PROCEEDINGS

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LIST

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CONTRIBUTORS,

With References to the several Articles contributed by each.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 12, 1836.

William Yarrell, Esq., in the Chair.

A NOTE addressed to the Secretary by Sir Robert Heron, Bart. M.P. was read. It referred to the writer's success in the breeding of *Curassows* in the last summer at Stubton.

From two individuals in his possession, the male of which is entirely black, and the female of the mottled reddish brown colour which is regarded as characteristic of the *Crax rubra*, Linn., Sir R. Heron has hatched in the last year six young ones in three broods of two eggs each: the eggs were placed under turkeys and common hens. Respecting one of them no notes were made; but the other five were all of the red colour of the female parent. Two of these, which were at two or three weeks old very strong, being still in the flower-garden, were killed in the night by a rat that had eaten its way into the coop in which they were. Two others were sent to the Earl of Derby, who wanted hens. The remaining one is now nearly, if not quite, full grown; and Sir R. Heron proposes to place it with the old pair.

"There is one great peculiarity," Sir R. Heron remarks, "attending the old pair. Their principal food is Indian corn and greens, both which they eat in common: but whenever any biscuit is given to them, as an occasional treat when visitors are here, the male breaks it and takes it in his mouth; waiting, however long, until the hen takes it out of his bill; which she does without the slightest mark of civility, although on excellent terms with him. This proceeding is invariable."

Mr. Yarrell, on behalf of T. C. Heysham, Esq., of Carlisle, exhibited the egg, the young bird of a week old, one of a month old, and the adult female of the *Dottrell, Charadrius Morinellus*, Linn., obtained on Skiddaw in the summer of 1835. Several pairs were breeding in the same locality.

He also stated that a specimen of the *grey Snipe, Macroramphus griseus*, Leach, a young bird of the year, has been obtained near

Carlisle in the past year. This is the third recorded instance of the occurrence of the species in England.

The following notes by Mr. Martin of a dissection of a *Vulpine Opossum, Phalangista Vulpina*, Cuv., were read.

"This animal, which died a short time since at the Gardens of the Society, was a female. In the length of the body it measured 1 foot $4\frac{3}{4}$ inches, exclusive of the head, which from nose to *occiput* measured $3\frac{3}{4}$ inches: the tail somewhat exceeded 11 inches. There was no abdominal pouch: the *mammæ* were two in number, about a quarter of an inch apart, very small, pointed, and retracted within the skin. The body was loaded with fat, and a layer of that substance, fully half an inch in thickness, lined the abdominal and *psoas* muscles.

"On leaving the *pylorus*, the *duodenum* was found to dip down to about the middle lumbar *vertebra*, where it crossed the spine, and then making an acute turn ascended till it reached the *pylorus*, where it again turned down abruptly, and lost, in the convolutions of the succeeding portion, or *jejunum*, its distinctive appellation.

"The stomach was large and simple, with a considerable cardiac pouch; when distended with air, its circumference measured $8\frac{1}{2}$ inches, and the great curvature 13.

"The *omentum* was very extensive, and loaded with fat.

"The *pancreas* was thin and indefinite, blending with the fat of the mesentery. It consisted of a main portion or body lying beneath the stomach, whence it spread to the mesentery, a broad slip adhering to the *duodenum* for about 2 inches.

"The liver was not unlike a fig-leaf in general outline, being deeply split into six distinct lobes,—three on the right, and three on the left, besides the *lobulus Spigelii*. In the middle fissure was seated the gall-bladder, its *fundus* being visible *in situ naturali*. The shape of this *vesicule* was, as usual, oval. It was filled with yellow bile. Its duct, which measured altogether $2\frac{1}{2}$ inches, received, at about half an inch from its commencement, several very small hepatic ducts, and entered the *duodenum*, with the pancreatic, 3 inches below the *pylorus*.

"The spleen consisted of three processes or *radii* from a central body: one of these processes adhered to the cardiac portion of the stomach; another floated in the *omentum*; and the third, bound by the mesentery, just covered the left kidney.

"The total length of the intestines was 11 feet 8 inches; the length of the small intestines being 6 feet 10, and of the large 4 feet 10. The mean diameter of the small intestines was half an inch. The mean diameter of the large at their origin was three quarters of an inch; but they contracted as they proceeded to one quarter, and the *rectum* subsequently enlarged to three quarters. The narrow part was filled with irregular knotted *fæces*. There were no longitudinal bands or *sacculi*. The texture of the large intestines was thin, and the circular fibres very distinct. The *cæcum* was long and convoluted on the mesentery, and narrowed gradually to a point; its length was 1 foot $4\frac{1}{2}$ inches.

"The right kidney was higher than the left. The suprarenal

capsules adhered to their upper *apex*. These bodies were firm, of small size, flat, and hollow. The length of the kidneys was 1¼ inch; their breadth three quarters. The *tubuli* converged to a single point, not elevated into a distinct *papilla*.

"The lungs consisted of three lobes on the right and two on the left side. Daubenton, in his description of a species of *Phalanger*, states that he found but one lobe on the left side, which was a little notched in the middle, but in the present animal the lobes were fairly separate.

"The heart was elongated and pointed, the right ventricle not extending to the *apex*. Its length was 1¼ inch.

"The anal, or rather common, opening, was surrounded by four large glandular follicles, full of creamy fluid of a rank disagreeable odour. The two on each side communicated together by means of a very fine tube, hardly larger than a hair. The *vagina* was longitudinally furrowed, its length to the orifices of the lateral tubes 2 inches. The *clitoris* was small, and about 3 lines long; above it were two small orifices, analogous perhaps to Cowper's glands. The body of the *uterus* was small, and its *parietes* thin and membranous. It was covered by the bladder, which concealed both this portion and its lateral canals and Fallopian tubes. These latter were somewhat more than an inch in length. The ovaries were small and compressed.

"The tongue was smooth: its length from the *epiglottis* to the tip, 2¼ inches; its breadth three quarters: its *apex* was somewhat acute. The *epiglottis* was broad and slightly bifid. The thyroid glands were oval, and half an inch long. The thyroid cartilage was remarkable for a rounded projection anteriorly, over which the *os hyoides* formed an adapted arch, capable of moving up and down on the projection, as drawn one way or other by its muscles.

"The morbid appearances consisted of great inflammation at the *pylorus*, with patches of an almost gangrenous appearance; a knot of enlarged mesenteric glands, which had begun to suppurate; and extensive adhesions to each other of the small intestines.

A notice by Dr. Rüppell, For. Memb. Z. S., of the existence of canine teeth in an Abyssinian *Antelope*, *Antilope montana*, Rüpp., was read. It was accompanied by drawings of the structure described in it, which were exhibited.

The following is a translation of Dr. Rüppell's communication.

In several *Mammalia* of the order *Ruminantia* the adult males, and even some females, possess canine teeth, which are more or less developed; to these teeth no other use has been attributed than that of a weapon of defence. The *Camels* (*Camelus*), the *Musk Deer* (*Moschus*), and the *Muntjak* of India (*Cervus Muntjak*), possess these canine teeth in both sexes. In the *red Deer* (*Cervus Elaphus*) and in the *rein Deer* (*Cerv. Tarandus*), the adult males alone are provided with them.

I have just ascertained that there is a species of *Antelope* which possesses these canine teeth; but in which, by a singular anomaly,

it is only the young males that are furnished with them. In these too they can only be considered in the light of half-developed germs; for the cartilaginous part which covers the palate and the upper jaw entirely conceals them.

It is the *Ant. montana*, which I discovered in 1824 in the neighbourhood of Sennaar, and of which I published in my 'Zoological Atlas' the figure of an adult male, that is provided, in its youth, with these anomalous canine teeth: the adults of both sexes, and the young females, are destitute of them. I observed, in my last journey in Abyssinia, many individuals of this species in the valleys in the neighbourhood of Gondar: it is far from rare in that locality, but the jungles mingled with thorns, which are its favourite retreat, render the chase of it extremely difficult.

At the time of the publication of my description of this new species, in 1826, I was possessed of only a single adult male, and there were consequently many deficiencies in my account of it. I am now enabled to add to this notice that the females of this species are always destitute of horns; that both sexes have, in the [groins] two rather deep pits covered by a stiff bundle of white hairs; and finally that the species lives in pairs in the valleys of the western part of Abyssinia, where it takes the place of *Ant. Saltiana*, an animal which it exceeds in size by nearly one half. These two species are called by the natives *Madoqua*, by which name the Abyssinians also designate the *Ant. Grimmia*, which equally constitutes a part of the game of that country, so rich in different forms of the *Ruminant* order.—E. R.

A note by Mr. Martin was subsequently read, in which it was stated that it had once occurred to him to observe a rudimentary canine tooth in the female of a species of *Deer* from South America, the body of which had been sent to the Society's house by Sir P. Grey Egerton, for examination. Having noticed an enlargement of the gum of the upper jaw, in the situation in which a canine tooth might possibly be supposed to exist, he cut into it, and found the germ of a canine tooth, about 3 lines in length, imbedded in the gum, and destitute of fang.

January 26, 1836.

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

Specimens were exhibited of numerous *Birds*, chiefly from the Society's collection; and Mr. Gould, at the request of the Chairman, directed the attention of the Meeting to those among them which he regarded as principally interesting either on account of their novelty or for the peculiarity of their form.

They included the following species of the genus *Edolius*, Cuv., which were compared with numerous others placed upon the table for that purpose.

Edolius grandis. *Ed. ater viridi metallicè splendens; capite cristato; rectricum duarum externarum scapis longissimis, vexillis ad apicem latè spatulatis.*

Long. tot. (rectricibus externis exclusis) 14 unc.; *rostri*, 1¼; *alæ*, 6¾; *caudæ*, 7; *tarsi*, 1⅞.

*Rostrum pedes*que nigri.

Hab. in Nepaliâ et (verosimiliter) in Sumatrâ.

This species may be distinguished from *Ed. Malabaricus* by its superiority in size, and by the greater fullness and length of its crest. The recurved feathers of the upper part of the head measure an inch and a half in length.

Edolius Rangoonensis. *Ed. ater viridi splendens; rectricum externarum scapis longissimis, vexillis latè spatulatis ad apicis marginem exteriorem præditis.*

Long. tot. (rectricibus externis exclusis) 12 unc.; *rostri*, 1¼; *alæ*, 6; *caudæ*, 5¾; *tarsi*, 1.

*Rostrum pedes*que nigri.

Hab. apud Rangoon.

Distinguishable from *Ed. Malabaricus*, to which it is nearly allied, by its shorter beak, and by the total absence from its forehead of the fine curled plumes which decorate that bird; the wing is also somewhat shorter.

Edolius Crishna. *Ed. velutino-ater viridi metallicè (præsertim ad alas) splendens; gutturis plumis sublanceolatis, viridibus; capite pilis longissimis pluribus ornato; rectricum externarum vexillis spiraliter intortis.*

Long. tot. (rectricibus externis exclusis) 12 unc.; *rostri*, 1⅝; *alæ*, 7; *caudæ*, 6; *tarsi*, 1.

Crishna Crow, *Lath., Hist.*

Hab. in Nepaliâ.

The bill of this species is more cultrated and lengthened than is usual in the genus. The outer feathers of the tail, which are spi-

rally reflected inwards, are not so much produced as those of *Ed. Malabaricus*. A very curious character is furnished by the long, hair-like, black filaments which spring from the head and measure nearly 4 inches in length.

Edolius viridescens. *Ed. intensè splendenti chalybeo-viridis, suprà magis saturatus.*
Long. tot. 11 unc.; *rostri*, 1¼; *alæ*, 5¾; *caudæ*, 5; *tarsi*, 1.
*Rostrum pedes*que nigri.
Hab. apud Manillam.

The remaining previously undescribed *Birds* that were exhibited were characterized by Mr. Gould as follows:

Orpheus modulator. *Orph. saturatè brunneus, alis pallidioribus albo bifasciatis; corpore subtùs, gutture, genis, strigâque superciliari cinerascenti-albidis; rectricum (præter intermediarum quatuor) apicibus latè albis.*
Long. tot. 10 unc.; *rostri*, ⅞; *alæ*, 4¾; *caudæ*, 5; *tarsi*, ⅝.
*Rostrum pedes*que saturatè brunnei.
Hab. in Fretu Magellanico.
This is by far the largest of the genus, and is very similar in all its markings to both *Orph. polyglottus* and *Orph. minor*. Although the bird from which the above character is drawn is from the Straits of Magalhaens, Mr. Gould is inclined to believe that it occurs in Brazil also, and considers it as being, very probably, the *Turdus Orpheus* of Spix, and the *grey Pie of Brazil* of Edwards.
The bands on the wings are produced by the white tips of the secondaries.

Ixos leucotis. *Ixos suprà cinereo-brunneus, subtùs pallidior; vertice, gutture, pectoreque nigris; auribus genisque albis; tectricibus caudæ inferioribus ochraceis; caudâ ad basin cinereâ in nigrescenti-brunneum apicem versus transeunte, rectricum omnium apicibus albis.*
Long. tot. 6½ unc.; *rostri*, ¾; *alæ*, 3⅛; *caudæ*, 3; *tarsi*, ¾.
*Rostrum pedes*que saturatè brunnei.
Hab. in Indiâ Orientali.

Colluricincla fusca. *Coll. suprà saturatè brunnea, plumis omnibus pallidiore marginatis; subtùs cinereo-albida, plumis in medio lunulâ brunneâ notatis; uropygii plumarum rectricumque apicibus albis.*
Long. tot. 11 unc.; *rostri*, 5¼; *alæ*, 5½; *caudæ*, 5; *tarsi*, 1½.
*Rostrum pedes*que pallidè brunnei.
Hab. vel in Novâ Zeelandiâ vel in Novâ Cambriâ Australi.
This species is fully a third larger than the *Coll. cinerea* described by Mr. Vigors and Dr. Horsfield in the 'Linnean Transactions.'

Trichophorus flaveolus. *Trich. cristatus, suprà olivaceo-flavescens, subtùs flavus; alis caudâque olivaceo-brunneis; genis gutturequesordidè albis.*

Long. tot. 8 unc.; *rostri*, 1; *alæ*, 4; *caudæ*, 3½; *tarsi*, ¾.
*Rostrum pedes*que corneo-brunnei.
Hab. in montibus Himalayensibus, in Nepaliâ, &c.
The crest consists of elongated feathers, intermingled with the hairy bristles usual in the genus.

Geocichla rubecula. *Geo. dorso, alis, caudâque saturatè cæruleo-cinereis, alis albo latè fasciatis; capite, collo, corporeque subtùs nitidè ferrugineis; crisso caudæque tectricibus inferioribus albis.*
Long. tot. 8 unc.; *rostri*, 1; *alæ*, 4¼; *caudæ*, 2½; *tarsi*, 1⅛.
Rostrum nigrum; *tarsi* brunnei.
Hab. in Javâ.
This pretty species resembles in many respects the *Red-breast, Erithacus Rubecula*, Swains. It belongs to an interesting group, which was first characterized by M. Kuhl, and of which the Society's collection possesses four well-marked species.

Mr. Gould subsequently directed the attention of the Meeting to a specimen of the *Turdus macrourus* of Dr. Latham, with the view of explaining the characters which induced him to regard that bird as constituting the type of a new

Genus Kittacincla.

Rostrum caput longitudine æquans, ad apicem emarginatum, rectiusculum, compressiusculum.
Nares basales, plumis brevibus utplurimum tectæ.
Alæ mediocres, rotundatæ: *remige* 1mâ brevissimâ, 4tâ 5tâque subæqualibus, longioribus.
Cauda elongata, gradata.
*Tarsi digiti*que longiusculi, tenues.
Obs. Maribus color suprà utplurimum niger; subtùs brunneus vel albus.

A paper by B. H. Hodgson, Esq., Corr. Memb. Z.S., on some of the *Scolopacidæ* of Nipâl, was read; the copy transmitted by that gentleman to the Society containing various corrections of his memoir which was published at Calcutta in the 'Gleanings of Science' for August, 1831.
Mr. Hodgson's object in the present paper is to bring under the notice of zoologists the various species of the family referred to which occur in Nipâl, on the natural history of which country he has, during a residence of several years, been engaged in making most extensive researches. The result of these it is his intention immediately to publish, accompanied by finished representations of the animals, taken from drawings made in almost every instance from numerous living individuals of the several races.
Mr. Hodgson first describes in detail the *common Woodcock, Scolopax Rusticola*, Linn., as it occurs in Nipâl; where it is, in every respect of form and colour, evidently identical with the European bird. In Nipâl also it seems to be, as it is in Western Europe, of

migratory habits: and the periods of its arrival in, and departure from, Nipâl, correspond altogether with the seasons of its appearance and disappearance in England.

He then proceeds to describe in detail the several kinds of *Snipe* which occur in Nipâl.

Two of these are so nearly related to the *common Snipe* of Europe, *Gallinago media*, Ray, that Mr. Hodgson is induced to regard them as being probably specifically identical with that bird: and he accordingly refers them to it as varieties, which are constantly distinguished from each other by the structure of the tail. In one of them the tail-feathers are fourteen or sixteen in number, and are all of the same form: in the other the tail-feathers vary in number from twenty-two to twenty-eight; and the outer ones on either side, to the number of six, eight, or ten, differ remarkably from those of the middle, being narrow, hard, and acuminated. The latter bird may, however, be regarded as the representative of a species to which the name of *Gall. heterura* may be given.

The other two *Snipes* of Nipâl are unquestionably distinct from those of Europe. They are described as the *solitary Snipe, Gall. solitaria*, Hodgs., and the *wood Snipe, Gall. nemoricola*, Ej.

In the *solitary Snipe* the wings are remarkably long; the upper surface, especially on the wings, is minutely dotted, barred, and streaked, with white intermingled with buff and brown; and the *abdomen* is white, barred along the flanks with brown.

The *wood Snipe* has the general colouring of the plumage dark and sombre; the wings short; the *abdomen* and the whole of the under surface thickly barred with transverse lines of dark brown on a dusky white ground; and a tail of sixteen or eighteen, or very rarely twenty, feathers.

Mr. Hodgson describes, with the greatest minuteness, each of these birds, and adverts with the fullest detail to their several habits and distinguishing peculiarities, as well of manners and of seasons as of form and plumage.

February 9, 1836.

Rev. F. W. Hope in the Chair.

A letter was read, addressed to the Secretary by M. Thibaut, and dated Malta, January 8, 1836. It communicated various particulars relative to the *Giraffes* belonging to the Society, which have recently been obtained by the writer and which are now in his custody, and may be translated as follows:—

"Having learnt, on my arrival at Malta, that you were desirous of information on the subject of the four *Giraffes* which the Society has entrusted to my care, I regard it as a duty to transmit to you a short statement, by which you will become aware of the difficulties that I encountered in obtaining and preserving for the Society these interesting animals, which are now, I hope, altogether out of danger.

"Instructed by Colonel Campbell, His Majesty's Consul General in the Levant, and desirous of rendering available for the purposes of the Zoological Society the knowledge which I had acquired by twelve years' experience in travelling in the interior of Africa, I quitted Cairo on the 15th of April, 1834. After sailing up the Nile as far as Wadi Halfa (the second cataract), I took camels, and proceeded to Debbat, a province of Dongolah; whence, on the 14th of July, I started for the desert of Kordofan.

"Being perfectly acquainted with the locality, and on friendly terms with the Arabs of the country, I attached them to me still more by the desire of profit. All were desirous of accompanying me in my pursuit of the *Giraffes*, which, up to that time, they had hunted solely for the sake of the flesh, which they eat, and of the skin, from which they make bucklers and sandals. I availed myself of the emulation which prevailed among the Arabs, and as the season was far advanced and favourable, I proceeded immediately to the south-west of Kordofan.

"It was on the 15th of August that I saw the first two *Giraffes*. A rapid chase, on horses accustomed to the fatigues of the desert, put us in possession, at the end of three hours, of the largest of the two: the mother of one of those now in my charge. Unable to take her alive, the Arabs killed her with blows of the sabre, and, cutting her to pieces, carried the meat to the head-quarters which we had established in a wooded situation; an arrangement necessary for our own comforts and to secure pasturage for the camels of both sexes which we had brought with us in aid of the object of our chase. We deferred until the morrow the pursuit of the young

Giraffe, which my companions assured me they would have no difficulty in again discovering. The Arabs are very fond of the flesh of this animal. I partook of their repast. The live embers were quickly covered with slices of the meat, which I found to be excellent eating.

" On the following day, the 16th of August, the Arabs started at daybreak in search of the young one, of which we had lost sight not far from our camp. The sandy nature of the soil of the desert is well adapted to afford indications to a hunter, and in a very short time we were on the track of the animal which was the object of our pursuit. We followed the traces with rapidity and in silence, cautious to avoid alarming the creature while it was yet at a distance from us. Unwearied myself, and anxious to act in the same manner as the Arabs, I followed them impatiently, and at 9 o'clock in the morning I had the happiness to find myself in possession of the *Giraffe*. A premium was given to the hunter whose horse had first come up with the animal, and this reward is the more merited as the laborious chase is pursued in the midst of brambles and of thorny trees.

" Possessed of this *Giraffe*, it was necessary to rest for three or four days, in order to render it sufficiently tame. During this period an Arab constantly holds it at the end of a long cord. By degrees it becomes accustomed to the presence of man, and takes a little nourishment. To furnish milk for it I had brought with me female camels. It became gradually reconciled to its condition, and was soon willing to follow, in short stages, the route of our caravan.

"This first *Giraffe*, captured at four days' journey to the south-west of Kordofan, will enable us to form some judgement as to its probable age at present; as I have observed its growth and its mode of life. When it first came into my hands, it was necessary to insert a finger into its mouth in order to deceive it into a belief that the nipple of its dam was there: then it sucked freely. According to the opinion of the Arabs, and to the length of time that I have had it, this first *Giraffe* cannot, at the utmost, be more than nineteen months old. Since I have had it, its size has fully doubled.

" The first run of the *Giraffe* is exceedingly rapid. The swiftest horse, if unaccustomed to the desert, could not come up with it unless with extreme difficulty. The Arabs accustom their coursers to hunger and to fatigue; milk generally serves them for food, and gives them power to continue their exertions during a very long run. If the *Giraffe* reaches a mountain, it passes the heights with rapidity: its feet, which are like those of a *Goat*, endow it with the dexterity of that animal; it bounds over ravines with incredible power; horses cannot, in such situations, compete with it.

" The *Giraffe* is fond of a wooded country. The leaves of trees are its principal food. Its conformation allows of its reaching their tops. The one of which I have previously spoken as having been

killed by the Arabs measured 21 French feet in height from the ears to the hoofs. Green herbs are also very agreeable to this animal; but its structure does not admit of its feeding on them in the same manner as our domestic animals, such as the *Ox* and the *Horse*. It is obliged to straddle widely; its two fore-feet are gradually stretched widely apart from each other, and its neck being then bent into a semicircular form, the animal is thus enabled to collect the grass. But on the instant that any noise interrupts its repast, the animal raises itself with rapidity, and has recourse to immediate flight.

" The *Giraffe* eats with great delicacy, and takes its food leaf by leaf, collecting them from the trees by means of its long tongue. It rejects the thorns, and in this respect differs from the *Camel*. As the grass on which it is now fed is cut for it, it takes the upper part only, and chews it until it perceives that the stem is too coarse for it. Great care is required for its preservation, and especially great cleanliness.

" It is extremely fond of society and is very sensible. I have observed one of them shed tears when it no longer saw its companions or the persons who were in the habit of attending to it.

" I was so fortunate as to collect five individuals at Kordofan; but the cold weather of December, 1834, killed four of them in the desert on the route to Dongolah, my point of departure for Bebbah. Only one was preserved; this was the first specimen that I obtained, and the one of which I have already spoken. After twenty-two days in the desert, I reached Dongolah on the 6th of January, 1835.

" Unwilling to return to Cairo without being really useful to the Society, and being actually at Dongolah, I determined on resuming the pursuit of *Giraffes*. I remained for three months in the desert, crossing it in all directions. Arabs in whom I could confide accompanied me, and our course was through districts destitute of everything. We had to dread the Arabs of Darfour, of which country I saw the first mountain. We were successful in our researches. I obtained three *Giraffes*, smaller than the one I already possessed. Experience suggested to me the means of preserving them.

" Another trial was reserved for me: that of transporting the animals, by bark, from Wadi Halfa to Cairo, Alexandria, and Malta. Providence has enabled me to surmount all difficulties. The most that they suffered was at sea, during their passage, which lasted twenty-four days, with the weather very tempestuous.

" I arrived at Malta on the 21st of November. We were there detained in quarantine for twenty-five days, after which, through the kind care of Mr. Bourchier, these valuable animals were placed in a good situation, where nothing is wanting for their comfort. With the view of preparing them for the temperature of the country to which they will eventually be removed, I have not thought it ad-

visable that they should be clothed. During the last week the cold has been much greater than they have hitherto experienced; but they have, thanks to the kindness of Mr. Bourchier, everything that can be desired.

" These four *Giraffes*, three males and one female, are so interesting and so beautiful, that I shall exert myself to the utmost to be of use to them. It is possible that they may breed; already I observe in them some tendency towards mutual attachment. They are capable of walking for six hours a day without the slightest fatigue.—G. T."

Mr. Gould, at the request of the Chairman, exhibited a specimen of the *Trogon resplendens*, Gould, and one of the *Trog. pavoninus*, Spix; and stated that he was indebted to the kindness of M. Natterer, who was present at the Meeting, for the opportunity of demonstrating, by the juxtaposition of the *Birds*, the correctness of the determination which he had made in regarding them as distinct species. Mr. Gould directed particular attention to the several characters and distinguishing marks which he had pointed out to the Society on March 10, 1835, and which had subsequently been published in the 'Proceedings,' part iii. p. 29, and again dwelt especially on the fact that in *Trog. resplendens* the hinder feathers of the back, which are fully 3 feet in length, hang gracefully far away beyond the tail; while in *Trog. pavoninus* the lengthened feathers of the back are rarely equal in length to the tail: in only one instance has M. Natterer known them, in the latter bird, to exceed the tail by so much as a quarter of an inch.

The reading was concluded of a paper " On the Anatomy of the *Lamellibranchiate Conchiferous Animals*, by Robert Garner, Esq., F.L.S.," a portion of which had been read at the meeting on November 24, 1835.

Founded principally on the author's individual observations, which have extended to the animals of several genera the anatomical structure of which is hitherto insufficiently known, this communication embodies also much information derived from the works of Poli, Cuvier, Bojanus, Home, M. de Blainville, and others. It is so arranged as to constitute a condensed memoir on the subject to which it is devoted, comprehending a summary of all that is yet known respecting it.

After some general remarks on the high importance of a knowledge of the structure of the animals that form those shells which have at all times attracted the attention of the curious, but to an acquaintance with which many naturalists, until of late years, have been content to limit themselves, Mr. Garner proceeds to speak of the position of the animal with respect to the shell; and thence to describe the variations in the form of the animal which occasion those appearances in the shell on which rest the primary subdivisions

made by conchologists among the *Lamellibranchiate Conchifera*. He regards *Anomia* as being in some measure intermediate between this order and the *Brachiopoda*; and in illustration of this view describes with some detail the structure of the animal of that genus.

Mr. Garner then adverts to the mode of growth of the shells and to their structure, and considers them in the variations in form which some of them undergo in their progress from the embryo to the adult state. He dwells also on the diversity of form assumed by the several groups of *Bivalves*, and shows in what manner these are occasioned by the form of the animal that produces the shelly coverings; referring to the foot especially as exercising in this respect a very remarkable influence.

The general review of the external form of the animal is succeeded by an account of the several systems of which it is composed. These are treated of in the following order: 1. Muscular system; 2. Nervous system; 3. Digestive system; 4. Circulating system; 5. Respiratory system; 6. Excretory system; 7. *Cilia* (and into this part of his subject the author enters with more than usual detail); and, 8. Reproductive system. Under each of these heads a rapid review is taken of the principal variations that occur in the order, and the illustrative examples referred to are generally numerous.

Finally, the author devotes a section of his paper to the diseases and the parasites of the animals on which he treats.

In conclusion, Mr. Garner submits the subjoined tabular view of an

Anatomical Classification of the Lamellibranchiate Conchiferous Animals.

With but one adductor muscle. Monomyaria, *Lam.*

Tentacles very long, not distinct from the *branchiæ*; an additional muscular system..... *Anomia.*

Tentacles short, separate from the *branchiæ*.
- No foot..... *Ostrea.*
- A foot.
  - *Branchiæ* disunited medianly.
    - Foot long, cylindrical; *ocelli* at the edge of the mantle ..... *Pecten.*
    - Foot short, thick, with a disk at the extremity, from the centre of which depends a pedicellated oval body; *ocelli* ..... *Spondylus.*
    - Foot compressed; no *ocelli*..... *Lima.*
  - *Branchiæ* conjoined medianly ..... *Vulsella.**

With two adductor muscles. DIMYARIA, *Lam.*

- Mantle without separate orifices or tubes.
  - Foot slender, byssiferous; tentacles fixed .. *Avicula.**
  - Foot thick, rounded, with a callosity ..... *Arca.*
  - Foot compressed, securiform ..... *Pectunculus.*
  - Foot oval below, its margin tentacular, tentacles volute..... *Nucula.*
  - Foot large, pointed anteriorly, bent at an angle..... *Trigonia.**
- Mantle with a distinct anal orifice.
  - Foot small, byssiferous.
    - Anterior muscle small; retractile muscles of the foot numerous; byssus large.
      - Byssus divided to its base ..... *Mytilus.*
      - Byssus with a common corneous centre..... *Modiola.*
      - *Anus* furnished with a long ligulate valve..... *Pinna.**
    - Muscles equal; two pairs of retractile muscles only; byssus rudimentary .... *Lithodomus.*
  - Foot large, not byssiferous ..... *Unio.*
- Mantle with a superior and inferior orifice; not elongated into tubes.
  - Mantle widely open..... *Cardium.*
  - Mantle closed around the foot or byssus.
    - Foot short and discal, byssiferous; anterior muscle small ..... *Tridacna.**
    - Foot small, cylindrical, bent at an angle; lips foliated ..... *Chama.**
    - Foot small, sharp; lips simple ..... *Isocardia.**
- Mantle with two produced tubes, or siphons.
  - *Branchiæ* not produced into the lower tube.
    - Mantle closed around the foot ..... *Loripes.**
    - Mantle open.
      - Tubes disunited; foot lanceolate.
        - Foot large, rather falciform; external *branchiæ* shortened; mantle tentacular; labial tentacles large..... *Donax.*
        - Foot small; external *branchiæ* shortened; edge of the mantle simple; tentacles small..... *Psammobia.*
        - Foot moderate; external *branchiæ* as long as the internal; tentacles large; margin of the mantle entire ..... *Tellina.*
        - Foot small; *branchiæ* equal; mantle tentacular..... *Amphidesma.*

Tubes more or less united; foot various.
Branchiæ united medianly.
Tubes small, partially divided; foot very long, obtuse ..... *Cyclas.*
Tubes small, united to the extremity; foot very long and pointed ..... *Mactra.*
Tubes large, foot short and prominent behind ..... *Venerupis.*
Branchiæ disunited medianly.
Foot lanceolate, prominent behind; tubes small, united ..... *Cytherea.*
Foot securiform; tubes larger and more or less distinct ..... *Venus.*
Branchiæ produced into, or attached to, the lower tube; tubes always united.
Mantle only open inferiorly for the protrusion of the foot.
Tubes small; lips long.
Foot small; *branchiæ* of each side united into one ..... *Pandora.*
Foot larger; *branchiæ* separate ..... *Corbula.*
Tubes long; lips small.
Foot not byssiferous; tubes large and coriaceous ..... *Mya.*
Foot byssiferous; tubes moderate .. *Hiatella.*
Mantle open anteriorly.
Foot long, club-shaped; tubes short .. *Solen.*
Foot very short, rounded.
Two distinct adductor muscles, the anterior one situated below a reflected portion of the mantle uniting the beaks instead of a cartilage; tentacles large ..... *Pholas.*
Body very elongated; adductor muscles united; end of the mantle with two calcareous pieces; tentacles small; no cartilage nor reflected portion of the mantle ..... *Teredo.*

For the anatomy of the several genera marked in the above table with an (*), the author acknowledges himself indebted either to Cuvier, Poli, or M. de Blainville.

He refers occasionally to other genera, besides those enumerated, as included in the groups distinguished by the characters given above.

Mr. Garner's paper was accompanied by numerous drawings of the objects and structures described in it, which were exhibited in illustration of his communication.

February 23, 1836.

The Rev. J. Barlow in the Chair.

Mr. Gould, at the request of the Chairman, exhibited specimens of numerous *Birds* forming part of the Society's collection; and directed the attention of the Meeting to those which he regarded as the most interesting among them.

He stated that one of them was especially curious as exhibiting a form of *Insessorial Bird*, not safely referrible to any known family; on which account he proposed to consider it as the type of a group to be designated

PARADOXORNIS.

Rostrum altitudine longitudinem superans, ad basin vibrissis instructum: *mandibulâ superiore* valdè compressâ; culmine acuto, valdè arcuato; tomio edentulo, apicem versus valdè incurvo, ad basin producto: *mandibulâ inferiore* ad basin latâ, robustâ; tomio emarginato.

Nares parvæ, rotundatæ, pone rostrum sitæ.

Alæ breves, rotundatæ: *remigibus* 4tâ, 5tâ, et 6tâ longioribus.

Cauda mediocris, gradata.

Tarsi robusti, læves.

Pedes magni, subtùs lati: *digitis* magnis; *halluce ungueque postico* maximis.

Ptilosis ampla, laxa.

The breadth of the under surfaces of the feet is so great as to indicate considerable powers of grasping.

PARADOXORNIS FLAVIROSTRIS. *Par. arenaceo-brunneus, subtùs pallidior; capite nuchâque rufo-brunneis; auribus partim aterrimis; facie guttureque albis nigro variis; pectore nigro.*

Long. tot. 8 unc.; *alæ*, 3½; *caudæ*, 4½; *tarsi*, 1¼; *hallucis* (arcuati), ⅞.

Rostrum splendidè aurantiaco-flavum; *pedes* cœrulescentes.

Hab. (verosimiliter) in Nepaliâ.

Mr. Gould regarded another of the *Birds* exhibited as the representative of a new type among the *Thrushes*; and characterized it as the type of the genus

ACTINODURA.

Rostrum subcompressum, subarcuatum, ad apicem subemarginatum.

Nares basales, lineares, operculo magno tectæ.

Alæ molles, breviusculæ, concavæ: *remige* 1mâ brevissimâ, 4tâ 5tâque longioribus.

Cauda mollis, elongata, gradata.
Tarsi elongati.
Pedes majusculi: *halluce ungueque postico* longiusculis.
Ptilosis mollis, laxa.
The wings and tail in the birds of this group are transversely barred. The typical species are crested.

Actinodura Egertoni. *Act. cristata; suprà nitidè rufo-brunnea olivaceo tincta, subtùs pallidè rufo-brunnea; cristâ, occipite, genisque brunnescenti-cinereis; remigibus ad basin rufis, pogoniis nigro flavoque fasciatis; secundariis nigro brunneoque fasciatis; rectricibus sordidè rufo-brunneis, lineis saturatioribus transversim notatis, alboque apiculatis.*
Long. tot. 8½ unc.; *alæ*, 3⅝; *caudæ*, 4¾; *tarsi*, 1¼; *rostri*, 1.
*Rostrum pedes*que brunnei.
Hab. in Nepaliâ.
The specimen described was presented to the Society by Sir P. Grey Egerton, Bart., M.P.

The following species were also characterized by Mr. Gould:

Corvus pectoralis. *Corv. niger cæruleo iridescens; maculâ nuchali latâ fasciâque lunatâ pectorali albis.*
Long. tot. 17 unc.; *rostri*, 2¼; *alæ*, 11½; *caudæ*, 7½; *tarsi*, 2¼.
*Rostrum pedes*que nigri.
Hab. in Chinâ.
Statura *Corv. Corone.*

Corvus curvirostris. *Corv. niger chalybeo-cæruleo purpureoque iridescens; maculâ dorsali fasciâque latâ ventrali albis.*
Long. tot. 17 unc.; *rostri*, 2½; *alæ*, 12⅜; *caudæ*, 7½; *tarsi*, 2¼.
*Rostrum pedes*que nigri.
Hab. in Africâ Occidentali.
Nearly allied to the *Corv. scapulatus*, Daud., a species of Southern Africa; but smaller in all its proportions, and possessing a bill which is rather feeble and considerably curved.

Prionites cæruliceps. *Pri. iridescenti-olivaceo-viridis, pteromatibus secundariisque magis viridibus; caudâ ad basin viridi, dein cæruleâ, ad apicem nigrâ; capite cæruleo, fasciâ frontali flavescenti-viridi, lineâque nigrâ a nare per oculum auremque utrinque ductâ et finem versus cæruleo submarginatâ, notato.*
Long. tot. 18 unc.; *rostri*, 1⅝; *alæ*, 5¼; *caudæ*, 11½; *tarsi*, 1½.
Rostrum nigrum; *pedes* brunnei.
Hab. in regione Tamaulipas dictâ.
The two middle tail-feathers have their shafts naked towards the end, as is usual in the genus, for the space of 2 inches; and the bird is decorated with the ordinary tufts of black feathers springing from the lower part of the throat.

PLYCTOLOPHUS PRODUCTUS. *Plyct. rostro elongato; brunneus, capite nuchâque pallidè brunnescenti-griseis, harum dorsique plumis saturatiore marginatis; uropygio, ventre, crissoque saturatè rubris; gutture pectoreque flavis, illo ad gulam rubro tincto; alarum flexurâ subtùs flavâ olivaceo-rufo tinctâ; rectricibus ad basin aurantiaco-flavo brunneoque fasciatis; remigum pogoniis internis ad basin subtùsque sordidè rufo brunneoque fasciatis.*

Long. tot. 15 unc.; *alæ*, 10; *caudæ*, 6; *tarsi*, 1¼; *rostri*, 2¼.

Rostrum pallidum; *pedes* saturatè brunnei.

Hab.

The bill is exceedingly produced, the upper mandible extending fully one half of its total length beyond the lower.

The bird belongs to that group which has been distinguished by M. Kuhl among the *Plyctolophi* under the name of *Nestor*.

A paper by Mr. Owen was read, entitled, "Descriptions of some new or rare *Cephalopoda*, collected by Mr. George Bennett, Corr. Memb. Z.S." The subjects referred to in it included specimens of *Cranchia scabra*, Leach; a small nondescript *Loligo*; the head and principal *viscera* of a *Decapodous Dibranchiate Cephalopod* from Port Jackson; a small nondescript species of *Octopus*; and a very small specimen of *Argonauta hians*, with its *Cephalopodous* inhabitant (*Ocythoe Cranchii*, Leach), and a large cluster of *ova*: all of which were exhibited, in illustration of the communication, by permission of the Curators of the Museum of the Royal College of Surgeons, of which collection they now form part.

The specimen of *Cranchia scabra* was taken by Mr. George Bennett in a towing net in lat. 12° 15′ S., long. 10° 15′ W.; and was at first regarded by him as a species of *Medusa*: and Mr. Owen observes, that from the uncommon form which this very remarkable *Cephalopod* presents, one cannot feel surprised that it should have been, at the first view, referred by its captor to a *Radiate* family, with which the *Cephalopods* bear, in more than one respect, an analogical relation.

As the type of its genus Mr. Owen considers the *Cranch. scabra* with reference to the generic characters that separate *Cranchia* from the neighbouring groups: from *Loligo* and *Onychoteuthis* it is distinguished by the continuity of its mantle with the dorsal *parietes* of the head; and from *Sepioteuthis*, *Sepiola*, and *Rossia* by the proportions and position of its fins. The form of the fins alone is evidently insufficient in *Cephalopods* for generic distinctions, as will appear from considering the variations in this respect that occur in the several species of the well-marked genus *Onychoteuthis*, Licht.; and also in the several species of *Loligo* as at present restricted, some of which, especially *Lol. brevis*, Blainv., make so close an approximation to *Cranch. scabra* in the rounded contour, as well as the terminal position, of their fins, that were it not that the exterior margin of the mantle is in all of them free on its dorsal aspect, the latter *Cephalopod*, notwithstanding its singular form, could not be separated generically from the *Loligines* on external characters alone.

As in the figures published by Férussac of the *Cephalopods* named *Cranch. cardioptera* by Péron and *Cranch. minima* by himself, the anterior margin of the mantle appears to be free on its dorsal aspect, similarly to that of the true *Loligines*, it must be doubted whether these species are correctly referred to the genus *Cranchia*: and the same doubt may perhaps be extended to *Cranch. Bonelliana*, Fér., in the description of which no mention is made of the adhesion or otherwise of the mantle to the posterior part of the head. This adhesion Mr. Owen regards as an essential character of the genus.

The specimen of *Cranchia scabra* on which the genus was founded by Dr. Leach, having been imperfect in some of its parts, Mr. Owen carefully describes the species anew from the perfect individual obtained by Mr. George Bennett; which is smaller than the original specimen, measuring only 1 inch 8 lines in total length to the end of the outstretched tentacle. The body is remarkable for its great flaccidity, which is owing to the very small space occupied by the *viscera*: these are situated at its anterior part, and not, as in *Loligopsis*, at the bottom of the sac. Besides this disproportion between the bulk of the *viscera* and the capacity of the containing sac, *Cranchia* has other relations with *Loligopsis* in the absence of the infundibular valve, which exists in all the other *Decapodous Cephalopods*; and in the non-articulation of the base of the siphon by a double ball and socket joint to the internal surface of the ventro-lateral parts of the mantle. In the *Decapodous Cephalopods* generally the funnel is articulated to the mantle, at the anterior part of its base, by two ball and socket joints, the projection being on the mantle and the socket on the funnel; both consisting of cartilage, covered with a fine synovial membrane. The projecting cartilage is of an oval form in the *Cuttle-fish*: but in *Loligo* it forms an elongated ridge; which in *Onychoteuthis* commences at the anterior margin of the mantle and extends one third down the sac, forming two thin lateral cartilaginous *laminæ* placed rather towards the ventral aspect of the mantle: an elongated groove in the opposite sides of the funnel plays upon each of these ridges. In *Loligopsis* the sides of the funnel adhere to the corresponding cartilaginous *laminæ*, which differ from the lateral cartilages of other *Decapodous Cephalopods* only by their greater length and tuberculated form. In *Cranchia*, as in the *Octopoda*, these cartilages are entirely wanting; but the ventral *parietes* of the base of the siphon become expanded, thin, and transparent; and adhere to and become continuous with the corresponding parts of the mantle.

Mr. Owen regards as new the species of *Loligo* referred to, and describes it under the name of *Lol. laticeps*: four specimens of it, the largest of which measures only 1¼ inch from the extremity of the mantle to the end of the outstretched tentacle, were obtained by Mr. George Bennett among the Sargasso weed, in lat. 29° N., long. 47° W. When alive they were of a fine purple colour with dark red spots. The specimens are now destitute of colour on the fins and on the under surface of the third and fourth pairs of arms, and the spots are but few on the under part of the head and mantle;

on the inner surface of the first, second, and third pairs of arms the dark pigment is disposed in broad, irregularly shaped, transverse bands, passing across between each of the pairs of suckers.

The head, as is indicated by the trivial name, is comparatively broad; and the arms which it supports are relatively longer than in the *Loligines* generally, the second and third pairs being nearly equal in length to the trunk. The body is subcylindrical and conical, gradually diminishing in circumference till it terminates in a point at the posterior margin of the fins, which do not extend conjoined together beyond this part. The fins are terminal and dorsal, a space of about half a line intervening between their origins anteriorly, whence their bases converge and are united at the *apex* of the trunk: their superior contour is an obtuse angle; their inferior margin is rounded.

In the *Cephalopod* described as *Cranchia cardioptera*, Pér., to which the species under consideration has a superficial resemblance, the terminal fins have a semicircular contour, and their origins are widely separated anteriorly; they also extend beyond the termination of the trunk: the trunk, moreover, is broader in proportion to the head, and does not diminish gradually to a point, but is rounded off at the posterior extremity. The *Cranchia minima* of Férussac may be at once distinguished from *Lol. laticeps* by the extension of the trunk beyond the small rounded fins, which gives a trilobate contour to the termination of the body.

In internal organization *Lol. laticeps* agrees with the other *Loligines* whose anatomical structure has been ascertained.

The fragments of the *Decapodous Cephalopod* obtained at Port Jackson are too imperfect to allow of their being satisfactorily referred generically: they may, however, have belonged to a species of *Loligo* or of *Sepioteuthis*. As in some species of both these genera, the outer lip was characterized by eight short processes, on the inner surface of which, at the extremity of each, were three or four small suckers, attached by peduncles, and having precisely the same structure as those of the eight large exterior arms. In this repetition of the structure of the external series of cephalic processes there is an evident analogy to the different series of labial processes of *Nautilus*. In some species, as for instance *Lol. Pealii*, Le Sueur, the acetabuliferous labial processes are more developed than in Mr. George Bennett's specimen. In *Lol. corolliflora*, Til., they have been compared by Bojanus to the internal shorter series of tentacles of a *Medusa*; affording another evidence of the analogy, though remote, between the *Cephalopods* and the *Radiata*.

The two lateral processes at the termination of the *rectum* being, in this instance, evidently adapted to form a valve for the closure of the *anus*, Mr. Owen was induced to examine the corresponding structure in other species; and to conclude, from his examination, that similar appendages, although varying in form and position, perform the same office in other *Decapoda*. The slenderness of the anal processes in *Onychoteuthis* and *Loligopsis* being such as to preclude the possibility of their acting as mechanical guards, it is in-

ferred that they may perform the function of instruments of sensation, and convey the stimulus to contract to the muscular parts that close the outlet of the alimentary canal. In the *Octopoda* the *anus* is not similarly provided; and, indeed, it may be generally remarked that valvular or other guards are developed among the *Cephalopoda* only in such as have the power of propelling themselves forwards in the water.

The generative apparatus forming part of the fragments referred to, Mr. Owen examined it with some care. His most important observation relative to these organs relates to a small round flat fleshy body, attached near the anterior aperture of each of the two nidamental glands, destitute of any outlet, and of an orange colour. A single bilobed organ, of a bright orange or red colour, similarly connected with the anterior extremities of the nidamental glands, exists (as was long since pointed out by Swammerdam) in the *Cuttle-fish*. In *Sepiola* the corresponding body is single, and of a rose colour. And there exist two such bodies in a small *Cephalopod* taken by Capt. Ross on the shore of Boothia, which Mr. Owen has recently described under the name of *Rossia palpebrosa*. Considering the bright colours which these bodies commonly present, and their structure and relations to the generative apparatus, Mr. Owen feels authorized in regarding them as analogous to the suprarenal bodies, hitherto regarded as peculiar to the *Vertebrate* series.

The small *Octopus* described by Mr. Owen was obtained by Mr. George Bennett, like the *Loligo laticeps*, among the Sargasso weed; which forms, as it were, a bank in the midst of the ocean, affording shelter to many marine animals of littoral genera. The condition of the generative organs would appear to indicate that the specimens brought home were not adult, and the species consequently may be assumed to attain a greater size than that of the largest individual in the collection, which measures only 1½ inch from the end of the sac to the extremity of the longest arm. Of the eight arms the first, or dorsal, pair is the longest, as is the case in many species of *Octopus*; the second pair is nearly of the same length as the first; the third pair (which in the *Decapods* is commonly the longest) is scarcely half the length of the first; the fourth pair is nearly two thirds of the length of the first. The musculo-membranous web, which is usually extended between the bases of all the arms in the *Octopi*, is in this species developed to the ordinary extent between the four dorsal arms only: the webs between the second and third arms, and the third and fourth arms, on each side, are very short; that between the fourth pair is wanting. From this peculiarity Mr. Owen proposes to name the species *Octopus semipalmatus*.

Its anatomy generally agrees with that of *Oct. vulgaris*.

The remaining specimens described by Mr. Owen are the shell and animal of *Argonauta hians*, Lam. They were obtained in lat. 4° S., long. 17° W. The animal was alive at the time of its capture by Mr. George Bennett, but fell out of its shell when it was moved on the following morning. A mass of eggs was then exposed in the involuted portion of the shell, which increased so greatly in size after

being put into spirit that they now occupy so much of the cavity that not more than one third of the body of the parent could be forced into it.

Referring to the fact that the *Cephalopods* hitherto found in the shells of each species of *Argonauta* have invariably presented characters as specifically distinct as those of the shells in which they were found, each species of animal having appropriated to it its own peculiar species of shell—a fact which extends not only to *Arg. Argo, Arg. tuberculata,* and *Arg. hians,* but also to an undescribed species obtained in the Indian seas by Capt. P. P. King, R.N., for which Mr. Owen proposes the name of *Arg. rufa,* he is disposed to believe that the shell really belongs to the animal that occurs in it. On this account he speaks of the animal in question as the *Arg. hians,* discarding the name of *Ocythoë Cranchii* applied to it by Dr. Leach.

In carefully describing the specimen before him, Mr. Owen corrects some errors in the account given of the animal by its original describer, and furnishes various particulars which, from the contracted state of his individuals, were unobserved by Dr. Leach. He also adverts to the statement made by that able zoologist, that in this species all the internal organs are essentially the same as in *Octopus*: and remarks that *Arg. hians,* like *Arg. Argo,* recedes from the naked *Octopods* and approaches the *Decapods* in the structure of the branchial hearts, which are provided with a fleshy appendage, in the form of the appendages of the *vena cava,* which are shorter and thicker; and in the relative position of the lozenge-shaped ink-bag, which is not buried in the substance of the liver, but lies in its anterior concavity: the inferior salivary glands are also relatively smaller. The following differences, as compared with *Octopus,* occur in other internal organs which adhere to the type of structure that characterizes the *Octopodous* tribe of the *Dibranchiata*: the laminated pancreatic bag is of a triangular form, and not spirally disposed; the two oviducts are devoid of the circular laminated glands which surround them in *Octopus* about the middle of their course; they are also disposed in four or five convolutions as they pass behind the roots of the *branchiæ*; and they terminate at a relatively greater distance from the base of the funnel.

Mr. Owen then describes various portions of the internal structure of *Argonauta*; and especially its brain, its principal nervous cords, and the lateral muscles, here at their minimum of development, which attain in *Nautilus,* as the muscles of attachment to the shell, so enormous a size.

The eggs are in nearly the same state of development as those which have been described by Mr. Bauer and by Dr. Roget; and consequently afforded no conclusive proof as to the nature of the connexion of the animal with the shell. In one of them, from the form of the opake body contained within it, Mr. Owen for a moment entertained the idea that the *nucleus* of the real shell might be found: on tearing open, however, the external tissue, the contained substance turned out to be nothing more than the yelk, separated by an intervening stratum of clear fluid from the transparent *mem-*

brana vitelli; and the whole substance of the opake mass separated into the flakes, granules, and globules of oil, of which the *vitellus* is usually composed: there was not a trace of any consistent parts of an embryo, nor the slightest particle of calcareous matter.

Mr. Owen concludes his communication by a tabular view of the *Cephalopoda*, exhibiting the external and internal characters common to the entire class; those of the several orders and families comprised in it; and the names of the genera included in each family.

March 8, 1836.

William Yarrell, Esq., in the Chair.

Mr. Ogilby read a paper, entitled "Observations on the opposable power of the Thumb in certain *Mammals*, considered as a zoological character: and on the Natural Affinities which subsist between the *Bimana*, *Quadrumana*, and *Pedimana*."

In the summer of 1829 it occurred to Mr. Ogilby to observe that two living individuals of *Mycetes Seniculus* did not use the extremities of their anterior limbs for the purpose of holding objects between the fingers and thumb, as is common among the *Quadrumana*; and he ascertained also, on closer examination, that the thumb, as it has generally been considered, was not in these animals opposable to the other fingers, but originated in the same line with them. Struck with the apparent singularity of the fact, he was induced to pay particular attention to all the other animals, referred by zoologists to the *Quadrumanous* family, to which he had access; and the continued observation of more than six years has assured him that the non-opposable character of the inner finger of the anterior extremities, which he first observed in the specimens referred to, is not confined to the genus *Mycetes*, but extends throughout the whole of the genera of the South American *Monkeys*, individuals of all of which have now been seen by him in the living state. In none of them, consequently, does a true thumb exist on the anterior limbs: and as a further consequence it follows, that the whole of them have hitherto been incorrectly referred to the *Quadrumana* by zoologists generally. There is a solitary exception among descriptive writers from this mode of viewing the subject, D'Azara (as Mr. Ogilby has very recently become aware) having spoken of the anterior extremities of some of the species observed by him as having five fingers originating on the same line with each other: but the statements of that original observer appear, in this respect, either to have been unnoticed by other authors or to have been passed by as undeserving of attention, so entirely were they at variance with the preconceived notions of all.

Of the eight natural genera which include all the known *Monkeys* of the Western Hemisphere, one, *Ateles*, is entirely destitute of a thumb, or has that member existing only in a rudimentary form beneath the skin. In five others, *Mycetes*, *Lagothrix*, *Aotus*, *Pithecia*, and *Hapale*, the anterior thumbs (using the ordinary expression for them) are placed absolutely on the same line with the other fingers, are of the same form with them, act invariably in the same direction, and are totally incapable of being opposed to them. In the two remaining genera, *Cebus* and *Callithrix*, the extremities of the anterior limbs have a greater external resemblance to the hands of *Man* and of the *Monkeys* of the Old World: the internal finger is placed

further back than the general line of the other fingers, and has, on that account, when superficially noticed, the semblance of being opposed to them; but, as has been correctly observed by D'Azara with reference to *Ceb. capucinus*, it is less separated than in *Man*: it is, besides, of precisely the same slender form with the rest, is weaker than them, absolutely without power of opposition to them, and habitually acts in the same direction with them. The impression derived from contemplating the hands of the Old World *Monkeys* might induce the belief that the extremities of the *Cebi* are similarly constituted: but if the knowledge that in *Mycetes*, *Pithecia*, &c., there are no opposable thumbs, lead to a close observation of the anterior extremities of the *Cebi*, it will be found that they do not act as hands, and cannot be considered as possessing the powers of those organs. From innumerable observations of many species of that genus Mr. Ogilby states that it was very evident, notwithstanding the fallacious appearance occasioned by the backward position of the organ, that they had not the power of opposing the thumb to the other fingers in the act of prehension: and, in fact, their principal power of prehension seems to be altogether independent of the thumb, for, generally speaking, that member was not brought into action at all, at least not simultaneously with the other fingers, but hung loosely on one side, as Mr. Ogilby has seen it do, in like circumstances, in the *Opossums*, *Phalangers*, and other arboreal *Mammals*: when actually brought into play, however, the thumb of the *Cebi* invariably acted in the same direction as the other fingers. *Cebus* consequently agrees in the character of non-opposableness of thumb with the nearly allied genera. And in this hitherto unsuspected peculiarity zoologists obtain a far more important character by which to distinguish the *Monkeys* of the Old and New World than that hitherto relied on, the comparative thickness of the *septum narium*, or than the accessory aids afforded by the absence of cheek-pouches and callosities. Hence, according to Mr. Ogilby, as the *Monkeys* of America have now been ascertained to be destitute of anterior hands, they can be no longer included among the *Quadrumana*; and he proposes in consequence to regard them as *Pedimana*. He considers that in the latter series, the *Monkeys* of America form a group parallel to that of the *Monkeys* of the Old World among the *Quadrumana*: and viewing the *Quadrumana* as consisting of two primary groups, that of which *Simia* forms the type, and the *Lemuridæ*, he proceeds to analyse the *Pedimana* in order to determine whether any group analogous to the *Lemurs* exists in it. He finds such a group in the association of the genera *Didelphis*, *Cheironectes*, *Phalangista*, *Petaurus*, and *Phascolarctos*, (together with a new genus, *Pseudochirus*, which he has found it necessary to separate from *Phalangista* as at present constituted); and for this association he uses the name of *Didelphidæ*. Aware that the modifications observable in the dentary systems of these several genera have been regarded by many zoologists as betokening a difference of regimen, which has led to their being viewed as constituting distinct families; he, in the first place, states, as the

result of his observation of the habits of the numerous species of all these genera which have been, from time to time, exhibited in the Society's Gardens, that there is little or no difference, in this respect, between the *Opossums* and *Phalangers*, but that all are equally omnivorous; and then proceeds to discuss the modifications that exist among them in the number and form of the several kinds of teeth, which are not, in his estimation, so very different in reality between the *Opossums* and *Phalangers* as they appear to be at first sight. In further support of his opinion that this association of genera forms a natural family, Mr. Ogilby refers to the gradual and uninterrupted transition from the naked-prehensile-tailed *Opossums* of South America, through the equally naked-tailed *Couscous*, *Balantia*, of the Indian Isles, to the true *Phalangers*; and from these to the *Petaurists* directly on the one hand, and by means of the *Pseudocheirs* to the *Koalas* on the other.

On the prehensile power of the tail Mr. Ogilby particularly insists, as on a faculty possessed by the greater number of the *Pedimana*, and as one which is, in truth, almost confined to them: only three known genera belonging to other groups, *Synetherus*, *Myrmecophaga*, and *Cercoleptes*, being endowed with it. He remarks on this faculty as on one of considerable importance, affording as it does, in some degree, a compensation for the absence of opposable thumbs on the anterior limbs. Combined with the prehensile tail, in every known instance, whether among the *Pedimana* or in other groups, is a slowness and apparent cautiousness of motion, not observable in any of the *Quadrumana* except in the *Nycticebi*. In none of the true *Quadrumana* is the tail prehensile.

Another evidence of the distinctness, as two groups, of the *Quadrumana* and the *Pedimana*, is furnished by their geographical distribution. The *Quadrumana* are strictly confined to the limits of the Old World: the *Pedimana*, almost as exclusively to the New World; for Mr. Ogilby considers the continent of Australia to belong more properly to America than to Asia. The very few apparent exceptions that occur to this latter position are in the presence of some species of *Phalangers* in the long chain of islands that connect the south-eastern shores of Asia with the north-eastern coast of Australia; islands which may, in truth, be fairly regarded as belonging partly to the one and partly to the other, and the productions of which might consequently be expected to partake of the character of both.

Mr. Ogilby subsequently adverts to another *Pedimanous* animal, the *Aye-Aye* of Madagascar, constituting the genus *Cheiromys*; respecting the affinities of which he speaks with hesitation, because, having never had an opportunity of examining the animal itself, he is acquainted with its characters only at second-hand. He is, however, disposed to regard it as representing a third group among the *Pedimana*, to be placed in a station intermediate between the *Monkeys* of the New World and the *Didelphidæ*. With the latter he would, in fact, be disposed to associate it, were it not destitute of the marsupial character which belongs to all the other animals com-

prised in that group. In some of the *Didelphidæ*, the *Phalangers* and *Petaurists* especially, there is a marked approximation to that rodent form of incisor teeth which obtains in *Cheiromys*, and which has hitherto been regarded as especially attaching to it an abnormal character.

Man is the only other animal furnished with hands; and however distinct he may be as regards his moral and intellectual powers, he must, zoologically, be considered on physical grounds. By his structural characters he becomes associated with all those of which mention has previously been made in Mr. Ogilby's communication; although he unquestionably constitutes among them a peculiar group, sensibly exalted above the rest, as well as above all other *Mammals*.

Mr. Ogilby concludes by proposing the name of *Cheiropeds*, *Cheiropoda*, to include all the *Mammals* that are possessed of hands; and by subjoining a table of the families and genera included in this order, as he regards it. Of this table the following may be regarded as an abstract.

Class. MAMMALIA.

Order. CHEIROPODA,

Mammals with opposable thumbs

On the anterior extremities only ..... BIMANA.

On both anterior and posterior extremities.... QUADRUMANA.

And with anthropoid teeth,

Monkeys of the Old World.

———— abnormal teeth,

Lemuridæ.

On the posterior extremities only..... PEDIMANA.

And with anthropoid teeth,

Monkeys of the New World.

———— rodent teeth,

Cheiromys.

———— abnormal teeth,

Didelphidæ.

March 22, 1836.

Richard Owen, Esq., in the Chair

The following Notes by Mr. Martin on the visceral and osteological Anatomy of the *Cariama*, *Dicholophus cristatus*, Ill., were read.

"The *Cariama*, of the examination of which I made the following notes, was sent to the Society by its President, the Earl of Derby, in November, 1835. It was a female, and had died from the effects of extensive visceral inflammation.

"The *trachea*, without making any curvature or loop, passed straight into the chest. The *œsophagus*, immediately before its entrance, presented a gentle but evident dilatation. On carefully dissecting away the abdominal muscles, the gizzard appeared just below the *apex* of the *sternum*, lying in a vertical position, so that its defined abdominal edge seemed a continuation of the sternal *apex*. On each side above was a large air-cell extending along the ribs, but separated from what may be termed the thoracic air-cell; and on each side below was another, occupying the iliac region, the membrane being fixed to the pubic bones. From the gizzard a kind of fatty *omentum*, if the term be allowed, stretched over the intestines; this *omentum*, however, was only the peritoneal membrane lining the abdominal muscles, having fat disposed in a foliaceous manner between its two *laminæ*. Below the gizzard lay the *duodenum*, its loose fold sweeping round that *viscus* in a horseshoe form. Each lobe of the liver was very soft, and, as it were, decomposed in structure, of a rose pink colour, and glued firmly to the peritoneal cavity by a layer of coagulated lymph half an inch thick; and the abdominal cavity was filled with bloody *serum*.

"The gizzard was of large size, thin, but muscular, with a radiating tendinous patch on each side, of the size of half-a-crown. It was lined with a strong coriaceous membrane, of a yellowish colour, irregularly puckered. The *proventriculus* was lined for the extent of 2 inches above its entrance into the gizzard with a zone of thickly set glands.

"The *duodenum*, on leaving the gizzard, made a sweep of 6 inches, from the right to the left, round that *viscus*, and then, returning suddenly upon itself, embraced in this flexure, as usual, the *pancreas*. The whole of the small intestines were disposed in loops of a similar nature, but of less extent. The *duodenum* at its commencement was a little enlarged; but not into anything like a pyloric *appendix* as in the *Adjutant*.

"The gall-bladder was of the size of a walnut; and the biliary duct,

an inch in length, entered the *duodenum* at its second turn, where the reflected portion returns to the gizzard. At half an inch from the biliary duct an hepatic duct entered; and near this two pancreatic ducts: but the *pancreas* was so disorganized that I failed in all endeavours to make out more.

"The total length of the small intestines was 2 feet 10 inches; of the large, 5 inches, reckoning from the base of the *cæca*, which were double, closely adherent to the small intestines, and 7½ inches long. The *cloaca*, at its entrance into which the large intestine was surrounded by a sphincter-like valve, was divided by a fold into two portions: beneath this fold entered the ureters and oviduct; and below and between the ureters was the *bursa Fabricii*. The upper portion of the *cloaca* was lined with a villous coat; but the part below had a smooth mucous lining. The *villi* of the large intestine were disposed in longitudinal lines; but this was not the case in the *cloaca*, where the villous surface was uniform. The length of the *cloaca* was 1 inch and 5 lines; its circumference 1¾ inch.

"The gizzard was filled with undigested flesh, feathers, and pebbles.

"The intestines were full of *pus*, and their villous lining was highly inflamed.

"In the whole of the visceral arrangement a close affinity may be observed to the *Grus* tribe. In the *Stanley Crane* (*Anthropoides paradisæus*, Bechst.) the intestines are similarly disposed in folds or loops, and the two *cæca*, given off 6 inches from the *anus*, are 4 inches long. In the *Stanley Crane*, however, the muscular coat of the gizzard is thicker than in the *Cariama*, being in some parts an inch across, while in the latter bird it is about ¼ of an inch; hence there is in this point an index of a less vegetable regimen. In the *Stanley Crane*, the total length of the intestines is 5 feet 3 inches. In the *Cariama*, it is 3 feet 5½ inches.

"In its general aspect the skeleton of the *Cariama* is very remarkable. The comparative shortness of the neck, the compactness of the chest and stoutness of the ribs, together with the abbreviated condition of the wings, appear as if out of harmony with the length of the limbs, especially of the *tibia* and *tarsus*; while the toes concluding this length of limb are short, the hinder one being situated high and not touching the ground.

"The skull, as in the *Cranes*, is arched above, but rises on the *vertex* to a more abrupt elevation; the arch in the *Stanley Crane* being a regular sweep from the base of the upper mandible to the *occiput*. The orbits are large, and are separated by a bony *septum* with a central and posterior perforation and a slight superior fissure. In the *Stanley Crane*, the central perforation is large and continuous with the posterior; the superior fissure being also more decided. The supra-orbital process of the lacrymal bone is large, prominent, and directed backwards, as it is in the *Stanley Crane*. There is also a large pos-

terior orbital process, forming part of the rim of the orbit; and before the *os quadratum* there projects forwards and downwards a process of the temporal bone, analogous, I suspect, to the zygomatic process; for the long bone stretching to the upper mandible from the *os quadratum*, which in the present bird is remarkably slender, cannot be called a true *zygoma*. Between these two processes is the depression for the temporal muscle. The nostrils are large, wide, ovoid, and open.

"In the lower jaw there is nothing remarkable. It may be observed, however, that a slit, or long foramen, marks the union of the basal to the anterior portion of the bone, instead of a simple suture. The coronoid process is very small.

"The *vertebræ* are short and stout, and resemble more those of a *Gallinaceous Bird* than of a *Crane*; in fact, they differ little from those of the *crested Curassow*. Their number is as follows:

Cervical	13
Dorsal.....	7
Sacral	12 apparently.
Caudal.....	8

But that a rib arises on each side from it, the last or 7th dorsal *vertebra* is so completely consolidated to the *sacrum* that it cannot be distinguished from that portion of the column;—this is also the case, in the *black-crested Curassow*, with the last dorsal *vertebra*; and in the *Stanley Crane*, with the last two.

"The *sternum* differs considerably in figure from that of the *Stanley Crane*. For, independently of the absence of a channel in the anterior edge of the keel for the reception of the *trachea*, the keel is neither so deep, nor is its anterior *apex* even in contact with the point of the *os furcatum*, (there being a firm consolidation in the *Stanley Crane*,) while its posterior edge is narrow and prolonged as in *Gallinaceous Birds*; whereas in the *Stanley Crane* it is broad and squared. The total length of the *sternum* is $4\frac{1}{2}$ inches: the greatest depth of the keel $1\frac{1}{4}$. The keel does not arise abruptly from the body of the *sternum*, but the latter merges gradually into it.

"The *os furcatum* is very slender and depressed towards the coracoid bones; its figure is triangular, and the *apex* does not reach the keel of the *sternum* by nearly half an inch. The *Cariama* is a bird of feeble powers of flight, very different from the *Crane* in this respect, and exhibiting a corresponding modification of the osseous parts connected with aërial progression.

"The ribs, seven in number on each side, are short and strong; the first two are false: in the *Stanley Crane* I can only find one false rib on each side; while all the rest are long, somewhat slender, and extend nearly 2 inches beyond the posterior margin of the *sternum*: whereas in the *Cariama*, the posterior sternal *apex* extends beyond

the ribs, which here make a very obtuse angle at their junction with the cartilages, or rather bones of sternal attachment.

"The clavicles offer nothing remarkable.

"The bones of the wings are short; the fore arm and *humerus* being of equal length,—4¼ inches: the hand consists of the usual bones in *Birds*, and is about 3½ inches in length.

"The *femur*, as in the *Crane*, is short and strong, measuring 3½ inches. The *tibia* is slender, measuring 8½ inches in length; the projecting *crista* before its upper articulating surface is very bold: as in the *Crane*, there is a large internal plate and an external pointed process, with a deep hollow between them, occupying the front of the upper end of the *tibia*. The *fibula* is, as usual, a slender stylet, and 3 inches long. The *tarsus* is 6¾ inches long, of a squared form towards its upper extremity, with an anterior and posterior groove very strongly marked, and a slighter groove on each side. The accessory or little metatarsal bone, at the base of the hind toe, is very small, and is situated about an inch from the lower extremity of the *tarsus*. The toes are short and stout, but consist of the usual number of *phalanges*.

"Though the *Cariama*, in its osseous structure, exhibits but little resemblance to the *Birds* of the *Raptorial* order, it approaches that order very remarkably in the structure of the eye, which is surrounded by a firm consolidated osseous ring. This ring departs materially in its formation from what obtains among the *Grallatores* generally, where it is imbricated and slight, and indeed scarcely merits the name of osseous.

"The choroid, the *iris*, and the lens present nothing remarkable. The ciliary processes are 102 in number, and about the 12th of an inch in length. The *marsupium nigrum* is strong, large in proportion to the eye, and much elevated."

In illustration of Mr. Martin's Notes, the mounted skeleton of the *Cariama* was exhibited; as were also preparations of several of the *viscera*.

The following Notes by Mr. Martin, of the anatomy of a specimen of *Buffon's Touraco, Corythaix Buffonii*, Vaill., were subsequently read.

"The death of a specimen of *Buffon's Touraco* in the Gardens of the Society, has enabled me to investigate its visceral anatomy, and to compare the details afforded by that species, with those given by Mr. Owen respecting the *Corythaix porphyreolopha*. The individual in question was a female of the *Cor. Buffonii*. In the total length of the head, neck and body, exclusive of the tail-feathers, it measured 8½ inches.

"On opening the *abdomen*, I found the *viscera* thus arranged. Below the edge of the *sternum*, (which is a very short bone, its keel being only 1½ inch long,) appeared the two lobes of the liver, (highly

tuberculated): on the left side was the gizzard; and on the right, the first portion of the *duodenum* with the spleen apparent. On turning back the stomach, there appeared, dorsad, the coil of intestines.

"Beginning with the *œsophagus*, I found it a wide dilatable simple tube, puckered longitudinally within, but these foldings disappeared on dilatation; lying compressed *in situ* its breadth was rather more than $\frac{1}{4}$ an inch. Without any previous dilatation or crop, it entered the *proventriculus*; its boundary line being a sphincter-like thickening. The whole of the *proventriculus* was covered internally with small thickly set glands, of a flattened figure; and its length from the termination of the *œsophagus* to the gizzard was $\frac{3}{4}$ of an inch.

"The tongue was tipped with a sharp flat horny point; but I could find no bristles at its *apex*, as in the *Toucans*, and as was seen by Mr. Owen in the *Corythaix porphyreolopha*. Its base was covered with retroverted *papillæ*, which occurred again posterior to the *rima glottidis*. The *pharynx*, or opening into the gullet, was beset with numerous glands, the mouths of which were very visible. The *trachea* was a straight tube; but soon after commencing it gradually contracted, and then gradually dilated for the space of an inch, contracting again, and again dilating as it dipped into the chest. As this peculiarity is not noticed by Mr. Owen in the species he dissected, I conclude that it does not exist in it. The sterno-tracheal muscles consisted of a single pair.

"The liver consisted of two lobes as usual, and beneath the right lay the gall-bladder, of an oblong figure, which I found empty. Its duct, 2 inches in length, entered the *duodenum* at the first angle, and beneath the body of the *pancreas*, accompanied by an hepatic duct which entered with it.

"The *pancreas* was small, and consisted of a lobulated portion lying on the angle of the *duodenum* above mentioned, and giving off a narrow slip along the first portion of the *duodenum* to which it was closely attached. I could trace two small ducts from it entering near the bile-ducts. The distance of this angle from the gizzard was about $1\frac{1}{2}$ inch. I found the spleen adhering to the gizzard, and between this and the right lobe of the liver. Its figure was oval, its size that of a small nutmeg, its structure soft and evidently disorganized.

"The heart presented nothing remarkable; it was subacute and $1\frac{1}{8}$ inch long.

"The muscular *parietes* of the gizzard were thin; but this *viscus* was lined by a leathery membrane of a whitish colour: its length was $1\frac{1}{2}$ inch; its diameter when lying compressed as usual $1\frac{1}{4}$. It contained a little undigested vegetable matter.

"The *duodenum*, beginning small from a short pyloric canal, as noticed by Mr. Owen, suddenly dilated to $\frac{1}{4}$ths of an inch in diameter; the pyloric canal was corrugated internally, these corrugations verging to a *sphincter*.

"The small intestines were $11\frac{1}{2}$ inches in length, terminating in a

globular pouch or *cæcum*, not unlike the rudimentary *cæcum* found in some *land Tortoises*. From this pouch to the *anus* the distance was 5 inches. The intestinal canal was full of purulent matter, and its mucous coat was highly inflamed. I found no worms, though I looked carefully for them, opening nearly the whole of the alimentary canal.

"The oviduct and the ureters terminated in the *cloaca* as usual. The ovary was nearly $\frac{3}{4}$ of an inch long. The kidneys were as usual.

"The eyes approximated closely in structure to those of the *Parrot* tribe. The sclerotic coat had a narrow ring of ossification composed of eleven plates, six of which were disposed in an imbricated manner, the five at the lower and posterior part being only in juxtaposition. Of these plates, however, the three superior alone could be termed fairly osseous. The *cornea* was small in diameter and not very convex. The optic nerve entered the infero-posterior portion of the sclerotic, the *retina* springing from a tubercle under and around the *marsupium*, which was very small. The vitreous humour and *lens* were as usual. The *membrana aquatica*, as it is termed, was very visible. The ciliary processes, the 12th of an inch long, were 96 in number. The *uvea* was dark; the *iris* lake colour, and its sphincter fibres distinct; the ciliary ligament broad; the *pigmentum nigrum* dark brown and in large quantity. Many fibrils of the 3rd, 4th, and 5th pairs of nerves pierced the sclerotic."

Mr. Bennett directed the attention of the Meeting to an interesting series of the *Indian Antelope*, *Antilope Cervicapra*, Pall., now at the Society's Gardens. It consists of four individuals: an adult and aged male, brought by Col. Sykes from Bombay, and presented by him to the Society nearly five years ago; a younger, yet adult, male, which was presented, in an immature condition, about two years since; an immature male, lately arrived in the Menagerie, and in about the same state of development as that in which the last-mentioned individual was when it was originally presented; and an emasculated individual of full growth. In the older of these *Antelopes* the rich deep colour of the body generally is so intense as almost to approach to black, and the horns are strong and fully developed: the possession of horns and the depth of colouring, which are peculiar to the male sex, are exhibited in it at their maximum. The second individual approximates nearly to it in the degree in which these secondary sexual characters are developed. In the third, the youngest of the series, there exist the horns characteristic of the male, but these organs are yet of small growth, are only beginning to be annulated at their base, and are commencing their first spiral turn; its colour, as is very generally the case among the young of animals that in adult age are differently coloured in the sexes, is that of the female, which in this instance is a dull fawn with a pale stripe along the side: it has, consequently, in these two striking particulars, full evidence of immaturity. The emasculated individual was probably, at the period when

that accident or operation occurred which prevented the development of its sexual characters, at nearly the same age as the one last adverted to: it has since continued to increase in bulk, and it even exceeds in size, as often happens in castrated animals, the perfect adult male of the same species: but the secondary sexual characters of the male have not been developed in it; it retains the dull fawn colour of immaturity, and its horns have not acquired the strength, the annulation, or the spiral turns which belong to those of the adult and perfect male. One of the horns has been broken off; perhaps the more readily from some weakness in its structure, consequent on its unimportance to an animal so degenerated: the other retains, at a short distance from its normally formed tip, a few rings, but beyond these the surface has become smooth, the substance remains weak and comparatively small, and the direction, instead of being in a succession of spiral turns, is in a single sweep, passing backwards above the base of the ear and then descending along the curve of the neck: it has, though weaker, much of the character of the horns of the African race of *Sheep*. The general appearance of the animal is also sheep-like and tame.

Mr. Bennett proceeded to remark that these animals, although curious and interesting on account of the variations exhibited by them, in accordance with their several conditions, in those acknowledged secondary sexual characters, colour and horns, were yet more interesting when considered with reference to the state of another organ, the use of which has long remained a problem to zoologists, but which, it appeared to him, must be referred to sexual relations; he alluded now to the lacrymal sinus. Referring to its structure as to that of a sac, opening externally by a lengthened slit, but perfectly closed within, he remarked, that that organ could not possibly be in any degree connected with the functions of respiration; there being no aperture through it for the passage of air. Its inner surface is covered by a smooth skin, with a few scattered and very short bristles, and is defended by a dark-coloured and copious secretion of ceruminous matter, which has a slight urinous or sexual odour. He did not feel himself competent, he stated, to explain the precise manner in which this organ is available for sexual purposes; yet he felt convinced that such is its use, from the consideration of its relative development in the several *Indian Antelopes* of the Society's Menagerie.

In the more aged of these individuals, as indeed in the adult *Indian Antelope* generally, the large cutaneous follicle beneath the eye known as the lacrymal sinus, is so prominent as to form a most striking feature in the animal's physiognomy: it never appears as a simple slit, its thickened edges pouting so widely as to be at all times partially everted. When the animal is excited, and it is constantly highly excitable, the eversion of the bag becomes complete, and its thick lips being thrown widely back, the intervening space is actually forced

forwards so as to form a projection instead of a hollow: the animal is, on such occasions, delighted to thrust repeatedly the naked lining of the sac against any substance that is offered to him, which soon becomes loaded with the odour that has been referred to as belonging to the secretion. In the second individual, although it is perfectly mature, the protrusion of the inner surface of the sac is not quite to so great an extent as in the more aged male; and the less thickened edges of the sinus allow of a nearer approximation to its closure in the unexcited state of the animal. The youngest male has the lips of the sinus small and closely applied to each other, so as to hide completely the whole of the internal lining of the sac, and to exhibit, externally, a mere fissure: in it the lips are but slightly moved when the animal is interested. The emasculated individual, notwithstanding its full growth, has its suborbital sinus nearly in the same condition as that of the immature male: it is merely a slight fissure, the edges of which are closely applied to each other; and in it those edges do not appear to be at all moved, the animal being generally careless and inanimate. It would consequently seem that the same cause which induced the retention, by this individual, of its immature colours, and which arrested the perfect growth of its horns, was adequate also for the checking of the development of the suborbital sinuses. Those organs, therefore, would appear to be dependent on sexual perfection; and consequently to be, in some manner yet to be ascertained, subservient to sexual purposes, with the capacity for which they are evidently, in the phases of their development, essentially connected.

Mr. Owen, who had conceived it possible that the secretion of these glands, when rubbed upon projecting bodies, might serve to direct individuals of the same species to each other, remarked that he had endeavoured to test the probability of this supposition by preparing a tabular view of the relations between the habits and habitats of the several species of *Antelopes*, and their suborbital, maxillary, post-auditory, and inguinal glands; in order to be able to compare the presence and degrees of development of these glands with the gregarious and other habits of the *Antelope* tribe. He stated, however, that it was evident from this table, that there is no relation between the gregarious habits of the *Antelopes* which frequent the plains, and the presence of the suborbital and maxiliary sinuses; since these, besides being altogether wanting in some of the gregarious species, are present in many of the solitary frequenters of rocky mountainous districts. The supposition, therefore, that the secretion may serve, when left on shrubs or stones, to direct a straggler to the general herd, falls to the ground.

Mr. Owen's Table is as follows:

Suborbital and maxillary sinuses. Suborbital sinuses large.

Inguinal pores.

Antilope Sumatrensis. Hilly forests; habits of the *Goat.*
Cervicapra. Open plains of India; gregarious.
quadriscopa. Senegal.
melampus. Open plains of Caffraria; flocks of six or eight.
? *Forfex.* Africa.
? *adenota.* Africa.
? *quadricornis.*
picta. Dense forests of India
scoparia. Open plains of S. Africa; sub-gregarious.
Tragulus. Stony plains and valleys of S. Africa; in pairs.
melanotis. Plains, hides in underwood; in pairs.
Dorcas. Borders of the desert; gregarious.
Kevella. Stony plains, Senegal; gregarious.
subgutturosa. Plains, Central Asia; gregarious.
Bennettii. Rocky hills of Deccan; not gregarious.
Arabica. Stony hills of Arabia.
Sœmmeringii. Hills in Abyssinia; not gregarious.
Euchore. Dry plains of S. Africa; gregarious.
pygarga. Plains, S. Africa; gregarious.
Mhorr. Deserts of Morocco.
Dama.
ruficollis. Deserts of Nubia; gregarious.

small.

Antilope Colus. Vicinity of lakes; gregarious, migratory.
gutturosa. Arid deserts, Asia; periodically gregarious.

Suborbital sinuses.

No inguinal pores.

Antilope Saltiana. Mountainous districts, Abyssinia; in pairs.
Oreotragus. Mountains of the Cape; like the *Chamois.*
Thar. Hills of Nepaul; not gregarious.
Gazella. Senegal. ?

Suborbital glands.

Antilope Bubalis. Mountains and deserts, Tripoli; gregarious.
Caama. Plains of S. Africa; gregarious.
? *lunata.* S. Africa.
Gnu. Karroos of S. Africa; gregarious.
taurina s. *Gorgon.* S. Africa; gregarious.

Maxillary sinuses.

Inguinal pores.

Antilope silvicultrix. Thickets and underwood, Africa.
mergens. Forests and underwood, S. Africa; in pairs.
Grimmia. Guinea.
Burchellii.
platous.
perpusilla. Bushes, S. Africa; in pairs.
Maxwellii.
pygmæa.

No suborbital, or maxillary sinuses.

Inguinal pores.

Antilope Strepsiceros. Woods and banks of rivers, Caffraria; subgregarious.
sylvatica. Woods, Caffraria; in pairs.
scripta.
Koba. Senegal.
Kob. Senegal.
Eleotragus. Reedy banks, Cape; subgregarious.
redunca. Goree.
Capreolus. Underwood, S. Africa; subgregarious.
Landiana. Underwood, S. Africa; subgregarious.

(Post-auditory sinuses.)

Antilope Rupicapra. Mountains, Europe; subgregarious.

No suborbital, or maxillary sinuses.

No inguinal pores.

Antilope Addax. Deserts, N. Africa; in pairs.
Leucoryx. Acacia groves, N. Africa; gregarious.
Oryx. Woods and plains, S. Africa; subgregarious.
leucophæa. Open plains, S. Africa; subgregarious.
barbata. Open plains, S. Africa; in pairs.
equina. Plains, S. Africa; in pairs.
ellipsiprymnus. S. Africa.
Oreas. Open plains, S. Africa; gregarious.
Canna. Deserts, Cape; gregarious.
Goral. Elevated plains, Himalaya; gregarious.

Mr. Ogilby remarked, with reference to this subject, that he had had opportunities of observing, at the Surrey Zoological Gardens, a female of the *Indian Antelope,* in which, when he first saw her, the lacrymal sinus was in a state of quiescence: but when he observed her again, a month afterwards, and probably in improved condition, that organ was in a state as excitable as it is in the old male of the Society's Gardens.

He added, as a general remark, which, however, he stated was not universal, that in intertropical animals the lacrymal sinus is larger than in more northern species, and in those whose range is limited to mountainous districts.

He also described the lacrymal sinus of a species of *Gazelle,* which he had observed after death: it consisted of a gland furnished with six excretory ducts placed nearly in a circle, and with one central duct: from the orifices of these ducts, when squeezed, there issued out strings of a dense ceruminous matter.

Mr. Bennett stated in conclusion, that since making his observations on the *Indian Antelope,* which had led him to form the opinion he had advanced with respect to the use of the lacrymal sinus, he had

received from Mr. Hodgson of Nepal, a Corresponding Member of the Society, a letter in which, among other subjects, some remarks are made on this organ as it exists in the *Thar Antelope*, and in the *Cervus Aristotelis*: in the former of those animals, Mr. Hodgson's observations prove that during the breeding-season the lacrymal sinus is in a high state of activity. Mr. Hodgson's letter, which is dated Nepal, June 18, 1835, refers also to other glands in some other *Antelopes*, as will be seen by the following extract.

"The *Chiru Antelope* has exceedingly large inguinal sacs, which hang by a long narrow neck from the loins. The longitudinal quasi maxillary gland of the *Cambin Otan* I doubt the existence of, and believe its 'suborbital sinus' to be similar to that of *Thar*.

"The latter differs essentially from that organ in any *Deer* or *Antelope* I have seen; being furnished with a huge gland, filling the whole cavity or depression on the scull, and leaving the cuticular fold void of hollowness: it is filled up, like the bony depression, by the gland; whereas the gland of this sinus, in most *Deer* and *Antelopes*, is a tiny thing, and a dubious one. As to any *Cervine* or *Antilopine* animal breathing through the suborbital sinus, it cannot be, unless they can breathe through bone and skin! If you pass a fine probe down the lacrymal duct, you see the probe through the bottom of the osseous depression holding the cuticular fold called the suborbital sinus. But, however thin the plate of bone at the bottom of the former, it is there, without breach of continuity; and the cuticular portion of the apparatus has a continuous course throughout, leaving no access to the inside of the head. I am watching closely a live specimen of *Cervus Aristotelis*, to discover, if I can, the use of this organ. In a recently killed male of this species, I passed a pipe into the nose, up to the site of the suborbital sinus, and tried, in vain, for half an hour, with the aid of a dozen men's lungs, to inflate the sinus. Not a particle of air would pass; nor could I cause the sinus to unfold itself, as the live animal unfolds it, by means of a set of muscles disposed crosswise round the rim of it. In dissecting the sinus, I found only a feeble trace of a gland; so also, in the *Muntjac*.

"But in the *Thar*, the gland is conspicuous, being a huge lump of flesh, bigger than, and like in shape to, the yolk of an egg. The live *Thar*, too, in the spring especially, pours out a continuous stream of thin viscid matter from the sinus; not so in any *Deer*. The *Thar's* gland seems to me connected with the generative organs: and I take its profuse secretion to be a means of relieving the animal (when it has no mate particularly) from the extraordinary excitement to which it is liable in the courting-season. I have witnessed that excitement, and have been amazed at its fearful extent, topical and general, for six weeks and more.

"The *Chiru's* labial sacs, or intermaxillary pouches, are, most clearly, accessory nostrils, designed to assist breathing at speed.

They spread with the dilatation of the true nostril, and contract with its contraction. This species has but five molar teeth on each side of either jaw."—B. H. H.

April 12, 1836.

William Yarrell, Esq., in the Chair.

Mr. Bennett directed the attention of the Meeting to a living specimen of the *brush-tailed Kangaroo*, *Macropus penicillatus*, Gray, which had recently been added to the Menagerie; having been presented to the Society by Captain Deloitte, Corr. Memb. Z. S. He remarked particularly on the peculiarity of its actions, as compared with those of the typical *Kangaroos*; and especially on the ease with which it vaults from the ground to any slight ledge, on which it remains perched, as it were, with its tail extended behind it: the tail, in fact, appearing to be in no respect aiding in the progression of the animal.

Referring to some observations which he had made on the exhibition of a skin of the same species, at the Meeting of the Society on January 13, 1835, (Proceedings, part iii. p. 1,) he stated it to be his intention to reduce into order his various remarks on the subject, and to accompany them by a figure of the animal taken from the living specimen.

Mr. Owen read the following notes of the morbid appearances observed in the dissection of the specimen of the *Chimpanzee*, *Simia Troglodytes*, Linn., which lately died at the Gardens; and respecting the habits and faculties of which some observations by Mr. Broderip were read at the Meeting of the Society on October 27, 1835. (Proceedings, part iii. p. 160.)

"Adhesions of the abdominal *viscera* to the *parietes* of the cavity existed in many parts, but more especially of the ascending *colon* and *cæcum* on the right side. On separating these adhesions a purulent cavity was exposed, with which the *ileum*, near its termination, communicated by an ulcerated aperture about half an inch in diameter. An abscess also existed between the lower end of the *cæcum* and the *peritoneum*, and the whole of the *fundus* of the *cæcum* was destroyed by ulceration, together with part of the vermiform process; the remainder of which was much contracted and shrivelled, and was found adhering to the sound part of the *cæcum*. The efficiency of the adhesive process in repairing, or at least preventing, the immediate evil consequences of a solution of continuity in the intestinal *parietes*, was remarkably exemplified in this instance; for notwithstanding the extent to which this had taken place, not a particle of the alimentary matters had escaped into the general cavity of the *abdomen*, nor was the mischief suspected until the adhesions were separated.

"On laying open the *ileum* it appeared that the original seat of the ulcer had been a cluster of the aggregated intestinal glands:

similar patches in the immediate neighbourhood were in a state of ulceration; and others were enlarged, or more than usually conspicuous, as they were situated farther from the seat of the disease. In the commencement of the *colon*, the solitary glands presented a state of enlargement and ulceration, and here and there an inordinate vascularity; but in the general track of the intestinal canal traces of recent or active inflammation were very few. The condition of the mucous membrane of the intestines closely resembled that which is so generally observed in phthisical subjects; here, however, the strumous matter was not developed in the lungs, but was confined to the mesenteric glands and spleen. All the mesenteric glands were more or less enlarged by a deposition of caseous matter: two, which are usually found adhering to the termination of the *ileum*, were even in a state of suppuration and ulceration, so that the *parietes* of the gut may have been attacked by the ulcerative process on both sides,—from without by that commencing in the mesenteric glands,—from within by that of the *glandulæ aggregatæ*: it was most probably, however, progressive from the latter point.

"The spleen was greatly enlarged, measuring 5 inches long and 4 broad, with numerous small scattered tubercles, none exceeding half an inch in diameter. Its substance was firm, but so disorganized as to enable it to fulfil in a very slight degree the functions of a reservoir of venous or portal blood.

"The liver was enlarged about one third beyond its usual size, and was of a pale colour; but upon a close inspection it presented no other morbid appearance than a congested state of the portal veins: a condition frequently associated with strumous *viscera*, and which was very well marked in this case, and perhaps dependent on the diseased state of the spleen. The gall-bladder contained thick but healthy-coloured bile.

"The stomach seemed free from disease; but had a large perforation, the margins of which showed that it had resulted from the *post-mortem* action of the gastric secretion.

"The *pancreas* was healthy.

"In the chest there were no adhesions. The heart was healthy. The lungs were somewhat firmer than usual, and the air-passages contained an unusual quantity of fluid secretion, in some parts stained with blood; but none of the air-cells had been obliterated by either inflammatory action or strumous deposition: there had been recent subacute inflammation of the mucous lining of the air-passages, but nothing more.

"No *Entozoa* were met with in the dissection; although the alimentary canal was carefully searched for them.

"The brain and its membranes were healthy.

"With respect to the organization of the *Chimpanzee*, so far as the dissection was carried, the parts corresponded with the descriptions given by Tyson in his 'Anatomy of a Pygmie'; and by Dr. Traill in the 'Wernerian Transactions,' vol. iii.

"The *tunica vaginalis testis*, which communicates with the *ab-*

domen in the *Simia Satyrus*, was here a completely closed or shut sac, as in the human subject."

The following "Descriptions of some Species of Shells apparently not hitherto recorded: by W. J. Broderip, Esq., V.P.Z.S., F.R.S., &c." were read. The reading of the communication was accompanied by the exhibition of specimens of the several species referred to in it.

Spondylus albidus. *Spond. testâ albidâ, lineis elevatis frequentissimis exasperatis, a cardine radiantibus, horridâ: long.* $\frac{9}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab.?

This delicate shell is rough like a file, and has indeed somewhat the aspect of a *Lima*.

Voluta Beckii. *Vol. testâ ovato-fusiformi, fulvâ lineis subangulatis spadiceis inscriptâ, transversim striatâ, striis minutis subundulatis; anfractibus tuberculato-subplicatis, ultimo longissimo; spirâ mediocri; columellâ triplicatâ; aperturâ ovato-elongatâ: long.* $8\frac{5}{8}$, *lat.* 4 *poll.*

Hab.?

Mus. Saul, Brod.

The body whorl of this fine species, which I have named after that distinguished conchologist Dr. Beck, is upwards of 6 inches in length.

I have long had a bleached specimen in my collection, but the description above given is taken from one with more colour and in better condition, though not good, in the cabinet of Miss Saul. My specimen is somewhat shorter. There is a very large individual lately added to the British Museum.

Voluta concinna. *Vol. testâ mitriformi, transversim subtilissimè striatâ, striis elevatis, fulvâ lineis longitudinalibus spadiceis, subirregularibus, frequentissimis inscriptâ; anfractibus plicatis, plicis subtubercularibus, anfractu basali elongato, fasciis duabus distantibus pallidioribus obscuris cincto; spirâ mediocri, valdè plicatâ; columellâ* 4*-plicatâ; aperturâ angustiore: long.* $3\frac{7}{10}$, *lat.* $1\frac{3}{8}$ *poll.*

Hab.?

Mus. Brod.

This is an elegant shell, approaching a little in some of its characters to *Vol. Lyriformis*, but differing widely from it in others. Of the total length of *Vol. concinna* two inches and a half are occupied by the body whorl, and it is only in the transversely striated plications of the spire, which are however more distant than those of the spire of *Vol. Lyriformis*, that the resemblance occurs, for the spire of *Vol. concinna* is very short in proportion to its body whorl, while the opposite character is strongly developed in *Vol. Lyriformis*. In this respect it comes nearer to *Vol. gracilis*, as well as in the form

and colour of the aperture and the plaits on the pillar. The aperture of *Vol. concinna* is fulvous, and the inner lip, where the mantle has extended, is of the same colour, with a few traces of the longitudinal lineations not yet obliterated.

My specimen is the only one I have seen.

Conus Adamsonii. *Con. testâ solidâ, subcylindraceâ, glabrâ, albidâ roseo pallido spadiceoque tessellatâ; anfractu basali supernè et ad basin sulcato, sulcis elevatis latis (interstitiis superiorum subpunctatis), fasciis tribus subæquidistantibus spadiceo-maculatis ornato; spirâ brevi, anfractibus subconcavis, transversim striatis.*

Hab. ?.

Mus. Adamson.

This species is nearly as solid and ponderous as *Con. Stercus Muscarum*, which it resembles somewhat in shape, though *Con. Adamsonii* is longer in proportion. It has also points which remind the observer of *Con. bullatus*; but is more nearly allied to *Con. discrepans*, Conch. Illustr. f. 28.

Purpura Gravesii. *Purp. testâ sordidè albâ, muricatâ, striis validis, elevatis, imbricato-squamulosis rugosâ; anfractibus longitudinaliter subplicatis, angulosis, angulis laminatis, serratis, retroversis; anfractu basali striâ validiore, submediali, elevatâ cincto: long.* $1\frac{9}{20}$, *lat.* $\frac{8}{10}$ *poll.*

Hab. in mari Mediterraneo.

Mus. Norris, Brod.

This shell was brought up on the fluke of the anchor of H.M.S. Mastiff, surveying-vessel, under the command of Lieut. Graves (who has already enriched this department of natural history by his activity in collecting, whenever the pressure of his professional duties would allow him to do so,) from a muddy bottom, and a depth of ten fathoms, off Napoli di Romania. The shell varies much, and other specimens have not the carinations, &c. nearly so much developed.

There is a figure of this species in Mr. Sowerby's 'Conchological Illustrations,' under the name of *Murex cariniferus*.

Bulinus Crichtoni. *Bul. testâ fusiformi, longitudinaliter costatâ et corrugatâ, costis rugisque validis, subalbidâ maculis spadiceis notatâ; labio rosaceo-violaceo, labro pallidiore, expanso, subreflexo: long.* 3 (*circiter*), *lat.* $1\frac{1}{8}$ *poll.*

Hab. ad Ambo juxta Huanuco Peruviæ.

Mus. Brod.

This curious shell, which at first sight reminds the observer of *Bulinus Labeo*, Brod., (Zool. Journ., vol. iv. p. 222,) brought home by Lieut. Maw, R.N., and presented by him to the Zoological Society of London, from whose Museum it has been stolen*, differs strongly from it, as will be seen by a reference to the figure in the 'Zoolo-

* This certainly was, and I believe (wherever it may be) is, the only specimen in Europe. It was in remarkably fine condition.

gical Journal' which is very accurate, excepting that the longitudinal lines in the engraving are rather too strongly expressed. The *apex* of the shell under description, the only specimem I ever saw, is broken, and its actual length is 2 inches and $\frac{7}{8}$. It will be observed that the specimen is notched at the base, but I suspect that this arises from accidental distortion.

The shell is named after my friend Sir Alexander Crichton, to whose liberality I am indebted for this and the following species.

Bulinus inflatus. *Bul. testâ fragili, subalbidâ vel flavâ, fusco vel castaneo maculatâ, anfractu basali castaneo fasciatâ, fasciis numerosis: long.* $\frac{7}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. juxta Ambo Peruviæ.

This pretty shell somewhat approaches *Bul. guttatus*, brought home by Mr. Cuming. The species varies very much.

Bulinus Pusio. *Bul. testâ valdè ventricosâ, ovato-globosâ, corneâ, diaphanâ, longitudinaliter striatâ; labri margine albo; umbilico mediocri: long.* $\frac{5}{7}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. in maris Mediterranei insulis Græcis (Syra).

This species was found in the island of Syra by Lieut. Graves, during his late survey in H.M.S. Mastiff. There were but two specimens; in one the *umbilicus* is very visible: in the other it is nearly closed.

April 26, 1836.

William Yarrell, Esq., in the Chair.

A Note was read, addressed to the Secretary by J. B. Harvey, Esq., Corr. Memb. Z.S., and dated Teignmouth, April 24, 1836. It referred to a series of specimens of *Rostellaria Pes Pelicani*, Lam., presented by the writer to the Society, and which he regards as interesting on account of the evidence afforded by them of the curious fact, that in the shells of this species the outer lip is most thickened at a time antecedent to the full development of the shell; absorption of the incrassated part of the lip taking place as the animal advances in age. "This series," Mr. Harvey remarks, "clearly shows that the shell, when not more than one half or three quarters grown, is much thicker than when all the processes are perfected: and that, when each process has a groove or channel in it, the shell is quite thin, and has arrived at its full period of growth."

The shells referred to in Mr. Harvey's letter were exhibited.

Characters were read of the *Vespertilionidæ* observed in the central region of Nepâl; being a communication transmitted to the Society by B. H. Hodgson, Esq., Corr. Memb. Z.S. They have already been published in the 'Journal of the Asiatic Society of Calcutta'.

The following are the species characterized:

Rhinolophus armiger, Hodgs.
Rhin. tragatus, Ej.
Pteropus leucocephalus, Ej.
Pter. pyrivorus, Ej.
Vespertilio formosa, Ej.
Vesp. fuliginosa, Ej.
Vesp. labiata, Ej.

Mr. Hodgson's characters of these species are accompanied by remarks on the habits of the several genera of *Bats* which are represented by them in the district in which they occur.

A second communication by Mr. Hodgson was read, which has also been published in the 'Journal of the Asiatic Society of Calcutta'. It was entitled "Specific Name and Character of a New Species of *Cervus*, discovered by Mr. Hodgson in 1825, and indicated in his Catalogue by the local name of *Bâhraiya*."

The animal to which this paper refers is regarded by Mr. Hodgson as constituting an important link in the chain of connexion between the *Deer* of the *Rusŭn* and of the *Elaphine* groups: possessing in the numerous snags into which the summit of its horns are divided one of the principal characteristics of the latter group; but agreeing

with the former in the absence of any median process on the stem of the horn, and in the singleness of the basal antler. In stature and aspect the species is intermediate between *Cervus Hippelaphus*, Cuv., and *Cerv. Elaphus*, Linn. Its general resemblance to the latter is indicated in the trivial name assigned to it by Mr. Hodgson, that of *Cerv. Elaphoides*.

It is referred to in his 'Catalogue of the *Mammalia* of Nepâl' (Proceedings, part ii. p. 99.) under the name of *Cerv. Bahraiya*, Hodgs.

Specimens were exhibited of numerous species of British *Fishes*, forming part of the collection of Mr. Yarrell. They consisted of dried preparations of rather more than one half of the skin of each individual: a mode of preservation peculiarly adapted, as Mr. Yarrell remarked, for travellers over land; specimens so prepared occupying but little space, and being consequently as portable as dried plants. An incision is made in the first instance round one side of the fish, at a short distance from the dorsal and anal fins, and the whole of the *viscera* and flesh are removed, so as to leave only the skin of the other side with the vertical fins attached to it, and with rather more than one half of the head: the loose edge of skin left from the side in which the incision has been made, is then fastened by means of pins to a piece of board, so as to display the entire side of the fish which it is intended to preserve, and it is then hung up to dry in an airy but shady situation. The more rapidly the drying is completed, the more effectually will the colours be preserved. As soon as the skin is dried it is varnished; and the loose edge of the skin on that side from whence the operation of removing the flesh has been effected is trimmed off with a pair of scissors, as being no longer useful. The preparation is then completed, and consists of the entire skin of one side of the fish, of the vertical fins, and of rather more than one half of the head, the latter being important for the preservation of the *vomer*, so as to show the absence or presence of teeth on that bone, and their form. All the essential characters of the fish are consequently preserved, if care be taken that the skin be so attached to the board on which it is dried, as to retain its original dimensions of length and depth: the due thickness of the fish may be secured in the preparation, if it be considered desirable, by inserting beneath the skin, when extending it on the board, a sufficient quantity of prepared horse-hair.

After explaining the mode which he had adopted in the preparation of the specimens exhibited, Mr. Yarrell made various remarks on those which he regarded as the most interesting among them; and particularly on a series of *Trout* and *Charr* from different localities, and varying in colour according to situation, to season, and also, in some instances, to food.

He then directed the attention of the Meeting to the specimens of the British species of *Rays* which formed part of the collection, and pointed out particularly the difference, as regards surface, which obtains in the sexes of many of these fishes; the skin of the female

being, in every instance, comparatively smooth. He added also, by reference to these specimens, and to specimens of the jaws exhibited for that purpose, an explanation of the differences which exist, in adult individuals, in the teeth of the sexes respectively; those of the male becoming exceedingly lengthened and pointed, while in the female they retain very nearly their original flattened surface: the form of the teeth, equally with the armature of the surface, constituting in these fishes a secondary sexual character, although both the one and the other have repeatedly, but erroneously, been considered as adapted for the establishing of specific distinctions.

May 10, 1836.

The Rev. J. Barlow in the Chair.

The following Note by the Rev. H. Dugmore was read.

"Lieut. Col. Mason, of Neeton Hall (four miles from Swaffham), has had a *Sea Eagle, Haliaetus albicilla,* Sav., in confinement for the last sixteen years. About a month since, it dropped an egg, which is now in my collection. The egg is perfectly white, and not quite so large as that of a *Goose*: the shell is rather harder."

A letter was read from Capt. Green of Buckden, Huntingdonshire, descriptive of a very fine specimen of the barn-door *Hen* in his possession, which has assumed the *Cock* plumage: the change took place about three years ago. The bird has since been presented to the Society by the writer.

Mr. Owen read the following Notes on the Anatomy of the *Wombat, Phascolomys Wombat,* Pér.

"The anatomy of the *Wombat* having already engaged the attention of Cuvier ('Lecons d'Anat. Comparée, *passim*) and Home (Phil. Trans. vol. xcviii. 1808, p. 304,) but little remains to be added on that subject.

"The individual lately dissected at the Museum of the Zoological Society had lived at the Gardens upwards of five years. The one which was dissected by Sir Everard Home in 1808 was brought from one of the islands in Bass's Straits, and lived as a domestic pet in the house of Mr. Clift for two years. This animal measured two feet two inches in length, and weighed about 20lbs: it was a male. The Society's specimen was a female, and weighed, when in full health in October 1833, 59½lbs.

"On removing the integuments of the *abdomen,* much subcutaneous fat, of the lard kind, was observed.

"The muscles of the *abdomen* presented the same arrangement as in other *Marsupiata*; the internal pillars of the external abdominal rings being formed by the marsupial bones, round which a broad cremaster, emerging from each ring, wound inwards and upwards to terminate by spreading over the mammary gland.

"The digestive organs in the abdominal cavity presented a development corresponding generally to that which characterizes the same parts in the *phytiphagous Rodents.*

"The stomach precisely corresponded with the description and figure given by Home; but the occurrence of cardiac glands in the *Dormouse* and *Beaver* renders a similar structure in this *Marsupial,* in which the *Rodent* type of dentition exists, less extraordinary than

it might otherwise appear. The *duodenum* commenced by a large pyriform dilatation, similar to that in the *Capybara* and *Spotted Paca*; beyond this part it presented a diameter of an inch; the small intestines then gradually widened to a diameter of $1\frac{1}{2}$ inch, and as gradually diminished again to the diameter of an inch: their entire length was 11 feet 3 inches.

"The *ileum* entered obliquely the wide sacculated *colon*, the bulging commencement of which represented a short and wide *cæcum*; and from the angle between this part and the *ileum*, a cylindrical vermiform process 2 inches long, and 3 lines wide, was continued.

"The *colon* continued to be puckered up by two wide longitudinal bands into large *sacculi*, which could be traced becoming less and less distinct along an extent of the gut measuring five feet 2 inches. Cuvier observes that the large intestines were hardly more voluminous than the small*; in our specimen the *colon* measured $2\frac{1}{4}$ inches in diameter, being more than double that of the *ileum*. But a more important difference was observed in the presence of a second *cæcum* at the distance from the first above mentioned. This consisted of a pyramidal pouch projecting 3 inches from the side of the gut, and communicating freely with the same at its base: its *parietes* were thinner than those of the rest of the large intestine; it was situated below the pyloric end of the stomach, had only a partial investment of *peritoneum*, and adhered by a cellular medium to the *duodenum* and *pancreas*. Below this second *cæcum*, or lateral dilatation, the *colon* formed a large *sacculus*, and was then disposed in a series of smaller *sacculi*, which at length disappeared at a distance of 6 feet from the second *cæcum*; the rest of the large intestine, 3 feet in length, was of simple structure, and of smaller diameter, viz. $1\frac{1}{8}$ inches.

"The internal surface of the small intestines presented some slight transverse corrugations; that of the *colon* was smooth, except below the second *cæcum*, where the lining membrane was corrugated irregularly; and a small patch of glands was here observable.

"The *rectum* terminated, as in other *Marsupials*, immediately behind the urethro-sexual aperture, and within a common outlet, both the excretory orifices being embraced by a common cutaneous sphincter.

"The liver was more completely separated into lobes than in the specimen dissected by Cuvier. Home is silent as to the structure of the liver; his observations respecting the digestive organs are limited to the peculiarities of the stomach. In our specimen the liver was divided by an extensive longitudinal fissure into two lobes, the right of which was again deeply subdivided into two, the gall-bladder being lodged in this second fissure: the gall-bladder was of an oval form, $2\frac{1}{2}$ inches in length.

"The *pancreas* and spleen were both well developed, and had each

* "Dans le Phascolome, les gros intestins ne sont guère plus volumineux que les petits." *Leçons d'Anat. Comp.*, nouv. ed.

the descending process which characterizes these parts in the *Marsupial* animals.

" The parotid glands were very thin, situated upon, and partly on the inner side of, the posterior portion of the lower jaw; they measured each 1¼ inch in length, and ½ inch in breadth; the duct passed directly upwards and outwards till it reached the orifice of the *sterno-cleido-mastoideus*; here it was buried in the cellular substance anterior to that muscle, then turned over the *ramus* of the jaw, and continued its course over the *masseter*, where it was slightly tortuous; it entered the mouth just anterior to the edge of the *buccinator*. The submaxillary glands were each about the size of a walnut; their ducts terminated, as usual, on each side of the *frænum linguæ*.

" The heart of the *Wombat* presented the usual peculiarities occurring in this part of the Marsupial organization; viz. 1st, the two appendages of the right auricle, one passing in front and the other behind the ascending *aorta*; 2ndly, the absence of the *annulus* and *fossa, ovalis*; and 3rdly, the absence of the terminal orifice of the coronary vein which empties itself into the *cava superior sinistra* just before the wide termination of the latter vein in the auricle by the side of the *cava inferior*. The right auriculo-ventricular opening is widely open, and is guarded by an irregular narrow membranous valve, the outer portion of which is attached to the tendons of three *carneæ columnæ*; two of which are of a large size as compared with the third, and arise, as in the *Kangaroo*, from the *septum* near the angle where this is joined to the *parietes* of the ventricle. The muscular walls are continued obliquely upwards in a conical form to the origin of the pulmonary artery, somewhat resembling a *bulbus arteriosus*. This peculiarity is still more marked in the *Kangaroo*. The right ventricle descends nearer to the *apex* of the heart in the *Wombat* than in the *Kangaroo*, and the form of the heart is longer and narrower. The left auricle is smaller and more muscular than the right; the valve between it and the ventricle is, as usual, broader and stronger, and its free margin is attached to the tendons of two thick *columnæ carneæ*, having the usual origins distinct from the *septum*, leaving that part of the inner surface of the ventricle smooth for the passage of the blood to the *aorta*. The pulmonary veins terminate by two trunks in the left auricle.

" The lungs consisted of one lobe on the left side, and one on the right, with the *lobulus medius*; which was a small strip extended between the heart and diaphragm.

" The thyroid glands were elongated bodies of a dark colour, reaching from the thyroid cartilage to the seventh tracheal ring on each side.

" The kidneys were each 2¾ inches long, and 2 inches broad, and of a somewhat compressed oval figure; the *tubuli* terminated on a single obtuse *mammilla*.

" The specimen dissected by Cuvier being, like that examined by Home, a male, the female organs of the *Wombat* are only known by

the description appended to the paper of the latter author, which relates to an impregnated individual. I found no part of the structure which supports the view taken by Sir Everard Home relative to the passage of the fecundating fluid to the *uterus*; the only natural communication between those cavities and the urethro-sexual canal being by the two lateral vaginal canals. The female organs consist, as in the *Opossum*, of two ovaries, two Fallopian tubes, two *uteri*, each opening by a separate *os tincæ* into a distinct *vagina*; the *vaginæ* having no intercommunication, but terminating in the common passage of Tyson, or urethro-sexual canal.

"The urethro-sexual canal is $1\frac{1}{2}$ inch in length; its inner surface is disposed in thick folds. The two anterior ones commencing united together form a semilunar fold above the urethral aperture; these folds are deeply intersected with oblique *rugæ*, the margins of which are villous, the *villi* becoming longer and finer as they approach the orifices of the true *vaginæ*. These commence $\frac{1}{2}$ an inch above the urethral orifice: their *parietes* are very thick for the extent of one inch, and the lining membrane of this part is disposed in minute longitudinal *rugæ*; it is then disposed in larger, coarser, and villous *rugæ*, similar to those of the first *vagina*, beneath which membrane several small vesicles were developed. Each of the true *vaginæ* having ascended with an outward curve for 2 inches, receives the *os tincæ* of its respective side, which is very projecting, and divided by deep fissures into numerous processes, resembling a short tassel. The *vaginæ* then descend to the upper part of the urethro-sexual canal, forming each a deep and large *cul de sac*, the inner surface of which is characterized by irregular villous *rugæ*, and the whole is highly vascular. The *culs de sac* are separate as in the *Opossum*, and do not communicate as in the *Kangaroo*.

"The *uteri* are each 2 inches long, and $\frac{3}{4}$ of an inch in diameter, somewhat flattened, pyriform, and giving off the oviducts from the inner or mesial part of their *fundus*. For the extent of an inch, the lining membrane presents a series of small but well-defined longitudinal *rugæ*, beyond which it assumes a fine texture, like velvet. The peritoneal covering of the *uterus* is reflected from it upon the ovarian ligament, the oviduct and the numerous vessels passing to the *uterus* on the outer side of this ligament, the duplicature or broad ligament containing which parts is $1\frac{1}{2}$ inch in breadth, and attached by its outer margin to the lumbar region of the *abdomen* as high as the kidney: just below this gland it is reflected upon the ovary, forming a large capsule for that part, and for the expanded extremity of the Fallopian tube, which presents an extraordinary development of fringe-like processes.

"The ovary presents the most distinct racemose structure which I have ever observed in the class *Mammalia*, consisting of about thirty ovisacs, of which the largest is half an inch, the smallest half a line in diameter; the whole ovary being of an oblong irregular figure $1\frac{1}{2}$ inch by 1 inch in dimensions. The mouth of the ovarian

capsule is about 1 inch in width, the length of the Fallopian tube 3 inches."

Some Notes by Mr. George Bennett, Corr. Memb. Z.S., were read. They were transmitted from Sidney, New South Wales, in a Letter addressed to the Secretary, and bearing date October 25, 1835. They related to the habits of the *Spermaceti Whale*, and of the large species of *Grampus* known by the name of the *Killer*.

May 24, 1836.

William Ogilby, Esq., in the Chair.

A letter addressed to the Secretary by J. B. Harvey, Esq., Corr. Memb. Z.S., and dated Teignmouth, May 18, 1836, was read. It referred to a collection of various marine productions of the south coast of Devonshire, which accompanied it, and which were presented to the Society by the writer. These were exhibited.

Among them was a specimen of *Capros Aper*, La Cép., captured in Mr. Harvey's neighbourhood: and with the view of illustrating the colours of this species, he forwarded with it a painting made from the fish while yet recent. This also was exhibited.

With the collection were several specimens of a *Tubularia*, nearly related to *Tub. indivisa*, of which Mr. Harvey furnished a detailed description, accompanied by numerous figures. The description was read, and the figures were exhibited.

Mr. Harvey first observed the *Tubularia* in question at the steam bridge on the river Dart, where it grows in clusters between the links of the chain over which this floating bridge is propelled. The specimens obtained by him in this locality were necessarily injured in the hurried manner of taking them off during the rapid motion of the bridge; but as they were immediately placed in sea-water most of them have survived the force used in separating them, and he has thus been enabled to observe them for a week or ten days, during which he has carefully studied their form and structure. His drawings are intended to illustrate many of the different positions of the polype in various conditions as to growth, expansion, &c.

"This animal," Mr. Harvey remarks, "is evidently a *Tubularia*. It is something like *Tub. indivisa* figured by Ellis, Plate XVI. no. 2. fig. *c*., but differs in several particulars. The tube of Ellis's *Tubularia* is jointed; the head has a lateral groove or opening; and the central projection (which is an elongation of the membrane covering the body) is much larger and higher, and is not surmounted by a row of slight long feelers. This *Tubularia* (for which, as a distinction, I submit the term *Tub. gracilis*,) has the tube hollow throughout and single; the body has no lateral groove; the central process has a row of fine long feelers near its termination, and placed round the orifice: their office is to direct the food to the mouth. On the circumference of the cup is a row of very long flexible feelers, having much freedom of motion, and between each two of them is a smaller red feeler; from the circumference to the origin of the central process are two or three confused rows of alternate white and red short papillæ, giving the animal much the appearance of a flower.

"The powers of contraction and dilatation very much resemble those of the *Caryophyllia*, which I have still alive, and which I have kept for two years. Upon the slightest touch all the feelers are instantly contracted; but the shaking of the water does not at all incommode them. I kept several clusters in the same bowl with my *Caryophyllia*; but I found that, every time they came near it, (either by being touched or by shaking the vessel) they were devoured: I therefore, now keep them by themselves, but I fear that I shall not be successful in preserving them, as the river tide cannot be imitated in confinement.

"The locality of this polype is very confined. The Dart floating bridge is propelled upon two chains, about 6 feet distant from one another, and stretching across the river. On the western chain not a cluster could be seen, but on the eastern one there were upwards of a hundred groups of them, in spite of the immense friction to which they were exposed. They are only found within 100 feet of the northern shore at low water. I have since observed the same animals growing on the links over which the floating bridge at Devonport runs, and there they do not occupy a space exceeding 150 feet.

"The most singular circumstance attending the growth of this animal, and which I discovered entirely by accident, remains to be mentioned. After I had kept the clusters in a large bowl for two days, I observed the animals to droop and look unhealthy. On the third day the heads were all thrown off, and lying on the bottom of the vessel; all the pink colouring matter was deposited in the form of a cloud, and when it had stood quietly for two days, it became a very fine powder. Thinking that the tubes were dead I was going to throw them away, but I happened to be under the necessity of quitting home for two days, and on my return I found a thin transparent film being protruded from the top of every tube: I then changed the water every day, and in three days time every tube had a small body reproduced upon it. The only difference that I can discover in the structure of the young from the old heads, consists in the new ones wanting the small red *papillæ*, and in the absence of all colour in the animal."

The skin was exhibited of a species of *Cynictis*, Og., which had recently been presented to the Society by Captain P. L. Strachan, by whom it was obtained at Sierra Leone. The exhibition was accompanied by a description of the animal by Mr. Martin, which was read.

Mr. Martin regards the animal as especially interesting on account of its presenting the second instance of the new form among the *Viverridæ* which was described by Mr. Ogilby at the Meeting of the Society on April 9, 1833, under the generic appellation of *Cynictis*, and of which a detailed description and figure has since been published in the Transactions, vol. i. p. 29. It agrees with that genus, which is intermediate between *Herpestes* and *Ryzæna*, in its general form; in the number of the toes with which its feet are fur-

nished; and in the number and form of its teeth, as far as they are preserved in the specimen exhibited, which, however, is that of a young individual. The points of the teeth are consequently in it unworn and acute: while in the specimen of *Cyn. Steedmanni* described by Mr. Ogilby, which was evidently an aged individual, the teeth were much worn down. The only other differences which exist between the teeth of the new species and those of *Cyn. Steedmanni* consist in the presence, in the outermost incisor in the upper jaw of the former, of a minute but decided internal tubercle, which is not found in the corresponding tooth of *Cyn. Steedmanni*; and in the inner lobe of the carnassier of the upper jaw being acute and conical, instead of blunt: the teeth behind this, in both jaws, are wanting in the specimen of the new species. The feet of the new species differ from those of *Cyn. Steedmanni* by their comparatively shorter claws; and by having a naked line extending along the under surface of the *tarsus* from the pad to the heel, the whole of the under surface of the *tarsus* being covered in *Cyn. Steedmanni* with hair.

The new species may be thus characterized:

Cynictis melanurus. *Cyn. saturatè rufus nigro punctulatus, ad latera pallidior; gulâ sordidè flavescenti-brunneâ; artubus internè abdomineque sordidè flavescenti-rufis; caudâ apicem versus latè nigrâ, ad apicem floccosâ.*

Long. *corporis* cum capite, 12 unc.; *caudæ*, pilis inclusis, 11; *capitis*, 2 unc. 1·lin.

In addition to the distinctive characters which have been noticed above, it may be remarked that *Cyn. melanurus* differs from *Cyn. Steedmanni* in the greater smoothness, shortness, and glossiness of the fur; in the less bushy character of the tail; in the dark tint of the head, back, and limbs; in the dusky colour of the throat; and in the black tip of the tail, the corresponding portion of this organ in *Cyn. Steedmanni* being white.

Mr. Ogilby remarked, that the animal described by Mr. Martin might probably be identical with the one noticed by Bosman under the name of *Kokeboe*; but added, that the notice given of it by that traveller was not sufficiently precise to admit of its being determined with certainty.

A specimen was exhibited of the *Chironectes Yapock*, Desm., on which Mr. Ogilby remarked as follows.

"I am indebted to Mr. Natterer for the opportunity of examining this rare and curious animal, of which he brought various specimens from Brazil. That now exhibited is a male, and possesses the same anomaly in the generative organs which characterizes the rest of the *Marsupials*. I have not seen the female, but Mr. Natterer informs me that the abdominal pouch is complete. The species is found in all the smaller streams of Brazil, and appears to extend from the southern confines of that empire, to the shores of the Gulf of Honduras; Buffon's specimen came from Cayenne, and a skin was recently obtained by Mr. W. Brown Scott, labelled '*Demerara Otter.*'

Both this and Mr. Natterer's specimen agree with the figure and description of Buffon, except that they are of a larger size, and instead of a grey mark over each eye, have a complete band of that colour extending entirely across the forehead. In Mr. Natterer's specimen the terminal half-inch of the tail only is white; in Mr. Scott's on the contrary, the last 4 inches are of this colour: the tail is exactly of the same length as the body; it measured 10 inches in the former specimen and 12 in the latter, but Mr. Natterer informs me that he has other specimens which measure 14 or 15 inches in length.

"The teeth of this animal are altogether different from those of the *Opossums* (*Didelphis*); and I am at a loss to reconcile my own observations with those of M. F. Cuvier upon this subject, as given in 'Les Dents des Mammifères' p. 73, unless by supposing that there must have been some mistake about the skull referred by M. Cuvier to the *Yapock*. For my own part, I could not be deceived in this matter, as the skull which I examined had never been extracted from the specimen. The incisors and canines are of the same form and number as in the true *Opossums*, the two middle incisors above being rather longer than the lateral, those below broader and a little separate. The molars are five on each side, two false and three real, both in the upper and under jaws. The first false molar is rather small and in contact with the canine, both above and below: the second is half as large again, and both are of a triangular form, with apparently two roots. The three real molars are of the normal form of these teeth among the *Opossums*. The first of the upper jaw is longer than it is broad, and has four sharp elevated tubercles with a low heel projecting backwards; the second resembles it in general form, but is larger and broader; the third is small and resembles the tuberculous molars of the true *Carnivora*. In the lower jaw the three real molars do not materially differ in point of size. They are narrower than those of the upper, have their tubercles arranged in a single longitudinal series, a single large one in the centre, and a smaller on each side.

"The *Yapock* has very large cheek-pouches which extend far back into the mouth, and of which the opening is very apparent. This circumstance, hitherto unobserved by zoologists, throws considerable light upon the habits of this rare animal, which thus appears, like the *Ornithorhynchus*, to feed upon freshwater *Crustacea*, and the *larvæ* of insects, spawn of fishes, &c. which it probably stows away in its capacious cheek-pouches. For 2 inches at the root the tail is covered with the same description of fine close fur as the body; from this part it tapers gradually to the point and is covered with small scales, arranged in regular spiral rows, and interspersed with bristly hairs, particularly on the under surface, a fact perfectly conclusive against the generally received opinion of this organ being prehensile in the *Chironectes*. Indeed, the tail so perfectly resembles that of the *Hydromys chrysogaster*, even to the white tip, that it would be impossible to distinguish these organs if separated from the respective animals. The useless appendage of a prehensile tail

to an aquatic animal, must consequently be henceforth discarded from the history of the *Chironectes*, and the animal allowed to take its place among conterminous genera, not as a compound of anomalous and contradictory characters, but as a regular component link in the scale of existence. That its habits are purely aquatic, and that it has not the power of ascending trees, is further proved by the structure of the extremities. The hind feet are broad like those of the *Beaver*; the toes, including the thumb, united by a membrane, and, with the exception of the thumb, provided with small falcular claws; the thumb, as in all the other *Didelphidous Pedimana*, is without a claw. The fore-fingers are separate, very long and slender, (the middle and ring-fingers the longest of all,) and the last joint expanded and flattened as in the *Geckos*. The thumb is placed rather behind the general line of the other fingers, and seems at first sight to be opposable: it perfectly resembles those of the *American Monkeys*. The claws are very small and weak; they do not extend beyond the points of the fingers, nor even so far, and are absolutely useless either for climbing or burrowing. Considerably behind the others, on the outside of the wrist, there is a lengthened tubercle resembling a sixth finger, but much shorter than the others and without any bone. What purpose this unique organ may serve in the economy of the animal's life, it is impossible to conjecture, but the long slender fingers are probably used to pick out the food which it carries in the cheek-pouches."—W. O.

June 14, 1836.

William Yarrell, Esq., Vice-President, in the Chair.

Specimens were exhibited of various *Birds* from Northern Africa, which had recently been presented to the Society by Sir Thomas Reade, Corr. Memb. Z.S. They included the *Anas marmorata*, Temm., on which Mr. Gould remarked that in the form of the bill it approached nearly to the *Pin-tailed Duck*, *Anas acuta*, Linn., although it is altogether destitute of the elongation of the middle tail-feathers which occurs in that bird; the *crested Duck*; the *Gadwall*; the *Garganey*; the *Ruff*, and the *black-tailed Godwit*, in their winter dress; the *Golden Oriole*; and other species: all of which were severally brought under the notice of the Meeting by Mr. Gould, at the request of the Chairman.

Mr. Gould subsequently exhibited specimens of various *Birds* which he had recently received from M. Temminck: including a new species of *Ptarmigan* from Siberia; and a *Trogon* from the Indian Islands, nearly allied in almost every particular to the *Trog. erythrocephala* of the Himalaya, but having the wing fully an inch shorter, with a tail bearing a relative proportion.

The Secretary announced the arrival in the Menagerie, since the last Meeting of the Society, of the four *Giraffes*, the capture of which was described by M. Thibaut in a letter read at the Meeting on February 9, 1836, and translated in the 'Proceedings' at p. 9.

He also directed the attention of the Members to a specimen of *Temminck's Horned Pheasant, Tragopon Temminckii*, Gray, which had recently been added to the Menagerie by the liberality of J. R. Reeves, Esq., of Canton: to a pair of the *Serin Finch, Fringilla Serinus*, Linn., brought from Italy for the Society, and presented to it by Mr. Willimott; and to a monstrous variety of the *Indian Tortoise, Testudo Indica*, Linn., which had also been lately added to the Menagerie, and which is remarkable for the great irregularity of the surface of its shell, each of the plates being raised into high conical eminences.

A paper was read by Mr. Martin "On the Osteology of the *Sea Otter, Enhydra marina*, Flem." It is founded on a perfect skeleton of the animal contained in the collection made by that energetic traveller the late David Douglas, and acquired, subsequent to his decease, by the Society. This skeleton was exhibited.

Mr. Martin refers in the first instance to the dentary characters of this remarkable animal, which were correctly described and

figured by Home in the 'Philosophical Transactions' for 1796; and then adverts to some erroneous statements which have since been made respecting its molar teeth by various authors, including Cuvier, who appear to have possessed no opportunities of examining specimens. In the course of his communication he describes in detail the number and form of the teeth, which consist of six incisors in the upper jaw and of four in the lower, the outer one on each side in either series being larger than the others and assuming, in the upper jaw, somewhat of the form of the canines; of a strong canine on each side of the incisors in either jaw; and of four molars on either side in the upper, and five in the lower jaw, of which two in the upper and three in the lower are false and successively increase in size towards the true molars, the latter being large, broad teeth, with flattened crowns somewhat depressed in the middle: in the upper jaw the hindermost of the true molars is much larger than the other, while in the lower it is comparatively small.

The total length of the skeleton is 3 feet 2 inches; of which the skull measures 5 inches, and the tail, 10.

The general form of the skull nearly resembles that of the *Common Otter, Lutra vulgaris*, Storr; but it is proportionally broader, and is more convex on its lateral *parietes*, in this respect approaching to many of the *Seals*: the nasal bones form a broad plane, and do not gradually decline, like those of the *Common Otter*, towards the nasal opening; they are also shorter in proportion than in that species: the breadth of the nasal opening is greater than its depth, proportions which are reversed in the *Common Otter*: the post-orbital space is less contracted: on the base of the skull the space between the pterygoid processes is more considerable: and the whole contour of the *cranium* is not only broader but deeper also. The lower jaw maintains the same general tendency to greater compactness, and is stouter and shorter than in the *Common Otter*.

Detailed admeasurements are given by Mr. Martin of the skull of an individual more advanced in age than the one whose skeleton is preserved, and in which the entire length of the *cranium* is 5 inches; the greatest breadth, being across the occipital ridge behind the auditory *foramen*, nearly 4 inches, the breadth between the *zygomata* being the same; the depth from the point of union of the inter-parietal with the occipital ridge to the *foramen magnum*, $1\frac{6}{8}$; the distance from the *foramen magnum* to the bony palate, $2\frac{3}{8}$; and the length of the bony palate, $2\frac{1}{4}$.

The chest is rather wide in form, but much compressed; being 6 inches across at the sixth rib, while its greatest depth from the vertebral column to the *sternum* is $2\frac{1}{4}$ inches. The direction of the ribs is obliquely backwards, and they are rather slender: their number is thirteen, (not fourteen, as is stated by Home,) the last five being false and attached by very long cartilages to the cartilages of the true ribs.

The lumbar *vertebræ* are six in number.

The anterior extremities are short and small. The *scapula* is 3 inches in length and 2 in its greatest breadth: its spine is feeble and but slightly elevated. The *humerus* is 3 inches in length; and is stouter and less laterally compressed than that of a *common Otter* of the same longitudinal dimensions. The *ulna* and *radius* are stout, and are separated from each other by a greater interval than in the *common Otter*. The paws are remarkable for their diminutive size. In the *common Otter*, from the extremity of the *radius* to the nail of the last *phalanx* of the third finger the measurement is 3 inches; in the *Enhydra* it is $2\frac{1}{8}$.

The *pelvis* is long and narrow, measuring from the crest of the *ilium* to the *tuber ischii* 6 inches: in the *common Otter*, the measurement is but 4. The iliac bones are remarkably thick and solid, and turn out from the spinal column. The distance from the centre of the *acetabulum* to the crest of the *ilium* is 3 inches; the breadth of the *ilium* $1\frac{1}{4}$.

It is in the posterior limbs that the great power of the *Enhydra* appears to be developed. The *os femoris* is short but very thick, and its *trochanter* is bold and prominent: the *trochanter minor* is small. The head of the *femur* is globular, and is destitute of the *ligamentum teres*, as in the *Seals*: in the *Otter* this ligament exists as usual. The length of the thigh bone from the great *trochanter* to the condyles is $3\frac{1}{2}$ inches. Both the *tibia* and *fibula* are large and of great comparative length: in the *common Otter*, they do not exceed the *femur*; but here they exceed it by more than an inch, the measurement being $4\frac{1}{4}$ inches.

It is in the hind paws or paddles, Mr. Martin remarks, that the greatest difference exists between the *Otter* and the *Enhydra*. They are here admirably constructed as organs of aquatic progression. Their length from the *os calcis* to the last *phalanx* of the outer toe is $7\frac{1}{4}$ inches; and as the toes are long and connected by intervening webs they form broad efficient oars. The toes graduate regularly from the inner toe, which is the shortest, to the outer or fifth toe, which is the longest. The metatarsal bone of the inner toe measures $1\frac{1}{2}$ inch, the toe analogous to the thumb and composed of only two *phalanges* measures the same—the other toes have three phalanges as usual; the metatarsal bone of the fifth toe measures $2\frac{1}{2}$ inches; the toe itself 3 inches. The breadth of the foot, measured obliquely across from the end of the metatarsal bone of the first toe to that of the fifth is 2 inches.

The nails of the fore paws are small and sharp; those of the paddles are blunt, but curved.

The *os penis* is a stout bone $3\frac{3}{4}$ inches in length.

Mr. Martin concluded by remarking that as the hinder extremities are placed far backwards, and when stretched out in the act of swimming exceed the tail, this organ will appear placed between them, almost as much as it is in the *Seals*; between which animals and the *Otters* the *Enhydra* forms, in his estimation, a palpable link

of union, approximating, in some portion of its osseous structure, even more to the former than to the latter.

Mr. Martin added that it was his intention, with the view of rendering his communication more complete, to review the osteology of the *Enhydra* in detailed comparison with that of the *common Otter* and of the *Seal*.

A drawing was exhibited of a *Saurian Reptile* of the family *Scincidæ* and of the genus *Tiliqua*, Gray, which forms part of the Museum of the Army Medical Department at Chatham, and which is regarded by Mr. Burton, Staff-Surgeon, in charge of the Museum, as hitherto undescribed.

It was accompanied by the subjoined character and description by Mr. Burton.

Tiliqua Fernandi. *Til. auribus profundis, latis, margine antico simplici; squamis dorsalibus valdè tri-carinatis: suprà pallidè brunnea strigis saturatioribus ornata, infrà albescens; lateribus brunneo variis alboque maculatis; guld brunneo lineatâ.*

Long. *corporis capitis*que 6 unc.; *capitis colli*que, 2¼; *caudæ*, ?

Hab. apud Fernando Po.

"There are eight rows of hexagonal imbricated scales on the back and tail, and two additional rows between the fore and hind legs; the lateral scales are irregular in form and size. Submental scales large, in three transverse rows; the first containing a single scale, the second a pair, the third a pair with an intermediate rudimentary one. Subcervical and ventral scales in eight rows; subcaudal in five rows, of which the middle row is the larger. There is a single row of anal scales, curved upwards. Scales of the upper surface of the body 3-keeled, of the lower smooth. A semicircular series of five plates over each orbit separated by a long narrow frontal: five occipital plates, the posterior ones largest: nasal, post-nasal, and labial plates varied in form and size.

"Head, back, tail and upper surface of the extremities reddish brown, a blackish line intersecting each row of scales; sides lighter, marked by a series of irregular blackish streaks; belly and under surface of tail a brownish white; throat alternated longitudinally with light and dark-brown lines; submental scales whitish, bordered with a broad dark-brown edge.

"A single row of blunt teeth on the margin of the jaws.

"Body of nearly uniform shape from the commissure of the lips to the tail."

June 28, 1836.

William Yarrell, Esq., V.P. in the Chair.

A note addressed to Colonel Sykes by Lieut. Henning, R.N., was read. It noticed the capture of an *Albatross* by a hook; and stated that the bird, while so attached, was fastened on by another of the same species, but whether with the intention of endeavouring to release it, or with the view of taking advantage of its helpless condition, the writer did not attempt to determine.

Some observations were read by Mr. Gray "On the genus *Moschus* of Linnæus, with descriptions of two new species."

The only character, Mr. Gray remarks, by which this genus, as established by Linnæus and others, differs from the genus *Cervus*, consists in the absence of horns; for the elongated canines are common to it and most of the Indian species of *Cervus*, especially the *Cerv. Muntjac*. The character of the fur, the degree of hairiness or nakedness of the *metatarsus*, and the presence or absence of the musk-bag in the male, offer, however, good characters for the subdivision of the group into three very distinct sections or subgenera.

The first of these divisions, for which Mr. Gray would retain the name of *Moschus*, comprehends only the *Thibet Musk*, *Moschus moschiferus*, Linn. In common with the *Deer* and *Antelopes* it has the hinder and outer side of the *metatarsus* covered with close erect hair; like many of the *Deer* also, its fur is quill-like and brittle; it has, moreover, a throat entirely clothed with hair; and the males are provided on the middle of the abdomen with a large pouch secreting musk. Its young, like those of most of the *Deer*, are spotted, while the adult animal is plain-coloured.

The division to which Mr. Gray in the year 1821, in a paper in the Medical Repository, gave the name of *Meminna*, also consists of but a single species, the *Moschus Meminna*, Linn. In this group the hinder edge of the *metatarsus* is covered with hair, but there is on its outer side, a little below the hock, a rather large smooth naked prominence, which is flesh-coloured during life; the fur is rather soft, spotted and varied with white, which becomes less conspicuous in the older specimens, but does not appear ever to be entirely lost; the throat is entirely covered with hair; and there is no musk-bag in either sex. The false hoofs are distinct, although denied to the animal both by Linnæus and Buffon.

The third and last subdivision is characterized by Mr. Gray, under the name of *Tragulus*, as having the hinder edge of the metatarsus nearly bald and slightly callous, a character which distinguishes them at once from all other *Ruminants*; the fur is soft, and adpressed like that of *Meminna*, but not spotted even when young; the throat is

provided with a somewhat naked, concave, subglandular, callous disk, placed between the rami of the lower jaw, from which a band extends to the fore part of the chin; and they have no musk-bag. Like all the other species of the Linnean genus *Moschus*, they have false hoofs; and most of them have the edges of the lower jaw, three diverging bands on the chest, and the under surface of the body more or less purely white. The species of this division scarcely differ in colour in the various stages of their growth; the young fawn resembling the adult in every particular except in size.

In this division, the synonymy of which is extremely confused, Mr. Gray reckons four species, two of which he describes as new, arranging and characterizing them as follows:

Moschus Javanicus. *Mosch. ferrugineus nigro variegatus; collo saturatè brunneo griseo nebulato; menti margine, strigis pectoralibus tribus posticè latioribus, pectore, abdomine, femoribus internè, caudâque subtùs, albis; pedibus, capitis lateribus, prymnâque nitidè fulvis; occipite nigrescenti.* Long. *corp. capitis*que simul poll. 24; *metatarsi* 4½ poll.

Moschus Javanicus, *Gmel., Syst. Nat.* 1. *p.* 174. *ex Pallasio. Raffles in Linn. Trans. xiii. p.* 261? *Benn., Zool. Gard., p.* 41.

Tragulus Javanicus, *Pall., Spic. Zool. xii. p.* 18. *in notâ.*

Moschus Indicus, *Gmel., Syst. Nat.* 1, *p.* 172.

Cervus Javanicus, *Osbeck, Iter, p.* 273.

Moschus Napu, *F. Cuv. Mamm. t.*

Chota Beta, *Rou de Ramon, Cab. Madr. t.* 9.

Hab. in Insulis Javâ et Sumatrâ.

This species, Mr. Gray states, is at once known by its larger size, pale colour, and the white of the entire under surface of the body, with the exception of the two longitudinal dusky stripes which separate the three white stripes of the chest from each other, and of a simple narrow pale band across the chest.

2. Moschus Kanchil. *Mosch. fulvus, nigrescenti variegatus; nuchâ strigâ latâ nigrâ longitudinali; gulâ, colli corporisque lateribus, pallidè flavescentibus, pilis nigro-apiculatis; antipedibus nitidè fulvis; menti marginibus, strigis tribus pectoralibus, pectore, abdomine, femoribus posticè, caudâque subtùs, albis; pectore abdomineque strigâ longitudinali, in illo saturatiore, in hoc pallidiore.* Long. *capitis corporis*que simul poll. 20; *metatarsi* 3½ poll.

Moschus Kanchil, *Raffles in Linn. Trans. xiii. p.* 262.

Le Chevrotain adulte, *Buffon, Hist. Nat. tom. xii. p.* 344.

Le Chevrotain de Java, *Buffon, Hist. Nat. Suppl. tom. vi. p.* 219. *t.* 30.

Javan Musk, *Shaw, Zool. t.* 173, *ex tab. Buffon.*

Hab. in Javâ.

This species Mr. Gray states to be easily distinguishable from the former by its smaller size; darker colour; the strength and distinctness of its nuchal streak; the width of the band across its chest,

which is besides continued backwards into a narrow streak; and the yellow band along the middle of the belly. These characters are common to two specimens of different ages in the collection of the British Museum. The lateral white streaks on the fore part of the chest are linear, the median one subtriangular, being narrow in front and widening backwards. The two dark streaks by which they are separated are linear, of the same colour with the sides of the neck, and do not unite together in front.

3. Moschus fulviventer. *Mosch. fulvus, nigrescenti variegatus; nuchâ strigâ longitudinali latâ nigrâ; gulâ, colli lateribus, antipedibusque rufescenti-fulvis; lateribus subtùsque flavescenti-fulvis; menti marginibus, strigis tribus pectoralibus, strigâ latâ utrinque in pectore abdomineque, femoribus internè anticèque, caudâque subtùs, albis.*

Le jeune Chevrotain, *Buffon, Hist. Nat. xii. p.* 342. *t.* 42, 43.

Hab. in Insulis Malaicis, et in Peninsulâ Indiæ Orientalis?

Very like the last, but differing from it in the under surface being pale fulvous with four white streaks, and in the lateral streaks on the chest being isolated anteriorly by means of a narrow transverse band which separates them from the white of the chin, while the median one is bounded in front by the union of the two dark streaks. There is also a small brown spot on each side of the chin just below the angle of the mouth, which is not found in the other species. The fawns only a few weeks old do not differ in colour from their parents. None of the three specimens in the collection of the British Museum have their habitats accurately marked. Two of them were from the collection of General Hardwicke, and the third was presented by Mr. Edward Burton of Chatham. Mr. Gray thinks it probable that this may be the animal indicated by Sir Stamford Raffles under the name of *Pelandoc*.

4. Moschus Stanleyanus. *Mosch. rufescenti-fulvus, pilis nigro-apiculatis, subtùs minùs nitidus; collo pectoreque nitidè fulvis; menti marginibus, strigis tribus pectoralibus, pectore, femoribus internè anticèque, caudâque subtùs, albis; syncipite, pedibusque a genubus inde saturatioribus; rhinario, strigâ utrinque oculos ambiente, auriculisque extùs et ad margines, nigris.*

Var. *menti marginibus minùs albis; strigis pectoralibus interruptis minùs conspicuis; guláque paulò saturatiore.*

Hab.

This is immediately distinguishable from all the other species by the brightness of its colouring, and by the absence of the nuchal streak, and of the white on the under surface of the body. There are at present four living specimens in the magnificent collection of the Earl of Derby at Knowsley; and two others, consisting of a specimen of each of the varieties, in that of the Society, to which they were recently presented by Her Royal Highness the Princess Victoria. It is not known from what exact locality any of them were obtained.

Mr. Gray discusses the synonymy of the species above characterized as belonging to the subgenus *Tragulus*, especially with reference to the descriptions of Buffon, Pallas, Raffles, and M. Frederic Cuvier. From the imperfect manner in which they are described and figured, he is unable to identify with any of the foregoing species, or to separate from them as distinct, the *Pelandoc* figured in Marsden's Sumatra, or the *Pygmy Musk* of Sumatra figured in Mr. Griffith's edition of Cuvier's 'Animal Kingdom,' on which Fischer has established his *Moschus Griffithii*. The *Mosch. pygmæus* of Linnæus Mr. Gray states to belong to the genus *Antilope*; the hinder part of the tarsus being covered with hair, and the false hoofs very small and rudimentary, and entirely hidden under the hair of the feet; the *Mosch. Americanus* appears by its spotted livery to be the fawn of a species of *Deer*: and the *Mosch. delicatulus*, or *Leverian Musk* of Shaw, is also undoubtedly the fawn of a *Deer*. It is curious that Dr. Shaw quotes as a synonym of the last-named species the figure of Seba, on which alone the *Mosch. Americanus* is founded, while at the same time he enumerates the *Mosch. Americanus* as a distinct species.

Mr. Gray also made some observations "On the tufts of hair observable on the posterior legs of the animals of the genus *Cervus*, as a character of that group, and a means of subdividing it into natural sections." These tufts are found on the inside, or on the outside, or sometimes even on both sides, of the hinder legs of all the *Deer* which Mr. Gray has had an opportunity of examining, with the exception of the *Muntjac*, on which he has not been able to detect them either in the living state or in preserved skins. This circumstance may, however, have arisen from the fact of the living animal examined being confined in a cage; for he has uniformly found them much more conspicuous in animals which have a wide range than in such as are confined to small inclosures. Thus the various species of *Deer* in the magnificent parks of the Earl of Derby at Knowsley, in which the Ruminant animals are allowed an extensive range, and preserved in a state nearly approaching to wildness, exhibit the tufts in question in a much more ample state of development than such as are seen in menageries; and one of the *Axis Deer* at the Gardens of the Society, which has the run of a small paddock, displays them much more evidently than another specimen in the Gardens, which is confined to a stall. This difference of development, Mr. Gray suggests, may account for the little notice that has hitherto been taken of them by zoologists, who have only spoken of them incidentally, and with reference to one or two species of the group. They are found at all ages and in both sexes; and afford, therefore, a valuable adjunct in the determination of the species of the hornless females, as well as in distinguishing them from the females of the genus *Antilope*, in which no indication of them is to be observed; the tufts or *scopæ* that occur in some of the species of that genus being on the fore knees and evidently serving a very different purpose.

They were noticed in the *American Deer* by Buffon, who speaks of them as surrounding "*un lichen noirâtre long de neuf lignes, fort étroit, entouré par des poils blancs et longs, qui paroissoient former aussi une sorte de brosse*;" and according to M. F. Cuvier, who observed them in the *Wapiti*, they surround a narrow long horny substance, which is the appearance of the part in the dry state; but Col. Hamilton Smith, in his description of the same species, takes a different view of the structure with which they are connected, which he states to be "a gland imbedded in hair secreting an unctuous fluid." That the tufts really cover a glandular apparatus is rendered probable by the circumstance that in the living animal they generally assume a conical form as though imbued with some oily secretion; and the specimens preserved in spirit which Mr. Gray has examined, seem to justify this opinion; but he has had no opportunity, since his observations upon the subject were made, of confirming the fact by anatomical examination. They are generally of a paler colour than the rest of the hair upon the legs; and in some species, the *Cervus Virginianus* for instance, they are of a pure white which renders them very conspicuous.

To the existence of these tufts as a generic character common to all the *Deer*, Mr. Gray states that, among the species which he has had an opportunity of examining, he has met with only one exception, that of the *Muntjac* before mentioned; and he thinks that if this animal should prove to be really destitute of the appendages in question, it would afford an additional motive, combined with the permanence of its horns and some other characters, for excluding it from the genus *Cervus*. But these tufts have also another value, that of affording by the differences in their number and position three obvious sectional divisions, which have an evident advantage over those derived from the form of the horns and other characters of a sexual and temporary nature, in being permanent at all ages and common to both sexes. These sections Mr. Gray arranges as follows:

The first has a pencil of hairs seated on the outer side of the hinder part of the *metatarsus*, about one third of the distance from the *calcaneum* towards the hoofs. This section includes *Cerv. Elaphus*, *Canadensis*, *Axis*, *porcinus*, *Hippelaphus*, *Dama* and its varieties, and *niger*, as well as the *Stag* in the Museum of the Society, called the *greater Muntjac*, *Cerv. Tunjuc*, Vig. and Horsf., in the Catalogue for 1829, p. 17, No. 303, which Mr. Gray believes to be a species of the Rusan group of Col. H. Smith with deformed horns. In *Cerv. Canadensis*, and perhaps also in some other species, Mr. Gray states that there is a large pad of close erect hairs on the hinder edge of the *metatarsus*, commencing with this tuft.

In the second section there exist two tufts of hair, one seated on the outer side of the hinder part of the *metatarsus*, about two thirds of the distance from the *calcaneum* to the hoof; and the other on the inner side of the hock or heel. This structure occurs in the *Virginian Deer*, *Cerv. Virginianus*, and in its variety *Cerv. Mexicanus*, as well as in an allied species of which the female exists in the Society's Museum. The internal pencil is very distinct in the *Virgi-*

nian Deer; and the external is also very conspicuous in consequence of the whiteness of the hairs composing it. Lord Derby's gamekeeper, however, stated to Mr. Gray that there are two varieties of this species in Knowsley park, in one of which this tuft is much more conspicuous than in the other.

The third section comprehends those species which have a very distinct tuft on the inside of the hock, but none on the outer side of the *metatarsus*. Mr. Gray has observed this structure in two living specimens of a species from Demerara in the menagerie of Lord Derby, which agrees best with *Cerv. rufus*, Desm.; in another South American species, allied to the former but apparently different, which was presented to the Society in 1828 by Sir Philip Egerton, and is now in its Museum; and in a very young spotted *Fawn* (almost a fœtus) preserved in spirits in the collection of the British Museum. He suspects that the *Brockets* of South America may have the same character; and thinks he could observe the internal tufts on the specimen of the *Rein Deer* in the Society's Museum, but no trace of the external, the entire hinder edge of the *metatarsus* being covered with a uniform very thick coat of hair.

From an examination of the skin of the *Elk* in the British Museum, Mr. Gray is of opinion that it will probably enter into a fourth section; in as much as it appears to have very distinct tufts on the inner side of the hock, and others also on the outer side of the *metatarsus* about one third of its length from the heel, as in the first section; but of the existence of the latter tufts he is by no means certain, on account of the age and state of the specimen.

July 12, 1836.

Thomas Bell, Esq., in the Chair.

Mr. Waterhouse, at the request of the Chairman, read a Paper, entitled "Description of a new genus of *Mammiferous Animals* from New Holland, which will probably be found to belong to the *Marsupial* type."

The skin on which this description was founded had been lent to Mr. Waterhouse, for the purpose of describing, by Lieut. Dale, of Liverpool, who procured it whilst on an exploring party in the interior of the Swan River Settlement, about 90 miles to the S.E. of the mouth of that river. Two specimens were seen; both of which took to hollow trees on being pursued, and one of them was unfortunately burned to death in the attempt to dislodge it from its retreat. The country abounded with decayed trees and ant-hills; and Mr. Waterhouse is of opinion, from this circumstance and from some peculiarities in the structure of the animal, that it lives chiefly, if not wholly, upon ants, for which reason he proposes for it the generic name of

Myrmecobius.

Dentes incisores $\frac{8}{6}$, canini $\frac{0-0}{1-1}$, pseudo-molares $\frac{5-5}{4-4}$, molares $\frac{3-3}{4-4}=48$.

Pedes antici 5-dactyli, digitis tribus intermediis longioribus; postici 4-dactyli, digitis duobus intermediis internum superantibus; externo brevissimo; unguibus longis acutis subfalcularibus. Scelides antipedibus longiores. Caput elongatum; rhinario producto; auriculis mediocribus acutis. Corpus gracile. Cauda mediocris.

Mr. Waterhouse details at length the peculiarities of the dentition and other structural characters of the animal under consideration, and particularly notices the statement of Lieut. Dale that, when it was killed, the tongue was protruded from the mouth to the extent of two inches beyond the tip of the nose, its breadth being three sixteenths of an inch; which circumstance, combined with the dentition of the animal, confirms him in the belief that it feeds upon ants. With respect to its immediate affinities he confesses himself at a loss. In skinning the specimen, the part where the pouch would be placed in a marsupial animal, has been so mutilated as to render it difficult to determine whether or not it possessed one: it appears, however, to have been a female, and to have two *mammæ* and the remains of a pouch. Mr. Waterhouse is of opinion that it will prove to be allied to the genus *Phascogale*; and there are also, he states, points of resemblance between it and *Tupaia*, as well as with the ground Squirrels, the genus *Tamias* of modern authors.

The species Mr. Waterhouse proposes to name *Myrmecobius fasciatus*: he describes it as follows: "Length from the nose to the root of the tail (measuring along the curve of the back) ten inches;

of the head, from the tip of the nose to the base of the ear, one inch and seven eighths; of the tail six inches and a quarter. The colour above is reddish ochre, interspersed with white hairs, the posterior half of the body being adorned with alternate black and white transverse fasciæ, disposed in a manner somewhat similar to those of *Thylacinus cynocephalus*. The under parts of the body are yellowish white; the anterior legs of the same colour on their inner sides, and of a pale buff colour externally; and the posterior legs of a pale buff colour, with the fore part of the tibiæ whitish, and the sole entirely bare. The hairs of the tail are mixed black, white and reddish ochre, each of these colours predominating in different parts. The reddish hue of the fore part of the body is gradually blended into the black, which is the prevailing colour of the posterior half, and which is adorned with nine white fasciæ; the first of these fasciæ (which is indistinct) commencing rather before the middle of the body, and being, in common with the second, interrupted on the back by the ground colour of the body; the third, fourth, and last extending uninterruptedly from side to side; and the fifth, sixth, seventh and eighth, extending over the back, passing without coming into contact, and thus as it were dovetailing, with those of the opposite side. The hair on the head is very short and of a brownish hue above, (being composed of a mixture of black and reddish-brown with a few white hairs); and whitish beneath. The nose and lips are blackish; and there are a few long black hairs springing from under the eyes and from the sides of the muzzle. The body is covered with hair of two kinds; the outer of which is moderately long, rather coarse, and compact on the back and fore parts of the body; but over the haunches, and on the under surface, where the pouch is situated in the *Marsupials*, the hair is long. The under fur is short, fine and rather scanty. The tail is furnished throughout with long hairs."

In illustration of his paper Mr. Waterhouse exhibited the skin, together with drawings of the animal, of its skull, and of its dentary characters.

The following notes of the dissection of a specimen of the *Chilian Bush Rat, Octodon Cumingii*, Benn., by Mr. Martin, were read.

"The individual examined was a male measuring in the length of the head and body 7 inches: the tail was imperfect.

"On removing the skin from the chest and *abdomen*, the shape of the xiphoid cartilage was observed to be reniform.

"The abdominal cavity being exposed, the order of the *viscera* was as follows. Occupying its usual situation the liver extended from side to side, while below its edge appeared a portion of the great curvature of the stomach, and also the *pylorus* emerging from beneath its right lobes; the *duodenum* passing from the *pylorus* suddenly dipped down, crossed the upper end of both kidneys, and then made a curve upwards and merged in the *jejunum*. The chief portion of the abdominal cavity, of comparatively spacious volume, was filled with the convolutions of the intestinal canal.

"The liver (which was highly disorganized) consisted of two nearly equal left lobes, and of two right lobes of which the outermost was partially divided, but not so completely as to make the number of right lobes three. The *lobulus Spigelii* was small.

"In a cleft in the first or central right lobe, a little to the right of the *ligamentum latum* (which was thin), appeared the gall-bladder, small, globular, and empty: its duct received several small hepatic tubes, and entered the *duodenum* half an inch below the *pylorus*.

"The spleen was attached to the lower part of the *œsophagus* and the cardiac *sacculus* by a riband of mesentery, half an inch in breadth when extended. In figure this *viscus* was pointed at both ends, and three-sided, or prismatic: its length was $1\frac{1}{2}$ inch; its greatest breadth half an inch.

"Beneath the cardiac portion of the stomach and the spleen, lay the *pancreas*, a soft indefinite mass spreading through the mesentery: a portion of it followed the course of the *duodenum* for about an inch. Its duct entered the intestine along with the biliary duct.

"The stomach, 2 inches in length, and somewhat more than 1 inch in depth, was of a regular figure, its cardiac *sacculus* projecting but little beyond the entrance of the *œsophagus*; between which and the pyloric opening there intervened a good distance, (about $\frac{3}{4}$ of an inch). The pyloric portion of the stomach was of equal volume with the cardiac, and did not diminish rapidly but was globular. Internally, the stomach had a cuticular and villous portion; the cuticular lining, occupying about a third of the whole, covered the cardiac end, commencing anterior to the entrance of the *œsophagus*.

"The small intestines measured 2 feet 6 inches in length.

"The *cæcum* was large and sacculated, being puckered into *sacculi* by two strong muscular bands. It measured 3 inches in length, was loaded with fæcal matter, and was ulcerated through in several points, from which the *fæces* had escaped in small quantity. It was so tender that it could not be distended.

"The *colon* formed a loop 5 inches in length, analogous to that which exists in *Capromys* and *Coypus*: at the part where the intestine leaves this duplicature the *fæces* assumed distinct oval forms. The first length of this fold or loop of the *colon* was larger than the second or returning length; and this portion with the rest of the large intestines scarcely equalled the small in diameter.

"The total length of the large intestines was 1 foot $5\frac{3}{4}$ inches.

"The right kidney was placed higher than the left: the kidneys were of an oval shape, and $\frac{3}{4}$ of an inch in length. The *papilla* was large and single.

"The renal capsule was of the size of a pea, round, of a yellowish grey colour, and soft internally.

"The lungs consisted of three right and two left lobes.

"The heart presented nothing remarkable.

"The *penis*, measured from the *pubis*, was $1\frac{1}{2}$ inch in length. The *glans* was supported by an osseous stylet, and its upper surface was rough with numerous minute but horny retroverted *papillæ*. At the orifice of the *urethra* were four long, conical, horny *papillæ*,

projecting forwards, two on each side: they appeared to be four of the horny *papillæ* of the *glans* elongated and developed, for these *papillæ* surrounded their base and were there rather larger than lower down on the *glans*.

"I found, as in *Capromys* and *Coypus*, a decided decussation of the pubic pillars of the *recti abdominis* muscles.

"The *testes*, of an oval shape, were within the *abdomen*, as high as the top of the haunch bones;—the *epididymis* formed a knot at the end of the *testis*, adhering closely to it, whence it sent a tube along the *testis* to the opposite or small end; arriving there it formed a knotted congeries of fine convolutions, from which emerged the *vas deferens*. To this congeries there proceeded from the abdominal ring (which was imperforate) a muscular, tubular sac, or *cremaster*, the fibres of which embraced it. The ring being imperforate, the *testis*, I imagine, never passes externally into the groin.

"The *vas deferens* emerging from this congeries of tubes, turned round, crossed the small end of the *testis*, and descended over the *vesicula seminalis* of its own side.

"The *vesiculæ seminales* were 1 inch in length, slender and convoluted.

"The prostate gland was double; Cowper's glands were of the size of peas, and round. The membranous part of the *urethra* was $\frac{3}{4}$ of an inch in length.

"The *fauces* were not funnel-shaped, but constricted by a lateral pillar rising up from the base of the tongue on each side to the palate, which wants tonsils and *velum pendulum*: the aperture thus formed just admitted the top of a pencil. The *nares* opened 2 or 3 lines beyond this constricted portion just above the *rima glottidis*; they were not therefore visible, until the *fauces* were fairly laid open. The contraction of the *fauces* is less decided than in the *Coypus*."

July 26, 1836.

Richard Owen, Esq., in the Chair.

At the request of the Chairman, Mr. Gould exhibited specimens of two new species of *Birds* from the Friendly Islands and New Holland, of which he proposed to form a genus. He stated them to approximate, in his opinion, in nearly an equal degree to the genera *Lanius*, *Turdus*, and *Lamprotornis*; but believed that they might with propriety be arranged among the *Thrushes*. Their characters were given as follows:

APLONIS.

Rostrum capite paulò brevius, robustum, subcompressum; mandibulâ arcuatâ, ad apicem emarginatâ.

Nares basales, ovales, patulæ.

Alæ breves; remigibus 2do et 3tio longissimis, 1mo et 4to æqualibus.

Cauda brevis, lata, quadrata vel sub-bifurca.

Tarsi robusti; digitis magnis; unguibus magnis curvatis, hallucis præcipuè valido.

In both species the feathers of the head are lanceolate; and the general plumage above has a slight glossy hue, especially on the head and back of the neck. The species were characterized as follows:

APLONIS MARGINATA. *Apl. pileo metallicè brunneo; notæo saturatè brunneo, remigibus secundariis margine externo albescentibus; humeris ferè nigris; remigibus caudâque saturatè brunneis; rostro tarsisque nigrescenti-brunneis; gastræo pallidè brunneo, rachibus plumarum ferè albis.*

Long. tot., 7¼ poll.; *rostri* à rictu ad apicem, 1; *alæ*, 3⅞; *caudæ*, 2¼; *tarsi*, 1⅛.

Hab. in Insulis Amicorum.

This species formed part of a collection made by Mr. Mathews, who has lately visited these islands.

APLONIS FUSCA. *Apl. pileo et regione paroticâ obscurè nigro-splendentibus; notæo pallidè brunneo; gastræo pallidiore; remigibus caudâque brunneis; rostro tarsisque nigris.*

Long. tot., 6¾ poll.; *rostri* à rictu ad apicem, vix ⅞; *alæ*, 3⅝; *caudæ*, 2½; *tarsi*, vix 1.

Hab. ad ripas fluvii Murrumbidgee, in Novâ Hollandiâ Australi.

This species was collected, together with many other rarities, by Captain Sturt, during his expedition in the interior of Australia, and presented by him to the Society.

August 9, 1836.

Richard Owen, Esq., in the Chair.

A specimen was exhibited of an *Ortyx* which Mr. Gould regarded as hitherto undescribed.

At the request of the Chairman he pointed out the distinguishing peculiarities of the new species, which he named and characterized as follows:

ORTYX OCELLATUS. *Ortyx nigro-brunneus, dorso punctis rufo-brunneis adsperso, lateribus ocellis albi-flavidis notatis, femoribus nigris.*

Long. corp. 6½ unc.; *alæ*, 4½; *tarsi*, 1¼.

Hæc species ad *Ort. Montezumæ* in affinitate proxima.

"Bill black, strong, and arched; top of the head, which is slightly crested, blackish brown; a large white mark extends over each eye and passes on to the back part of the neck; beneath the eye is an oval mark of blueish black; from the base of the lower mandible extends another white mark which spreads upon the front of the neck and is bounded by an abrupt margin of black; a large patch of the latter colour occupies the chin and throat; the general colour of the whole of the upper surface is brownish olive, each feather having a decided central line of chestnut following the direction of the shaft and becoming spatulate at the tip; the web of each feather is transversely barred and blotched with black; the chest and abdomen is sandy chestnut, becoming more intense on the under tail-coverts; sides of the chest and flanks transversely spotted with yellowish white on a blueish grey ground; thighs black; tail very short and partly hidden; tarsi brown.

This bird differs from *Ortyx Montezuma* in several particulars, but to that species it is most nearly allied.

Mr. Gould also brought before the notice of the Meeting two new species of *Birds* from New South Wales, where they had been collected, and subsequently presented to the Society by Captain Sturt. They are referrible to the genus *Zosterops* of Messrs. Vigors and Horsfield; a group among the *Sylviadæ*, and of which but two species were known at the time those gentlemen instituted the genus. Mr. Gould placed on the table six additional species, a portion of which was from the Society's collection, and the remainder from his own. In the course of his remarks, Mr. Gould adverted to the surprising augmentation of species which has now taken place in nearly every group in ornithology; and characterized the new species mentioned above as

ZOSTEROPS ALBOGULARIS, *Gould.*

Zost. corpore supernè, alis, caudâque, olivaceis; dorso, tectricibus alarum, caudæque, castaneo-brunneis; oculo plumulis albis circum-

dato ; genis maculâ nigrâ notatis ; auricularibus griseis; gulâ, ventre, crissoque albis ; lateribus castaneis ; rostro pedibusque purpurascenti-griseis.

Long. *corp.* 5½ unc.; *rostri*, ⅞; *alæ*, 3; *caudæ*, 2½; *tarsi*, 1.

Hab. in Australiâ, apud flumen Murrumbidgee dictum.

ZOSTEROPS TENUIROSTRIS, *Gould.*

Zost. vertice capitis, nuchâ, gulâ, thoraceque viridi-flavis ; oculo plumulis albis circumdato ; dorso, scapulis, olivaceo-griseis ; primariis rectricibusque viridi latè marginatis; ventre, crissoque brunneo-flavis ; rostro pedibusque brunneis.

Long. *corp.* 5⅜ unc.; *rostri*, ¾; *alæ*, 2⅝; *caudæ*, 2⅛; *tarsi*, ⅞.

Hab. in Australiâ apud flumen Murrumbidgee dictum.

They are the two largest known species of the genus.

Notes by W. C. Williamson, Esq., Curator to the Natural History Society, Manchester, on the appearance of rare Birds in the vicinity of Scarborough were then read, of which the following is an abstract.

"The prominent position of Scarborough with its projecting headlands separated by deep bays and its high hills covered with wood, render the neighbourhood a favourite retreat for various tribes of birds. Among the spring visitors the *Siskin* may be enumerated, which appears in April, remaining only a few days apparently on its route to breeding-places farther north. It is never seen at any other period of the year, though considered by authors as a winter visitor. Several examples of the *Hoopoe*, and one specimen of the *Roller*, have been shot in the neighbourhood. The stomach of the latter was filled with the *elytra* and other remains of a species of *Curculio*. Of the *Water Ouzel* or *Dipper* it is stated that, when flying down a stream it drops into the water and dives under any rails laid across from bank to bank, rather than fly over them, rising on the opposite side and pursuing its course. The nest of this bird is occasionally seen so placed under a projecting ledge that a fall of water was constantly rolling over it, thus rendering it secure from any attacks: the birds entering by the sides of the fall.

"The *Redwing* has been seen as late as May; these birds are remarkable for a peculiar cry uttered when disturbed and about to take flight.

"The *Hooded Crow* has been known to breed near Scarborough on two or three occasions. In one instance, a female *Hooded Crow* was observed to pair with a *Carrion Crow* on a large tree at Hackness, where they succeeded in rearing their young. The *Carrion Crow* was shot by the gamekeeper, but the following year the *Hooded Crow* returned with a new mate of the same sable hue as the former one to her old nest. The carrion and young crows were again all shot; the old female by her vigilance escaped all the efforts of the keepers to destroy her, and a third time returned with a fresh mate; she was not however again so successful, but was shot, and is now preserved in the Scarborough Museum. The young

birds varied, some resembling the *Hooded* and others the *Carrion Crow* in their plumage.

"The *Great* or *Thick-kneed Plovers* breed on the fallows, and often startle the midnight traveller by their shrill and ominous whistle. This is supposed to be the note so beautifully alluded to by Sir Walter Scott in his poem of The Lady of the Lake,

> 'And in the Plover's shrilly strain
> The signal whistle's heard again.'

for it certainly sounds more like a human note than that of a bird.

"The *Rough-legged Buzzard* breeds occasionally in a precipitous dell near Hackness. A marked female returned the following year with a new mate to her former favourite haunt.

"Three species of the genus *Lestris*, the *Glaucous Gull*, *Little Gull*, *Great Northern Diver*, *Little Auk*, and *Long-tailed Duck* are obtained generally during the prevalence of strong north-easterly winds. Temminck's *Tringa* and the *Olivaceous Gallinule* have been killed near Scarborough. The *Sanderling* visits the shore in May and September. Good sport is sometimes gained at *Woodcock*-shooting in March, when from any cause these birds are prevented continuing their journey northward. In one or two instances a *Woodcock* has been seen there as late as June."

August 23, 1836.

Thomas Bell, Esq., in the Chair.

In consequence of the lamented decease of the Secretary, E. T. Bennett, Esq., the usual routine of scientific business was suspended.

September 13, 1836.

William Yarrell, Esq., in the Chair.

A communication was read from J. B. Harvey, Esq., of Teignmouth, a Corresponding Member of the Society, on the occurrence of four specimens of the *Velella limbosa* of Lamarck, which were found on the beach at Teignmouth after a continuation of southerly winds and smooth water.

A specimen was forwarded for the Society, and representations of it in four different points of view accompanied the communication.

Mr. Vigors called the attention of the meeting to a *Bird*, presenting a singular form among the *Tinamous*, which he had exhibited at one of the evening meetings in the year 1832, but which, from accidental circumstances, had not been characterized in the Proceedings. The birds of this group, which forms an immediate connecting link between the *Tinamous* and the *Bustards*, were first observed by Mr. Pentland on a high elevation in the Andes, and the specimen before the meeting was brought by that gentleman to this country and presented to the Society. Mr. Vigors described in detail the characters of the genus, to which he assigned the name of *Tinamotis*, and also pointed out the specific characters of the bird, to which he had on a former occasion given the name of *Pentlandii*, in honour of the distinguished traveller who first discovered the group.

TINAMOTIS.

Rostrum forte, subrectum, *Otidis* rostra persimile; culmine plano.

Alæ mediocres, rotundatæ; *remigibus* primâ et septimâ ferè æqualibus, brevissimis, tertiâ et quartâ longissimis.

Pedes tridactyli; *tarsis* sublongis fortibus; *acrotarsiis* reticulatis squamis inferioribus grandibus; *digitis* longitudine mediocribus, medio cæteris, quæ sunt ferè æquales, longiore, omnibus membranâ utrinque marginatis; *acropodiis* scutellatis, squamis maximis; *unguibus* grandibus, planis, dispansis.

Cauda brevis, subrotundata.

TINAMOTIS PENTLANDII. *Tin. corpore cinereo-brunneo sordidoque fulvo fasciato, capite colloque similiter striatis; crisso femoribusque rufis; mento albescente.*

Plumulæ *capitis colli ventris*que magis albido, *dorsi caudæ*que magis fulvo notatæ; narum notis maculis simulantibus. Longitudo *corporis*, 15; *alæ*, a carpo ad apicem remigis 3tiæ, 10; *rostri* ad frontem, $1\frac{1}{8}$, ad rictum, $1\frac{3}{8}$; tarsi, 2; *digitorum*, unguibus inclusis, medii, $1\frac{5}{8}$, externorum, $1\frac{1}{4}$.

Mr. Vigors took the same opportunity of describing and naming

two *Parrots* in the Society's Collection, one of which, now alive in the Menagerie, distinguished by a brilliant purple plumage over the head, nape, and breast, and which came from South America, he characterized under the name of *Psittacus augustus*; the second, of which two specimens had been procured from the late Rev. Lansdown Guilding's collection, received from the Island of St. Vincent, but the precise locality of which was not known, he described by the name of *Psittacus Guildingii*.

Psittacus augustus. *Psitt. viridis, capite, collâ corporeque subtùs splendidè purpureis, sincipite viridi tincto, torque nuchali saturatiore; humeris rectricibusque coccineo notatis, his ad apices purpurascenti-fusco tinctis.*

Plumulæ *nuchæ corporis*que infrà nigro ad apices marginatæ; *interscapulii tectricum*que femoris azureo leviter ad apices tinctæ. Magnitudo *Platycerci Vasæ*.

Psittacus Guildingii. *Psitt. capitis fronte albescente, sincipite genisque flavis, occipite mentoque azureis, nuchâ viridi; alis viridibus in medio fasciâ aurantiaco-flavâ notatis, ad apices nigris; caudâ ad basin aurantiacâ, deinde fasciâ viridi in medio lazulinâ notatâ, ad apicem flavâ.*

Plumulæ *occipitis* ad basin flavescentes, deinde azureæ, fasciâ gracili nigro-brunneâ; *nuchæ* virides fasciâ latiore notatæ. *Remigis* primaria ad basin flavæ, secundaria aurantiacæ; ad apices nigræ; interiorum plumis externis lazulino tinctis, rhachibus nigris. *Rectricis* suprà ad basin flavæ, deinde aurantiaco viride marginato notatæ, posteà externè lazulinæ, externè nigræ, ad apices aurantiaco-flavæ, rhachibus nigris; subtùs ad basin aurantiacæ, in medio virides, ad apices flavæ. *Rostrum* album. Long. *corp.* $17\frac{1}{2}$ unc.; *alæ* a carpo ad apicem remigis 4tæ, 12; *tarsi*, $\frac{7}{8}$; *caudæ*, 8; *mandibulæ* superioris, $1\frac{1}{2}$; inferioris, $1\frac{1}{8}$.

Mr. Gould, at the request of the Chairman, exhibited to the Meeting two tribes of *Birds*, viz. the *Tamatias*, from the warmer parts of America, and the *Coursers*, from the arid regions of Africa and India. Mr. Gould observed, that of the first group, only five species appear to have been known to Linnæus; eleven others had since been added, making sixteen: the Society's collection contained thirteen species. Mr. Gould exhibited a series of drawings in illustration of the group, and characterized one new species under the name of *Tamatia bicincta*, as follows:

Tamatia bicincta. *Tam. gulâ et corpore infernè subtùs ochraceo-fulvis; pectore duabus fasciis nigris transversim striato; lateribus flavido-albis nigro maculatis; plumis auricularibus griseis, marginalibus subtùs brunneâ fuscâ tinctis; fasciâ nuchali griseâ; corpore summo caudâque supernè brunneis; tectricibus alarum secundariis ad apicem ochraceo-albis hoc colore dorso guttato; rectricibusque externis marginalibus.*

Long. tot. 8 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, $3\frac{1}{4}$; *caudæ*, 3; *tarsi*, $\frac{3}{4}$.
Hab. Cayenne?

Mr. Gould stated in conclusion, that this formerly limited group now constitutes a considerable family, or subfamily, whose members appear naturally to form themselves into at least three or four genera: thus divided, the genus *Tamatia*, Cuv. (*Capito*, Vieill.) contains 9 species, that of *Lypornix*, Wagl., 3 species; that of *Monasa*, Vieill., 3 species; and that of *Chelidoptera*, Gould, 1; the latter being a generic title provisionally instituted by Mr. Gould for the *Lypornix tenebrosa*, Wagl., a species which differs in many essential characters from all the other members of the group, possessing as it does a very lengthened wing, and being in every way adapted for powerful flight. He observed, that he had consulted with M. Natterer on the propriety of separating this bird from the other members of the group, in which opinion that eminent naturalist had coincided, and at the same time stated, that it usually resorted to the topmost branches of the trees, whence it sallied forth over the forest in search after its insect food, while, on the other hand, all the other members of the group kept to low thickets and the neighbourhood of the ground. In their general economy they offer a striking resemblance to the *Shrikes* and *Fly-catchers*; they are, however, more indolent in their disposition, and sit motionless on a dead branch for hours together, until their attention is drawn to some passing insect, when they sally forth, capture it, and return to the same branch, which they are known to frequent for months together. With the exception of three or four species all the members of this group are confined to the Brazils.

Mr. Gould exhibited six species of the genus *Cursorius*, one of which was described as new by the appellation of *Cursorius rufus*.

Cursorius rufus. *Cur. fronte castaneo-rufo; occipite griseo, fasciâ albâ cincto hac suprà et infrà lineâ angustâ nigrâ marginatâ; nucha rufescente; corpore summo rufescente brunneo; gulâ albidâ; pectore pallido fulvo hoc colore in faciam ventralem nigram mergente; abdomine posteriore, crissoque albis; remigibus primariis nigris; secundariis albis; prymno? rectricibusque caudæ ad basin brunneo-griseis harum duabus intermedius notâ nigrâ apicali externis ferè albis reliquis plùs minùsve ad apicem albis nec non nigra macula griseum colorem singente; rostro nigro; digitis nigrescentibus; tarsis? albido flavis.*

Long. tot., 9 unc.; *rostri*, 1¼; *alæ*, 5¼; *caudæ*, 2; *tarsi*, 3.

Hab. in insulis Oceani Indici.

The new species of *Cursorius* was from the islands of the Indian Ocean, but from what particular locality Mr. Gould had not been able to ascertain. It differs from *Curs. Asiaticus*, by being smaller in all its proportions, by having the whole of the upper surface of a rich rufous brown, and by not possessing a white band across the rump. In its affinities it is closely allied to both *Curs. Asiaticus* and *Curs. Temminckii*.

Mr. Martin placed on the table two examples of the *Potto* or *Kinkajou* from the Society's Museum, and, at the request of the Chairman, read some notes describing the differences in colour, size,

and comparative measurements of parts in the two specimens, of which the following is an abstract.

"The differences which exist in two specimens of the *Kinkajou* in the Society's Museum have led me to introduce them to the attention of the Meeting, as it is not improbable that they may ultimately prove to be distinct species. The *Kinkajou*, however, is so rare an animal both in the museums and menageries of our country, that we want the means of ascertaining whether or not, like that allied animal the *Coati*, its colour be subject to variations of tint and marking. But independently of the great difference in colour which obtains in the two specimens before the meeting, and on which, taken as a solitary character, we should hesitate to ground a specific distinction, at least until we had compared several specimens, it appears that the ears of the rufous specimen (which was lately presented by George Vaughan, Esq.) are more elongated than those of the other, which died in the Society's Menagerie, where it had lived for many years. It is on this difference, rather than on that of colour, that I have suspected a specific distinction; though I confess my suspicions are strengthened by the latter as a concomitant. A knowledge of the precise localities from which each specimen was obtained would be of great use, but on this point, unfortunately, I have not been able to gain any information.

"In distinguishing between the two species of *Kinkajou*, I consider it best to drop entirely the specific title *caudivolvulus*, (which is applicable to both, and is descriptive rather of a generic than a specific character,) the only mode in fact by which to avoid all possibility of confusion.

"Our first species will stand as *Cercoleptes megalotus*. It is distinguished by the form of the ears, which are elongated, narrow, rounded at the tip, and somewhat flapping; their length is 1 inch 3 lines, their breadth 7 lines.

"Internally they are sparely covered with thinly set soft hairs; externally they are fully clothed with hairs of a pale yellowish white.

"The fur is close, short, thick, and rigid; the general colour is deep reddish yellow, or fulvous, with an obscure band of a darker colour, down the top of the head, the back, and upper surface of the tail, approaching to chestnut. The sides of the body and the insides of the limbs are pale fulvous; the abdomen and throat are nearly as dark as the back, and a stripe of deep chestnut commences about the end of the sternum, and is continued to the inguinal region. The tail is slender, and the hairs of this part are very rigid.

"To our second species we propose to give the name of *Cercoleptes brachyotus*.

"The fur is full, soft, and moderately long; of a universally glossy yellowish grey clouded with brown, especially over the nose, on the top of the head, and down the back; and indeed little less so on the sides of the body and outer surface of the limbs. The abdomen, the insides of the limbs, and the throat are dusky straw colour. The ears are broad, short, and rounded; covered, but somewhat sparingly, on

the outside with fur of the same colour as that of the body: their length and breadth are equal, namely, 1 inch.

"The tail is moderately thick, being covered with fur of the same character as that of the body."

Sp. 1. Cercoleptes megalotus. *Cercolept. lætè rufus, strigâ saturatiore, per totam longitudinem capitis, dorsi medii, caudæque suprà excurrente; lateribus pallidioribus; abdomine guláque rufis, strigâ castaneâ abdominali; auriculis longis, angustis, rotundatis subpendentibus et externè pilis pallidè flavis, indutis caudâ gracili; vellere denso brevi, atque rigido.*

Sp. 2. Cercoleptes brachyotus. *Cercol. vellere denso, molli, et longiusculo, griseo flavescenti, at brunneo, undato, hoc colore in capite, summoque dorso, saturatiore: abdomine et gulâ stramineis auriculis latis, mediocribus, et erectis, pilis rarioribus fuscis externè indutis.*

September 27, 1836.

Richard Owen, Esq., in the Chair.

A communication from Edward Fuller, Esq., of Carleton Hall, near Saxmundham, was read, which stated that his gamekeeper had succeeded last year in rearing two birds from a barn-door *Hen*, having a cross from the *Pheasant*, and a *Pheasant* cock; that the birds partook equally of the two species in their habits, manners, and appearance; and concluded by presenting them to the Society.

The gamekeeper of Edward Fuller, Esq., in a short note which accompanied the birds, stated that he had bred them, and they were three-quarter-bred *Pheasants*.

The living birds were exhibited at the Meeting, as was also a living hybrid, between the *Pheasant* and *common Fowl*, which was one of several that had been some years in the Menagerie of the Society.

Several specimens of hybrids, from the preserved collection in the Museum of the Society, were placed on the table for exhibition and comparison. These had been bred between the *Pheasant* and *common Fowl*, the *common Pheasant* and the *silver Pheasant*, and the *common Pheasant* with the *gold Pheasant*.

The specimens of the three-quarter-bred *Pheasants* were considered interesting, the opinion of the older physiologists having been that animals bred between parents of two distinct species were unproductive.

Mr. Yarrell stated, that although generally such an opinion prevailed there were still exceptions. The Proceedings of the Society for 1831 exhibited one already recorded at page 158. This communication was received from the Honourable Twiselton Fiennes, who having succeeded in rearing a brood between the *common Duck* and the *Pintail*, found in the following season these hybrids were productive. Other instances are also on record which were adverted to. Mr. Yarrell stated, that he had had opportunities of examining the bodies of hybrids, both of *Gallinaceous Birds* and *Ducks*, and found that the sexual organs of the males were of large size, those of the females deficient in size, and not without some appearance of imperfection. The crosses produced by the breeders of *Canaries* were mentioned, and the objects of obtaining them explained. Mr. Yarrell expressed his belief that the attempt to breed from a hybrid was most likely to be successful when a male hybrid was put to a female of a true species.

Mr. Vigors said this was the first instance that had come to his knowledge of a female hybrid being productive, and he had hitherto

considered that they were not so: he expressed his desire to see the female hybrid that had produced the three-quarter *Pheasants* then in the room, and hoped that the opportunities which the Menagerie of the Society afforded of obtaining additional evidence on this interesting subject would not be lost sight of.

The Chairman stated, that it was the opinion of John Hunter that hybrids were not productive except in cases where the generative organs were in a state of perfection, which might be regarded as unnatural in hybrids, as in the rare cases recorded of fertile *Mules*, between the *Horse* and *Ass*. Constant fertility in the hybrid proved, in the opinion of Hunter, that the parents were varieties of the same species, not distinct species. But the Chairman stated, that the experiments recorded by Hunter in the 'Animal Œconomy' relative to the fecundity of the hybrids from the *Dog* and *Wolf* and *Dog* and *Jackal* were incomplete, from the circumstances of the hybrids having always bred from a perfect species and not having propagated the intermediate variety *inter se*. He trusted that in a short time this test would be applied in experiments now in progress at the Society's Menagerie, and thus an additional element be gained towards the solution of this interesting question.

A small collection of *Birds* from Swan River, presented to the Society by Lieut. Breton and Capt. Brete, were on the table. Mr. Gould, at the request of the Chairman, observed upon the collection generally, and selected two species which he considered as undescribed, a *Gallinule* and a species of *Duck*, the latter strictly referrible to the genus *Oxyura* of L. Bonaparte, Prince of Musignano, (genus *Undina* of Gould). Mr. Gould named the *Gallinule*, *Gallinula ventralis*, and the *Duck*, *Oxyura Australis*, this being the only instance he had seen of this limited group from Australia. Of this species the collection contained both male and female, the latter of which, in the general distribution of its markings and colouring, bore so close a resemblance to the *Hydrobates* of Temminck that the bill alone presented the obvious distinction.

Mr. Gould characterized the *Gallinula* as follows:

Gallinula ventralis. *Gall. gulâ pectore et inferioribus corporis partibus fusco-cinereis, lateribus albo guttatis, remigibus caudæ crissoque nigris; toto corpore supernè olivaceo-brunneo; alis castaneo tinctis; mandibulâ superiore olivaceâ; inferiore ad basin rubrâ, ad apicem olivaceâ; pedibus olivaceis.*

Long. tot. 15 a 17 unc.; *rostri*, $1\frac{1}{4}$; *alæ*, 9; *caudæ*, $3\frac{1}{2}$; *tarsi*, $2\frac{1}{4}$. *Hab.* in Australiâ apud flumen Cygnorum.

Oxyura Australis. Mas. *Oxy. capite toto et colloque nigris; pectore, dorso lateribusque nitide castaneis; remigibus tectricibusque caudæ nigrescentibus, uropygio nigricante brunneo inornato; abdomine crissoque brunneo cinereis brunneo transversaliter obscurè striatis, rostro pedibusque plumbeis.*

Fœm. *Differt toto corpore nigricante, obscuris lineis guttisque castaneis notato; partibus inferioribus corporis pallidioribus.*

Long. tot. 15 unc.; *rostri*, 2; *alæ*, 6; *caudæ*, 3; *tarsi*, $1\frac{1}{8}$.

Hab. Australia.

Hæc species typum generis constat, alis brevibus atque concavis rectricibus caudæ rigidis plumisque corporis nitidis.

October 11, 1836.

Joseph Cox Cox, Esq., in the Chair.

A series of *Mammalia* selected from the collection of the Society was exhibited. Mr. Gray made some remarks upon them illustrative of the value which he conceived was to be placed on the characters used by M. Cuvier to separate the plantigrade from the digitigrade *Carnivora*, and he concluded by stating that he did not regard the nakedness of the sole as a good character to separate the genera into larger or smaller groups, though from its permanence in all ages and the state of the species, it furnished excellent characters to distinguish species, to separate them into sections, and often to characterize the genera of carnivorous animals; and in proof of the latter, he referred to the excellent character which it furnished to distinguish the species of the genera *Herpestes*, *Mephites*, and *Lutra*. He further observed, that in many instances the extent of the nakedness of the soles appears to depend upon the temperature of the country that the animal inhabited, and mentioned that several of the animals living in countries covered with snow, which apply the whole of the soles of their feet to the ground, have this part entirely covered with hair, as the *Wolverine*, the *Panda*, the *Seals*, and the *Polar Bear*; but that this was not universally the case, for the *Benturing*, which inhabited the same country as the *Panda*, has the soles bald and papillary. He further observed, that the nakedness of the soles did not appear to be permanent even in the specimens of the same species in the *Squirrel* and other *Glirine* animals; for he had observed that the specimens of the *grey Squirrels*, in the Northern part of the United States, had this part covered with hair, whilst those of the Southern parts, had the soles entirely bald; and he also observed, that the various species of the *Spermophile* differed greatly amongst themselves in the extent of the nakedness of this part.

Mr. Gray then proceeded to make some remarks on the alteration in the situation of the teeth, and on the change which takes place in the form of the carnivorous tooth, in the milk and permanent teeth of the *Carnivora*; and stated, that the milk carnivorous tooth of the *Cat*, *Dog*, *Vison*, *Skunk*, *Viverra*, and indeed of all the genera which he had been able to examine, had a small central internal lobe, whilst the same tooth in the permanent set always had a large anterior lobe; he also stated, that he had observed that the tubercular grinders of the *Mustelæ* often vary considerably in size in the various specimens of the same species, showing that implicit reliance cannot be placed in the size of these teeth as a specific cha-

racter, which several persons have been inclined to do, as it is well known that the size of such teeth does not depend upon the age of the animal, as they never alter their size after they are once completely developed. Mr. Gray then proceeded to point out the characters by which the new species exhibited were distinguished: two were said to have formed part of the collection of the late Sir Stamford Raffles, and were therefore supposed to have come from Sumatra; one of them was a new species of *Paradoxurus*, called *P. leucomystax* from its strong white whiskers, and the other Mr. Gray regarded as the type of a new genus which he called *Cynogale*, which appeared to be intermediate between *Paradoxurus* and *Ictides*, by differing from both in the length of the face, the compressed form of the false canines, and the small size and triangular form of the carnivorous grinder. Mr. Gray proposed to call it *Cynogale Bennettii*, after his late friend, who, he believed, intended to have described this animal if he had lived. Then followed the description of two *Foxes*, (*C. Magellanicus* and *C. griseus*), which formed part of the collection made by Capt. P. P. King, during his survey of the coast of South America, and a *Squirrel* (*Sciurus Douglasii*), and three *Hares*, (*Lepus longicaudatus*, *L. Californica*, and *L. Douglasii*), discovered by the late Mr. Douglas in North America. Then the description of three new species of *flying Squirrels* from various parts of continental India, viz. *Pteromys Melanotis*, *P. albiventer*, and *P. Leachii*; the latter, presented by Mr. Mellish to the Society, is peculiar for being coloured exactly like the American *Sciuroptera*, but is at once distinguished from them by the length and cylindrical form of its tail; and an *Herpestes* from the Indian Islands, like the black *Herpestes* of the Cape, but differing from it in colour and in the shortness of the tail, therefore called *H. brachyurus*. Mr. Gray then proceeded to point out the character, taken from the form of the soles of the hind feet, by which the *Skunks* could be divided into three sections or subgenera, and showed the character in the four species in the collection of the Society, and referred to some other species belonging to these sections which were in the collection of the British Museum, where also he stated other specimens of several of the species, as the *Dog*, *flying Squirrel*, and *Herpestes*, now described, were to be found.

Mr. Gould exhibited several specimens and drawings of *Birds* allied to the well-known *Wren* of Europe; and, at the request of the Chairman, proceeded to comment upon, and characterize the undescribed species as follows:

Troglodytes Magellanicus. *Trog. corpore infrà griseo-fulvo, vinaceo tincto; crisso rufo, suprà brunneo; dorso scapulisque striis nigrescentibus obscurè ornatis; alis caudâque rufis, nigro striatis; mandibulâ superiore nigrâ, inferiore, nec non pedibus, pallidè brunneis.*

Long. tot., $4\frac{1}{2}$ unc.; *rostri*, $\frac{1}{2}$; *alæ*, 2; *caudæ*, 2; *tarsi*, $\frac{3}{4}$.

Hab. in Fretu Magellanico.

Differt à specie *Trog. Æquinoctialis*, Swains., magnitudine majore corporis; rostro minore.

TROGLODYTES LEUCOGASTRA. *Trog. corporis parte superiore remigibusque caudæ brunneo-rufescentibus olivaceo tinctis; caudæ et remigibus secundariis lineis brunneis transversaliter striatis; strigâ superciliosâ, gutture, pectore, abdomineque albis; lateribus, femoribus, crissoque pallidi-brunneis; mandibulâ superiore fuscâ, inferiore sub-albidâ; pedibus brunneis.*

Long. tot., $2\frac{3}{4}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, 2; *caudæ*, $1\frac{1}{8}$; *tarsi*, $\frac{1}{5}$.

Hab. in Mexico, in loco Taumalipus dicto.

THRYOTHORUS GUTTATUS. *Thry. capite suprà brunneo-rubro; strigâ superciliosâ albâ lineis quàm minimis nigris interruptâ; dorso brunneo, plumis longitudinaliter albo striatis; alis albo et brunneo alternativè striatis; remigibus caudæ duabus intermediis brunneo-nigro guttatis, duabus propinquis nigrescentibus; marginibus externis guttis pallidè brunneis adspersis rectricibus duabus, externis albo atque brunneo striatis; harum externâ ad apicem albo notatâ; gulâ et pectore griseo-albis maculis nigris guttatis; abdomine lateribusque albis guttis nigris parvis adspersis; pedibus brunneis; mandibulâ superiore gricescente, inferiore fusco.*

Long. tot., $6\frac{3}{4}$ unc.; *rostri*, 1; *alæ*, 3; *caudæ*, 3; *tarsi*, 1.

Hab. Mexico.

Mr. Gould also proposed a new genus in the group of *Wrens*, under the name of *Scytalopus*, and which he characterized as follows:

Genus SCYTALOPUS.

Rostrum capite brevius, compressum, obtusum leviter recurvum.

Nares basales, membranâ tectæ.

Alæ concavæ, breves, rotundatæ, remige primâ abbreviatâ, tertiâ, quartâ, quintâ et sextâ æqualibus.

Cauda brevis, rotundata, (pennis externis brevissimis,) laxâ.

Tarsi elongati, atque robusti, antrorsùm scutellis tecti; posteriùs fasciis angustis cincti, squamis serpentum abdominalibus, haud dissimilibus; halluce elongato et robusto; ungue elongato; digitum anteriorum, medio elongato et gracili.

SCYTALOPUS FUSCUS. *Scy. corpore toto fuliginoso-nigro; capitis plumis nonnunquam argentato-griseis; rostro nigro; pedibus brunneis.*

Long. tot., $2\frac{3}{4}$ unc.; *rostri*, $\frac{1}{2}$; *alæ*, $1\frac{7}{8}$; *caudæ*, $1\frac{1}{4}$; *tarsi*, $\frac{7}{8}$.

Hab. in Fretu Magellanico, Chili, &c.

Hoc genus ad illud in quo *Troglodytes* veræ amplectuntur maximam affinitatem demonstrat.

Scytalopus albogularis. *Scy. capite cæruleo-nigro ; corpore superiore ferrugineo-brunneo, lineâ transversali nigrâ ; caudâ pallidè rufo-brunneâ ; gulâ, pectore, abdomineque intermedio albis, lateribus et crisso pallido ferrugineis lineâ transversali nigrâ ; mandibulâ superiore nigrâ brunneâ ; pedibus brunneis.*

Long. tot., $3\frac{3}{4}$ unc.; *rostri*, $\frac{5}{8}$; *alæ*, $1\frac{3}{4}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Hab. in Brasiliâ.

October 25, 1836.

Dr. Bostock in the Chair.

Two skulls of the *Orang-Utan* of Borneo, and a skin, including the *cranium*, of an immature *Orang-Utan* of Sumatra, were exhibited. They were transmitted to England by Dr. W. Montgomerie of Singapore, with a statement that the young Sumatran *Orang* had died in that gentleman's possession soon after having acquired additional grinders.

Mr. Owen availed himself of the occasion to make the following observations on each of the above specimens.

He stated that the skin of the young Sumatran *Orang* agreed in the rufous colour, texture, disposition, and direction of the hair, with the adult female Sumatran *Orang*, presented to the Zoological Society by Sir Stamford Raffles; like that specimen also, it had no nail on the *hallux* or thumb of the hinder hands. The posterior *molares* on each side of each jaw correspond to the first permanent *molares* of the adult; the rest of the teeth consisted of the 8 deciduous *bicuspides*, the 4 small deciduous *canini*, and the 8 deciduous *incisores*. This state of the dentition was similar to that of the human child at the 7th year; but it would be unsafe to infer from this circumstance that the age of the *Orang* corresponded: it being more probable, from the characteristic duration of the immature state in the human species, that the shedding of the teeth takes place at a later period than in the *Orang*.

Of the two *crania* of the Bornean *Orangs*, one differed materially from the other in size and in the development of the cranial ridges. The larger specimen before the Society, closely resembled the *cranium* of the Bornean *Pongo* or adult *Orang* in the Museum of the College of Surgeons, and differed, in precisely the same respects as that specimen, from the *cranium* of the *Pongo* (supposed to be Sumatran) in the possession of Mr. Cross, described and figured in the 1st volume of the Society's Transactions, (p. 380. Pl. 53), which induced Mr. Owen to entertain more strongly his original suspicion, that that *cranium* belonged to an *Orang* specifically distinct from the great Bornean species (*Simia Wurmbii*, Fischer). With respect to the differences alluded to, he stated that the *cranium* of the great Bornean *Orang* was characterized by the more oblique plane of the orbits, and consequently the straightness of the contour of the skull between the forehead or *glabella* and the incisor teeth; the external boundaries of the orbit were broad and had a rough irregular surface, probably in consequence of the development of the callous protuberances which characterize the sides of the face in the adult males of this species. The *symphysis* of the lower jaw was also proportionally deeper than in the (supposed) Sumatran *Pongo*. The *cranium*

of that animal in the possession of Mr. Cross, Mr. Owen regarded as being that of a male individual from its size and from the development of the cranial ridges.

The sexual peculiarities observable in the *cranium* of both the Bornean and Sumatran *Pongos* are well marked, and are exemplified, first in a difference of relative size, that of the female being about $\frac{1}{6}$th smaller; secondly, in a much smaller development of the cranial ridges; and thirdly, in the *symphysis menti* being of less depth, the *cranium* of the female approaching in these respects, according to the usual law of sexual development, towards the characters of the immature animal. The smaller of the *crania* of the two Bornean Orangs, Mr. Owen regarded as indicative of a species of *Simia*, Erxl., equally distinct from the great *Pongo* of Borneo (*Simia Wurmbii*, Fischer, Synopsis Mammalium, p. 32, No. 43), and from the *Orang* of Sumatra (*Simia Abelii*, Fischer, *ibid.* p. 10, No. 2*); and whilst regretting that his conclusion as to the specific distinction of the smaller *Orang*, (which, *cæteris paribus*, must be at least one third less than either of the two preceding *Orangs*) necessarily reposed on a comparison of the *cranium* alone, he at the same time observed that, as the *cranium* in question was in every respect entire, and with the series of teeth complete, it served to establish that deduction on the sound basis of dental and osteological characters.

Mr. Owen therefore proposed to designate the lesser *Orang* of Borneo, *Simia Morio*, and proceeded to describe the *cranium* as follows:

"The size and form of the *cranium* of the *Simia Morio* at first suggests the idea of its being an intermediate stage of growth between the young and adult *Simia Satyrus*, or *Pongo*; but this is disproved by comparison of the teeth of *S. Morio*, with the permanent teeth in the adult *Pongo*, and with the deciduous ones in the young *Simia Satyrus*, as well as with the germs of the permanent teeth concealed in the jaws of the latter. For while the teeth of *S. Morio* are much larger than the deciduous teeth of the young *S. Satyrus*, they have different relative sizes one to another from those which are observed in the permanent teeth of the full-grown: the *molares* and *bicuspides* of the *S. Morio* being smaller, the *canini* much smaller, while the upper *incisores* have nearly, and the lower *incisores* fully, the same dimensions as those of the great *Pongo*.

"The teeth in the jaws of a quadrumanous *cranium* may be known to belong to the permanent series, by the absence of the *foramina*, which, in an immature *cranium*, are situated behind the deciduous teeth, and which lead to the cavities containing the crowns of the permanent teeth. This character is very conspicuous on comparing the *cranium* of *Simia Morio* with that of a young *Simia Satyrus*, in which the deciduous series are present, together with the first permanent *molares*. The deciduous teeth in the young *Orang*, besides their smaller size, are more or less protruded from their sockets, and thrust apart from one another by the *vis à tergo* of their huge successors, while the teeth of *S. Morio* are lodged firmly in the jaws; and, with the exception of the characteristic interval between the

canines and incisors, are compactly arranged in close contiguity with each other.

"I have re-examined with much interest several *crania* of immature *Orangs*, in order to ascertain if any of these might be the young of the species in question; but they have all presented the crowns of the permanent *molares* of too large a size,—of a size which shows that the great *Pongo*, either of *Wurmb* or *Abel*, represents their adult state*. And these immature *crania* also indicate the condition to which they are destined to attain by the size of the orbits, which exceeds that of the orbits of the *S. Morio*, the eye having, like the brain, already in the young *Pongos* acquired its full size.

"That the *cranium* of the *Simia Morio* here described, belonged to an adult is proved by the small interval between the temporal ridges at the crown of the skull, corresponding to the extensive surface of origin of the *crotophyte muscles*; and by the obliteration of the intermaxillary sutures: that it belonged also to an aged individual is highly probable from the extent to which the teeth are worn down, and from the obliteration, notwithstanding the absence of interparietal and lambdoidal crests, of the sagittal and lambdoidal sutures.

"The cerebral portion of the skull of *Simia Morio* equals in size that of the *Pongo*, and indicates the possession of a brain at least as fully developed as in that species, while the maxillary portion is proportionally smaller; so that, as the *cranium* rises above the orbits, and is, like that of the *Pongo*, more convex on the coronal aspect than in the *Chimpanzee*, and wants the prominent supraciliary ridge which characterizes the African *Orang*, it presents in the *Simia Morio* altogether a more anthropoid character.

"There are, however, the rudiments of the ridges which so remarkably characterize the *cranium* of the mature *Pongo*. Those which commence at the external angle of the frontal bone pass backwards, upwards, and slightly converge, but do not meet; they gradually diminish in breadth, and, after passing the coronal suture, subside to the level of the skull; they are then only traceable by a rough line, which leading parallel to the sagittal suture, and gradually bending outwards, rises again to be continued into the lam-

* The permanent teeth in the Bornean and Sumatran *Pongos* so closely correspond in size and shape that I am unable to refer the *crania* of the immature Orangs which I have hitherto examined to either species exclusively from comparison of the crowns of the concealed permanent teeth; in speaking of the immature specimens of the great *Pongo*, I therefore use the term *Simia Satyrus*; in comparing the *Simia Morio* with the *adult Pongo*, I would be understood as always referring to the Bornean species, with cheek-callosities, or the *Simia Wurmbii* of Fischer. If the specific differences of *Simia Wurmbii* and *Simia Abelii* be admitted, the term *Simia Satyrus* must merge into a synonym, as having been applied indiscriminately to the young of both these large *Orangs*. In each case, the generic term *Simia* is applied in the restricted sense in which it is used by Erxleben in his 'Systema Regni Animalis,' 8vo, 1777, and with which the term *Pithecus*, substituted by Geoffroy for the genus of *Orangs*, is synonymous.

bdoidal ridges; thus circumscribing the origins of the temporal muscles. The lambdoidal and mastoid ridges are broader and more developed than in the *Chimpanzee*, but inferior in both respects to those of the *Pongo*. The inial region of the *occiput* is almost smooth, and is convex, without the mesial ridge, and strong muscular impressions observable in the *Pongo*, where a preponderating weight in front calls for the insertion of powerful muscles behind to counterbalance it.

The temporal bones join the frontal in *Simia Morio* as in the *Troglodytes niger*; but this structure occasionally is present on one or both sides of the skull in *Simia Satyrus*.

The *additamentum suturæ lambdoidalis* is present on both sides in the *S. Morio*, and the beginning of the lambdoidal suture may be faintly traced, but the remainder is obliterated.

Directing our attention to the base of the skull of *S. Morio* we observe the occipital *foramen* to be less posteriorly situated than in the *Pongo*, but more so than in the *Chimpanzee*. The plane of the *foramen* is also less oblique than in the *Pongo*. The occipital condyles are as far apart anteriorly as in the *Chimpanzee*. The anterior condyloid *foramina* are double on each side as in the *Pongo*: the carotid and jugular *foramina* open within the same depression; they are relatively further apart in the *Chimpanzee*: the petrous portion of the temporal bone, as in the *Pongo*, is relatively smaller than in the *Chimpanzee*, and the articular cavity, or surface for the lower jaw, forms a larger proportion of the base of the skull.

The other characters of the *basis cranii* correspond with those of the *Pongo*; and the smaller size of the *meatus auditorius externus* is probably associated in both species with a smaller auricle, as compared with the *Chimpanzee*.

On the bony palate the relative position of the *foramen incisivum* corresponds with the development of the incisive teeth, showing the intermaxillary bones to be of larger size in the *S. Morio* than in the *Chimpanzee*: the situation of the sutures joining these bones to the maxillaries is indicated by vascular grooves, but otherwise obliterated; while in the *cranium* of a young *Pongo* of nearly the same size as that of the *Simia Morio*, the intermaxillary sutures still remain, corresponding to the non-development of the permanent laniaries. It will be interesting to determine at what period these sutures are obliterated in the more anthropoid *Simia Morio*.

The *os nasi* is a single narrow long triangular bone, slightly dilated at its upper end or apex, with the basal margin entire, presenting no indications of original separation into two parts, as has been observed in skulls of the *Chimpanzee*.

In the contraction of the interorbital space, and the general form of the orbit and its boundaries, the *Simia Morio* resembles the *Simia Satyrus*, but the orbital cavity, as before observed, is smaller. In the plane of the orbit and straight contour of the upper jaw, the *Simia Morio* resembles the Bornean species of *Pongo* or *Simia Wurmbii*, rather than the *Simia Abelii* or Sumatran *Pongo*.

The orbital process of the *os malæ* is perforated in the *S. Morio*

as in the *Pongo*, by several large *foramina*. There is one principal and two very small infraorbital *foramina* on either side; the upper maxillary bones are relatively smaller, as compared with the other bones of the face, and especially the intermaxillaries, than in the *Pongo*; a structure which coincides with the smaller proportional development of the canine teeth. The nasal aperture has the same form as in the adult *Simia Wurmbii*, being more elongated than in the immature *Orang*.

The main and characteristic difference then between the *Simia Morio* and the *Pongo*, whether of Borneo or Sumatra, obtains in the size of the laniary or canine teeth, to the smaller development of which in the *S. Morio*, almost all the other differences in the *cranium* are subordinate or consequent. The laniary teeth, it may be observed, have little relation to the kind of food habitual to the *Orangs*; had they been so related they would have been accompanied with a structure of the glenoid cavity fitting them, as in the true *Carnivora*, to retain a living prey in their gripe, till its life was extinguished or resistance effectually quelled. But the flattened surfaces on which the condyles of the lower jaw rotate are in subserviency to the flattened tuberculate molars, showing the mastication of vegetable substances to be the habitual business of the jaws, and the application of the laniaries to be occasional, and probably defensive in most cases. We perceive the utility of formidable canine teeth to the *Orangs*, whose stature makes them conspicuous and of easy detection to a carnivorous enemy; such weapons, in connexion with the general muscular strength of the *Pongos*, enable them to offer a successful defence against the *Leopard*, and may render them formidable opponents even to the *Tiger*; but in the smaller species, which we have been describing, to which concealment would be easier, the canines are of relatively smaller size, and those of the lower jaw are so placed as to be worn down by the lateral incisors of the upper jaw; they were reduced in the specimen described, to the level of the other teeth; and the points of the upper canines were also much worn. The size, forms, and proportions of the teeth which relate more immediately to the food of the *Orangs*, viz. the molars and incisors, show indisputably that the *Simia Morio* derives its sustenance from the same kind of food as the larger *Orangs*. The singular thickness or antero-posterior diameter of the incisors, which are worn down to a flattened surface, like molar teeth, show that they are put to rough work; and it is probable that their common use is to tear and scrape away the tough fibrous outer covering of the cocoa-nut, and, perhaps, to gnaw through the denser shell.

With respect to minor differences not noticed in the description, these may be deduced from the subjoined table of comparative admeasurements.

Table of Admeasurements.

	Simia Morio, adult.		*Simia Wurmbii*, adult male.	
	inch.	lin.	inch.	lin.
Length of the skull from the *vertex* to the base of the occipital condyle	3	7	4	6
Length of the skull from the posterior plane of the *occiput* to the margin of the incisors	7	10	10	6
Length of the skull from the posterior plane of the *occiput* to the fronto-nasal suture	4	4	5	3
Length of the skull from the fronto-nasal suture to the margin of the incisors	4	$1\frac{1}{2}$	5	7
Greatest lateral diameter of the skull (at the post-auditory ridges)	4	8	5	4
Smallest lateral diameter of the skull (behind the orbits)	2	4	2	9
Distance between temporal ridges	0	7	0	0
Diameter of the skull at the *zygomata*	5	1	6	9
Length of the zygomatic *fossa*	1	9	2	6
Diameter of skull taken between the outsides of the orbits	3	6	4	6
Interorbital space	0	4	0	7
Transverse diameter of orbital cavity	1	3	1	6
Vertical diameter of orbital cavity	1	6	1	7
Vertical diameter of nasal aperture	1	1	1	6
Transverse diameter of nasal aperture	0	9	1	0
Interspace between infraorbital *foramina*	1	7	2	0
Distance between the inferior margin of the nasal bone and the inferior margin of the intermaxillary bone	2	5	3	3
From the anterior margin of the occipital *foramen* to the posterior margin of the bony palate	2	3	2	10
Length of the bony palate along the mesial suture.	3	$1\frac{1}{2}$	4	0
From the anterior margin of the intermaxillary bones to the anterior palatal *foramina*	0	10	1	3
Breadth of the crown of the first incisor, upper jaw.	0	6	0	7
Breadth of the crown of the second incisor, upper jaw	0	$3\frac{1}{2}$	0	4
Breadth of the four incisors, *in situ*, upper jaw	1	6	1	9
Longitudinal extent of grinding surface of the *molares*, *bicuspides* included, of one side, upper jaw	2	2	2	5
Length of the enamelled crown of the canine tooth, upper jaw	0	$6\frac{1}{2}$	1	0
Breadth of ditto	0	5	0	9
Length of the lower jaw from the condyle to the anterior surface of the sockets of the incisors.	5	7	7	4
Length of the *ramus* of the lower jaw	3	4	4	$7\frac{1}{2}$
Greatest breadth of ditto	2	0	3	1
Interspace between the mental *foramina*	1	8	2	1

Mr. H. E. Strickland read the following list of *Birds* noticed or obtained by him in Asia Minor, in the winter of 1835 and spring of 1836.

He stated that the winter of last year was one of unusual severity in all parts of Europe. At Smyrna, where he resided from November to February, the weather, which had been mild in the early part of December, underwent a sudden change about Christmas-day. A north wind and violent storms of snow brought vast flocks of northern *Birds* to take shelter in Smyrna Bay. A frost of more than three weeks followed, a circumstance almost without parallel at Smyrna, which is situated close to the sea and in the low latitude of $38\frac{1}{2}°$. This statement will explain the occurrence in the following list, of many *Birds* whose usual abode is in high northern latitudes.

In the month of February he visited Constantinople, and returned overland to Smyrna, which he reached at the end of April. A great change had now taken place in the ornithology of that neighbourhood. The spring was now at its height, and numerous summer birds had arrived, of a more exotic race than those which had been observed during the winter. Mr. Strickland was now, however, compelled to return to Europe; but the few days which passed before he left Smyrna, served to give him a taste of the rich ornithological harvest which might be reaped by a summer's residence in Asia Minor.

Of those species in the following list which have an asterisk attached, specimens had been obtained by Mr. Strickland and were exhibited.

" *Vultur*, Ill.
Aquila, Briss.

Two or three species of each of these families frequent the neighbourhood of Smyrna, but all my endeavours to procure specimens of these wary birds were unavailing.

*1. *Falco Æsalon*, Linn. Smyrna; rare.

*2. *Falco Tinnunculus*, Linn. Smyrna; rare.

*3. *Falco tinnunculoides*, Temm. Very abundant in Asia Minor during the spring. It frequents the Turkish villages, and builds in the roofs of the houses. Its mode of hovering is similar to that of the *common Kestrel*, but it is more gregarious in its habits than that bird.

*4. *Accipiter Fringillaria*, Ray. Smyrna.

*5. *Buteo vulgaris*, Bechst. Smyrna.

*6. *Circus cyaneus*, Flem. Smyrna.

*7. *Circus rufus*, Briss. Smyrna.

8. *Otus brachyotus*, Cuv. Smyrna.

*9. *Ulula Stredula*, Selby. Smyrna.

*10. *Bubo maximus*, Sibb. Smyrna.

*11. *Noctua nudipes*, Nilss. Very common in the Levant.

*12. *Lanius minor*, Linn. Smyrna, in April.

*13. *Lanius rufus*, Briss. Smyrna, in April.

*14. *Lanius Collurio*, Linn. Smyrna, in April.

15. *Turdus Merula*, Linn. Smyrna.

16. *Turdus solitarius*, Linn. Frequents the rocks and hills near Smyrna.

17. *Turdus viscivorus*, Linn. Smyrna, during the winter.

18. *Turdus pilaris*, Linn. Smyrna, during the winter.

19. *Turdus musicus*, Linn. Smyrna, during the winter.

20. *Turdus iliacus*, Linn. Smyrna, during the winter.

21. *Cinclus aquaticus*, Bechst. Rivulets near Smyrna. I cite this bird with some doubt, not having been able to obtain a specimen. It is possible that the Smyrna *Cinclus* may be the *C. Pallasii*, Temm., though I am inclined to refer it to the former species.

*22. *Oriolus Galbula*, Linn. Smyrna, April.

*23. *Saxicola Rubicola*, Bechst. Winters at Smyrna.

*24. *Saxicola aurita*, Temm. Arrives at Smyrna in April. Its habits are similar to those of our *Wheatear*, and from its shy and restless motions it is very difficult to procure.

*25. *Saxicola Œnanthe*, Bechst. Smyrna, in April.

26. *Saxicola Rubetra*, Bechst. Common at Smyrna during the winter.

27. *Phœnicura suecica*, Selby. I believe that I saw this bird near Smyrna in April.

*28. *Phœnicura Tithys*, Jard. and Selb. This bird is common on the bare rocky hills near Smyrna, where it remains during the winter.

29. *Philomela luscinia*, Swains. First heard on the 5th of April at Hushak in the interior.

30. *Salicaria phragmitis*, Selby. Seen at Smyrna in December.

31. *Curruca cinerea*, Bechst. Smyrna, April.

*32. *Curruca melanocephala*, Bechst. This delicate little bird, which is only found in the most southern parts of Europe, remains through the winter in the neighbourhood of Smyrna. It is a retired solitary bird, frequenting sheltered ravines thickly beset with various evergreen shrubs.

*33. *Sylvia rufa*, Temm. Shot near Smyrna in November.

*34. *Sylvia brevirostris*, mihi. Also killed in November near Smyrna. This species, which I believe to be new, may be thus characterized:

Sylvia brevirostris. *Sylv. corpore suprà olivaceo brunneo, subtùs albido; pedibus nigris.*

Plumage closely resembling that of *S. Trochilus*. Above brown with a tinge of olive. A pale yellow streak over the eye. Throat and breast pale fulvous with a slight tinge of yellow; belly whitish. Inner wing-coverts of a pale yellow. *Remiges*: the 4th and 5th longest and equal: the 2nd equal to the 8th. Beak dusky; legs black.

Long. tot. poll. $4\frac{3}{4}$; *rostri*, $\frac{1}{4}$; *caudæ*, $2\frac{1}{8}$; *alæ*, $2\frac{2}{5}$; *tarsi*, $\frac{3}{4}$.

Differs from *S. rufa* in its greater size, and from *S. Trochilus* in the shortness of the beak, and the dark colour of the legs.

Habitat prope Smyrnam. Hyeme occisa.

*35. *Accentor modularis*, Cuv. Killed near Smyrna in the winter, but is rare.

*36. *Regulus ignicapillus*, Cuv. Frequents the olive groves near Smyrna.

*37. *Troglodytes europæus*, Linn. Common near Smyrna. Undistinguishable from English specimens.

38. *Motacilla alba*, Linn. Smyrna.

39. *Motacilla boarula*, Linn. Smyrna.

*40. *Anthus pratensis*, Bechst. Common at Smyrna.

*41. *Anthus aquaticus*, Bechst. Killed on the coast near Smyrna.

42. *Hirundo rustica*, Linn. I believe that all the British species of *Hirundinidæ* frequent the Levant, but have only ascertained the above species.

*43. *Alauda arvensis*, Linn. Immense flocks of this bird arrived from the northward at the commencement of the severe weather at Christmas.

*44. *Alauda cristata*, Linn. Very common.

*45. *Alauda arborea*, Linn. Smyrna; common.

*46. *Alauda calandra*, Linn. Arrived during the cold weather.

*47. *Parus major*, Linn. Smyrna.

*48. *Parus cæruleus*, Linn. Smyrna.

*49. *Parus lugubris*, Natt. Smyrna.

*50. *Emberiza miliaria*, Linn. Common.

*51. *Emberiza Cia*, Linn. Frequents the rocky hills near Smyrna.

*52. *Emberiza Cirlus*, Linn. Haunts the vicinity of streams. It seems to replace the *E. citrinella*, which I never noticed in Asia Minor.

*53. *Emberiza palustris*, Sav. The habits of this species of *Reed Bunting* exactly resemble those of *E. Schæniclus*. The beak is rather less gibbous than in the Dalmatian specimens.

*54. *Emberiza cæsia*, Cretzsch. Killed at Smyrna in April. It is frequent in Greece and in the Ionian Islands.

*55. *Emberiza hortulana*, Linn. Smyrna, April.

*56. *Emberiza cinerea*, mihi. This new species is thus characterized:

EMBERIZA CINEREA. *Emb. capite viridi-flavescente; corpore suprà cinerascenti, subtùs albo.*

Male. Crown of the head greenish yellow, becoming cinereous at the nape. Back cinereo-fuscous with an obscure streak of brown in the middle of each feather. Rump cinereous; tail dark brown; the two lateral pairs of feathers white on the inner webs for near half their length towards the extremities.

Wings dark brown, the coverts and quills margined with whitish, the scapulars with fulvous. Chin and throat yellow, becoming greenish on the cheeks.

Breast cinereous; abdomen white, sides cinereous.

Bill dusky; legs flesh-coloured.

Long. tot. poll. 6; *rostri*, $\frac{2}{3}$; *alæ*, $3\frac{1}{2}$; *caudæ*, $2\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.

The beak of this species most nearly resembles that of *Emberiza Cia*.

Habitat in collibus juxta Smyrnam. Mense Aprili occisa.

57. *Pyrgita domestica*, Cuv. This is the *common house Sparrow* of the Levant.

*58. *Pyrgita hispaniolensis*, Cuv. A single specimen was obtained in April at Smyrna.

*59. *Linaria cannabina*, Swains. Common.

60. *Carduelis elegans*, Steph. Common.

*61. *Fringilla Cœlebs*, Linn. Very common in the Levant.

62. *Fringilla Montifringilla*, Linn. Occurred during the winter.

*63. *Fringilla Serinus*, Linn. Gregarious during the winter. Assembles in large flocks, which chirp incessantly in a small low note.

64. *Coccothraustes Chloris*, Flem. Common.

65. *Sturnus vulgaris*, Linn. Smyrna.

66. *Corvus Corax*, Linn. Smyrna.

67. *Corvus Cornix*, Linn. Common near Smyrna.

68. *Corvus Monedula*, Linn. Common near Smyrna.

Obs. The *common Rook* was not noticed, and I do not believe that it exists in the country.

69. *Pica caudata*, Ray. Common in the Levant.

*70. *Garrulus melanocephalus*, Bonelli. This bird was first described by M. Gené in the Memoirs of the Academy of Turin, vol. xxxvii. p. 298, Pl. I., from specimens in the Turin Museum, received from Lebanon. It is common in the vicinity of Smyrna, and its note and habits are identical with those of the European *Jay*, whose place it supplies.

*71. *Sitta syriaca*, Ehrenb. Frequents the open hills near Smyrna, where it is seen climbing up the masses of rock, or perched on their summits. It never is seen on trees. The note is a loud clear warble.

*72. *Sitta europæa*, Linn. Inhabits the groves of aged olive trees which abound in the bottoms of the valleys. The specimens are smaller than British ones, but not otherwise distinguishable.

73. *Upupa Epops*, Linn. Seen at Hushak in April.

*74. *Alcedo ispida*, Linn. Common.

*75. *Alcedo rudis*, Linn. This bird may often be seen in the salt-water marshes west of Smyrna. It never seems to follow the rivers, but always remains near the coast. It sometimes hovers for several minutes, about 10 feet above the water, and then drops perpendicularly on to its prey.

76. *Picus martius*, Linn. I saw a specimen of this bird in the possession of Mr. Zohrab at Broussa. It was shot in the pine forests of Mount Olympus.

*77. *Picus major*, Linn. Common near Smyrna.

*78. *Cuculus canorus*, Linn. Smyrna, in April.

79. *Phasianus colchicus*, Linn. Common near Constantinople on both sides of the Bosphorus. It has probably migrated thither spontaneously from Colchis, its native country.

80. *Francolinus vulgaris*. Occurs in the marshes of the Hermus and the Cayster, whence it is sometimes brought to market at Smyrna.

*81. *Perdix saxatilis*, Meyer. Abundant on the hills round Smyrna.

82. *Coturnix dactylisonans*. Remains near Smyrna during winter.

83. *Columba Palumbus*, Linn. Smyrna.

84. *Columba Ænas*, Linn. Smyrna.

*85. *Columba Turtur*, Linn. Smyrna, in April.

*86. *Columba cambayensis*, Lath. This bird inhabits the Turkish burial-grounds at Smyrna and Constantinople, which are dense forests of cypress trees. It is strictly protected by the Turks, and it was

with some difficulty that I obtained a specimen. It was, perhaps, originally introduced by man, but now seems completely naturalized.

87. *Otis tarda*, Linn. Frequents the plains south of Smyrna. It is called *wild Turkey* by the European residents.

*88. *Otis tetrax*, Linn. Abundant during the winter in the poultry shops at Smyrna.

89. *Œdicnemus crepitans*, Temm. Said to occur in this part of Asia Minor.

90. *Vanellus cristatus*, Meyer. Appeared in vast flocks at the commencement of the cold weather.

91. *Grus cinerea*, Bechst. A flock seen in the plain of Sardis the end of April.

*92. *Ardea Egretta*, Linn. Frequents the sea marshes west of Smyrna.

*93. *Botaurus stellaris*, Steph. Smyrna.

*94. *Ciconia alba*, Bellon. Very abundant in Turkey during summer. It swarms in every village, and is protected with the same strictness by the Turks as by the Dutch. It is said to have quite deserted Greece, since the expulsion of its Mahometan protectors.

95. *Numenius arquatus*, Cuv. Smyrna.

96. *Scolopax Rusticola*, Linn. So abundant were *Woodcocks* at Smyrna during the severe weather, that many were killed in small gardens in the midst of the town.

97. *Scolopax Gallinago*, Linn. } Abundant in the marshes near
98. *Scolopax Gallinula*, Linn. } Smyrna.

*99. *Tringa variabilis*, Meyer. Common on the coast.

*100. *Tringa Temminckii*, Leisl. Smyrna, in winter.

*101. *Totanus Glottis*, Bechst. Smyrna, in winter; rare.

102. *Totanus Calidris*, Bechst. Common in the marshes.

103. *Totanus ochropus*, Temm. Seen on the coast.

*104. *Recurvirostra Avocetta*, Linn. Smyrna; rare.

*105. *Rallus aquaticus*, Linn. Smyrna.

106. *Crex pratensis*, Bechst. Smyrna, in winter.

*107. *Crex porzana*, Bechst. Smyrna, in winter.

108. *Gallinula Chloropus*, Lath. Smyrna, in winter.

109. *Fulica atra*, Linn. Smyrna in winter.

*110. *Glareola torquata*, Meyer. A pair of these birds were brought to me at Smyrna in April.

*111. *Podiceps cristatus*, Lath. The young of this bird is abundant in the harbour at Constantinople, where, in common with all other waterfowl, it is strictly protected.

*112. *Puffinus Anglorum*, Ray. Flocks of this bird are constantly seen flying up and down the Bosphorus. They are rarely seen to alight, and from their unceasing restlessness, the Franks of Pera have given them the name of *âmes damnées*. I am not aware that this bird has before been noticed in the southern parts of Europe.

*113. *Larus ridibundus*, Linn.

*114. *Larus argentatus*, Brunn. These two species of *Gull* frequent the Golden Horn at Constantinople, where they are so tame that they may easily be struck with an oar.

115. *Pelecanus Onocrotalus*, Linn. Frequents the marshes near Smyrna, where it remains during the winter.
*116. *Phalacrocorax Carbo*, Briss. Abounds in the harbour of Constantinople, and roosts on the roofs of the houses.
*117. *Phalacrocorax pygmæus*, Briss. Shot near Smyrna in winter.
118. *Cygnus Olor*, Linn. Visited Smyrna Bay in the winter.
119. *Clangula vulgaris*, Leach. Smyrna, during the winter.
120. *Fuligula ferina*, Steph. Smyrna, during the winter.
121. *Fuligula cristata*, Steph. Smyrna, during the winter.
*122. *Rhynchapsis clypeata*, Shaw. Smyrna, during the winter.
123. *Tadorna Vulpanser*, Flem. Smyrna, during the winter.
124. *Querquedula acuta*, Selby. Smyrna, during the winter.
125. *Anas Boschas*, Linn. Smyrna, during the winter.
126. *Mareca Penelope*, Selby. Smyrna, during the winter.
127. *Tadorna Rutila*, Steph. Frequent in the poultry shops at Smyrna, but owing to the Turkish practice of cutting the throats of birds as soon as shot, I was unable to obtain a perfect specimen.
128. *Querquedula Crecca*, Steph. Smyrna, in the winter.
*129. *Mergus albellus*, Linn. Smyrna, in the winter."

Mr. Strickland also exhibited the skin of a variety of the *common Fox*, *Canis Vulpes*, Linn., which occurs near Smyrna: together with a specimen of the *Lepus hybridus*, Pall., from the South of Russia, purchased of a furrier at Rome.

Also a specimen of an *Argonauta*, Linn., which was brought to him in Cephalonia with the animal alive in it. Mr. Strickland stated that he kept it for some hours alive, and when dead it fell out of the shell with its own weight; proving that there is no muscular connexion between the animal and the shell. In this instance the shell did not contain any *ova*.

Mr. Ogilby called the attention of the Society to two *Antelopes* at present living in the Gardens, which he regarded as the *Koba* and *Kob* of Buffon. He expressed his pleasure at having it in his power to identify two animals originally described imperfectly, and of which the zoological characters have been hitherto almost unknown; observing that the re-discovery of an old species was at all times more gratifying to him, and, he considered, more beneficial to the science of zoology, than the original description of twenty that were new; because, whilst it equally added an authentic species to the substantive amount of our knowledge, it had the further merit of dispelling the many doubts and surmizes which unavoidably obscured the subject. Mr. Ogilby entered at some length into the identification of these two interesting species, referring to the scanty materials afforded by the original descriptions of Buffon and Daubenton, and pointing out the various other *Ruminants* with which subsequent naturalists had confounded them; at the same time reserving his more detailed demonstration of this subject, and his descriptions of the animals themselves, for the monograph which he has been long preparing for the Transactions of the Society. Among other errors, he pointed out that the *Koba* of Pennant (*A. Senegalensis*) was the *Caama*;

and that the *Korrigum* of Denham and Clapperton's Travels, identified with *A. Senegalensis* by Mr. Children and Colonel Smith, was a very distinct animal from the *Koba*, and even belonged to a different natural genus. It has horns in the female sex and lachrymal sinuses, both of which characters are absent in the *Koba*: he therefore proposed to distinguish the Bornou animal by the specific name of *A. Korrigum*. The same observation applies to the two species which Colonel H. Smith has described under the names of *A. Adenota* and *A. Forfex*, and which he identified with the *Kob* and *Gambian Antelope* respectively; both these animals had lachrymal sinuses, whereas, both Buffon and the more accurate Daubenton, expressly declare that the *Kob* is without this character. The animals in the Gardens, however, corresponded in all respects with the original descriptions; their comparative size, their colour, their habitat, their zoological characters, as far as they were reported, and, in the case of the *Koba*, even the name, were identical; and it therefore gave him peculiar satisfaction to be able to congratulate the Society on the possession of two of the rarest and most interesting *Antelopes* ever brought together. He observed, in conclusion, that the female of the *Kob* had been observed by him six or eight months ago in the Surrey Zoological Gardens, but that he had only recognised its identity with Buffon's animal on the arrival of the fine male specimen at present belonging to the Society.

Mr. Ogilby afterwards exhibited the skin of a *Fox* from the Himalayan mountains, which he has described in the Zoological Part of Mr. Royle's "*Flora Himalaica*," under the name of *Canis Himalaicus*. This animal, of which Mr. Ogilby stated that he had examined three skins, two belonging to the Zoological Society, and one procured by Mr. Royle at Mussooree, (the two former in their summer, the latter in its winter dress,) appears to be rare in Nepaul, since Mr. Hodgson has never been able to procure a specimen, but contents himself with indicating its existence (*vide* Proceed. Zool. Soc. II. 97); it is not uncommon, however, in the Doon, in Kumaon, and the more western and elevated parts of the Mountains, where it is called the *hill Fox* by the Europeans, and greatly admired for the beauty of its form, and the brilliancy and variety of its colours. The whole length to the origin of the tail is 2 feet 6 inches; that of the tail, 1 foot 6 inches; that of the ears, 4 inches; and the height may be about 1 foot 4 or 5 inches. The animal agrees with the common European and American *Foxes*, (*C. Vulpes* and *C. fulvus*,) in the black marks on the backs of the ears, and in front of the hind and fore legs. The coat consists of long close rich fur, as fine as that of any of the American varieties, and of infinitely more brilliant and varied colours. It consists of two sorts of hair, an interior of a very fine cottony texture, and an external of a long silky nature, but perfectly pliant, and, like the fur of the *Sable*, lying almost equally smooth in any direction. The inner fur is of a smoky blue or brown colour along the back, as is likewise the basal half of the outer silky hair, which, up to this point, is of the same soft cottony texture as the interior fur; it then assumes its harsher silky character, is marked with a broad

whitish yellow ring, and terminated by a long point of a deep bay colour. Hence, along the whole upper surface of the head, neck, and back, the uniform colour is unmixed deep and brilliant red. On the sides of the neck, on the throat, ribs and flanks, is pure white, changing to light smoky blue on the last-named parts. The outer hair of the hips and thighs is tipt with grey instead of red, which gives these parts a hoary appearance, and this colour predominates on all the upper parts of the Society's two specimens, in which the fur is moreover much shorter and coarser, and the colours less brilliant and varied than in Mr. Royle's. The whole under surface of the body is of a smoky brown colour, without any intermixture of long silky hairs. The external colours of the body are, therefore, bright bay on the back, yellowish red on the sides of the body, white on the sides of the neck, hoary grey on the hips, and smoky brown on the throat, breast, and belly. The ears are pretty large and elliptical, their outer surface black; a stripe of the same colour runs down the front of the legs, both fore and hind; the soles of the feet are thickly covered with hair of a yellowish brown colour, except the balls of the toes, which are naked. The brush is large and well finished, of the same colour as the body throughout the greater part of its length, and terminated by a large white point.

Mr. Gray related a series of facts in reference to the habits of a *Cuckoo*, which appeared to prove that the female, though she leaves the eggs to be hatched by another bird, sometimes at least takes care of the young bird and feeds it after it leaves its nest, and teaches it to fly. They may explain how they are taught to migrate.

He also expressed some doubt respecting the eggs of *Cuckoos* being laid in the nest of *Granivorous birds*, and stated an instance where a chicken had been hatched under a *Pigeon*, that the *Pigeon* neglected it when it found that it would not eat the soaked peas, and eventually ejected it from its nest.

Mr. Gray then exhibited and explained a peculiarity in the structure of the ligaments of bivalve shells, and pointed out the peculiarity of some mactraceous shells which had this part, contrary to the general structures, inclosed in the cartilage pit, observing that this structure was found in his genus *Gnathodon*, and in a new genus, which Mr. Gray had called at the British Museum *Mulinia*, of which he described five species; and he also stated the necessity for forming a new genus, of which *Mactra Sprengleri* may be regarded as the type.

Mr. Harvey, of Teignmouth, exhibited various fossils from Devonshire. Of these, sections in different directions had been made, and the surfaces highly polished. The structure was thus rendered beautifully apparent.

Mr. Harvey also exhibited various specimens of *Asterias* and *Ophiura* from the Devonshire coast, and explained the mode by which they had been prepared.

Mr. Gould brought under the notice of the Meeting several spe-

cies of *Birds* from New South Wales, which he considered to be new to science, as they are not contained in the collection of the Linnean Society; nor, as far as he is aware, described in any publication. Mr. Gould embraced this opportunity to characterize and name ten species, and stated that at subsequent meetings of the Society he would bring forward the remainder of his collection.

Mr. Gould more particularly pointed out a species of *Petroica*; a new and interesting species of *Ptilonorhynchus*, allied to *Ptil. nuchalis*, and which he proposed to make the type of a new genus; a new species (belonging to the Society) of the genus *Calyptorhynchus*, which he compared with all the other members of the group then on the table, and described as *Calyptorhynchus Naso*; and four new species of the genus *Amadina*, Swains., which he named *Amadina cincta*, *ruficauda*, *modesta*, and *Castanotis*. The characters of the above species are as follows:

Petroica phœnicea. Mas. *Pet. corpore supernè fuliginoso-griseo fronte, naribus, marginibusque anterioribus remigum tertialium albo notatis; remigibus primariis rectricibusque griseo-nigris, harum externis plumis penitus albis, gulâ fuliginosa; corpore subtùs coccineo; crisso albo; rostro pedibusque nigris.*

Fœm. *Corpore supernè toto brunneo, tectricibus alæ rufo-griseo emarginatis; rectricibus externis albis corpore subtùs rufescenti-griseis; rostro pedibusque nigris.*

Long. tot. $5\frac{1}{8}$ unc.; *rostri*, $\frac{1}{2}$; *alæ*, $3\frac{1}{3}$; *caudæ*, 2; *tarsi*, $\frac{3}{4}$.

Hab. Novâ Hollandiâ.

Amadina Castanotis. *Am. corpore supernè cinereo-fusco; uropygio albo, tectricibus caudæ nigris, albo guttatis; genis castaneo-rufis lineâ albâ ad basin rostri; pectore griseo lineis nigris transversim striato; notâ nigrâ in medio pectoris; abdomine albo, crisso ochraceo, lateribus castaneis albo guttatis; rostro aurantiaco; pedibus subflavis.*

Long. tot. $4\frac{1}{8}$ unc.; *alæ*, $2\frac{1}{8}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{1}{2}$.

Hab. Novâ Hollandiâ.

Amadina modesta. *Ama. fronte sanguinolentâ; corpore superiore fusco; alis albo-guttatis; uropygio crissoque alternatim striatis lineis albis atque fuscis; rectricibus nigris, duabus lateralibus externis ad apicem albo notatis; gulâ nigrâ; corporis inferiore parte cinereo-albido lineis transversis fuscis striato, abdomine intermedio crissoque albis; rostro nigro, pedibus nigrescentibus.*

Long. tot. $4\frac{1}{2}$ unc.; *alæ*, $2\frac{1}{4}$; *caudæ*, 2; *tarsi*, $\frac{5}{8}$.

Hab. in Novâ Hollandiâ.

Amadina cincta. *Ama. capite toto argentato cinereo; gulâ nigrâ; corpore toto pallidè castaneo; fasciâ nigrâ corporis inferiorem partem cingente; tectricibus caudæ superioribus et inferioribus albis; caudâ nigrâ; rostro nigro; pedibus brunneis.*

Long. tot. $4\frac{1}{2}$ unc.; *alæ*, $2\frac{3}{8}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{6}{8}$.

Hab. in Novâ Hollandiâ.

Amadina ruficauda. Mas. *Ama. fronte genisque coccineis his albo striatis; corpore supernè olivaceo-fusco; tectricibus caudæ caudáque fusco-coccineis, illis guttis pallido-rubris ornatis; guld corporeque infernè olivaceis, griseis, albo transversim notatis, abdomine intermedio crissoque flavidi-albis; rostro coccineo; pedibus pallidi-brunneis.*

Fœm., *vel* mas junior. *Corpore toto cinereo fusco, abdomine intermedio albo; caudá rufescente-brunneá.*

Long. tot. $4\frac{1}{4}$ unc.; *alæ*, $2\frac{1}{8}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{5}{8}$.

Hab. in Novâ Hollandiâ.

Calodera maculata. *Cal. capite suprà auricularibus, et guld nitidè brunneis, scapulá plumá cinereo-argentato cinctá; fasciá nuchali rosaceá; corpore supernè caudáque intensè brunneis; apicibus plumarum in dorso, uropygio, scapulisque, fulvo largè guttatis; remigibus albidis; rectricibus flavido-albis, ad apicem notatis; corpore subtùs cinereo; lateribus transversaliter brunneo striatis; rostro pedibus fusco brunneis.*

Long. tot. $11\frac{1}{4}$ unc.; *rostri*, $1\frac{1}{4}$; *alæ*, 6; *caudæ*, $4\frac{3}{4}$; *tarsi*, $1\frac{5}{8}$.

Hab. in Novâ Hollandiâ.

Differt à *Ptilonorhyncho nuchale*, Jard., magnitudine inferiore, nec non maculis supernè sparsis.

Cracticus hypoleucus. *Cract. nuchá, dorso, tectricibus caudæ, crisso, rectricibusque caudæ ad basin, albis, reliquis partibus nigris, rostro ad basin plumbeo in nigrum transeunte.*

Long. tot. $14\frac{1}{2}$ unc.; *rostri*, 2; *alæ*, $9\frac{3}{4}$; *caudæ*, $5\frac{3}{4}$; *tarsi*, 2.

Hab. Van Diemen's Land.

Differt à specie *Cracticus Tibicen* appellatâ, rostro et tarsi brevioribus, æque ac dorsi albo colore.

Hab. in Terrâ Van Diemen dictâ.

Cracticus fuliginosus. *Cract. corpore toto fuliginoso; remigiis, rectricibusque caudæ ad apicem albis; rostro pedibusque nigris.*

Long. tot. 18 unc.; *rostri*, $2\frac{1}{2}$; *alæ*, 10; *caudæ*, 7; *tarsi*, $2\frac{1}{4}$.

Hab. in Terrâ Van Diemen dictâ.

Calyptorhynchus naso. Mas. *Calyp. capitis cristá, et toto corpore nitidè nigris, rectricibus caudæ duabus intermediis exceptis; fasciá latè coccineá cinctis; rostro prægrandi ad basin pallidè plumbeo; pedibus cæruleo nigris.*

Fœm. *Differt cristá genis corpore supernè guttis flavis adspersis; corpore inferiore transversis lineis coccineis atque flavis ornato; fasciá caudali coccineá, lineis nigris interruptá, rostro albo.*

Long. tot. 22 unc.; *mensura rostri verticalis*, $2\frac{3}{4}$ unc.; *alæ*, 14 *caudæ*, $10\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Hab. in Novâ Hollandiâ, ad fluminem Cygnorum.

Calyptorhynchus Naso differt à reliquis generis speciebus rostri magnitudine, sed corporis magnitudine præter unam omnibus inferiore.

November 8, 1836.

Richard Owen, Esq., in the Chair.

A letter, addressed to the Secretary, by Robert Mackay, Esq., the British Vice-Consul at Maracaibo, and a Corresponding Member of the Society, was read, describing the habits of a *Vulture* (*Vultur Papa*, Linn.) forwarded to the Society for the Menagerie, but which had unfortunately died during the voyage.

After noticing the peculiar habit attributed to these birds, (which frequently congregate to the number of three hundred,) of paying deference to an individual differing from the rest in plumage, and to which the inhabitants of Maracaibo give the title of king, Mr. Mackay proceeds to state:

"These birds, in their flights, ascend to such a height as to be lost sight of, and from their elevation, discover objects of prey.

"They reside in the savannas of a warm and dry temperature; and their travels do not extend beyond five or six leagues of the place where they have been bred.

"They lay their eggs, and hatch their young, in the small concavities of mountains.

"At a distance from towns, villages, and frequented roads, they generally assemble in large numbers; but in the immediate vicinity of such situations the king never deigns to associate with his vassals."

At the request of the Chairman, Mr. W. Martin read the following description of a new species of the genus *Felis*.

"The beautiful species of *Felis* to which I beg leave to call the attention of the Meeting was brought from Java or Sumatra, and obtained, with other specimens from the same locality, from Mr. Gould. The only writer, as far as I can learn, who notices it, is Sir W. Jardine in the 'Naturalist's Library,' in which work are two figures from specimens in the Edinburgh Museum; but he there confounds it with the *Felis Diardi* of Cuvier, to which species, as indeed also to the *Felis Bengalensis*, it bears a close affinity in the style and colour of its markings. It will be easy, however, to show that the *Felis Diardi* is a very different species to the present. The first description of the *F. Diardi* is in the fourth volume of Cuvier's *Ossemens Fossiles*, p. 437. 'There is,' says Cuvier, 'in Java another *wild Cat* larger than *Felis Bengalensis*, very remarkable for the beautiful regularity of its blotches, of which Messrs. Diard and Duvaucel have transmitted to us a skin and a drawing. We shall designate it *Felis Diardi*.' After describing its colour, he adds, 'The head is six inches, the tail 2 feet 4 inches, the body 2 feet and a half, and its height at the shoulder must be 18 inches.' (French measures.) With regard to the *Felis Diardi*, it is somewhat questionable whether it be distinct from the *Felis macrocelis*, or not; at all events

it is a large *Cat* closely allied to, if not identical with that animal, but certainly distinct from the *Cat* before the Meeting.

"The admeasurements of this species are as follows:

	Feet.	Inches.
Head and body	1	11
Head from nose to occiput, following the arch of the skull	0	$5\frac{1}{2}$
Tail	1	$3\frac{1}{2}$
Height at shoulder	0	$10\frac{1}{2}$
Total length	3	$2\frac{1}{2}$

"It may be observed, that the individual is adult, as proved by the state of the dentition; its colouring agrees closely with that detailed by Sir W. Jardine. The ground tint is rusty grey the rufous tinge prevailing on the top of the head down the middle of the back, over the cheeks, chest, scapulæ, fore limbs, and thighs. On the top of the head are two longitudinal markings of black inclosing a space cut up by irregular small rings or dashes of black, and external to these begin two decided black lines (commencing over each eye), which become broader on the occiput and back of the neck, on which latter part they converge, but do not come in contact with each other; they then sweep over the top of each shoulder blending with the markings of the body.

"Continued from the first-described central markings on the head, there runs between these two decided stripes a broken line, assuming between the shoulders the form of elongated open spots, and ultimately a black dorsal stripe continued to the base of the tail; on the haunches, however, it divides into two parallel stripes. The ears are short and somewhat rounded, black at the tips, grey in the centre, and black at and around their base; beyond the black mark at their base, there is a space of dusky grey, which merges into the colour of the neck. The sides of the neck, scapulæ, fore and hind limbs, are thickly spotted with black. The sides of the body are marbled with obliquely longitudinal marks of dark grey, each mark having an irregular margin of black.

"The lower angle of each eye is black, and two black lines cross the cheek, passing into a throat-mark carried across beneath the angle of the lower jaw; below this is a similar mark but more indefinite; the chest is spotted with black. The abdomen is dirty white which is crossed by rows of black spots in regular order. The upper surface of the tail is grey, the lower yellowish grey; it is marbled by spots of black forming indistinct rings, which, towards the tip, assume a more definite character; the extremity being black. The fur of the body is moderate and sleek; on the tail it is full and soft.

"For this beautiful species of *Cat* I venture to propose the title of *Felis marmorata*. Though inferior in size to the *Felis macrocelis*, this species is related to it, not only in the style of the markings of the fur, but in the elongation of its form, and the length and thickness of the tail; it is a *Rimau Dayan* in miniature; nor, though larger than the *Felis Bengalensis*, is it less allied to that species, between which and the former it constitutes an intermediate grade."

November 22, 1836.

Richard Owen, Esq., in the Chair.

A communication from Mr. Harvey, of Teignmouth, in Devonshire, was read, which referred to a specimen of the *electric Ray* then on the table. The fish was caught in a trawl-net near Teignmouth, and was presented to the Society by Mr. Harvey. When taken, part of a specimen of the small spotted *Dogfish* was hanging from its mouth. The fishermen handle the *electric Ray* while it is alive without being at all affected by it, always taking care to lay hold of the tail.

Mr. Yarrell exhibited a very large *Carp* taken by a net in a piece of water called the Mere, neare Payne's Hill, in Surrey. The length of the specimen was 30 inches, the girth of the body at the commencement of the dorsal fin 24 inches; the weight, 22 pounds. The fish belonged to Edward Jesse, Esq., author of the "Gleanings in Natural History," by whose permission it was exhibited. Mr. Yarrell observed, that he could find no record of any *Carp* so large having before been taken in this country.

Mr. Martin, at the request of the Chairman, read the following notes on the anatomy of *Koala*, *Phascolarctos fuscus*, Desm.

"The acquisition of a young male *Koala* preserved in spirits, and presented to the Society by Captain Mallard, has afforded me the opportunity of examining the *viscera* of this rare and curious animal; which I did with the utmost care. Differing from the *Wombat* in its *dental formula*, in which respect it closely resembles the *Kangaroos*, the visceral anatomy of the *Koala* closely approximates to that of the former animal, as will be perceived by comparing the following notes with the description of the anatomy of the *Wombat* by Mr. Owen.

"On reflecting the skin of the *abdomen*, there appeared a small transverse muscle arising from the skin on either side, which passed over the marsupial bones, towards their upper extremity, acting as a support to, and a compressor of them.

"The *pyramidalis* muscle, to which, on its outer side is attached the inner edge of the marsupial bone, radiated from this bone to the middle line, and sent off a broad *fascia* of fibres over the *rectus muscle* to the cartilages of the ribs. The *rectus* began broad from the cartilages of the lower ribs, its fibres appearing to mix with those of the *pectoralis*; it continued its course broad to the *pubis*, and was inserted in the usual manner. The *external oblique* was thick and

its fibres remarkably strong; the *internal oblique* gave off a strong *cremaster*, which ran down the spermatic cord as far as the *testis*.

"The *transversalis* as usual.

"The first head of the *triceps adductor femoris* was connected by a slip of fibres to the external apex of the triangular base of the marsupial bone, giving to that bone, by its contraction, a slight external motion.

"The *panniculus carnosus* was very strong, especially over the back and sides.

"The capacity of the *thorax* was very small in comparison with that of the *abdomen*.

"The stomach occupied the left side of the abdominal cavity, scarcely passing the mesial line; its pyloric portion bent down abruptly, forming a narrow arch through which protruded the *lobulus Spigelii* of the liver.

"The liver consisted of two equal parts, a right and left, both closely attached by membranous (or peritoneal) processes to the diaphragm; the *ligamentum latum* verged towards the left side. The right portion of the liver was divided into three foliaceous lobes, the left into two: the free edges of this *viscus* were deeply and abruptly fissured, as if cut with a knife; and its under surface presented an irregular congeries of small *lobuli* or appendages, clustered thickly together; on the left side, the outer lobe of the liver passed completely behind or dorsad of the stomach, the cardiac portion of which advanced as low as the left kidney. The outer lobe of the liver on the right side advanced in a pointed form, and passed behind the whole of the dorsal surface of the right kidney. The great mass of the liver had, in fact, a dorsad position, the anterior portion being comparatively very trifling.

"The gall-bladder was seated in the fissure between the first and second lobes, reckoning from the right side; it was very large, but empty. Of great width at its base, it narrowed gradually to an almost vermiform apex, and its total length was $3\frac{1}{4}$ inches. Its duct, of considerable calibre, terminated exactly one inch below the *pylorus*.

"The spleen was long, thin, and tongue-shaped; it lay loosely adhering to the *cardium*; its greatest breadth was $\frac{1}{2}$ an inch, its length, $2\frac{1}{4}$ inches; its edges were very thin and slightly crenulated.

"The pancreas presented a thin, flat portion, attached to the spleen, whence ran a broad slip attached to the peritoneal reflection at the back of the stomach, and advancing round to the *duodenum*. Its duct joined that of the gall-bladder $\frac{3}{4}$ of an inch from its insertion.

"The stomach was divided by a contraction, into two distinct portions; of these, the cardiac was large and almost globular, its breadth across being 2, its length across $2\frac{1}{2}$ inches; its *parietes* were much thinner than those of the pyloric portion, which, as we stated, bent down abruptly, so as to form a narrow arch. The breadth of the *pylorus* at its commencement, was little more than an inch, but it swelled out into a *sacculus*, whence it narrowed to the pyloric

orifice. Following its greater curve it measured $2\frac{1}{2}$ inches, along its smaller, only $\frac{3}{4}$ of an inch. It was slightly puckered transversely on the sides by a posterior longitudinal band of fibres. Anterior to the entrance of the *œsophagus*, and occupying the space of the smaller curvature of the stomach, between the *œsophagus* and the contraction, was situated a large thick gland, opening by numerous ducts, whose mouths clustered together, formed a sort of network. On each side of this gland the inner membrane of the stomach was longitudinally corrugated with small *rugæ*, whence larger *plicæ*, and more distinct from each other, were continued down the inner surface of the *pylorus*, to its orifice, which was closed with a strong sphincter-valve; the cardiac pouch was lined with a thin smooth cuticular membrane. The *duodenum* began pyriform with a small *sacculus* $\frac{3}{4}$ of an inch in breadth, whence it narrowed to $\frac{5}{8}$ of an inch; this being its average breadth. Its course was as follows: Leaving the *pylorus*, and bound to the spine by mesentery, it advanced over the right kidney, then crossed the spine, turned up on the left side under the cardiac portion of the stomach, and merged into *jejunum*. The whole of the inner membrane of the small intestines exhibited a beautiful velvety tissue.

"The *cæcum* was of enormous magnitude, and slightly puckered equidistantly or nearly so throughout its whole length into *sacculi*, by a slight longitudinal (mesenteric) band of muscular fibres; there appeared also, faint traces of an opposite band. Turning spirally on itself and beginning large, it gradually narrowed, the decrease of its last portion, for the length of 18 inches, being very marked; this portion running to a long vermiform point. The total length of the *cæcum* was 4 feet 2 inches. Basal breadth, 2 inches. The *colon*, resembling in character the first portion of the *cæcum*, was slightly contracted into large *sacculi*, the first *sacculus* just below the entrance of the *ileum*, being more decided and larger than those which succeed; it was, however, nothing more than a simple enlargement, without any pyramid figure. After a course of 17 inches, the *colon* decreased in size to the breadth of $\frac{3}{8}$ of an inch; the total length of the large intestines was 6 feet 4 inches. The inner membrane of the *rectum* was corrugated longitudinally.

"The lungs consisted of 3 right lobes, one large, and two small; and of two left lobes, the lower by far the largest.

"The heart was compressed and pointed; its length was two inches.

"The *aorta* gave off as usual 3 branches for the supply of the anterior portion of the body. The first or *arteria innominata*, however, almost immediately divided into carotid and subclavian. The right auricle presented at its upper part a semilunar notch fitting to the base of the *aorta*, two points rising up, one on each side of the *aorta*, as auricular appendages. Into the upper part of the auricle just behind the right appendix entered the right *vena cava superior*; and into the inferior portion of the auricle close to the entrance of the *vena cava inferior*, entered the left *vena cava superior*. The *vena azygos* running up on the left side of the *aorta*, entered the left *vena*

cava superior an inch from its termination. This arrangement of the *venæ cavæ* appears to be normal in the *Marsupials*, as Mr. Owen has previously observed*.

"Six coronary veins entered the right auricle round its junctional margin with the ventricle.

"The auriculo-ventricular opening on the right was of moderate size, with a simple valve, the edges of which were bound down by the tendons of two distinct *carneæ columnæ*; a third *fasciculus* of fleshy fibres, but very indistinct, were to the right of these, but they could hardly be said to constitute a third *carnea columna*. The right ventricle does not approach the *apex* of the heart by $\frac{3}{8}$ of an inch. No trace of *foramen ovale*. Pulmonary artery very wide, dividing after a course of $\frac{1}{2}$ an inch in two branches, a right and left. Right ventricle very thin; the left, very thick and firm.

"Of the kidneys, the right was seated higher, nearly by its whole length, than the left; the lower end of the former and the upper end of the latter being parallel. In shape, these organs were oval, and but slightly compressed. Their *pelvis* was small, the *papilla* single and obtuse; the cortical and cineritious layers very distinct. Length, $1\frac{3}{8}$ of an inch; breadth, $\frac{3}{4}$ of an inch.

"The *penis*, of small size and conical figure, was placed immediately anterior to the *anus*; it was slightly bifurcate, or rather had two projecting *papillæ*, one on each side of the urethral orifice. Length of spongy portion, $\frac{3}{4}$ of an inch. Bladder small, oval, and much contracted. *Testis*, of the size of a horsebean. Total length of *vasa deferentia*, $2\frac{1}{2}$ inches; their entrance was below and external to the ureters, which opened as usual. Prostate small. *Vesiculæ seminales* small; they entered $\frac{7}{8}$ of an inch below the bladder, with Cowper's glands, which were as large as a tare.

"The thyroid glands were oval, compressed, and small; their colour pale; they began at the 4th ring of the *trachea* from the thyroid cartilage, and extended to the 9th or 10th.

"There was a round subzygomatic gland the size of a pea on the *masseter*, and two others of the same character were placed on the front of the neck, on the *platysma myoides*.

"The submaxillary glands were thin and long, measuring 1 inch in length. Their situation was as usual.

"The parotid glands, very extensive but superficial, occupied the usual situation; the duct passed over the *masseter*, and entered opposite the 3rd molar, anterior to the edge of the *buccinator*.

"The *sterno-cleido-mastoideus* was attached not only to the mastoid process, but also to the whole extent of the occipital ridge; it consisted of two portions arising as usual, from clavicle and sternum.

"The tongue was thick at its base, which rose abruptly from a deep furrow surrounding its root; the distance from its root to the *epiglottis* $\frac{7}{8}$ of an inch. Its form was narrow, equal, and rounded at the tip; its surface was velvety, and one large central *papilla* was

* Proceedings of Zool. Soc. April 10, 1832, p. 72.

seated near its base. Length altogether 2 inches. Breadth $\frac{1}{2}$ an inch. Length of free part $\frac{5}{12}$ of an inch. The palate was divided by elevated transverse ridges into 8 furrows.

"*Pharynx* spacious, and lined with a corrugated membrane. *Œsophagus* narrow, its inner membrane being puckered longitudinally.

"The anterior surface of the thyroid cartilage was regularly convex, but not so protuberant as in the phalangers; nor did the *os hyoides* play freely over it."

Mr. Edward Burton, of Fort Pitt, Chatham, communicated a description of a small species of *Pipra* received from the Himalaya mountains, and considered by Mr. Burton to be the first species of this genus yet discovered in those regions.

Genus Pipra, *Linn.*

P. squalida, capite et cervice suprà brunneis; interscapulio, dorso, alis et caudâ viridescenti-brunneis; hâc ad regionem subapicalem brunneâ saturatiori, sed apice externo albo graciliter fimbriatâ; alarum caudæque pogoniis externis olivaceo leviter tinctis; corpore infrà ubique albido.

Mandibula superior fusca, inferior albida apice fusco. Pedes nigri.

Longitudo $3\frac{1}{2}$ poll. *Alæ* caudam æquantes.

Hab. apud Montes Himalayenses.

In Museo Medico-Militari, Chatham.

The following observations on a species of *Glaucus*, referred to the *Glaucus hexapterygius*, Cuvier, by George Bennett, Esq., F.L.S., Corresponding Member of the Zoological Society, Surgeon and Superintendent of the Australian Museum at Sydney, New South Wales, were read.

"On the 20th of April, 1835, during a voyage from England to Sydney, New South Wales, in latitude 4° 26′ N., and longitude 19° 30′ W., with light airs and calms prevailing at the time, about 3 P.M., a number of damaged and perfect specimens of the *Glaucus hexapterygius*, Cuv., were caught in the towing net. On being immediately removed from the net and placed in a glass of sea water, they resumed their vital actions and floated about in the liquid element, exhibiting a brilliancy of colour and peculiarity of form, which did not fail to excite the admiration of the beholders.

"The back of the animal, as well as the upper surface of the fins and digitated processes, and the upper portion of the head and tail, was of a vivid purple colour, varying occasionally in its intensity; appearing brighter in colour when the animal was active or excited, and deeper when remaining floating tranquilly upon the surface of the water. The abdomen, and under surface of the fins, are of a beautiful pearly white colour, appearing as if it had been enamelled. The usual length of my specimens, measured from the extremity of

the head to the tail, when extended floating upon the surface of the water, was $1\frac{3}{4}$ inches; sometimes one or two lines more or less. The body of the animal is subcylindrical, terminating in a tail, which gradually becomes more slender towards the extremity, until it finally terminates in a delicate point. The head is short, with very small conical *tentacula* in pairs; two superior, and two inferior; three (and in *G. octopterygius*, Cuv., four) branchial fins on each side, opposite, palmated, and digitated at their extremities; the number of digitations, however, varying; and the centre digitations are the longest; the first branchial fins, those nearest the head, are larger and denser than the others. The mouth is armed with bony jaws; the body is gelatinous and covered by a thin and extremely sensible membrane.

"These little animals were very delicate and fragile in their structure, and although many, indeed, I may say numbers, were caught, yet very few in comparison were found to be in a perfect condition, some being deficient in one, two, or more fins, and others being completely crushed. Not one of the specimens caught on this occasion, or during the voyage, had the silvery line or streak running down the back, from the head to the extremity of the tail; branching off also to the fins and along the centre of each of the digitations. Several *Porpitæ* were also captured in the net at the same time with these animals, and serve as food for them.

"It caused much regret to see the change death produced in the beauty of these interesting little animals, and all means of preserving them were found to be useless. When placed in spirits, the digits of the branchial fins speedily became retracted, the beautiful purple gradually faded and at last disappeared, and the delicate pearly white of the under surface of the body and fins peeled off and disappeared; thus did this beautiful mollusk become decomposed in less than the space of an hour. Some mollusks quickly lose their colour after death, but retain their form for a long time; but these speedily change after death, both in form and colour, and the beauty before so much admired perishes never to be regained.

"When taken in the hand, the under surface of the animal soon becomes denuded of the beautiful pearly white it previously had, and at that time appears like a small transparent bladder, in which a number of air-bubbles are observed, together with the *viscera*. On the *abdomen* being laid open, a large quantity of air-bubbles escaped, and perhaps a query may arise how far they assist the animal in floating upon the surface of the water?

"The figure of *Glaucus hexapterygius* in Cuvier's work '*Sur les Mollusques*,' is tolerably well executed, but no engraving can convey to the beholder the inconceivable delicacy and beauty of this mollusk; in the engraving alluded to, there is an inaccuracy at least as compared with the specimens before me,—in the digitated processes of the fins not being sufficiently united at the base; in the living specimens before me, they were united together at the base, and then branching off became gradually smaller until they terminated in a fine point. Again, in the engraving in Cuvier's work, the anal orifice is

placed on the right side, whereas in my specimens it was situated on the left; for in all the specimens I examined, I found the *anus* was disposed laterally and could be plainly distinguished situated on the left side of the animal, a little below the first fin. This I consider also the orifice of generation, as in some of the specimens examined, a rather long string of dots resembling *ova* were seen to protrude from it. One of the animals discharged from this orifice a large quantity of very light brownish fluid; this no doubt was the *fæces*.

"But few of these animals were caught after the 20th until the 24th of the same month, in latitude 2° 26′ N., longitude 19° 51′ W., when having light airs from S. by E., nearly calm; in the morning a great number were seen floating by the ship, and it was not difficult, by aid of my towing-net, to capture as many as I required, for they swam very superficially upon the water. The whole of those taken proved to be of the same species (*G. hexapterygius*) as those before caught. I again placed several of the specimens in a glass of sea water; they were full of life, sometimes moving about, not very briskly, however,—and at other times remaining floating upon the surface of the water, merely gently moving the fins. As they floated upon the surface of the water in the glass, the sides of the head, back, tail, fins, &c., exhibited at the time a light silvery blue colour, which was admirably contrasted with the deeper blue of the upper surface, and falling into the elegant pearly or silvery white of the under surface of the animal, displaying an exceedingly rich and elegant appearance. Often, when at rest, the animal would drop one or more of the fins, but on touching them, they would be immediately raised to the former position, and that organ was turned back as if to throw off the offending object, followed at the same time by a general movement of the whole body. On touching the animal upon the back, it seemed to display more sensitiveness in that than in any other part of the body, judging from the effects produced, in comparison with similar experiments on other portions of the body; for instance, the centre of the back was touched lightly and rapidly with a feather; which caused the little creature to sink as if under the pressure of the touch, throwing at the same time the head, tail, and all the fins upwards, followed by a general distortion of the whole body of the animal, as if the gentle touch had been productive of severe pain. I invariably found every part of the upper surface of the body very sensitive when touched, and displayed a general movement of uneasiness throughout the whole of the body of the creature.

"These creatures have a peculiar manner of throwing the head towards the tail, and flouncing the tail towards the head, when they are desirous of removing any object of annoyance. It is at that time these animals seem to recover from their torpidity, and evince the greatest activity in their movements. When much annoyed, they throw the body about with great activity, coiling up the head, tail, fins, &c., in a somewhat rotundiform position; and if the tormenting

object is not removed, dash out again in full activity of body, then return to the rotundiform position, and there remain for a short period apparently exhausted by their efforts. But on the cessation of the irritating cause, the animal quietly resumed its original position, perhaps dropping one or two of its wearied fins according as its own sensations of ease or comfort might dictate.

"When nothing irritated this tender mollusk, it would remain tranquilly floating upon the surface of the water with scarcely any movement but that which proceeded from the undulating movements of the digitated extremities of the fins, as well as an occasional slight twisting motion of the same organs.

"I felt much interest in the beautiful display of a circulating fluid on the dorsal surface of these animals, which was afforded me by the assistance of a microscope. Through the semi-transparent membrane of the back, a fluid could be readily perceived close to the surface, evidently flowing in two directions, one taking a course downwards, and the other returning upwards; but I was unable to distinguish two distinct vessels for these separate actions.

"These animals seemed to be very torpid in their movements, although sometimes, when floating upon the water, they would be seen busily engaged in moving their fins about, but those actions were soon suspended and their fins were suffered to hang lazily down, as if fatigued with the short exertion, which did not move them one inch about the glass of water; and even when the little indolent creatures did take the trouble to move themselves from one side of the glass to the other, it was effected by a tardy motion, stirring themselves first with one fin and then with the other, according as circumstances might require.

"I placed some small specimens of *Porpita* in the glass of water containing the *Glauci*, to observe if they would attack them; for some time one of the *Glauci* was close to a *Porpita* and was even annoyed by the *tentaculæ* of the latter touching its back, yet the *Glaucus* bore this, although with the usual characters of impatience, yet without attempting to attack it. At last it seized the *Porpita* between its jaws, and by aid of a powerful lens, an excellent opportunity was afforded me of closely watching the devouring process, which was effected by an apparently sucking motion; and at this time all the digitated processes of the fins were floating about, as at other times when the animal was at rest; but I did not observe, in one single instance, that they were of any use to the animal, either to aid in the capture or to securely hold their prey when in the act of being devoured; for the animal seems to depend merely upon the mouth in capturing its prey, as in this and other instances, which I had opportunities of observing, they seized their prey instantly with the mouth, and held it by that power alone, whilst by a kind of sucking motion the prey was devoured. The digitations may therefore only be regarded as appendages to the fins to aid the animal perhaps in the direction of its movements, as it was observed that they turned and twisted them about during the progressive mo-

tion, (that is, when this tardy animal is pleased to progress, which appeared to me very rarely to meet with its inclination,) as if in some way or other to direct the movements of the animal.

"The *Glaucus*, after eating the tentacles and nearly the whole of the soft under surface of its prey, left the horny portion, and remained tranquilly reposing upon the surface of the water after its meal, the only motion visible in the animal being the playing of the digits of its fins. The mutilated remains of the *Porpita* sank to the bottom of the glass.

"Soon after, another *Glaucus* began a devouring attack upon another *Porpita* which had been placed in the glass, eating a little of it and then ceasing after a short meal, occasionally renewing the attack at short intervals. On examining the *Porpita*, which had been partially devoured by the ravenous *Glaucus*, I found the disc had been cleared of the tentacles and other soft parts; a small part of the fleshy portion only remaining upon the disc. Only one part of the horny disc exhibited any injury, and that appeared to be the place where the animal was first grasped by the *Glaucus*.

"When any of these animals came in contact with another in the glass, they did not display any annoyance, or coil themselves up, nor did they evince any savage propensities one towards the other; and they would often float about, having their digitated processes in contact one with the other, without exhibiting any signs of annoyance; even when placed or pushed one against the other, they did not manifest any irritation, but remained undisturbed as in their usual moments of quiet repose.

"On the back of the animal being seen in a strong light, a black line could be discerned on each margin, and passing down the centre of each fin, and sometimes varied in having two black lines on the upper part of one fin, although the opposite fin may display but one.

"The margin between the falling of the purple colour of the back into the silvery white of the *abdomen* often exhibited beautiful tints of a golden green; but these variations were probably produced by the effect of different rays of light.

"These animals soon perished; I could not preserve them for any length of time in the glass of sea water, although the water was changed as often as it was thought necessary; the digitated processes of the fins were observed to shrink up on the death of the animal, and the process of decomposition rapidly took place, the whole body becoming a shapeless mass, having a bluish colour of deadly hue for a short period, and then became of a blackish or brownish black colour. I have seldom seen a gelatinous animal which appeared so firm whilst in the water, that proved so speedily to decompose when removed from it; even the beautiful purple of the back, the silvery or enamel of the *abdomen*, and the silvery blue of the sides, all speedily vanish, indeed instantly disappear, upon the death of the animal, as if it had been washed off; the expansive, delicate, and beautiful fins and digitated processes are no longer seen; they shrank up to nothing.

"Even on taking the animal alive out of the water and placing it

upon the hand, that instant almost, from its extreme delicacy, it was destroyed: the digitations of the fins fell off, the least movement destroyed the beauty of the animal; it speedily lost all the deep purple and silvery enamelled tints, and became a loathsome mass. Thus do we too often find animals beautiful in external adornments, curious in their habits and organization, and calculated in every respect to supply us with inexhaustible sources of intellectual gratification, doomed speedily to perish; brief is the period allotted to them in the busy theatre of animated existence; but doubtless, with the gift of existence, they have received from the bounteous hand of their Creator, the means of enjoying their fleeting lives.

"To place these little animals in the glass of water from the towing net without injury to their delicate structure required care; so that as soon as they were captured in the net, attached to the meshes, they were not handled, but carefully washed off, which was effected by dipping the meshes in the glass of water, when the animal soon detached itself without sustaining any injury, and floated in the water.

"Although these animals are so fragile, so easily destroyed on being taken out of their natural element, yet they fling themselves about in the water without sustaining any injury, without even the loss of any of the digitated processes of the fins; yet when there is much movement of the water in carrying the glass from one place to another, they are evidently disturbed and restless, and the fins are dropped; if therefore, a slight motion of the water disturbs them, what can become of these delicate mollusks during tempestuous weather; can they be similar to the delicate *Ephemeris*, doomed to live merely for the space of a day and perish in myriads? From the immense number seen only from the ship—and how many myriads more extended beyond our range of vision!—it conveyed to the mind some idea of the profusion of living beings inhabiting the wide expanse of ocean, and a feeling of astonishment at the inconceivable variety of forms and constructions to which animation has been imparted by creative power.

"The tail of this animal has been described as resembling that of a *Lizard*: the comparison is good, not only with regard to form, but also, with perhaps a little more flexibility of motion, when in action. Sometimes the animal throws its tail up to the body, as if intended to brush off any annoying object, and at other times, it has been observed to turn the head towards the side as if for a similar purpose. It seems, in the action of eating, to resemble a *Caterpillar*.

"No more of these animals were seen until the 15th of May at 10 P.M., when in lat. 24° 18′·5, long. 31° ′·01 W., moderate breezes and fine weather; a number of *Glauci* were captured as well as *Porpitæ*; some of the latter had been partially devoured, and in some only the horny disc remained; this, there was no doubt, from the previous knowledge of the carnivorous propensities of the *Glaucus*, was their work, more especially as we had positive proof that tribes of them were wandering or prowling about the ocean to-

night. This was the last time during the voyage the *Glauci* were captured.

"From these animals devouring the *Porpitæ*, we had positive evidence of their carnivorous habits, independent of the structure of the jaws; and the *tentacula* of the *Porpitæ* were no protection against their enemies; indeed, these appendages were first devoured and the horny disc was alone left, in many instances being quite picked clean; from this circumstance we may infer, that the horny discs of the *Porpitæ* and *Velellæ*, which previously, and for the last four days were found in the net, were the remains of those which had been devoured by the *Glauci* or similar carnivorous mollusks, among which we may with safety include (from the structure of its jaws, and from often capturing it attached to *Velella*,) the inhabitant of the *Janthina fragilis* or violet shell.

"The more we pursue the investigation of the actions of living objects, the more we see of the unbounded resources of creative power; and, after all our reasoning, must conclude that some wise purpose, though dimly perceptible to our imperfect understandings, is no doubt answered by this great law of organic formation,—the law of variety."

Mr. Ogilby called the attention of the Meeting to the various preserved specimens of *Antelopes* then exhibited, and made the following observations on some *hollow-horned Ruminants*.

"In arranging the Society's collection subsequent to the late removal from Bruton Street, the following rare or undescribed species of *Ruminants* were observed, which it is thought proper to bring under the public notice of the Society.

"1. *Ixalus Probaton*. A single skin of the very anomalous animal to which I propose assigning this name, was presented to the Society by Dr. Richardson, and has been considered as the female of *A. Furcifer*, from which, however, it differs in some of the most important characters. Of its origin there can be no reasonable doubt; it was contained in the same box with the skins of *A. Furcifer*, and other animals obtained by the celebrated zoologist just mentioned, during Capt. Franklin's memorable expedition, and the hay with which it was stuffed contained numerous small locks of the very peculiar hair of *A. Furcifer*. The specimen is a male about the size of a *fallow Deer*, the length from the nose to the end of the tail being 4 feet 10 inches. The head is $9\frac{1}{4}$ inches long, the tail, $5\frac{1}{2}$ inches; and the ear, $3\frac{3}{4}$ inches. Though the skin is that of an adult individual, as is proved by the incisors, which are all of the permanent class and considerably worn down, the head is without horns, having only two small, naked, flat scales, in the positions usually occupied by these organs; yet the bones of the skull remain beneath, and the specimen is unquestionably the spoil of a male animal. In form, as well as size, the animal resembles the *fallow Deer* (*Cervus Dama*). The colour is a uniform pale reddish brown above and on the outsides of the members; the breast, belly, and inner face of the *anus* and thighs are greyish white; the lower

part of the cheeks, the lips and beneath the chin are of the same colour, but the whole throat or under surface of the neck is pale reddish brown, like the back and sides. The tail is covered above with short reddish hair like that of the body, but it is perfectly naked beneath, and in form and length resembles the tail of some species of *Deer* (*Cervus*). The nose is hairy like that of a *Goat*; the animal is furnished with lachrymal sinuses of considerable size, opening by very obvious apertures of a circular form; it has inguinal pores and two teats, as in the *common Antelope* (*A. Cervicapra*); large spurious hoofs, and no appearance of *scopæ* or knee-brushes either on the anterior or posterior extremities. These characters will not permit it to be associated with any known group of *Ruminants*. That it is not merely a *Deer* which has cast its horns, is proved by the absence of the pedestals which support these organs in the solid-horned *Ruminants*, as well as by the hairy lips, two teats and inguinal pores; neither can it be a *Sheep* or a *Goat*, as is evinced by the lachrymal sinuses, inguinal pores, and the length and form of the tail, which, in the wild species of these genera, is nearly tuberculous. The supposition of its being the female of *A. Furcifer* is disproved by the sex of the specimen; in other respects, the existence of large spurious hoofs shows plainly enough that it has no affinity to that animal. There is but one other supposition: may it not be a species of *Antelope* allied to the typical group of that genus? and may not the abortive horns of the present specimen be the result of some accident? This may certainly be the case; the other characters of the specimen agree with those of the *common Indian Antelope*, and if the animal should eventually prove to belong to that genus, it may bear the specific name of *A. Ixalus*, which the classical scholar will recognise as the name of an undetermined species of *Ruminant* mentioned in the Iliad.

"2. *Antilope Eurycerus*. Of this magnificent and hitherto undescribed species, two pairs of horns, one attached to the skull, the other to the integuments of the head, have long existed in the Society's collection. Their origin is unknown, but I have reason to believe that they come from Western Africa. Their length in a straight line is 2 feet $1\frac{3}{4}$ inch; on the curve, 2 feet $7\frac{1}{2}$ inches; their circumference at the base is 10 inches; their distance at base 1 inch, and at the points 11 inches. In form they bear some resemblance to those of *A. Strepsiceros*, being wrinkled as in that species, and having a prominent ridge on their posterior face; but they form only one spiral twist instead of two, and their direction throughout lies in the plane of the forehead, whilst in the *Koodoo* these two planes form an angle of about 100°. The characters of the skull are likewise similar to those of the *Koodoo*, but it is broader and larger than in that animal. The points of the horns are of an ivory colour. The animal has a large muzzle, but is without lachrymal sinuses; it has a white band across the face, immediately under the eyes, and two white spots on each cheek. All these characters are distinctive of the natural group which includes the *Koodoo*, the present species, the *Boshbok*, the *Guib*, and the beautiful species mentioned by Mr.

Bennett (Proc. Zool. Soc., 1833, p. 1,) which is a real *Antelope*, and which I hope shortly to have an opportunity of describing in detail under the name of *A. Doria*, as a friend, who has connexions with the West Coast of Africa, has kindly undertaken to procure me skins.

"3. *Antilope Philantomba*. Two females of this minute species lived for some time in the Society's Gardens: they were brought from Sierra Leone and presented by Mr. M^cCormick. Mr. Rendall, who saw them with me at the Gardens, assured me that they were the *Philantomba* of the Sierra Leone negroes. The larger and older specimen has small horns about $1\frac{1}{2}$ inch long, bent slightly forwards and surrounded at the base with 5 or 6 small rings: the species is distinguished from the *pygmy Antelope* of the Cape by its longer tail and ears, the latter clothed with white hair on the inside, by the darker mouse-colour of the body and the uniform hue of the legs, which instead of being sandy red as in the Cape species, are of the same colour as the body, only rather paler. But for the circumstance of the female possessing horns, I should have been inclined to identify this animal with the *A. Maxwellii* of Col. Smith.

"4. *Antilope Sumatrensis*. This species and *A. Thar* were exhibited together for the purpose of pointing out the similarity of their zoological characters, and correcting a mistake into which Messrs. F. Cuvier, Desmarest, and Col. Smith have fallen with regard to the former species. According to these zoologists the *Cambing Outan* (*A. Sumatrensis*) possesses both the lachrymal sinus and the longitudinal gland on the maxillary bone, which distinguishes the *Duykerbok* (*A. Mergens*) and some other *Antelopes*: in reality the lachrymal sinus is sufficiently distinct, but there is not the slightest trace of any maxillary gland. The same zoologists represent the female *Cambing* as being without horns and having only two teats: the specimen exhibited, a young female, had tolerably large horns and distinctly showed four teats, thus agreeing in all respects with the adult female *Thar* with which it was compared.

"5. *Antilope palmata*. Colonel Smith has described the horns of this species from an imperfect pair preserved in the Museum of the College of Surgeons, but was undecided whether it should be considered as a distinct species or only a variety of the *Prongbaick* (*A. Furcifer*). The present perfect pair, with the skin of the head attached, goes far to prove the specific distinction, but the habitat is widely different from that assigned by Colonel Smith. The specimen came from Mexico, where Dr. Coulter informs me it is sufficiently common. The horns are twice or thrice as large again as those of *A. Furcifer*, and instead of preserving a tolerable degree of parallelism, as in that species, spread widely, and are much hooked at the points. The face also is of a very dark brown colour, whilst in *A. Furcifer* it is of the same light fawn as the upper parts of the body."

Mr. Gray exhibited a specimen of *Argonaut* with an *Ocythoë* from the Cape of Good Hope, and stated that as the subject had been brought forward at the last meeting, he was induced to remark that every time he considered it, and compared it under its various

bearings with the relations of other *Molluscans* and their shells, he was more and more inclined to believe that the animal found in the shell of *Argonauta* was a parasite. He gave the following reasons for this belief.

"1. The animal has none of those peculiarities of organization for the deposition, formation, and growth of the shell, nor even the muscles for attaching it to the shell, which are found in all other shell-bearing *Molluscans*; instead of which it agrees in form, colour, and structure with the naked *Mollusca*, especially the naked *Cephalopods*.

"2. The shell, although it agrees in every respect with the shells of other *Molluscans* in structure, formation, and growth, is evidently not moulded on the body of the animal usually found in it, as other shells are; but exactly agrees in every point (except in the form of the spire), with the shell of *Carinaria*, which coincided with the other *Molluscans* in all these respects.

"3. The body of the animal does not appear to have the power of secreting calcareous matter, for it does not, like all the *Mollusca* which have that power, secrete either a solid deposit or distinct *septa* to adapt the cavity of the shell to the increase of the body, nor does it cover over with calcareous matter any sand or other extraneous bodies which may have accidentally intruded themselves between the mantle and the shell, but leaves the sand, which is often found mixed with the eggs, free, without taking any means to prevent it from irritating the skin.

"4. The young shell of the just hatched animal which forms the *apex* of the shell at all periods of its growth, is much larger (ten times) than the eggs contained in the upper part of the cavity of the *Argonaut*.

Mr. Gray further stated, that he does not think that any inference can be drawn in favour of the opinion that the *Ocythoë* forms the shell, from either of the three arguments which have been produced in favour of that hypothesis, which he then examined in detail.

"5. He believes that Poli must have been misled when he thought that he had discovered the animal in the egg of an *Ocythoë* covered with the "rudiment of a shell," because all the *Molluscans* which he has seen in the egg (*Cephalopods* as well as others) were covered with a well-developed shell, even before all the organs were developed, and the figure which Poli gives of the rudiment does not agree with the nucleus found on the *apex* of the shell of the *Argonauts*. Unfortunately, none of the eggs of the *Ocythoës* that have been examined by other observers have been enough developed to show the fœtal animal.

"6. The different species of *Argonauta* are said to be inhabited by different species of *Ocythoë*; but allowing this to be the case, it only proves that each of these genera have local species: the same may be observed with respect to the *Hermit Crabs*, without proving anything in favour of their being the framers of the shell they live in.

"7. That though some specimens of *Ocythoë* preserved in their

shells are marked with cross grooves resembling the grooves on the shell, yet these grooves are only formed by the pressure of the dead animal against the shell; for the specimens of the animal which are found out of the shell, or which are taken out of the shell while recent, are always destitute of these grooves, or of the compressed form of the cavity of the shell. That some specimens which he had received from the Cape (of which that now on the table was one), which had been packed on their sides, had the upper side of the animal smooth and rounded, and the lower flat, and curved like the shell on which it was pressed by its own weight; while a specimen which he had received from the Mediterranean packed erect, with the mouth upwards, so that the animal was equally pressed against each side of the shell, was flattened and curved on each side, like the specimen examined by M. Ferussac.

Mr. Gray also stated that, so far from the animal using the finned arms as sails, they were the means by which it retained itself in the shell; and he further observed, that it was very difficult to distinguish the species of *Argonauta*, as they varied greatly in shape, and that on a comparison of many specimens, he had found that the presence or absence of the spines or ears at the back of the mouth were of no importace as a specific character, specimens of each of the recorded species having this process developed only on one or the other side.

The Chairman, after premising some observations on the diseases to which the mortality of the larger feline animals in the Society's Menagerie was attributable, proceeded to read the following description of two *Entozoa* infesting the stomach of the *Tiger*, (*Felis Tigris*, Linn.,) one of which forms the type of a new genus of *Nematoidea*.

"I received a few days ago, from the Medical Superintendent of the Society's Menagerie, a portion of the stomach of a young *Tiger* (which died of rupture of the *aorta*), exhibiting on the internal or mucous surface what were considered to be scrofulous tumours. They were five or six in number, of a round and oblong form, varying in size from half an inch to two inches in the largest diameter, and the largest of them projecting about half an inch from the plane of the inner surface: they made no projection externally. The mucous membrane covering the smaller tumours was puckered up into minute reticulate *rugæ*: the surface of the largest tumour was smooth. On wiping away the tough thick mucous secretion from the tumours, and examining more closely their surface, two or three orifices presented themselves in the larger, and a single orifice in each of the smaller tumours. These orifices conducted to irregular sinuses which were the *nidi* of two kinds of *Nematoid Entozoa*, some measuring nearly an inch in length and a line in thickness; the others being more minute, not exceeding 5 lines in length, and about $\frac{1}{50}$ of an inch in diameter. Only a pair of the larger *Entozoa* were found in each of the three largest tumours; the smaller species existed in countless numbers.

"Before proceeding with the description of the worms, I may

briefly conclude the history of the tumours by observing that they were composed of condensed accumulated layers of the sub-mucous cellular tissue, presenting a flat surface next the muscular coat, to which the larger tumours firmly adhered, and projecting with a rounded convexity towards the cavity of the stomach, where the sinuses opened and terminated. They did not contain any of the caseous secretion characteristic of *struma*, but were most probably caused by the irritation of the *Entozoa*.

"The dimensions of the larger *Entozoa* above given are those of the female: the male is about one fourth smaller. In both sexes the body is slightly attenuated at the two extremities; the caudal extremity is more inflected and more obtuse in the male; the oral extremity in both is obtuse and truncate.

"The surface of the body appears to the naked eye to be minutely striated transversely: it is variegated by the white genital, and amber-coloured digestive tubes appearing through the transparent integument. When examined with a lens of half-inch focus, the anterior two-thirds of the body are seen to be covered with circular series of minute reflected spines, which, viewed with a still higher power, present three distinct points, one large one in the middle and two small lateral ones.

"The mouth is surrounded by a tumid circular lip armed with six or seven circular rows of well-developed spinous processes of a similar complex structure to those on the body. The oral orifice itself presents the form of a vertical elliptical fissure, bounded on each side by a jaw-like membranous fold or process, the anterior margin of which is produced in the form of three straight horny points or processes, directed forwards. These lateral processes can be protruded beyond the circular lip by compressing the smooth spineless skin behind the latter; and the elasticity of the structure causes them to be again retracted on remitting the pressure.

"The *vulva* is situated at the junction of the middle and posterior thirds of the body; the *anus* in the female is in the form of a transverse semilunar fissure immediately behind the obtuse posterior apex, and on the concave side of the inflection.

"The *anus* of the male, from the anterior part of which a single slightly-curved intromittent *spiculum* is protruded, is surrounded by eight distinct pointed *papillæ*, three of which are placed in a vertical row on each side, and two smaller ones at the lower boundary of the common opening to the *rectum* and male gland.

"On comparing this *Nematoid* worm with those already described, it approaches most nearly to some species which are referred by Rudolphi to the genus *Strongylus*, as the *Strongylus trigonocephalus*, R., (*Hist. Entoz.* ii. pl. I. p. 231.,) in which species the '*Bursa maris subglobosa, biloba, multiradiata,*' presents an approximation to the structure of the external male organs above described, in which the eight tubercles surround the opening somewhat after the manner of rays. But on pursuing the comparison we find that here the resemblance ceases: there is no subglobose bilobed sheath to the intromittent organ in the species here described; the head is sur-

rounded by a circular instead of a trigonal lip; the *Strong. trigonocephalus* is placed by Rudolphi in the section *c, ore nudo*, while the armature of the mouth, in the present species, is so remarkable, as to induce me to regard it as the type of a new genus, which I propose to denominate *Gnathostoma**.

"Gen. Char. *Corpus* teres, elasticum, utrinque attenuatum. *Caput* unilabiatum, labio circulari tumido integro; os emissile, processibus corneis maxilliformibus duobus lateralibus denticulatis. *Genitale masculum* spiculum simplex, ad basin papillis circumdatum.

"Sp. *Gnath. spinigerum*. Gnath., capite truncato, corpore seriebus plurimis spinulorum armato.

"The generic difference indicated by the external peculiarities of the *Entozoa* above described, is confirmed by the internal anatomy, which presents some peculiarities which appear not to have been hitherto detected in the class *Entozoa*: I refer more particularly to a distinct salivary apparatus, conformable to that which exists in the *Holothuria* and other *Echinodermata*. This apparatus consists of four elongated straight blind tubes, each about two lines in length, which are placed at equal distances around the commencement of the alimentary canal, having their smaller extremities directed forward, and opening into the mouth, at the base of the lateral tridentate processes, and their closed obtuse ends passing backwards into the abdominal cavity. When examined with a lens of $\frac{1}{4}$ inch focus, the *parietes* of these salivary tubes present very distinct oblique or spiral decussating fibres; their contents are semi-pellucid in the recent worm, but become opake in spirit of wine.

"The coexistence of these salivary glands with an oral apparatus which is better adapted for trituration than any that has hitherto been detected in the *Entozoa*, is conformable to the laws which regulate the existence and condition of the salivary apparatus in higher animals; and is highly interesting on that account. The only allusion which I can find to salivary organs in other *Entozoa* is in Cloquet's '*Anatomie de l'Ascaride Lombricoide*,' in which he considers the thickened glandular *parietes* of the *œsophagus* to serve for an analogous secretion.

"The first portion of the alimentary canal or stomach, is about 3 lines in length; it contains a milk-white substance, and is separated by a well-marked constriction from the remaining portion, which we may regard as intestine: this is filled with a pulpy substance of an amber colour, which grows deeper in tint as it approaches the *anus*. The intestine enlarges slightly as it passes backward; it is wide and straight: is not tied down to the *parietes* of the body by mesenteric filaments as in the *Strongylus gigas*, &c.; its surface is irregular, and it seems to contain a spiral tube or valve, but this appearance arises from the nature of the internal surface of the intestinal tunics, which is beset with large regular obtuse lozenge-shaped processes arranged in alternate longitudinal rows.

"The lateral lines of the body consist distinctly of two vessels,

* γνάθος *maxilla*, στομα *os*.

which project into the interior of the body, being attached by a small part of their circumference; and becoming very wide and free near the head. The dorsal and ventral nervous cords are plainly visible in the midspace of the lateral vessels. The muscular tunics of the body are well developed, consisting of external transverse and internal longitudinal fibres. The latter are lined with a layer of pulpy flocculent substance.

"The male organs consist of a slightly-curved slender single *spiculum*, projecting from the caudal extremity of the body, as above described. The base of this *spiculum* communicates with a dilated receptacle, 2 lines long, of an opake white colour, which is separated by a slight constriction from the rest of the seminal tube; this is, as usual, single: it is semi-transparent, and gradually grows smaller to its blind extremity, which is attached by cellular tissue to the middle line of the ventral surface of the body, half-way between the two extremities. The whole length of the seminal tube is ten times that of the entire worm.

"The female organs consist of the *vulva*, *vagina*, *uterus bicornis*, and *oviducts* or *ovarian tubes*.

"From the *vulva*, the situation of which has been already mentioned, the *vagina* is continued, at first wide, then narrower, and lastly widening again to pass into the *uterus*: it exceeds an inch in length. The two *cornua* of the *uterus* are each about $\frac{1}{2}$ a line in diameter, and 5 lines in length; they diminish and are continued without any constriction into the *ovarian* tubes; these are of immense proportional length, each exceeding, by 30 times, the length of the body; their attenuated extremities or beginnings are not attached to the *parietes* of the body; although the coils of the oviducts appear at first sight to be inextricably interwoven around the intestine, they in reality cover it in aggregate folds, which are easily separated from the intestine, and unravelled."

Mr. Owen stated in conclusion, that preparations exhibiting the male and female organs thus unfolded, with the digestive canal and salivary apparatus, had been deposited in the Museum of the Royal College of Surgeons.

December 13, 1836.

Richard Owen, Esq., in the Chair.

Part of a paper by M. Frederick Cuvier was read, on the Family of the *Dipodidæ*, including the *Jerboas* and *Gerbillas**.

Mr. F. Debell Bennett, Corresponding Member of the Society, then read some Notes on the anatomy of the Spermaceti Whale, (*Physeter macrocephalus*, Auctorum,) principally relating to its dentition, and to the structure and appearances presented by the soft parts.

Mr. Bennett remarks that a greater disproportion exists between the sexes in this species of *Whale* than is observed in any other cetaceous animal; for while the usual length of the largest male *Cachalots*, taken in the South Seas, is about 60 feet, that of full-grown females is only 28, and rarely, if ever, exceeding 35.

When the young male *Cachalot* has attained the length of 34 feet, its teeth are perfectly formed, though not visible until it exceeds 28. The upper jaw usually described as toothless, has on either side a short row of teeth, sometimes occupying the bottom of the cavities which receive the teeth of the lower-jaw, but generally corresponding to the intervals between them. The entire length of these teeth is about three inches; they are slightly curved backwards, and elevated about half an inch above the soft parts, in which they are deeply imbedded, having only a slight attachment to the maxillary bone. Their number is not readily ascertained, because the whole series are not always apparent; but in two instances Mr. Bennett found 8 on each side. These teeth exist in adult *Whales* of both sexes, and though not visible externally in the young *Cachalots*, may be seen upon the removal of the soft parts from the interior of the jaw.

"The eye of the *Cachalot* is small, and placed far back on the head, above and between the pectoral fin and angle of the lower jaw. Its situation is chiefly marked by a raised portion of integument around it. The aperture for vision does not exceed 2 inches in the longitudinal, and 1 inch in the vertical direction. The eyelids are without *cilia* and tarsal cartilages; they are composed of two horizontal bands of integument, each, in the example from which I describe (viz. a half-grown male), two inches in depth, and connected with each other at the inner and outer *canthus*. Between each of the eyelids and the blubber exists a distinct line of separation, marked by a somewhat deep groove, having a duplicature of thin membrane, serving as a surface or hinge on which the lids move. At these lines of demarcation all integument partaking of the nature of fat ceases, and the texture of the *tarsi* thus insulated is composed solely of common skin and cellular and other membranes, together with a dense layer

* The abstract of this and the concluding part of the Memoir will be found in the Proceedings for December 27, 1836.

of muscular fibres deposited in its centre. The *conjunctiva* of the lids is highly vascular, injected with blood, and covered with orifices of mucous ducts. At the inner canthus of the eye it forms a thick duplicature, of crescentic form, constituting a rudimental third eyelid, not unlike the haw of the horse. The globe of the eye is chiefly lodged in the soft parts, but little if any of its substance entering the bony orbit. It is deeply set within the lids, and does not in size much exceed that of an ox. Its size in an adult female was $2\frac{1}{2}$ inches in the longitudinal, and the same in the vertical direction. The interior or cavity was $1\frac{1}{2}$ inch in each of the last-named directions, and its depth $\frac{2}{3}$rds of an inch only.

"The globe at its greatest circumference was $7\frac{1}{2}$ inches: the transparent *cornea* at its transverse or broadest diameter measured 1 inch, and in its vertical or narrowest $\frac{3}{4}$ths of an inch. The muscles of the globe formed a dense mass surrounding the sheath of the optic nerve, and were inserted in one continuous line over the circumference of the globe at its greatest convexity.

"The optic nerve before penetrating the sclerotic is continued to some length. It does not exceed the circumference of a crow's quill, but is surrounded by a dense fibrous sheath nearly 4 inches in perimeter, and which, where the nerve perforates the globe, terminates on the posterior surface of the latter. Around the globe and its muscles much cellular tissue and true fat are deposited. The eyeball in shape is not a perfect sphere; its anterior and posterior surfaces are flattened: that portion of the *conjunctiva* of the globe immediately surrounding the *cornea*, and the only portion exposed between the aperture of the lids, is of an intense black hue. It is possible this dark portion may be a membrane distinct from the *conjunctiva*, since around the extent it occupies, it terminates by an irregular margin, and is capable of being detached from the *conjunctiva*, when it presents the form of a delicate layer of cuticle, with a black pigment deposited beneath its surface*.

"The *cornea* of the Cachalot is dense, and composed of many layers; when divided, a small quantity of limpid aqueous humour flows forth: the anterior chamber of the eye is very limited, and the crystalline lens projects into it through the pupillary aperture. The iris is a coarse membrane of a dull-brown colour, with a narrow zone of lighter hue surrounding its outer margin. Its inner and free margin is very thin, and embraces the protruding convexity of the lens.

"The lens is small, certainly not exceeding in size that of the human eye: it forms nearly a perfect sphere: the vitreous humour tolerably abundant. The retina was spread with beautifully delicate arborescent vessels, and afforded a small bright spot at the insertion of the optic nerve. Beneath the retina was spread a *tapetum* of dense membranous texture, and yellow-green or erugo-green colour. The sclerotic at its posterior third is thick, fibrous, and resisting, whilst its anterior third is thin and flexible; no lachrymal apparatus exists."

* A slight dark tint around the cornea is not uncommon amongst the dark-skinned natives of warm countries.

In the description of the organs of generation; the cavity in the head containing the spermaceti; and some more of the soft parts, Mr. Bennett's observations coincide with those of Hunter and other comparative anatomists.

A *fœtus* apparently of mature growth, taken from the *abdomen* of a *Sperm Whale*, measured 14 feet in length and 6 in girth; its position in the *uterus* was that of a bent bow.

Mr. Reid brought before the notice of the Meeting a new species of the genus *Perameles*, and read a paper giving some account of its habits, and pointing out its distinguishing characters.

The author states that he was indebted to William Holmes, Esq., of Lyon's Inn, for the opportunity of exhibiting this specimen, which was brought from Van Diemen's Land, where these animals are said to be common. The same species is also found in Western Australia, and is there called by the natives *Dalgheit*, and by the colonists the *Rabbit*, under which name it is mentioned by Cunningham in his work on New South Wales. Widdowson, in his account of Van Diemen's Land, notices it; but neither of these writers has given any description of the animal. From its resemblance to the Rabbit, Mr. Reid proposes for it the specific name of *Lagotis*.

Perameles Lagotis. *Per. griseus, capite, nuchâ, et dorso, castaneo lavatis; buccis, lateribus colli, scapulis, lateribus, femoribus extus, caudâque ad basin, pallide castaneis; mento, gulâ, pectore, abdomine, extremitatibus intùs anticèque, antibrachiis postice, pedibusque suprà albidis; antibrachiis externè pallidè griseis, femoribus extus posticeque saturatè plumbeis; caudâ, pilis longis albescentibus ad partem basalem, indutâ, dein pilis nigris tectâ, parte apicali albâ, pilis longis supra ornatâ. Vellere longo molli. Caudâ pilis rudis vestitâ; pilis ad pedes brevissimis. Labio superiore, buccisque, mystacibus longis sparsis. Auriculis longis, ovatis, intùs nudis, extus pilis brevissimis brunneis, ad marginem, albescentibus indutis, pilis ad bases eos plumbeis, apicibus albis aut castaneis, illis in abdomine omninò albis. Marsupio ventrali magno, mammis novem, in faciem posticam; quarum una centralis est, reliquis circumdata, intervallis æqualibus, gyrumque facientibus, transversùm unciam cum quadrante reddentem.*

	poll.	lin.
Long. capitis	5	3
—— corporis	13	0
—— caudæ	10	0
—— auriculæ	3	10
—— antibrachii	4	0
—— pedis antici	1	8
—— tibiæ	3	9
—— pedis postici	4	6
—— ab auriculæ basi usque ad oculum	2	0
—— ab oculo usque ad nasum	2	8
Latitudo auriculæ	1	9

Hab. In Australiâ Occidentali et in Terrâ Van Diemen.

"The ears are long, broad, and ovate, having several semitransparent dots scattered over their surface (the remains of sebaceous glands). On the anterior extremity the nails are much elongated; the second and third are about $\frac{1}{4}$th of an inch longer than the first; they are all flattened at the tips, thus furnishing the animal with a very efficient apparatus for burrowing. The tail offers many differences from that of the other species of the genus *Perameles*. The basal fourth is clothed with hairs about the same length and colour as those of the body. The middle half is black, the hairs on the upper part being elongated; the remaining part is white, with a ridge of long white stiff hairs forming a crest.

"The pouch in this specimen (a female) is large, and has 9 nipples on its posterior surface; one being placed in the centre, and the remainder at equal distances form a circle, the diameter of which is 1 inch 3 lines.

"The skull is perfect, but the state of the skin was such as totally to prevent its removal, and the description is therefore defective in particulars concerning the bones of the face. The interparietal and occipital crests are clearly defined and large. The bulla of the ear is large, and its shape that of a flattened ovoid. The tympanum was entire, and on removing it the manubrium of the malleus was found to be twice the length of its body. The zygomatic arch is imperfect for about the space of $\frac{1}{2}$ an inch. The lower-jaw is slender, with a salient process at its angle. Dent.: Prim. $\frac{5-5}{6}$, Can. $\frac{1-1}{1-1}$, Mol. spur. $\frac{3-3}{3-3}$, Mol. ver. $\frac{4-4}{4-4}$, = 48.

"The two front superior incisors are nearly a line apart, small, and quadrangular; a small space intervenes between these and the three succeeding, which are larger, and placed in a continuous series. The fourth and fifth incisors are about the same distance from each other as the two anterior. Posterior to the incisors is a space about 5 lines in width, for the reception of the inferior canines. The canines are well developed: another space intervenes between them and the false molars, which latter are all rather widely separated, of a conical shape, and have a small tubercle anterior to the body of the tooth.

"The molars of *Perameles*, as figured by M. F. Cuvier in his '*Dents des Mammifères*,' consist of two prisms fixed to a slightly curved base, with the concavity towards the inside of the jaw; but in this species the molars are quadrangular, having had but two sets of tubercles, and in the present specimen these teeth are worn down and present a square surface, inclosed by enamel, having a band of the same running transversely across the middle of the tooth. The two last molars of the upper jaw approximate so closely, as to require careful examination to detect the line of separation. The teeth of the lower jaw, except in number and in the circumstance of all the incisors forming a continuous series, do not differ from those of the upper. When the jaws are closed, the posterior molars of the upper and lower jaws are in contact.

"A friend of Mr. Gould's, residing in Western Australia, states that these animals are found beyond the mountains of Swan River, in

the district of York. They feed upon large maggots and the roots of trees, and do considerable damage to the maize and potato crops by burrowing. A specimen kept by him in confinement became in a few days very docile, but was irritable, and resented the slightest affront or ill usage. It took bread, which it held in its fore-paws. A young one to which it gave birth unfortunately escaped, after being carried in the mother's pouch for several days."

Mr. Reid considers the distinctions between this and the rest of the species belonging to the genus *Perameles* so marked, that should more of the same form be discovered, the above characters would constitute a subgenus to which the name of *Macrotis* might be applied.

Mr. Waterhouse exhibited a second specimen of *Myrmecobius*, and directed the attention of the Meeting to certain differences existing between it and the one upon which he had founded the characters of the genus, and described under the specific name of '*fasciatus*.'

The present animal differs from the one previously described in having the black and fulvous colouring of the back less decided, owing to a larger proportion of interspersed white hairs. The fasciæ, instead of being white, are of a yellowish cream-colour, and they also differ in number and arrangement. Commencing from the tail, the three first are distinct and uninterrupted, the intermediate spaces being about $\frac{1}{2}$ an inch in width, black, with white hairs interspersed, and a few of an ochraceous colour. The fourth is also distinct, but instead of being continued across the back, it is met by two fasciæ from the opposite side. The two following are continuous, but less distinct than either of the foregoing. Beyond these, the fasciæ are almost obsolete, there being only faint indications of them on the sides of the body.

The most important distinction, however, exists in the teeth, the present specimen possessing altogether four more molars than the one brought before the notice of the Society on a previous occasion. The entire number of teeth is 52, (26 in each jaw), and the 5 posterior molars are placed closely together, differing in that respect from those of the previously examined specimen.

The animal was brought from Van Diemen's Land, and others similar to it were observed scratching at the roots of trees, and feeding upon the insects which are generally abundant in such situations. Their favourite haunts are stated to be the localities in which the Port Jackson willow is most plentiful.

Mr. Waterhouse remarked that although the differences between the two animals were considerable, yet he did not consider the distinctions such as to justify his characterizing the one then before the Meeting as a second species.

A Paper was then read by William Ogilby, Esq., with a view of pointing out the characters to which the most importance should be attached in establishing generic distinctions among the *Ruminantia*.

Mr. Ogilby commences by observing that "It has been justly remarked by Professor Pallas, that if the generic characters of the *Ruminantia* were to be founded upon the modifications of dentition, in accordance with the rule so generally applicable to other groups of Mammals, the greater part of the order would necessarily be comprised in a single genus; since the number, form, and arrangement of the teeth being the same in all, except the *Camels* and *Llamas*, these organs consequently afford no grounds of definite or general distinction. Hence it is that naturalists have been obliged to resort to other principles to regulate the distribution of ruminating animals; and the form, curvature, and direction of the horns, selected for this purpose at a period when the extremely limited knowledge of species permitted the practical application of such arbitrary and artificial characters without any very glaring violation of natural affinities, still continue to be the only rule adopted by zoologists in this department of Mammalogy. The illustrious Illiger forms a solitary but honourable exception; he first introduced the consideration of the muzzle and lachrymal sinus into the definitions of the genera *Antilope*, *Capra*, and *Bos*; but his labours were disregarded by subsequent writers, or his principles applied only to the subdivision of the genus *Antilope*. It is obvious, however, that as the knowledge of new forms and species became more and more extensive, the prevailing gratuitous rule above mentioned, founded as it is upon purely arbitrary characters which have no necessary relation to the habits and œconomy, or even to the general external form, of the animals themselves, would eventually involve in confusion and inconsistency the different groups which were founded upon its application; and such has long been its acknowledged effect. The genus *Antilope*, in particular, has become a kind of zoological refuge for the destitute, and forms an incongruous assemblage of all the hollow-horned *Ruminants*, without distinction of form or character, which the mere shape of the horns excluded from the genera *Bos*, *Ovis*, and *Capra*; it has thus come to contain nearly four times as many species as all the rest of the hollow-horned *Ruminants* together; so diversified are its forms, and so incongruous its materials, that it presents not a single character which will either apply to all its species, or suffice to differentiate it from conterminous genera.

"To meet this obvious evil, MM. Lichtenstein, De Blainville, Desmarest, and Hamilton Smith have applied Illiger's principles to subdivide the artificial genus *Antilope* into something more nearly approaching to natural groups; the reform thus effected, however, was but partial in its operation; the root of the evil still remained untouched, for none of these eminent zoologists appears to have been sufficiently aware of the extremely arbitrary and artificial character of the principal group itself, which they contented themselves with breaking up into subgenera, nor of the actual importance and extensive application of the characters which they employed for that purpose. By mixing up these characters, moreover, with others of a secondary and less important nature, the benefit which might have been expected from their labours has been, in a great measure, neu-

tralized; and even the subdivisions which they have introduced into the so-called genus *Antilope*, are less definite and comprehensive than they might otherwise have been made.

"The truth is, however, that the presence or absence of horns in one or both sexes; the substance and nature of these organs, whether solid or concave, permanent or deciduary; the form of the upper lip, whether thin and attenuated as in the goat, or terminating in a broad heavy naked muzzle as in the *Ox*; and the existence of lachrymal sinuses and interdigital pores, are the characters which really influence the habits and œconomy of ruminating animals, and upon which, consequently, their generic distinctions mainly depend. These, with the assistance, in a very few instances, of such accessory characters as the superorbital and maxillary glands, the number of teats, and the existence of inguinal pores, are sufficient in all cases to define and characterize the genera with the strictest reference to logical precision and zoological simplicity. It is not my intention to discuss the value of these characters, or to state the reasons which induced me to adopt them in preference to those more generally employed in this department of Mammalogy; these will form the subject of a future communication, and I shall content myself for the present with observing, that the presence or absence of horns in the females regulates, in a great measure, the social intercourse of the sexes, that upon the form of the lips and muzzle, the only organs of touch and prehension among the *Ruminantia*, depend the nature of the food and habitat, making the animal a *grazer* or a *browser*, as the case may be; and that the existence or nonexistence of interdigital glands, the use of which appears to be to lubricate the hoofs, has a very extensive influence upon the geographical distribution of the species; confining them to the rich savannah and the moist forest, or enabling them to roam over the arid mountain, the parched karroo, and the burning desert.

"Having thus briefly explained the necessity of reforming the characters of the different groups of the Order *Ruminantia*, as they are at present constituted, and the nature and value of the principles which I propose to employ for that purpose, I shall at once proceed to their practical application, confidently anticipating that their employment will remove the most serious objections which exist against the present distribution of the order, and place our knowledge of these interesting animals, in point of scientific accuracy, precision, and affinity, on a par with the more generally cultivated departments of zoology.

Fam. I. Camelidæ.

Pedes subbisulci, subtùs callosi, digitis apice solo distinctis; ungulæ succenturiatæ nullæ; *cornua* nulla; *dentes primores* suprà duo, infrà sex.

2 Genera.

1. Camelus, cujus characteres sunt:
   Digiti conjuncti, immobiles.

Rostrum chilomate instructum, labro fisso.
Sinus lachrymales nulli.
Fossæ interdigitales nullæ.
Folliculi inguinales nulli.
Mammæ quatuor.

2. Auchenia :
Digiti disjuncti, mobiles.
Rostrum chilomate instructum, labro fisso.
Sinus lachrymales nulli.
Fossæ interdigitales nullæ.
Folliculi inguinales nulli.
Mammæ duæ.

"The *Camelidæ* form what Mr. MacLeay would call an aberrant group; they differ essentially from other Ruminants in the structure both of the organs of locomotion and of mastication, and their generic distinctions consequently depend upon characters which have no application to the remaining groups of the order. On the other hand, the principles of generic distribution which subsist among the rest of the *Ruminantia* appear to furnish negative characters only when applied to the *Camelidæ;* but though necessarily expressed negatively, the absence of lachrymal, inguinal, and interdigital sinuses forms, in reality, positive and substantial characters, and as such, as well as for the sake of uniformity, should be introduced into the definition of these, as well as of other genera, in which they unavoidably appear under a negative form.

Fam. II. Cervidæ.

Pedes bisulci; *cornua* solida, plerùmque decidua, in mare solo, aut in utroque sexu; *dentes primores* suprà nulli, infrà octo.

6 Genera.

1. Camelopardalis.
Cornua in utroque sexu, perennia, simplicia, cute obducta.
Rhinaria nulla.
Sinus lachrymales nulli.
Fossæ interdigitales parvæ.
Folliculi inguinales nulli.
Mammæ quatuor.

Duo species sunt *C. Æthiopicus* et *C. Capensis.*

2. Tarandus.
Cornua in utroque sexu, subpalmata, decidua.
Rhinaria nulla.
Sinus lachrymales exigui.
Fossæ interdigitales parvæ.
Folliculi inguinales nulli.
Mammæ quatuor.

Typus est *Tarandus Rangifer* (*Cervus Tarandus*).

3. Alces.
Cornua in mare solo, palmata, decidua.
Rhinaria nulla.
Sinus lachrymales exigui.
Fossæ interdigitales magnæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *Alces Machlis* (*Cervus Alces*).

4. Cervus.
Cornua in mare solo, ramosa, decidua.
Rhinaria magna.
Sinus lachrymales distincti, mobiles.
Fossæ interdigitales magnæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typi sunt *C. Elaphus* et *C. Saumer* aut *Hippelaphus*, Cuv.

5. Caprea.
Cornua in mare solo, subramosa, decidua.
Rhinaria distincta.
Sinus lachrymales nulli.
Fossæ interdigitales magnæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *C. Capreolus*.

6. Prox.
Cornua in mare solo, subramosa, decidua.
Rhinaria magna.
Sinus lachrymales maximi, mobiles.
Sinus duo supraorbitales ad basin cornuum, magni, mobiles.
Fossæ interdigitales magnæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *Prox Moschatus* (*Cervus Muntjac*).

Fam. III. Moschidæ.

Pedes bisulci ; *cornua* nulla ; *dentes primores* suprà nulli, infrà octo.
2 Genera.

1. Moschus.
Rhinaria magna.
Sinus lachrymales nulli.
Fossæ interdigitales nullæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *Moschus Moschiferus*.

2. Ixalus ?
Rhinaria nulla.

Sinus lachrymales exigui, distincti.
Fossæ interdigitales nullæ.
Folliculi inguinales exigui.
Mammæ duæ.

Typus est *Ixalus Probaton*, Proc. Zool. Soc., Part IV. page 119.

"The genus *Ixalus*, founded upon the observation of a single specimen, may eventually prove to belong to a different family; it differs little, indeed, from the true Antelopes: but even supposing it to be correctly placed among the *Moschidæ*, other forms are still wanting to fill up the chasms which evidently exist among the characters of that group. Two are more especially indicated, and our knowledge of the laws of organic combination and of the constituent parts of other groups, gives us every reason to believe in their actual existence, and to anticipate their discovery. They will be characterized nearly as follows, and will probably be found, one in the tropical forests of the Indian Archipelago, and the other on the elevated table lands of Mexico or South America.

Hinnulus.
Rhinaria magna.
Sinus lachrymales distincti.
Fossæ interdigitales nullæ.
Folliculi inguinales nulli.
Mammæ quatuor.

Capreolus.
Rhinaria nulla.
Sinus lachrymales nulli.
Fossæ interdigitales parvæ?
Folliculi inguinales?
Mammæ duæ.

"It may appear a bold, perhaps a presumptuous undertaking, thus to predict the discovery of species, and define the characters of genera, of whose actual existence we have no positive knowledge; but, as already remarked, all the analogies of nature, whether derived from organic combination or from the constituent members of similar groups, are in favour of the supposition; and I may observe further, that the recent discovery of the genus *Ixalus*, if indeed it eventually prove to be a genus, of which I had long previously defined the characters, as I have here done for the presumed genera *Hinnulus* and *Capreolus*, strengthens my belief in the actual existence of these forms, and increases the probability of their future discovery.

Fam. IV. Capridæ.

Pedes bisulci; *cornua* cava, persistentia; *rhinaria* nulla; *dentes primores* suprà nulli, infrà octo.

7 Genera.

1. Mazama.
   Cornua in mare solo.
   Sinus lachrymales nulli.
   Fossæ interdigitales distinctæ.
   Folliculi inguinales nulli.
   Mammæ quatuor.

Typus est *M. Furcifer* (*Antilope Furcifer*).

2. Madoqua.
   Cornua in mare solo.
   Sinus lachrymales distincti.
   Fossæ interdigitales distinctæ.
   Folliculi inguinales nulli.
   Mammæ quatuor.

Typus est *M. Saltiana* (*Ant. Saltiana* et *Hemprichii*).

3. Antilope.
   Cornua in mare solo.
   Sinus lachrymales distincti, mobiles.
   Fossæ interdigitales maximæ.
   Folliculi inguinales maximi.
   Mammæ duæ.

Typus est *A. Cervicapra.*

4. Gazella.
   Cornua in utroque sexu.
   Sinus lachrymales distincti, mobiles.
   Fossæ interdigitales maximæ.
   Folliculi inguinales maximi.
   Mammæ duæ.

Typus est *Gazella Dorcas* (*Ant. Dorcas*).

5. Ovis.
   Cornua in utroque sexu.
   Sinus lachrymales exigui, immobiles.
   Fossæ interdigitales parvæ.
   Folliculi inguinales nulli.
   Mammæ duæ.

Typus est *Ovis Aries.*

6. Capra.
   Cornua in utroque sexu.
   Sinus lachrymales nulli.
   Fossæ interdigitales parvæ.
   Folliculi inguinales nulli.
   Mammæ duæ.

Typus est *Capra Hircus.* Ad hoc genus pertinent *Ovis Tragelaphus*, et *Antilope Lanigera* aut *Americana*, Auct.

7. Ovibos.
   Cornua in utroque sexu.
   Sinus lachrymales nulli.

Fossæ interdigitales ?
Folliculi inguinales nulli.
Mammæ quatuor.
Typus *Ovibos Moschatus*.

Fam. V. Bovidæ.

Pedes bisulci; *cornua* cava, persistentia; *rhinaria* distincta, nuda; *dentes primores* suprà nulli, infrà octo.
9 Genera.

1. Tragulus.
Cornua in utroque sexu.
Glandulæ maxillares oblongæ.
Fossæ interdigitales nullæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *T. Pygmæus* (*Ant. Pygmæa*).

2. Sylvicapra.
Cornua in mare solo.
Glandulæ maxillares oblongæ.
Fossæ interdigitales parvæ.
Folliculi inguinales distincti.
Mammæ quatuor.
Typus est *S. Mergens* (*Ant. Mergens*).

3. Tragelaphus.
Cornua in mare solo.
Sinus lachrymales magni.
Fossæ interdigitales distinctæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *T. Hippelaphus* (*Ant. Picta*); the *Neel-ghae*, and not the *Saumer Deer* of India, as I shall show elsewhere, is the animal described by Aristotle under the name of *Hippelaphus*.

4. Calliope.
Cornua in mare solo.
Sinus lachrymales nulli.
Fossæ interdigitales nullæ.
Folliculi inguinales distincti.
Mammæ quatuor.
Typus est *Calliope Strepsiceros* (*Ant. Strepsiceros*).

5. Kemas.
Cornua in utroque sexu.
Sinus lachrymales nulli.
Fossæ interdigitales magnæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *Kemas Ghoral* (*Ant. Goral*).

6. Capricornis.
Cornua in utroque sexu.
Sinus lachrymales magni.
Fossæ interdigitales distinctæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *C. Thar* (*Ant. Thar*, Hodg.).

7. Bubalus.
Cornua in utroque sexu.
Sinus lachrymales exigui, distincti.
Fossæ interdigitales magnæ.
Folliculi inguinales nulli.
Mammæ duæ.
Typus est *Bubalus Mauritanicus* (*Ant. Bubalus*).

8. Oryx.
Cornua in utroque sexu.
Sinus lachrymales nulli.
Fossæ interdigitales magnæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Species sunt *O. Capensis* (*Ant. Oryx*), *Leucoryx*, *Leucophæa*, &c.

9. Bos.
Cornua in utroque sexu.
Sinus lachrymales nulli.
Fossæ interdigitales nullæ.
Folliculi inguinales nulli.
Mammæ quatuor.
Typus est *Bos Taurus*.

"I have here confined myself strictly to generic characters; the synonyma and discrimination of species will form the subject of a future monograph; in the mean time, with the assistance of the Article Antelope in the Penny Cyclopædia, or, with the proper corrections, of Col. Smith's Treatise on the Ruminants in the fourth volume of Griffith's Translation of the 'Règne Animal,' the student will have no difficulty in referring any particular species to its appropriate genus. He will thus be enabled to judge of the correctness or incorrectness of the affinities here indicated, and consequently to form a tolerable estimate of the value of the characters by which I propose to distinguish the genera of ruminating animals; and indeed it is principally from the wish to excite the attention of zoologists to more extensive observation than I myself possess, that I have been induced to publish the present analysis of my own investigations in this department of Mammalogy."

Mr. Gould exhibited numerous examples of the genus *Strix* (as at present restricted), from numerous parts of the globe, including three undescribed species from Australia, which he characterizes as follows:

Strix castanops. *Str. disco fasciali castaneo, ad marginem saturatiore, et nigro circumdato; corpore suprà alis caudâque lætè rufo-brunneis, plumis singulis fasciis latis saturatè brunneis, dispariter ornatis; capite humerisque maculis sparsis minutis albis; corpore infrà flavescenti-brunneo; lateribus colli corporisque guttis nigris sparsè ornatis; femoribus tibiisque flavo-brunneis pedibus flavescentibus; rostro flavo-fusco.*

Long. tot. 18 unc.; *rostri*, $2\frac{1}{4}$; *alæ*, 15; *caudæ*, 7; *tarsi*, $3\frac{1}{2}$.

Hab. In Terrâ Van Diemen.

This is the largest known species of the restricted genus *Strix*, of which the common *Barn Owl* is a typical example.

Strix Cyclops. *Str. disco fasciali albo, venustè annulo saturatè brunneo, circumdato; corpore supra albo; dorso humerisque pallidè stramineis, maculis brunneis et albis lentiginosis; primariis, fasciis alternis stramineis brunneisque; pogoniis externis apicibusque lineis brunneis rectis, frequentibus, et retortis; caudâ albâ fasciis brunneis; interstitiis albis brunneo crebrè guttatis, corpore infrà albo, maculis brunneis; femoribus tarsisque albis; pedibus flavo-fuscis; rostro livido.*

Long. tot. 15 unc.; *rostri*, $1\frac{3}{4}$; *alæ*, $11\frac{1}{2}$; *caudæ*, $5\frac{1}{2}$; *tarsi*, $2\frac{3}{4}$.

Hab. In Novâ Cambriâ Australi.

This is one of the most beautiful species of the genus.

Strix delicatulus. *Str. disco fasciali albo, margine stramineâ circumdato; corpore suprà pallidè cano-fusco, flavo tincto, notis nigricantibus et albidis intermixtis delicatulis frequentibusque ornato; alis pallidè fulvis, fasciis lineisque rectis retortis, pallide brunneis; primariis ad apicem guttâ albâ notatis; caudæ rectricibus quoad colorem remiges fingentibus at guttâ apicali albâ obscuriore; corpore infrà albo; pectore lateribusque maculis brunnescentibus sparsè notatis; femoribus tibiisque albis; pedibus flavescentibus rostro livido.*

Long. tot. 14 unc.; *rostri*, $1\frac{3}{4}$; *alæ*, 11; *caudæ*, 4; *tarsi*, $2\frac{1}{2}$.

Hab. In Novâ Cambriâ Australi.

This species in some respects very closely resembles the common *British Owl, St. flammea;* but it has a longer bill, and is considerably smaller.

December 27th, 1836.

Richard Owen, Esq., in the Chair.

The remainder of M. F. Cuvier's Paper on the *Jerboas* and *Gerbillas* was read.

M. Cuvier commences this memoir with observing that his attention has been particularly directed to the *Rodentia*, with a view of arriving at a natural classification of the numerous species composing that order, among which considerable confusion had hitherto prevailed, particularly in the genera *Dipus* and *Gerbillus*, the relations of which to other allied groups have been but very imperfectly understood by previous writers.

The species included in the genus *Dipus* have been formed by M. Lichtenstein into three divisions, which are distinguished by the absence and number of rudimentary toes upon the hind feet. In the first section are placed those with three toes, all perfectly formed; in the second, those with four, one of which is rudimentary; and in the third, those with five, two of these being rudimentary. M. Cuvier states that he is unacquainted with the second division of M. Lichtenstein, but in the examination of the species belonging to the first, in addition to the absence of rudimentary toes, he finds they are also distinguished from those of the third by the form of the teeth, and the osteological characters of the head. These points of difference he considers of sufficient importance to justify his making a distinct genus for the *Jerboas* with five toes, adopting the name *Allactaga*, given by Pallas to a species, as the common generic appellation.

"We know," observes M. Cuvier, "that the three principal toes of the *Allactagas*, as well as the three only toes of the *Jerboas*, are articulated to a single metatarsal bone, and that the two rudimentary toes of the first genus have each their metatarsal bone; whence it results that the penultimate segment of the foot is composed of three bones in the *Allactagas*, and of one only in the *Jerboas*. The incisors of the *Allactagas* are simple, whilst those in the upper-jaw of the *Jerboas* are divided longitudinally by a furrow. The molars of the latter genus are complicated in form, and but little resemble those of the former. They are four in number in the upper-jaw, and three in the lower, but the first in the upper is a small rudimentary tooth, which probably disappears in aged individuals."

The structure of the grinding teeth is then described in detail, and illustrated by drawings which accompanied the paper.

"The general structure of the head of the *Allactagas* and *Jerboas* is evidently the same, and is characterized by the large size of the *cranium*, the shortness of the muzzle, and above all by the magnitude of the suborbital *foramina*. The cranium of the *Jerboa* is distinguished by its great breadth posteriorly resulting from the enormous development of the tympanic bone, which extends beyond the occi-

pital posteriorly and laterally as far as the zygomatic arch, which is by no means the case in the *Allactagas*, where all the osseous parts of the ear are of moderate dimensions. Another differential character between the two genera, is presented by the maxillary arch, which circumscribes externally the suborbital foramina, and which, in the *Allactagas*, may be said to be linear, and presenting a very limited surface for the attachment of muscles. Lastly, we may note a difference in the relative development of the jaws, the lower being comparatively much shorter in the *Allactagas* than in the *Jerboas*."

The author then proceeds to describe a new species of *Allactaga*, a native of Barbary, for which he proposes the name of *A. arundinis*. Its length from the origin of the tail to the end of the muzzle, 5 inches; length of the tail, 5 inches and 2 or 3 lines; of the ears, 1 inch; length of the tarsi from the heel to the extremity of the toes, 22 lines. All the upper parts of the body are of a beautiful greyish yellow, with yellowish sides and tail of the same colour, terminated by a tuft of a blackish brown at its origin, and white at the extremity. The sides of the cheek, the ventral surface of the body, and the internal limbs are white; large brown moustaches adorn the sides of the muzzle. The incisors are white and entire, the ears almost naked.

M. Cuvier next proceeds to consider the characters and affinities of the genera *Gerbillus* and *Meriones*, and enters into a critical examination of all the species referred to that group. To these he adds another species, the habits of which he details, and describes at length under the name of *G. Burtoni*. The species which he thus includes are, 1st, *G. Egyptiacus*, syn. *Dipus Gerbillus*, *Meriones quadrimaculatus*, Ehrenberg; 2nd, *Gerbillus pyramidum*, syn. *Dipus pyramidum* Geoff., *Meriones robustus* Rupp.; 3rd, *G. pygargus*, syn. *Meriones Gerbillus*, Rupp.; 4th, *G. Nidicus*, syn. *Dipus Nidicus*, Hardwicke; 5th, *G. Africanus*, syn. *Meriones Schlegelii* Smutz., *G. Afra* Gray; 6th, *G. brevi-caudatus*; 7th, *G. Otaria*; 8th, *G. Burtoni*. The author enters into detailed descriptions of each of these species from original specimens. M. Cuvier lastly considers the affinities of the *Gerbillas* and *Allactagas* to the *Gerboas*, and concludes that the *Gerbillas* have a much nearer affinity to the *Muridæ*.

Mr. Gould exhibited to the Meeting all the species from which the drawings had been taken for the first part of his new work on the Birds of Australia, among which were several new and very remarkable forms. The following hitherto undescribed genera and species were named and characterized.

Ocypterus superciliosus. *Oc. facie, gulâ, pectoreque nigrescenti-griseis; lineâ superciliari albâ ad basin rostri excurrente; summo capite, corpore superiore alisque fuliginosis; abdomine crissoque castaneis; rectricibus griseo-fuliginosis, ad apicem albescentibus, intermediis duabus exceptis; rostro plumbeo, ad apicem nigro; pedibus plumbeis.*

Long. tot. 7 unc.; *rostri*, 1; *alæ*, $4\frac{3}{4}$; *caudæ*, 3; *tarsi*, $\frac{3}{4}$.

Hab. In Novâ Cambriâ Australi.

VANGA CINEREA. Mas. *Vang. capite et nuchâ nigris loro albo ; dorso, humeris et uropygio griseis ; tectricibus caudæ albis, rectricibus caudæ nigris, internè ad apicem albis, duabus intermediis exceptis, secundariis in medio, tectricibus majoribus, gulâ et corpore subtùs, albis ; rostro ad basin plumbeo, ad apicem nigro ; pedibus nigris.*
Long. tot. $12\frac{1}{2}$ unc. ; *rostri*, $1\frac{3}{4}$; *alæ*, 6 ; *caudæ*, $5\frac{3}{8}$; *tarsi*, $1\frac{1}{4}$.
Hab. In Terrâ Van Diemen.

VANGA NIGROGULARIS. Mas. *Vang. capite, collo, et pectore nigris ; torque nuchali, ptilis, pteromatum strigâ longitudinali, dorso imo, uropygio, abdomine, crisso, rectricumque lateralium apicibus albis ; rectricibus duabus, intermediis omnino nigris ; rostro ad basin plumbeo in nigrum transeunte ; pedibus nigris.*
Fœm. vel mas jun.? *Partibus quæ in mare nigris in hôc cinerascenti-brunneis, vittâ occipitali ferè obsoletâ ; gulâ pectoreque fulvo brunneis ; partibus reliquis ut in mare adulto.*
Long. tot. $13\frac{1}{4}$ unc. ; *rostri*, $1\frac{3}{4}$; *alæ*, 7 ; *caudæ*, 6 ; *tarsi*, $1\frac{1}{2}$.
Hab. In Novâ Cambriâ Australi.

STRUTHIDEA.

Rostrum validum, robustum, tumidum, suprà arcuatum, altitudine latitudinem excellente ; *gonyde* angulato ; *naribus* rotundatis opertis ; mandibulâ inferiore ad basin incrassatâ, et in genas pereunte ; *alæ* mediocres, rotundatæ ; remige primo brevi, quarto et quinto longissimis, remigibus secundariis elongatis et latis ; *tarsi* mediocri longitudine et robusti, anticè scutellati, posticè plani ; digitis subvalidis ; pollice medio digito breviore et validiore.

STRUTHIDEA CINEREA. *Struth. capite, collo, partibusque corporis inferioribus griseis ; singulis plumis ad marginem pallidioribus ; alis brunneis ; rectricibus caudæ nigris, metallicè viridi nitentibus ; rostro pedibusque nigris.*
Long. tot. $11\frac{1}{2}$ unc. ; *rostri*, $\frac{3}{4}$; *alæ*, $5\frac{1}{2}$; *caudæ*, 6 ; *tarsi*, $1\frac{1}{2}$.
Hab. In Novâ Cambriâ Australi.

TROPIDORHYNCHUS CITREOGULARIS. *Trop. summo capite, dorso, uropygio, alis, caudâque brunneis, his pallidioribus ; pogoniis externis remigum secundariorum olivaceo marginatis ; caudâ ad apicem griseâ ; nuchâ ac lateribus colli albescenti-griseis ; mandibulâ inferiori ad basin notâque nudâ pone oculos cæruleis ; gulâ et lateribus pectoris citreis ; abdomine pallidè griseo ; rostro nigro ; pedibus plumbeis.*
Long. tot. $10\frac{1}{4}$ unc. ; *rostri*, $1\frac{1}{4}$; *alæ*, $5\frac{1}{4}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, $1\frac{1}{8}$.
Hab. In Novâ Cambriâ Australi.

MELIPHAGA PENICILLATA. *Mel. facie plumisque auricularibus flavidis ; pone has penicillâ sericeâ albâ oriente ; corpore superiore flavescenti-griseo ; pogoniis remigum externis latioribus ; corpore subtùs pallidè brunnescenti-cinereo ; rostro pedibusque brunneis.*
Long. tot. $6\frac{1}{4}$ unc. ; *rostri*, $\frac{5}{8}$; *alæ*, 3 ; *caudæ*, 3 ; *tarsi*, $\frac{5}{4}$.
Hab. In Novâ Cambriâ Australi.

Melipiiaga sericea. *Mel. summo capite, gulâ, et regione circa oculos nigris; strigâ frontali albâ supra oculos tendente; penicillâ pilosâ albâ, genas auresque tegente; dorso brunnescenti-cinereo, longitudinaliter nigro striato; corpore subtùs albo singulis plumis in medio longitudinaliter nigris; alis brunnescenti-nigris, pogoniis remigum externis, lætè flavidis; rectricibus caudæ brunneis, pogoniis ad marginem flavescentibus; rostro pedibusque nigris.*

Long. tot. $6\frac{1}{4}$ unc.; *rostri*, $\frac{7}{8}$; *alæ*, $2\frac{3}{4}$; *caudæ*, $2\frac{5}{8}$; *tarsi*, $\frac{3}{4}$.

Hab. In Novâ Cambriâ Australi.

Hæmatops.

Rostrum capite brevius, levitèr arcuatum, acutum, sine denticulo ad apicem; compressiusculum: *naribus* longitudinalibus, et operculo tectis, setis nullis ad rictum: *alæ* mediocres, remige primo brevi, tertio et quarto ferè æqualibus et longissimis: *caudâ* mediocri, æquali vel leviter forficatâ: *tarsi* mediocres, sub validi halluce et ungue, digitum medium et unguem æquantibus; digitis externis longitudine paribus; *nævi* sanguinolenti supra oculos.

Hæmatops validirostris. *Hæm. summo capite splendidè nigro, vittâ occipitali albâ, pone oculos oriente; plumis auricularibus, mento, et nuchâ nigris; summo corpore olivaceo, griseo lavato; uropygio rectricumque pogoniis externis lætioribus; alis brunneis, olivaceo levitèr tinctis; gulâ albâ, corpore subtùs brunnescenti-griseo; rostro nigro, et ad apicem depressiusculo; pedibus carnosis.*

Long. tot. $6\frac{3}{4}$ unc.; *rostri*, $\frac{5}{4}$; *alæ*, $3\frac{1}{2}$; *caudæ*, 3; *tarsi*, $\frac{7}{8}$.

Hab. In Terrâ Van Diemen.

Hæmatops gularis. *Hæm. summo capite nigro, vittâ occipitali albâ pone oculos oriente; plumis auricularibus et nuchâ nigris; dorso et uropygio aurato-olivaceis; alis caudâque brunneis; gulâ cinerascenti-albâ, strigâ nigrâ per mediam partem tendente; corpore subtùs cinerascenti-brunneo; rostro nigro; pedibus pallidè brunneis.*

Long. tot. 6 unc.; *rostri*, $\frac{5}{4}$; *alæ*, $3\frac{3}{8}$; *caudæ*, $2\frac{5}{4}$; *tarsi*, $\frac{7}{8}$.

Hab. In Novâ Cambriâ Australi.

Neomorpha.

Rostrum longitudine caput excellens ad latera compressum, arcuatum, corneum, solidum, acutum ad apicem denticulo; *nares* opertæ, in sulco basali; carinâ mandibulæ superioris in pontem tendente; *lingua* dura, gracilis, ad apicem setosa; anguli oris carunculis carneis pendentibus conferti; *alæ* ———; *pedes* ———; *cauda* corpus longitudine æquans.

Neomorpha acutirostris. *Neom. rostro gracili, elongato, arcuato, colore corneo, in plumbeum ad basin transeunte; carunculis lætè aurantiacis; corpore toto nigro; caudâ largè ad apicem albâ.*

Long. tot. $16\frac{1}{2}$ unc.; *rostri*, $3\frac{1}{4}$; *alæ*, —; *caudæ*, 7; *tarsi*, —.

Neomorpha crassirostris. *Neom. rostro subarcuato, valido, acuto, corneo colore, in plumbeum ad basin transeunte; corpore nigro; caudâ largè ad apicem albâ.*

Long. tot. $17\frac{1}{2}$ unc.; *rostri*, $2\frac{1}{2}$; *alæ*, —; *caudæ*, $7\frac{1}{2}$; *tarsi*, —.

Remark. It is to be regretted that the only examples known of both these species are imperfect, wanting the feet and the greater portion of the wings: they form a part of the Zoological Society's collection, and were obtained from the captain of a vessel, who had received them from a native chief in New Zealand.

Podiceps gularis. *Pod. summo capite, et nuchâ, intensè nigrescenti-brunneis, olivacco lavatis; gutture genisque nigris; strigâ castaneâ pone oculos oriente et per latera colli excurrente; corpore suprà nigrescenti-brunneo; tectricibus alæ secundariis albo marginatis, hoc colore vittam transversam faciente; collo imo, pectore et corpore subtùs argenteo-griseis, hoc colore in brunneum ad latera transeunte; rostro et pedibus nigris.*

Long. tot. 10 unc.; *rostro*, $1\frac{1}{4}$; *alæ*, $4\frac{1}{4}$; *tarsi*, $1\frac{1}{2}$.

Hab. In Novâ Cambriâ Australi.

Podiceps Nestor. *Pod. capite plumis elongatis sericeis albis induto; gutture et occipite nigris; corpore suprà intensè brunneo, subtùs argenteo-griseo, ad latera brunneo lavato; rostro nigro ad apicem pallidiore; tarsis olivaceo-nigris.*

Long. tot. 9 unc.; *rostri*, 1; *alæ*, $4\frac{1}{4}$; *tarsi*, $1\frac{3}{8}$.

Hab. In Terrâ Van Diemen et in Novâ Cambriâ Australi.

Calodera.*

Rostrum validum, arcuatum, capite brevius, naribus basalibus rotundatis, ferè apertis, mandibulâ superiore ad apicem levitèr indentatâ marginibus sulcatis; margine mandibulæ inferioris in sulcum superioris recepto; *ales* mediocres, remige primo brevissimo; *tarsi* validi, antrorsim scutellati, pollice cum digito interno conjuncto, hôc ejusque ungue, validis, at medio digito ungueque, brevioribus; *ungues* incurvati et acuti; *cauda* mediocris, penitùs æqualis.

* The species belonging to the genus *Calodera*, are characterized at page 106.

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The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of species respecting which Anatomical Observations are made, in CAPITALS.

THE END.

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PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 10, 1837.

W. B. Scott, Esq., in the Chair.

A paper was read, entitled "Observations on the Phosphorescence of the Ocean, made during a voyage from England to Sydney, N.S. Wales." By George Bennett, Esq., F.L.S., Corresp. Member of the Society.

The author commences this paper with adverting to the very slight progress which naturalists have made in their attempts to elucidate the history of the phænomena connected with the phosphorescence of the ocean, and notices some of the imaginary advantages which former observers have attributed to its presence; among others that of its indicating to mariners the existence of shoals and soundings, a circumstance which his own experience has not enabled him to confirm. He then proceeds to remark, that the sea, when phosphorescent, exhibits two distinct kinds of luminosity, one in which its surface appears studded with scintillations of the most vivid description, more particularly apparent as the waves are broken by the violence of the wind or by the passage of the ship through them, as though they were electric sparks produced by the collision, and which scintillations he considers are probably influenced, in some measure, by an electric condition of the atmosphere, as at those particular times they were observed to be much more vivid and incessant than at others. The other kind of luminosity spoken of has more the appearance of sheets or trains of whitish or greenish light, often sufficiently brilliant to illuminate the vessel as it passes through, being produced by various species of *Salpa*, *Beroë*, and other Molluscs, while in the former case the scintillations, which adhere in myriads to the towing net when drawn out of the water, probably originate in animalcules so minute that the only indication of their presence is the light which they emit.

The author remarks that "the luminosity of the ocean is often seen with greater constancy and brilliancy of effect between the latitudes 3° and 4° north and 3° or 4° south of the equator, than at any other part of the tropical regions. This circumstance, which I have observed myself, if found to be borne out by repeated observations, may be occasioned by the eddies arising from currents, for it is a curious fact worth noticing, that where currents are known to exist, the luminosity of the ocean has been observed to assume a higher degree of brilliancy. Now the westerly current is supposed to run between those parallels of latitudes from 20° or 22° west lon-

gitudes towards the Brazilian coast perpetually, and it is not improbable that nearly at the termination of the north-east trade wind a current joins with a similar current carried by the south-east trade wind; both uniting in forming the westerly current may thus cause a greater assemblage of the various tropical molluscs and crustaceous animals, a number of which possessing luminous properties may impart by their presence a higher degree of phosphorescence in that particular portion of the ocean than is observed in other situations except from similar causes. That the diffusion of the phosphoric light possessed by these molluscs does not solely depend on the creatures being disturbed (such as the passage of the ship through the water, or other somewhat similar causes,) is evident, as a luminous mass may frequently be observed to gradually diffuse its brilliant light, at some distance from the ship, without any apparent disturbance; and often during calm nights a similar glow of light is diffused over the water, without there being any collision of the waves to bring it forth; and if a light breeze springs up during the same night, the passage of the vessel leaves no brilliant trace in its wake, although the same spontaneous diffusion of light is observed in the water at some distance to be repeated as before; the phosphoric light being confined apparently solely to the occasional groups of molluscs, which when we succeeded in capturing them in the towing net, resembled for the most part pieces of crystal cut into various fantastic forms, round, oval, hexagonal, heptagonal, &c. From the bodies of these a faint or a bright light (according to the greater or less duration of time the animal may have been removed from the water, that is, we may say, by the intensity of its light we can judge of its healthy or vigorous state,) would be seen to issue in minute dots from various parts; and on the examination of both large and small specimens, the large with the naked eye and the small under a powerful lens, I could not detect any one peculiar secreting organ for this luminous excretion.

" It has often occurred during the voyage that the ocean became suddenly brilliantly luminous, and at other times merely a constant succession of scintillations were visible. Again, it was remarked that no luminosity of the ocean was visible except what proceeded from the wake of the ship, the other parts of the ocean exhibiting no phosphorescence.

" On the 15th of April, 1835, in lat. 8° 45′ north, and longitude 21° 02′ west, during the day large quantities of a beautiful pink *Medusa* were taken in the towing net, which species I was previously aware possessed luminous powers, and as expected, at night the ocean was brilliantly luminous, which luminosity continued until about 8 P.M., after which time it had almost totally disappeared. During the time the phosphorescence was visible, the *Medusa* before mentioned was captured in large numbers, but on the disappearance of the luminosity no more were caught, evidently showing that the phosphorescence of the sea this evening was occasioned by their presence. I have frequently remarked that when the ocean appears brilliantly luminous, besides the animals producing the phosphorescence, several crustaceous animals and a number of small fish are

usually taken in large quantities: the presence of these may proceed from their being attracted by the phosphoric light. Sometimes during heavy rains within the tropics the sea would become suddenly luminous, as rapidly passing off again, and the effect of the sudden transitions was exceedingly splendid to the beholders. During its continuance luminous species of *Salpa*, *Beroë*, *Pyrosoma*, and other molluscs were captured in the towing net if the weather admitted of its being placed overboard."

On placing some of these luminous *Medusæ* in a bucket of water, Mr. Bennett observed that the phosphoric light is not emitted from any one particular part of the animal, but commences at different points, gradually extending over the whole body, sometimes suddenly disappearing, and at others slowly dying away. Upon squeezing the animal the hands became covered with a profusion of the luminous secretion, which could be communicated from one object to another. In conclusion several additional instances are related, occurring in different latitudes, of the beautiful and varied appearances presented by the phænomena of marine phosphorescence.

Mr. Martin directed the attention of the Meeting to three specimens of the genus *Felis*, recently presented to the Society by Charles Darwin, Esq. One of these appeared to be a cat of the domestic race, shot in a wild state at Maldonado, differing only from our common cat in the elongation and greater size of the head. The second was the "Chat Pampa" of Azara, *Felis Pajeros* of Desmarest, shot at Bahia Blanca in latitude 33. The third and most interesting specimen, which had been shot at Buenos Ayres, Mr. Martin was disposed to consider as the Yagourondi or a closely allied species, since it agrees with that animal in its elongate form, stout limbs and small head, but differs from it in the greater proportionate length of tail, and also in its entire dimensions, as recorded by Desmarest, who gives the following:

	ft.	in.	lin.
Length from nose to the root of the tail .	1	11	0
Length of tail	1	1	9
Length from nose to the ear	0	3	2

In the present specimen, which is evidently adult, the measurements were found to be as follows:

	ft.	in.	lin.
Length from nose to root of tail.....	2	2	0
——— of tail	1	8	0
——— from nose to ear.....	0	3	9
Height at shoulders.....	0	11	6
——— at haunches.....	1	0	6
Length of ear	0	1	2
Breadth of ear.....	0	1	6
From nose to eye.....	0	1	2

The hair is black, annulated with ochre, and sometimes with whitish yellow; each hair is pale brown at the base and then alternately black and yellow, the colours being repeated two or three times.

Upon the head the yellow colour is most prevalent. The under fur is thick and of a pale brown colour. The hair is about the same length or rather shorter than in the domestic cat, and much harsher to the touch. The hind feet are black beneath from the heel to the toes, and there is a streak of black about an inch and a half in length, passing upwards from the front paw on the outer side. The hair of the tail is long and bushy; the legs thick and moderately long; the general form is slender; the head small in proportion to the body, and considerably arched above. The region of the anterior angle of the eye is black, with a yellowish white spot immediately above it. The eyes are very small; the ears short, broad, and obtusely pointed, thickly covered with hair, which on the outside is of a similar colour to that on the top of the head, excepting at the tip, where it is margined with black. Inside the ears the hair is of a paler hue. The under parts of the body are of the same general hue as the sides. The tail is of the same general colour as the body, but the hairs become gradually less annulated towards the tip, their basal portions being brown and the apices black; the under side is of a somewhat paler hue than the upper. The lips and nose are black.

Mr. Martin remarked, that there was some reason for supposing two species were confounded under the same name, for he was aware of the existence of a cat with a shorter tail, agreeing very closely with Azara's description of the Yagourondi. Without, however, being in possession of more ample materials he did not like to characterize the present specimen as a new species, but in the event of its ultimately being considered distinct, he proposed that it should be called *Felis Darwinii.*

Mr. James Reid read some notes on several quadrupeds, also from the collection of Mr. Darwin, including a new species of *Opossum,* which he characterized as *Didelphis hortensis**. He also noticed a very young specimen of the *Viscache, Lagostomus trichodactylus* of Brooks. This example, not much larger than our common *Rat,* differs from the adult in wanting the ridge of stiff black hairs over the eyes so conspicuous in old specimens, and in wanting also the grooves on the teeth.

Mr. Gould exhibited from Mr. Darwin's collection of *Birds,* a series of *Ground Finches,* so peculiar in form that he was induced to regard them as constituting an entirely new group, containing 14 species, and appearing to be strictly confined to the Galapagos Islands. Mr. Gould believed the whole of these *Birds* to be undescribed, and remarked that their principal peculiarity consisted in the bill presenting several distinct modifications of form, while the general contour of the species closely assimilated. He proposed to characterize them under the separate generic appellations of *Geospiza, Camarhynchus, Cactornis,* and *Certhidea.*

* The characters of species newly described which have not yet been furnished by the respective authors, andare the refore necessarily omitted, will be inserted, if subsequently sent in, at the termination of the volume.

Geospiza.

Corporis figura brevissima et robusta.

Rostrum magnum, robustum, validum, altitudine longitudinem præstante; *culmine* arcuato et capitis verticem superante, apice sine denticulo, lateribus tumidis.

Naribus basalibus et semitectis plumis frontalibus.

Mandibulâ superiori tomiis medium versus sinum exhibentibus, ad *mandibulæ inferioris* processum recipiendum. *Mandibula inferior* ad basin lata, hoc infra oculos tendente. Alæ mediocres *remige primo* paulo breviore secundo, hoc longissimo.

Cauda brevissima et æqualis.

Tarsi magni et validi, *digito postico*, cum *ungue* robusto et *digito* intermedio breviore; *digitis* externis inter se æqualibus at *digito postico* brevioribus. Color in maribus niger, in fœm. fuscus.

Geospiza magnirostris. (Spec. typ.) *Geos. fuliginosa, crisso cinerascenti-albo; rostro nigro brunnescente lavato; pedibus nigris.*

Long. tot. 6 unc.; *alæ*, $3\frac{1}{2}$; *caudæ*, 2; *tarsi*, 1; *rostri*, $\frac{7}{8}$; alt. *rost.*, 1.

Fœm., vel Mas jun.; *corpore intensè fusco singulis plumis olivaceo cinctis; abdomine pallidiore; crisso cinerascenti-albo; pedibus et rostro, ut in mare adulto.*

Geospiza strenua. *Geos. fuliginosa, crisso albo, rostro fusco et nigro tincto; pedibus nigris.*

Long. tot. $5\frac{1}{2}$ unc.; *alæ*, 3; *caudæ*, $1\frac{3}{8}$; *tarsi*, $\frac{3}{4}$; *rostri*, $\frac{5}{8}$; alt. *rost.* $\frac{3}{8}$.

Fœm. *Summo corpore fusco singulis plumis nec non illis alarum caudæque, pallidè cinerascenti-olivaceo cinctis; gulâ et pectore fuscis; abdomine lateribus et crisso pallidè cinerascenti-fuscis; rostro brunnescente.*

Geospiza fortis. *Geos. intense fuliginosa, crisso albo; rostro rufescenti-brunneo, tincto nigro; pedibus nigris.*

Fœm. (vel Mas jun.) *Corpore suprà pectore et gutture intensè fuscis, singulis plumis cinerascenti-olivaceo marginatis; abdomine crissoque pallidè cinerascenti-brunneis; rostro rufescenti-fusco flavescente ad apicem; pedibus ut in mare.*

Geospiza nebulosa. *Geos. summo capite et corpore nigrescenti-fuscis; singulis plumis cinerascenti-olivaceo marginatis; corpore subtus pallidiore, abdomine imo crissoque cinerascentibus; rostro et pedibus intensè fuscis.*

Long. tot. 5 unc.; *alæ*, $2\frac{3}{4}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{3}{4}$; *rostri*, $\frac{5}{8}$; alt. *rost.*, $\frac{1}{2}$.

Geospiza fuliginosa. *Geos. intensè fuliginosa, crisso albo, rostro fusco; pedibus nigrescenti-fuscis.*

Long. tot. $4\frac{1}{2}$ unc.; *alæ*, $2\frac{1}{2}$; *caudæ*, $1\frac{5}{8}$; *tarsi*, $\frac{3}{4}$; *rostri*, $1\frac{1}{2}$; alt. *rostri*, $\frac{5}{8}$.

Fœm. *Summo corpore, alis, caudâque intensè fuscis; singulis plumis cinerascenti-ferrugineo marginatis; corpore infra cinereo, singulis plumis medium versus obscurioribus; rostro brunneo; pedibus nigrescenti-brunneis.*

Geospiza dentirostris. (Fœm. Mas ignotus.) *Mandibulæ superioris margine in dentem producto; vertice corporeque supra fuscis; singulis plumis medium versus obscurioribus; secundariis tectricibusque alarum ad marginem stramineis; gutture et pectore pallidè brunneis, singulis plumis medium versus obscurioribus, imo abdomine crissoque cinerascenti-albis; rostro rufo-fusco; pedibus obscurè plumbeis.*

Long. tot. $4\frac{3}{4}$; *alæ*, $2\frac{3}{8}$; *caudæ*, $1\frac{3}{4}$; *rostri*, $\frac{1}{2}$; alt. *rost.* $\frac{3}{8}$.

Geospiza parvula. (Mas.) *Geos. capite, gutture, et dorso fuliginosis; uropygio cinerascenti-olivaceo; caudâ et alis nigrescenti-brunneis; singulis plumis caudæ et alarum cinereo-marginatis; lateribus olivaceis fusco guttatis; abdomine et crisso albis, rostro et pedibus nigrescenti-brunneis.*

Long. tot. 4 unc.; *alæ*, $2\frac{3}{8}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{3}{4}$; *rostri*, $\frac{3}{8}$; alt. *rost.*, $\frac{5}{16}$.

Fœm. *Summo capite et dorso cinerascenti-brunneis, gutture, pectore, abdomine crissoque pallidè cinereis, stramineo tinctis.*

Geospiza dubia. (Fœm. Mas ignot.) *Geos. summo capite et corpore suprà fuscis, singulis plumis cinerascenti-olivaceo marginatis; strigâ superciliari, genis, gutture corpore infrà cinerascenti-olivaceis, singulis plumis notâ centrali fuscâ; alis caudâque brunneis singulis plumis olivaceo-cinereo marginatis; rostro sordidè albo, pedibus obscurè fuscis.*

Long. tot. $3\frac{3}{8}$ unc.; *alæ*, $2\frac{3}{4}$; *caudæ*, $1\frac{5}{8}$; *tarsi*, $\frac{7}{8}$; *rostri*, $\frac{5}{8}$; altitud. *rostri*, $\frac{3}{8}$.

Camarhynchus (subgenus).

Camarhynchus differt a genere *Geospizâ*, *rostro* debiliore, margine mandibulæ superioris minùs indentato; *culmine* minùs elevato in frontem et plus arcuato; *lateribus* tumidioribus; *mandibulâ* inferiore minus in genas tendente.

Camarhynchus psittacula. (Spec. typ.) *Cam. summo capite corporeque superiore fuscis; alis caudâque obscurioribus; gutture corporeque inferiore, cinerascenti-albis, stramineo tinctis; rostro pallidè flavescenti-fusco; pedibus fuscis.*

Long. tot. $4\frac{3}{4}$ unc.; *alæ*, $2\frac{3}{4}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{7}{8}$; *rostri*, $\frac{1}{2}$; alt. *rostri*, $\frac{1}{2}$.

Camarhynchus crassirostris. (Fœm.) *Cam. corpore superiore intensè brunneo, singulis plumis cinerascenti-olivaceo marginatis; gutture pectoreque cinerascenti-olivaceis, singulis in medio plumis obscurioribus; abdomine, lateribus crissoque cinereis tinctis stramineo.*

Long. tot. $5\frac{1}{2}$ unc.; *alæ*, $3\frac{3}{4}$; *caudæ*, 2; *tarsi*, $1\frac{1}{8}$; *rostri*, $\frac{1}{2}$; alt. *rostri*, $\frac{1}{2}$.

Cactornis (subgenus.)

Cactornis differt a genere *Geospizâ rostro* elongato, acuto, compresso, longitudine altitudinem excellente; *mandibulæ* superio-

ris margine vix indentato; *naribus* basalibus et vix tectis; *tarsis* brevioribus, *unguibus* majoribus et plus curvatis.

Cactornis scandens. (Spec. typ.) *Cact. intensè fuliginosa, crisso albo; rostro et pedibus nigrescenti-brunneis.*

Long. tot. 5 unc.; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{5}{8}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.

Fœm., vel Mas jun. *Corpore superiore, gutture pectoreque intensè brunneis, singulis plumis pallidiorè marginatis; abdomine crissoque cinereis, stramineo tinctis; rostro pallidè fusco; pedibus nigrescenti-fuscis.*

Cactornis assimilis. (Mas jun.?) *Cact. corpore suprà fuliginoso, nec non gutture abdomineque, illorum plumis, cinereo marginatis; rostro pallidè rufescenti-brunneo; pedibus nigrescenti-brunneis.*

Long. tot. $5\frac{1}{2}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{3}{4}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.

Certhidea (subgenus).

Certhidea differt a genere *Geospizâ rostro* graciliore et acutiore; *naribus* basalibus et non tectis; *mandibulæ* superioris margine recto; *tarsis* longioribus et gracilioribus.

Certhidea olivacea. *Cert. summo capite, corpore superiore, alis caudâque olivacco-brunneis; gutture et corpore infra cinereis; rostro pedibusque pallidè brunneis.*

Long. tot. 4 unc.; *rostri*, $\frac{1}{2}$; *alæ*, 2; *caudæ* $1\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Of the groups here characterized, *Geospiza*, *Camarhynchus*, and *Cactornis*, belong to one type; but with regard to *Certhidea*, Mr. Gould remarked that although he confidently believed that it should also be referred to the same group with the three former, yet in its slighter form and weaker bill it has so much the appearance of a member of the *Sylviadæ*, that he would by no means insist upon the above view being adopted until the matter shall have been more fully investigated.

Mr. Gould deferred entering into any further details respecting the species under consideration until Mr. Darwin had furnished him with some information relating to their habits and manners.

Mr. Gould then resumed the exhibition of a portion of his own collection of *Birds* from Australia, and characterized the following new species:

Hemipodius melanogaster.

Hem. capite, auriculis, guld abdomineque nigris; lined super oculum oriente et ad nucham excurrente, plumis singulis maculâ ad apicem albâ; nuchæ plumis nigris et castaneis, maculis pluribus albis; dorso superiore castaneo-fusco, plumis singulis maculâ albâ, lineis duabus nigris cum fasciâ unicâ nigrâ apicali; scapulis, tectricibus primariis secundariisque rufo-brunneis, plumis singulis maculâ albâ nigro circumdatâ; remigibus primariis saturatè brunneis; femoribus et tectricibus superioribus et inferioribus caudæ brunneis nigro fasciatis et irroratis; rostro pallidè brunneo; pedibus carneis.

Long. tot. $8\frac{1}{2}$ unc.; *rostri*, 1; *alæ*, $4\frac{1}{2}$; *caudæ*, $1\frac{5}{4}$; *tarsi*, $1\frac{1}{8}$.
Habitat in Novâ Cambriâ Australi, vel Terrâ Van Diemen.

Hemipodius melanotus. *Hem. capite nigro, plumis apicibus brunneis; loro, lineâ supra-oculari, buccisque, pallidè flavo-brunneis; plumis buccarum apicibus extremis nigris; nuchâ lætè castaneo-rufâ, plumis singulis fasciâ latâ nigrâ centrali lineâque cervinâ ad latera externa; dorso superiore uropygio et tectricibus caudæ superioribus nigris, singulis plumis brunneo minutè variegatis, nec non maculis obscurè fulvis; caudæ tectricibus externè, et alarum tectricibus majoribus minoribusque stramineis, harum plumis singulis maculâ nigrâ centrali; rectricibus brunneis; gulâ albescenti; collo anticè pectoreque saturatè stramineis; lateribus colli et corporis pallidè stramineis, vittâ oblongâ transversâ nigrâ centrali; abdomine tectricibusque inferioribus caudæ flavo-albidis; rostro pedibusque fuscis.*
Long. tot. $6\frac{1}{2}$ unc.; *rostri*, $\frac{7}{8}$; *alæ*, $3\frac{1}{4}$; *caudæ*, $\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.
Hab. In Terrâ Van Diemen.

Coturnix pectoralis. *Cot. loro, auriculis gulâque fulvis; summo capite nuchâque saturatè brunneis, lineis duabus stramineis super oculum; lineâ stramineâ à rostro ad nucham excurrente; nuchâ brunneâ, plumis singulis lanceolatâ centrali stramineâ, et ad latera nigro guttatis; dorso tectricibusque superioribus caudæ fuscis, lineis angularibus nigris transversim notatis, strigâque lanceolatâ centrali stramineâ; alis fuscis lineis angularibus griseis et nigris transversim fasciatis; remigibus primariis cum maculâ pectorali nigris; lateribus pectoris brunneis; abdomine albo, plumis singulis lineâ centrali nigrâ; lateribus corporis saturatè brunneis, plumis singulis strigis tribus, quarum exteriores nigræ sunt, intermediâ albâ; rostro nigrescenti; pedibus fusco-carneis.*
Long. tot. $6\frac{3}{4}$ unc.; *rostri*, $\frac{1}{2}$; *alæ*, $3\frac{7}{8}$; *tarsi*, $\frac{7}{8}$.
Habitat in Novâ Cambriâ Australi.

Mr. Gould also exhibited a new and interesting species of *Parrot*, presented to the Society by Mr. John Leadbeater, and which he characterized, on behalf of the donor, as *Platycercus ignitus*.

Platycercus ignitus, Leadb.

Plat. capite summo auriculis, uropygio, pectore, corporeque subtus coccineis; buccis albis; plumis singulis dorsi ad medium nigris, marginibus coccineo et flavo intermixtis; alâ mediâ cæruleâ primariis quintis ad basin albis, apicibus brunneis; rectricibus quatuor intermediis albis coccineo pallide tinctis; rectricibus reliquis cæruleis ad basin albis, ad apicem albescentibus; rostro livido; pedibus saturate fuscis.
Long. tot. 12 unc.; *alæ*, 6; *caudæ*, $6\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.
Hab. Australiâ.

January 24, 1837.

Rev. John Barlow, in the Chair.

Mr. Gould exhibited the Raptorial *Birds* included in the collection recently presented to the Society by Charles Darwin, Esq., and after some general observations upon the geographical distribution of the known species, proceeded to characterize the following as new to science:

Polyborus galapagoensis. *Pol. intensè fuscus; primariis nigris; secondariarum pogoniis internis albo et fusco transversim striatis; caudâ cinerascenti-fuscâ, transversim lineis angustis et frequentibus intensè fuscis notatâ; rostro obscure corneo; pedibus olivaceo-flavis.*

Long. tot. 20 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, $14\frac{1}{2}$; *caudæ*, 9; *tarsi*, $3\frac{1}{4}$.

Fœm. jun. *Capite et corpore intensè stramineis fuscoque variegatis; illo in pectore et abdomine prævalente; primariis fusconigris; caudis rectricum, pogoniis externis cinerascenti-fuscis, internis pallide-rosaceis; utrisque lineis angustis et frequentibus fuscis transversim striatis, apicibus sordide albis; rostro nigrescenti-fusco; pedibus olivaceo-flavis.*

Long. tot. 22 unc.; *rostri*, $1\frac{3}{4}$; *alæ*, 17; *caudæ*, $10\frac{1}{2}$; *tarsi*, $3\frac{1}{2}$.

Obs. Were I not assured by Mr. Darwin that the habits of this bird strictly coincide with those of the *Caracara* (*Polyborus Brasiliensis*), its mode of flight and cry being precisely the same, I should have been induced to regard it as rather belonging to the genus *Buteo* than to *Polyborus*; but as I have satisfactorily ascertained by a close investigation, it forms a beautiful intervening link between these genera, as is evidenced by the scaling of the tarsi and the produced form of the beak; while its habits place it within the limits of the latter genus.

It is on the authority of Mr. Darwin also that I rely for the assurance of the two birds above described being the male and the female of the same species, so great is the difference between them both in size and colour.

Hab. In insulis Galapagorum.

Polyborus (Phalcobænus) albogularis. *Pol. fuscescenti-niger, marginibus plumarum inter scapulos fulvis; primariis secondariisque albo ad apicem notatis; gulâ pectore corporeque subtus albis; lateribus fusco sparsis; rostro livido; cerâ flavâ; tarsis olivaceis.*

Long. tot. 20 unc.; *rostri*, $1\frac{5}{8}$; *alæ*, $18\frac{1}{2}$; *caudæ*, 9; *tarsi*, 3.

Obs. I have some doubts as to whether this bird may not eventually prove to be a variety of *Phalcobænus montana*, D'Orb. The principal difference between this bird and the one described and figured

by M. D'Orbigny is, that the throat and chest of the latter are brownish black, while the same parts in this bird are white.

Hab. Santa Cruz.

Buteo varius. *But. vertice corporeque supra intensè fuscis, plumis fulvo marginatis vel guttatis; primariis secondariisque cinereis, lineis fuscis frequentibus transversim striatis; caudâ cinereâ, lineis angustis et frequentibus fuscis transversim notatâ; singulis plumis flavescenti albo ad apicem notatis; gulâ fuliginosâ; pectore fulvo lineâ interruptâ nigrescente circumdatâ a gulâ tendente; abdomine imo lateribusque stramineo et rufescenti-fusco variegatis; femoribus crissoque stramineis lineis transversalibus anfractis rufescenti-fusco ornatis; rostro nigro; cerâ tarsisque olivaceis.*

Long. tot. $21\frac{1}{2}$; *alæ*, $16\frac{1}{2}$.

Obs. The fine individual above described was the only example of the species contained in Mr. Darwin's collection; and it is evidently in a state of change from youth to maturity.

Hab. Santa Cruz.

Circus megaspilus. *Circ. vertice corporeque supra intense fuscis, lineâ stramineâ a naribus supra oculos ad occiput tendente; hoc rufescenti-fusco, primariis intensè fuscis ad basin cinereis, lineis nigris cancellatis; tectricibus caudæ albis; rectricibus intermediis cinereis externis cinereo-stramineis; omnibus lineis latis fuscis transversim notatis; lineâ ultimâ latisimâ apice sordide stramineo; gulâ et pectore stramineis, fusco sparsis; corpore subtus stramineo; plumis pectoris et laterum striâ centrali fusco notatis; rostro nigro; cerâ tarsisque flavis.*

Long. tot. 21 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, 17; *caudæ*, $10\frac{1}{2}$; *tarsi*, $3\frac{1}{2}$.

Buteo ventralis. *But. vertice corporeque intense et nitide-fuscis, plumis dorsalibus purpurescentibus; primariis nigris; caudâ fuscâ lineis frequentibus obscurioribus, cancellatâ ad apicem sordide albâ; gulâ abdomine medio crissoque stramineo albis; lateribus pectoris corporisque fasciâque abdominali necnon femoribus flavescente-albis fusco notatis, notis in femoribus rufescentibus; tarsis per mediam partem antice plumosis, rostro nigro; cerâ tarsisque flavis.*

Long. tot. $21\frac{1}{2}$ unc.; *alæ*, $15\frac{1}{2}$; *rostri*, $9\frac{1}{2}$; *tarsi*, $3\frac{1}{2}$.

Otus (Brachyotus) galapagoensis. *Ot. fasciâ circa oculos fuliginosâ; strigâ superciliari plumis nares tangentibus et circa angulum oris, gulâ et disci fascialis margine albis; vertice corporeque supra intense stramineo fuscoque variegatis; primariis intense fuscis ad apicem, stramineo fasciatis ad basin; corpore subtus stramineo notis irregularibus fasciisque fuscis ornato; femoribus tarsisque plumosis rufescenti-stramineis; rostro et unguibus nigris.*

Long. tot. $13\frac{1}{2}$; *rostri*, 1; *alæ*, 11; *caudæ*, 6; *tarsi*, 2.

Obs. This species belongs to that section of the horned owls which

comprehends the short-eared owl of England, and numerous other nearly allied species which are distributed universally over the globe, from all of which it may be distinguished by its smaller size and darker colouring. I am led to regard the members of this section as possessing characters of sufficient value to justify their being separated into a distinct genus, for which I propose the name of *Brachyotus*.

Mr. Martin described a species of *Fox* brought by Mr. Darwin from the island of Chiloe, respecting which he made the following remarks:—

The animal in question is probably identical with the *Culpeu* of Molina, especially as the account of its surprise at the presence of man, uncombined with any exertions to escape, as given by Mr. Darwin, agree with the observations of Molina. Still, however, the description of the *Culpeu* is too vague to render its identity with the present species a matter of certainty; and as I regard it to be the best and safest plan in all doubtful cases to set the matter in such a light as to prevent if possible any confusion, I shall here describe and name the animal, for which I propose the specific title *fulvipes*.

Vulpes fulvipes. *Vulp. robustus, artubus brevibus caudâ mediocri; corporis colore cano nigroque commixtis; hoc in dorso prævalente: capite sordidè fulvescente, cano irrorato, rostro fusco, labiis superioribus ad marginem sordide albis, mento fuliginoso, auribus externe castaneis; brachiis interne, tarsis digitisque fulvis; genis, gulâ, corporeque subtus, sordide albis; caudâ vellere breviore per tertiam partem indutâ, apice floccoso et fuliginoso.*

	ft.	in.	lin.
Longitudo corporis ad basin caudæ.....	2	0	0
——— caudæ ad apicem velleris	0	9	0
——— rostri ad oculos	0	1	4
——— aurium	0	1	3
——— tarserum ad plantam digitalem	0	2	4
Altitudo apud humeros	0	10	0

Hab. Chiloe.

The *Vulpes fulvipes* is remarkable for the stout form of the body and the shortness of the limbs: the tail is rather short, and covered with hair of moderate length, except at the extremity, where it forms an abrupt and full tuft tipped with sooty black. The general fur is full, moderately deep, and rather harsh; on the body the colour is hoary mixed with black, the latter being more decided down the top of the back; the head inclines to fulvous, grizzled with hoary. The muzzle and skin are dusky, but the edges of the lips are white; the ears are rather short and of a chestnut brown; the outside of the fore limbs is dusky black freckled with fulvous inner side and toes pale fulvous brown; a dark mark approaching black above the tarsal joint; tarsi and toes fulvous brown. Under parts dirty white. Hair of two sorts, viz. those which constitute a soft

under vest of a dusky greyish brown, through which pass long hairs of a dusky brown at the base with a black band, followed by a yellowish white band and tipped with black; a mixture producing the grizzled character of the fur of the body.

The Secretary read a communication from J. O. Westwood, Esq., describing several new species of Insects belonging to the family of the *Sacred Beetles*.

After noticing the interest which is attached to the family of the *Scarabæidæ*, not only on account of their curious habits, whence they were raised to the rank of objects of worship by the Egyptians, but also from having led to the publication of the *Horæ Entomologicæ* by Mr. MacLeay, in which an analysis of the Linnæan *Scarabæi* was given; the author gives an abstract of the classifications of this family respectively proposed by MacLeay, Latreille, (*Règne An.*, 2nd edition), and Serville and Saint Fargeau (*Encyclop. Méthod.* vol. x.), with a notice of the genera more recently proposed by various authors referrible or allied thereto. From a review of these distributions in conjunction with the natural economy of the insects of which the family is composed, the author is disposed to consider the family as divisible into two natural groups, those with long hind legs and those which have their legs short and conical; and also that the characters of the genus *Scarabæus* and subgenus *Heliocantharus* must either be modified so as to exclude the species which are destitute of a distinct spur at the extremity of the intermediate *tibiæ*, or that the *Ateuchus Adamastor* (*Enc. Méth.*) and the insects subsequently described must be regarded as referrible to the genus *Scarabæus*, although possessing two spurs at the extremity of the intermediate *tibiæ*, agreeing in all other material respects with the true *Scarabæi*.

The following is an abstract of the characters of the insects, the descriptions of which were accompanied by figures exhibiting the various essential organs in detail, and by observations upon the structural peculiarities of the two groups.

Typus Sceliages.

Corpus latum, subdepressum. *Caput* subtrigonum clypeo trilobato, lobo intermedio valdè emarginato. *Antennæ* clavâ subglobosâ, articulo 7^mo^ magno infernè producto, articulos duos terminales in sinu ejus includente, ultimo 8vo minori. *Palpi* maxillares breves subfiliformes, labiales abbreviati 3-articulati, articulis magnitudine decrescentibus. *Thorax* abdomine paullo latior. *Tibiæ* anticæ magnæ, pone medium intus curvatæ. *Tibiæ* intermediæ bicalcaratæ.

Sceliages Iopas.

Ater nitidus lævis, clypei dentibus intermediis duobus obtusis subelevatis, capite anticè punctatissimo, thorace lævissimo, elytris punctis nonnullis minutissimis irregularibus striisque sex longitudinalibus simplicibus fere obliteratis.

Long. corp. 10 lin. Africa Austral. Mus. Hope et P. Walker.

Typus Anomiopsis.

Pedes elongati, *tibiæ* intermediæ curvatæ bicalcaratæ, calcaribus mobilibus interno, elongato acuto, externo breviori spatuliformi, *tarsi* pedum anticorum obsoleti, quatuor posticorum depressi setosi, unguibus nullis; *palpi* maxillares filiformibus, articulis tribus ultimis longitudine fere æqualibus; labiales difformes, articulo 2do maximo transverso-ovato, ultimo minutissimo internè et obliquè inserto.

Aniomiopsis Dioscorides.

Ater, nitidus punctatissimus; elytris 6-punctato-striatis; capitis thoracisque lateribus, femoribus anticis tarsisque quatuor posticis longè rufo-hirtis.

Long. corp. 13 lin. Mus. P. Walker et C. Darwin.

Hab. Patagoniâ.

Anomiopsis Sterquilinus.

Ater, nitidus punctatissimus, convexus, capite cornu elevato verticali, thorace impressione centrali valdè irregulari, elytris semicircularibus striis sex simplicibus in singulo, capite thorace tarsisque breviter rufo-hirtis.

Long. corp. 10 lin. Habitat. —? Mus. P. Walker.

Mr. Martin called the attention of the meeting to a specimen of the *Dasypus hybridus*, in the collection presented to the Society by C. Darwin, Esq. This animal, the *tatou mulet* of Azara, has been characterised in all systematic works, as closely related to *Dasypus Peba*, and as having large ears; whereas the ears are much smaller than in *D. Peba*, and but little larger than those of *D. minutus*. In reference to this species, which he at first was unable satisfactorily to identify, he observed that the vague and unsatisfactory account given in systematic works would, he conceived, justify him in laying before the meeting a more complete and definite description of the animal than he had been able to meet with, the want of which he had himself experienced, which he thus ventured to supply.

In *Dasypus hybridus* the contour of the body is short and stout, the limbs are robust, and the muzzle is shorter in proportion than in *D. Peba*. The admeasurements of the specimen in question are as follows:

	inch.	lin.
Length from the tip of the nose over the back to the root of the tail	13	3
——— from the top of the frontal plate to the end of the nose	3	0
——— from the anterior angle of eye to end of nose	1	7
——— from the same to base of ear	1	5
——— of ears	0	10
Extent of shoulder plate, from back of neck to its posterior edge	2	10

	inch.	lin.
Haunch plate, from its anterior to its posterior margin above the tail. . . .	2	10
Length of tail	6	9
Circumference of its basal ring, from which it rapidly tapers to a slender point	4	0

Number of dorsal bands 7.

In a small specimen of *D. Peba*, measuring from nose to root of tail 1 foot $2\frac{1}{2}$ inches, the ears measure $1\frac{1}{4}$ inch in length; and in a somewhat larger specimen (from nose to root of tail, 1 foot 3 inches) $1\frac{3}{8}$th inch.

In the smaller specimen of *D. Peba* the extent of the shoulder plate is $2\frac{3}{4}$ inches,—of the haunch plate 4 inches.

The length of the head $3\frac{1}{2}$ inches, and the distance from the anterior angle of the eye to the end of the nose, $2\frac{1}{8}$ inches.

Tail imperfect, but much longer than in *D. hybridus*.

Between *D. hybridus* and *D. Peba*, independently of the differences in the proportion of the ears and length of snout, the characters exhibited by the *scutellæ* of the plates are very distinct. In *D. hybridus* the *scutellæ* of the helmet are of moderate size, those in the centre of the upper part being elongated, and many sub-triangular, the rest occupying the space between the eyes and downwards are of an irregular figure, some nearly square, others pentagonal and hexagonal. In *D. Peba* the *scutellæ* are not only much larger, but of a more definite figure, being mostly hexagonal, with sides of unequal length.

In *D. hybridus* the *scutellæ* of the shoulder plate consist of elevated oval tubercles in transverse rows, the intervals being filled with smaller, very irregular, and less elevated granuli. The same observation applies to the haunch plate, in which the elevated oval *scutellæ* are remarkably distant and large, while somewhat smaller and flatter *scutellæ* form a rosette round each. In the *D. Peba* the larger *scutellæ* of this plate are round, and are encircled by others of very small size.

In *D. hybridus* the ears are delicately granulated,—in *D. Peba* coarsely.

As respects the *Das. minutus* there can be no possibility of confounding it with the *D. hybridus*.

Mr. James Reid exhibited to the Meeting, and characterized as new, under the name of *Obscurus*, a dark-coloured monkey, from the Society's collection, belonging to the genus *Semnopithecus*. The locality of the particular specimen before the Meeting was unknown.

February 14th, 1837.

William Brown Scott, Esq., in the Chair.

A letter was read from M. Julien Desjardins, a corresponding member of the Zoological Society, dated from the Mauritius, 15th July, 1836. The letter was accompanied by two copies of a memoir on the late Charles Telfair, Esq., President and Founder of the Natural History Society of that island. The memoir was written by M. Desjardins.

A letter dated Capetown, July 5th, 1836, from the Rev. James Adamson, a corresponding member, was read; the letter acknowledged the receipt of the printed Proceedings and Transactions of the Society, with thanks from the South African Literary and Scientific Institution.

A letter was also read from C. R. Read, Esq., a corresponding member, dated Singapore, September 2nd, 1836, announcing a present of 56 skins of birds, and the skin of an alligator of large size, which have been received.

At the request of the Chairman, Mr. Waterhouse brought under the notice of the Meeting numerous species of the genus *Mus*, forming part of the collection presented to this Society by Charles Darwin, Esq., a Corresponding Member. The specimens placed on the table had been collected at various parts of the Southern Coast of South America, viz. Coquimbo, Valparaiso, Port Desire, Maldonado, Bahia Blanca, &c.

Most of these numerous species were considered by Mr. Waterhouse as hitherto undescribed, and drawings were exhibited by him illustrative of the modifications observable in their dentition.

The specific characters of the species above referred to are as follows:

Mus tumidus. *M. brunneus, nigro lavatus, rostro ad apicem, labiis, mento, gulâ, pectore, abdomineque albis, naso suprà nigrescente; mystacibus atris; capite magno; auribus mediocribus rotundatis, pilis nigris et griseis intermixtis, vestitis; corpore crasso; caudâ capite corporeque breviore, pilis nigricantibus, subtùs albescentibus prope basin, vestitâ; artubus pedibusque grisescentibus; vellere longo, molli; pilis dorsi ochraceo annulatis apicibus nigris; pilis laterum apicibus fuscescenti-griseis; pilis omnibus ad basin plumbeis; unguibus longis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	6	9
——— *caudæ*	5	4
——— ab apice rostri ad marginem oculi	0	9
——— ab apice rostri ad basin auris	1	8
——— *tarsi digitorumque*.....	1	6
——— *auris*	0	7

Hab. Maldonado.

Mus. nasutus. *M. suprà obscurè flavescenti-fuscus, ad latera fulvescens; subtùs obscurè fulvo tinctus: pedibus pilis obscurè fuscis tectis; unguibus longis; auribus mediocribus; caudâ corpore breviore, suprà fuscâ, subtùs sordidè albâ: rhinario producto: vellere longo et molli.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	5	2
——— *caudæ*	2	8
——— ab apice rostri ad marginem oculi. .	0	$7\frac{3}{4}$
——— ab apice rostri ad basin auris	1	3
——— *tarsi digitorumque*	1	$0\frac{1}{2}$
——— *auris*	0	5

Hab. Maldonado.

Mus obscurus. *M. suprà fusco-nigrescens, subtus flavescens; pedibus obscurè fuscis; unguibus longiusculis; auribus mediocribus; caudâ corpore breviore, supra nigrescente, subtus sordidè albâ: vellere mediocri, molli.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	5	3
——— *caudæ*	2	7
——— ab apice rostri ad marginem oculi. .	0	6
——— ab apice rostri ad basin auris	1	$2\frac{1}{2}$
——— *tarsi digitorumque*	0	$11\frac{1}{2}$
——— *auris*	0	4

Hab. Maldonado.

Mus longipilis. *M. suprà obscurè griseus, flavo lavatus; subtus griseus; pedibus fuscis, unguibus longiusculis, auribus mediocribus; caudâ corpore breviore, suprà nigrescente, subtùs fuscescente; rhinario sub-producto: vellere longissimo, molli.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	5	4
——— *caudæ*	3	1
——— ab apice rostri ad marginem oculi. .	0	$6\frac{1}{2}$
——— ab apice rostri ad basin auris	1	2
——— *tarsi digitorumque*	1	$0\frac{1}{2}$
——— *auris*	0	$6\frac{1}{2}$

Hab. Coquimbo.

Mus olivaceus. *M. corpore suprà subolivaceo, subtùs cinerescente; auribus mediocribus, rotundatis, pilis parvulis fuscescentibus obsitis; caudâ corpore breviore, pilosâ, at squamas ostendente, suprà fuscâ subtùs albescente; pedibus pilis fuscescentibus tectis.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	5	1
——— *caudæ*	2	8
——— ab apice rostri ad marginem oculi.	0	6
——— ab apice rostri ad basin auris	1	2
——— *tarsi digitorumque*	0	11
——— *auris*	0	5
Latitudo *auris*	0	$5\frac{1}{2}$

Hujus speciei pili corporis omnes longi sunt, laxi, mollesque, plumbeo colore, sed in dorso ad apicem flavescente; abdomine, albescentes; pili longiores dorsales apicem versus nigricantes, cinerascentes desinunt: mystaces pilos tenues ostendunt cinereo colore, sed ad basin nigrescentes.

Hab. Valparaiso.

Mus micropus. *M. suprà cinerascenti-fuscus flavo lavatus; subtùs obscurè flavo tinctus; pedibus pilis sordidè albis tectis, antipedibus parvulis; auribus mediocribus; caudâ, quoad longitudinem, corpus ferè æquante, supra fuscâ, subtùs sordidè albâ.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	6	0
——— *caudæ*	3	8
——— ab apice rostri ad marginem oculi	0	$7\frac{1}{2}$
——— ab apice rostri ad basin auris	1	4
——— *tarsi digitorumque*	1	$0\frac{3}{4}$
——— *auris*	0	6

Hab. Santa Cruz.

Mus brachiotis. *M. suprà obscurè fuscus, subtùs obscurè griseo tinctus; pedibus griseo-fuscis; auribus parvulis; caudâ, quoad longitudinem, corpus ferè æquante: vellere longo et molli.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	4	9
——— *caudæ*	2	8
——— ab apice rostri ad marginem oculi	0	$6\frac{1}{4}$
——— ab apice rostri ad basin auris	1	2
——— *tarsi digitorumque*	0	11
——— *auris*	0	3

Hab. in insulâ parvulâ apud Midship Bay, Chonos Archipelago.

Mus xanthorhinus. *M. suprà griseus, subtùs albus, rhinario flavo; auribus parvulis, intùs pilis flavis obsitis; mystacibus longis, canis, ad basin nigrescentibus: caudâ corpore breviore, suprà fuscâ, ad latera flavescente, subtùs sordidè albâ: pedibus anticis tarsisque flavis, digitis albis: vellere longo, molli.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	4	0
——— *caudæ*	2	0
——— ab apice rostri ad marginem oculi	0	$5\frac{2}{3}$
——— ab apice rostri ad basin auris	1	$0\frac{3}{4}$
——— *tarsi digitorumque*	0	9
——— *auris*	0	$3\frac{3}{4}$

Statura mure musculo paulò major.

Hab. Santa Cruz.

Mus canescens. *M. suprà canescens, subtùs albus pallidè flavo lavatus; oculis flavido cinctis; auribus parvulis, pilis pallidè flavis et plumbeis obsitis; mystacibus mediocribus, canis, ad basin nigricantibus; caudâ vix corpore breviore, suprà fusco-nigrâ,*

subtùs sordide albâ; pedibus canescentibus; vellere mediocri, molli, suprà pilis pallidè et sordidè flavis, nonnullis cinerascentibus intermixtis.

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	3	4
——— *caudæ*	2	10
——— ab apice rostri ad marginem oculi..	0	$5\frac{1}{2}$
——— ab apice rostri ad basin auris	0	$11\frac{1}{4}$
——— *tarsi digitorumque*.....	0	9
——— *auris*.....	0	$3\frac{3}{4}$

Staturâ muri musculo appropinquat.
Hab. Port Desire.

Mus arenicola. *M. suprà fuscus, subtùs cinerascenti-albus, pallidè flavo tinctus; auribus mediocribus rotundatis, pilis flavis fuscisque obsitis: caudâ quod ad longitudinem pertinet corpus æquante, pilis subvestitâ, squamisque apparentibus, suprà fuscâ, infrà albescente; pedibus obscurè albis. Vellere longo, molli; pilis ad bases plumbeis, illis capitis, dorsi, laterumque apicem versus sordidè flavo et fusco-nigrescente variegatis; mento, gulâ, pectore, abdomineque, pilis ad apicem flavo-albidis; mystacibus plenis, brevibus tenerrimis ad basin fuscescentibus, ad apicem grisescenti-albis.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	4	3
——— *caudæ*.....	2	9
——— ab apice rostri ad marginem oculi..	0	$5\frac{3}{4}$
——— ab apice rostri ad basin auris	1	0
——— *tarsi digitorumque*.....	0	10
——— *auris*	0	$4\frac{1}{2}$

Hab. Maldonado.

Mus bimaculatus. *M. vellere pallidè ochraceo, pilis nigricantibus adsperso, his ad latera rarioribus; rostri lateribus, notâ magnâ pone aurem utramque, corporeque subtùs niveis: mystacibus albis, ad basin nigrescentibus; auribus majusculis, pilis flavis atque albis intermixtis obsitis: caudâ, quoad longitudinem, corpus ferè æquante, carneâ, pilis albis brevissimis obsitâ; artubus albis; pedibus pilis albis sparsim tectis; tarsis ad calcem pilis argenteo-candidis obsitis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	3	1
——— *caudæ*	1	11
——— ab apice rostri ad marginem oculi.	0	$4\frac{1}{2}$
——— ab apice rostri ad auris basin	0	$8\frac{3}{4}$
——— *tarsi digitorumque*.....	0	8
——— *auris*.....	0	$4\frac{1}{2}$

Hæc species mure musculo minor; auribus paululùm grandioribus ratione ad totam magnitudinem habitâ; pili gulæ, pectoris abdominisque albi sunt usque ad radices.
Hab. Maldonado.

Mus elegans. *M. suprà flavus, vellere pilis fuscescentibus adsperso, his ad latera et prope oculos, rarioribus: pilis pone aurem utramque, labiis, corpore subtùs, pedibusque niveis: auribus magnis, intùs pilis flavis, externè, ad partem anteriorem fuscis obsitis: mystacibus nigrescentibus, ad apicem albescentibus; caudâ capite corporeque paulo longiore, pilis albis, suprà fuscescentibus, obsitâ: tarsis longis, ad calcem pilis albis tectis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin. . . .	3	7
——— *caudæ*	3	9
——— ab apice rostri ad marginem oculi .	0	6
——— ab apice rostri ad basin auris	1	0
——— *tarsi digitorumque*	0	10
——— *auris*	0	6

Hæc species staturâ muri musculo appropinquat. Vellus in gulâ usque ad radicem album, in abdomine pallidè cinereum ad basin.

Hab. Bahia Blanca.

Mus gracilipes. *M. suprà fuscus flavo-lavatus; hoc colore apud latera et in artubus lætiore; pilis pone aurem utramque, labiis, corporeque subtùs, albis: pedibus parvulis, gracilibus, carneis, supra et ad calcem pilis albis tectis: caudâ gracili, carneâ, pilis albis instructâ: auribus majusculis, pilis flavescentibus obsitis: vellere mediocri et molli, pilis omnibus ad basin plumbeis: mystacibus nigrescentibus ad apicem albescentibus; nonnullis omninò albis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	2	10
——— *caudæ*	1	7
——— ab apice rostri ad marginem oculi .	0	$4\frac{1}{3}$
——— ab apice rostri ad basin auris	0	$8\frac{1}{4}$
——— *tarsi digitorumque*	0	$6\frac{1}{2}$
——— *auris*	0	$4\frac{1}{4}$

Hab. Bahia Blanca.

Mus flavescens. *M. suprà colore cinnamomeo, lateribus capitis, corporisque, æque ac pectore, auratis; gulâ abdomineque flavescenti-albis: pedibus albis: auribus mediocribus rotundatis, pilis flavis obsitis; illis ad marginem superiorem extrinsecùs intensè fuscis; caudâ corpore capiteque longiore, gracili, suprà fuscâ, subtùs sordidè albâ.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	3	9
——— *caudæ*	4	$1\frac{1}{2}$
——— ab apice rostri ad marginem oculi .	0	$5\frac{1}{2}$
——— ab apice rostri ad basin auris	1	0
——— *tarsi digitorumque*	1	$0\frac{1}{2}$
——— *auris*	0	$4\frac{1}{2}$

Hab. Maldonado.

Mus brevirostris. *M. supra fuscus fulvo lavatus; ad latera flavescens, subtùs sordidè ochraceus; auribus magnis, pilis indi-*

stinctè obsitis, illis internis auratis; caudâ capitem corpusque ferè æquante, pilis parcè tectâ; suprà obscurè fuscâ, subtùs pallidè fuscâ; pedibus fuscescentibus, digitis albicantibus; mystacibus fusco-nigris: vellere brevi, molli; capite parvulo, brevi.

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	3	2
——— *caudæ*	2	9
——— ab apice rostri ad marginem oculi	0	$3\frac{1}{4}$
——— ab apice rostri ad basin auris	0	7
——— *tarsi digitorumque*	0	9
——— *auris*	0	$4\frac{3}{4}$

Hæc species muri musculo appropinquat; differt attamen capite minore, (ratione ad magnitudinem habitâ,) rostro breviore, tarsisque longioribus.

Hab. Maldonado.

Mus Maurus. *M. pilis subrigidis, suprà purpurascenti-nigris, subtùs fusco-plumbeis; capite fusco-nigro, rostro fusco; auribus parvulis sordidè albis, pilis minutissimis pallidè fuscis obsitis: caudâ corpus ferè æquante, nigrâ, pilis sparsè vestitâ: pedibus fuscis; mystacibus fusco-nigris, ad apicem grisescentibus.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	11	3
——— *caudæ*	7	6
——— ab apice rostri ad marginem oculi	1	0
——— ab apice rostri ad basin auris	2	2
——— *tarsi digitorumque*	1	8
——— *auris*	0	$6\frac{1}{4}$

Hæc species colore muri ratto appropinquat, at purpurascenti-fusco tincta. Quoad staturam murem decumanum pergrandem æquat; vellus quoad texturam ferè est ut in mure decumano; et ad basin plumbeum; pilis albis in dorso lateribusque intersparsis.

Hab. Maldonado.

"Though in the foregoing description I have retained the generic title *Mus*, I have here to state that the above species naturally divide themselves into several subordinate groups, the characters of which are sufficiently evident, not only between themselves, but also between each group and that to which the term *Mus* ought, I conceive, to be restricted, and of which our common mouse (*Mus musculus*) may be regarded as the type. To these groups I shall here assign subgeneric titles, and at the same time point out their chief distinguishing characters without entering into any minute details respecting them, as I shall shortly have an opportunity of illustrating my views by means of drawings both of the teeth and of the animals, without which it is impossible to convey a clear idea of the subject."

Subgenus 1. Scapteromys*.

Molars with enamel deeply indented in the crown. In the front molar of the lower jaw the enamel is indented twice on the outer

* *Scapteromys*, from Σκαπτης, a digger, and Μυς.

margin and three times on the inner; in the second molar the enamel is indented once on the outer margin and twice on the inner; and in the last molar once on the outer, and twice on the inner. Fur long and soft. Tail moderate, well clothed with hair. Claws long, but slightly curved and formed for burrowing. Fore-feet moderately large. Thumb furnished with a distinct claw. Ears moderate, well clothed with hairs.

Species *Mus* (*Scapteromys*) *tumidus*.

Subgenus 2. Oxymycterus *.

Molars with the folds of enamel penetrating deeply into the body of the tooth. Front molar of the lower jaw with three indentations on the inner side and two on the outer; second molar with two on the outer side and the same number on the inner; the last molar with one indentation of the enamel on each side. Fur long and soft. Claws long, but slightly curved, and formed for burrowing. A distinct claw on the thumb. Tail short, moderately furnished with hair. Nose much elongated and pointed.

Species *Mus* (*Oxymycterus*) *nasutus*.

Subgenus 3. Abrothrix †.

Folds of enamel penetrating deeply into the sides of the molars. The front molar of the lower jaw has three folds of enamel on the inner side and two on the outer; the second molar has two on the inner side and one on the outer; and the last molar has one on each side. Fur long and soft. Tail short, well furnished with hair. Thumb with a short rounded nail. Ears well furnished with hair.

Type *Mus* (*Abrothrix*) *longipilis*.
Species 2 *Mus* (*Ab.*) *obscurus*.
——— 3 ——— *olivaceus*.
——— 4 ——— *micropus*.
——— 5 ——— *brachyotis*.
——— 6 ——— *xanthorhinus*.
——— 7 ——— *canescens*.
——— 8 ——— *arenicola*.

In general appearance these animals resemble *Arvicolæ*.

Subgenus 4. Calomys ‡.

Fur moderate, soft. *Tarsus* almost entirely clothed beneath with hair. Front molar with three indentations of enamel on the inner side and two on the outer; second molar with two on the inner and two on the outer; and the last molar with one on each side.

Type *Mus* (*Calomys*) *bimaculatus*.
Species 2 *Mus* (*Cal.*) *elegans*.
——— 3 ——— *gracilipes*.

Mus maurus and *M. brevirostris* I regard as belonging to the restricted genus *Mus*. In *Mus flavescens* the dentition differs *slightly* from that of the ordinary mice.

* *Oxymycterus*, from Οξυς, sharp, and Μυκτηρ, nose.
† *Abrothrix*, from Ἁβρος, soft or delicate, and Θριξ, hair.
‡ *Calomys*, from Καλος, beautiful, and Μυς.

Mr. Gould exhibited, in continuation, the *Fissirostral Birds* of Mr. Darwin's collection, recently presented to the Society, and characterized from among them the following new species:

CAPRIMULGUS BIFASCIATUS. *Cap. nigro, fusco, et fulvescente ornatus; caudâ albo bifasciatâ, fasciâ terminali lato: primâ angustâ; primariis nigrescentibus fasciâ angustâ albâ ad medium: alis spuriis maculâ albâ notatis; gutture lunulâ albâ; secondariis tectricibusque alarum maculâ fulvescente ad apicem; crisso pallidè rufescente; rostro pedibusque fuscis.*
Long. tot. unc., $9\frac{3}{4}$; *alæ*, $6\frac{1}{2}$; *caudæ*, 5; *tarsi*, $\frac{3}{4}$.

CAPRIMULGUS PARVULUS. *Cap. intensè fuscus, guttis minutis cinereis ornatus; vittâ rufâ cervicem cingente; gutture scapularibusque ad marginem, secondariis ad apicem stramineis; pectore et abdomine lineis fuscis transversis; primariis nigrescentibus, tribus fasciis inæqualibus pallidè rufescentibus; caudâ fasciis pallidè fulvescentibus et fuscis ornatâ.*
Long. tot. unc., $7\frac{1}{2}$; *alæ*, 5; *caudæ*, 4; *tarsi*, $\frac{5}{8}$.

HIRUNDO FRONTALIS. *Hir. vertice plumis auricularibus dorso et lunulâ pectorali nitidè cæruleo viridescentibus, notâ albâ super nares, gulâ corporeque subtus albicantibus, crisso niveo, alis caudâque fuscis viridi tinctis, rostro nigro, pedibus intensè fuscis.*
Long. tot $4\frac{3}{4}$ unc. *alæ*, $4\frac{3}{4}$; *caudæ*, 2; *tarsi*, $\frac{1}{2}$.
Hab. Montevideo.

HIRUNDO CONCOLOR. *Hir. nitidè cærulescenti niger.*
Long. tot. $5\frac{3}{4}$ unc. *alæ*, 5; *caudæ*, $2\frac{3}{4}$; *tarsi*, $\frac{1}{2}$.
Hab. in insulis Galapagorum.

HALCYON ERYTHRORHYNCHUS. *Halc. vertice plumis auricularibus, et nuchâ fuscescenti-cinereis, gulâ pectore et abdomine medio albis, lateribus abdomine imo crissoque castaneis, alis humerisque nigris secondariis ad marginem dorso medio tectricibusque caudæ metallicè viridibus, cæruleo tinctis, caudâ cæruleâ superne, subtus fuscâ, rostro pedibusque rubris.*
Long. tot. $7\frac{3}{4}$ unc.; *rost.*, 2; *alæ*, $3\frac{3}{4}$; *caudæ*, $2\frac{1}{2}$; *tarsi*, $\frac{1}{2}$.
Hab. in insulâ St. Iago.

February 28th, 1837.

The Rev. John Barlow, in the Chair.

The following notice by T. C. Eyton, Esq. of some osteological peculiarities in different skeletons of the genus *Sus* was read.

"Having during the last year prepared the skeleton of a male *Pig* of the pure Chinese breed, brought over by Lord Northampton, I was surprised to find that a very great difference existed in the number of the vertebræ from that given in the "*Leçons d'Anatomie Comparée*," vol. i. Ed. 1835. pag. 182, under the head either of *Sanglier* or *Cochon Domestique*. A short time afterwards, through the kindness of Sir Rowland Hill, Bart., M.P., I prepared the skeleton of a female *Pig* from Africa; this also differed, as also does the English long-legged sort as it is commonly called.

"The following table will show the differences in the number of the vertebræ in each skeleton with those given in the work above quoted.

	English Male.	African Female.	Chinese Male.	Leçons d'Anat. Comp. Sanglier.	Leçons d'Anat. Comp. Coch. dom.
Cerv.	7	7	7	7	7
Dors.	15	13	15	14	14
Lumb.	6	6	4	5	5
Sac.	5	5	4	4	4
Caud.	21	13	19	20	23
Total.....	55	44	49	50	53

It is possible that some of the caudal vertebræ may be missing.

"The Chinese *Pig* was imported into this country for the purpose of improving our native sorts, with which it breeds freely, and the offspring are again fruitful. I this winter saw a fine litter of *Pigs* by Sir Rowland Hill's African *Boar*, imported with the female I described, the mother of which was a common *Pig*; time will show whether they will again be fruitful.

"From what has been stated the result appears to me to be that either the above three *Pigs* must be considered as distinct species, and which, should the offspring of the two latter again produce young, would do away with the theory of Hunter, that the young of two distinct species are not fruitful, or we cannot consider osteological character a criterion of species.

"I have been induced to offer the above not with any desire of species-making, but of adding something towards the number of recorded facts by which the question what is a *species* must be answered."

A letter was read from Thomas Keir Short, Esq., dated Launceston, Van Diemen's Land, August 10th, 1836, containing some remarks upon the *Apteryx*, two living specimens of which had been seen by the writer. The general correctness of the description published by Mr. Yarrell of this bird is confirmed by the observations of Mr. Short, with the exception of its progressive powers, which are stated to be remarkably great. The natives employ two methods of capturing it; one by hunting it down with very swift dogs, the other by imitating its call at night, and when by this means the bird is decoyed within a short distance, it is suddenly exposed to a strong light, which so confuses it that it is then readily taken. The usual position is standing, with the head drawn back between the shoulders, and the bill pointing to the ground. The food is stated to be principally worms and insects, and these birds are strictly nocturnal in their habits, feeding only during the night. Mr. Short remarks, that he has not been able to learn the place in which the *Apteryx* builds its nest, or the number of eggs which it lays. In conclusion, he promises to use his utmost endeavours to procure specimens for the Society.

Mr. Gould resumed the exhibition of his collection of Australian Birds, as also several species, from the same country, forming portions of the collections of the United Service Museum, and of King's College, London. Among his own birds Mr. Gould characterized two new species of *Meliphagidæ*, constituting a subdivision of that family, including *Meliphaga tenuirostris* of authors. For this new group he proposed the generic title of *Acanthorhynchus*, and for the two new species the names of *A. superciliosus* and *A. dubius*.

Acanthorhynchus. (Gen. char.) *Rostrum* elongatum gracile et acutum; ad latera compressum; tomiis incurvatis; culmine acuto et elevato.

Nares basales elongatæ et operculo tectæ.

Lingua ut in Gen. *Meliphaga*.

Alæ mediocres et sub-rotundatæ, remigibus primis et quintis ferè æqualibus; tertiis et quartis intensè æqualibus et longissimis.

Cauda mediocris, et paululùm furcata.

Tarsi elongati, fortes; halluce digito medio longiore et robustiore; digito externo medium superante.

Ungues curvati.

Typus, Certhia tenuirostris, auct.

Acanthorhynchus superciliosus. *Ac. summo capite, corpore superiore, alis, caudæque rectricibus sex intermediis cinerascenti-fuscis, rectricibus reliquis nigris albo amplè terminatis; loro plumisque auricularibus nigrescenti-fuscis; gutture summo, genis lineâque superciliari albis; gutture colloque nitidè et pallidè castaneis; illius colore vittâ albâ infrà circumdato, cui vitta nigra accedit; abdomine crissoque pallidè cinerascenti-fuscis; rostro pedibusque nigris.*

Long. tot $5\frac{1}{4}$ unc.; *rostri*, $1\frac{1}{8}$; *alæ*, $2\frac{1}{2}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{3}{4}$.
Hab. in terrâ Van Diemen.

Acanthorhynchus dubius. *Ac. summo capite intensè cinerascenti-viridi; loro, plumis auricularibus, lunulâ in utroque pectoris latere, rectricibusque caudæ sex intermediis nigrescenti-fuscis, rectricibus reliquis nigris ad apicem albis; nuchâ obscurè rufâ; secundariis, tectricibus alæ majoribus, et uropygio cinereis; gulâ pectoreque cinerescenti-albis, illâ rufo tinctâ; abdomine crissoque nitidè at pallidè castaneis; rostro pedibusque nigris.*
Long. tot. $5\frac{1}{2}$ unc.; *rostri*, 1; *alæ*, $2\frac{3}{8}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{3}{4}$.
Obs. Although I have given the name of *dubius* to this species on account of its close resemblance to *Acanthorhynchus tenuirostris*, I have but little doubt that it will ultimately prove to be distinct.
Hab. in terrâ Van Diemen.

The following species, also in Mr. Gould's collection, were named and characterized:

Pardalotus affinis. *Pard. fronte nigro; vertice nigro, singulis plumis lineâ centrali albâ; lineâ superciliari flavâ ad basin rostri oriente, cum lineâ albâ conjunctâ occiput versus tendente; nuchâ dorsoque sordidè olivaceo-fuscis; uropygio tectricibusque caudæ flavidè olivaceo-fuscis; alis nigris, primariis notâ albâ apicali ornatis, plumâ tertiâ albescente ad marginem externum; secundariis albo rufoque marginatis; alâ spuriâ ad apicem flavâ; caudæ rectricibus nigrescenti-fuscis transversim albo ad apicem notatis; auriculis genisque cinerescentibus; gulâ flavâ; pectore abdomineque mediis pallidè flavis, albo intermixtis; lateribus flavidè olivaceo-fuscis; rostro nigro; pedibus fuscis.*
Long. tot. $3\frac{1}{4}$ unc.; *rostri*, $\frac{5}{8}$; *alæ*, $2\frac{5}{8}$; *caudæ*, $1\frac{1}{4}$; *tarsi*, $\frac{13}{16}$.
Obs. This species differs from *Pardalotus striatus* in having a larger bill, a longer wing, and a longer tarsus, and in the absence of the white margination of the five primaries; the tips of the spurious wing in the present species is yellow, while in *Pardalotus striatus* the same part is scarlet. I am somewhat disposed to believe that the bird figured by Dr. Latham may be referable to this species, and not to the following.
Hab. In terrâ Van Diemen.

Nanodes elegans. Mas. *Nan. vittâ frontali purpureâ, suprà lineâ metallicè cæruleâ marginatâ ad auriculas tendente; loro splendidè flavo; capite, genis, dorso, tectricibusque caudæ olivacco-viridibus aureo lavatis; humeris cæruleis, primariis nigris, primis quatuor ad marginem viridescentibus; secundariis alâque spuriâ nigris; gulâ pectoreque viridescenti-flavis, hoc colore in flavum, abdomine crissoque transeunte; abdomine centrali pallidè aurantiaco; rectricibus caudæ duabus intermediis viridescenti-cæruleis, reliquis ad basin cæruleis, amplè flavo terminatis; rostro pedibusque intensè fuscis.*

Fœm. vel Mas Junior *vittâ frontali caret, et colorem habet indistinctiorem.*
Long. tot. 9 unc.; *alæ*, $4\frac{3}{8}$; *caudæ*, $5\frac{1}{4}$; *tarsi*, $\frac{1}{2}$.
Hab. In terrâ Van Diemen?

Platycercus flaveolus. *Plat. fronte coccineo; buccis pallidè cæruleis; summo capite, nuchâ, et dorso, uropygio, tectricibus caudæ superioribus, corporeque infernè pallidè flavidis, plumis dorsi parteque inferiori tectricum alæ majorum centris nigris externè flavescentibus; alis mediis cyaneis; alâ spuriâ primariisque externè ad basin saturatè violaceis; reliquis primarium saturatè brunneis; rectricibus duabus intermediis caudæ ad basin viridescentibus, ad apicem cæruleis, reliquis rectricum ad basin exteriorem saturatè cæruleis, apicibus pallidioribus, plumis internè ferè per totam longitudinem brunneis, apicibus extremis albis; rostro livido; pedibus fuscis.*
Long. tot. $13\frac{1}{4}$ unc.; *alæ*, 7; *caudæ*, $7\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.
Hab. in Novâ Cambriâ Australi.

Himantopus leucocephalus. *Him. albus; nuchâ, dorso, alisque nigris, nitore viridi; rostro nigro; pedibus rufis.*
Long. tot. 15 unc.; *rostri*, $2\frac{1}{2}$; *alæ*, $8\frac{1}{2}$; *caudæ*, 3; *tarsi ad primum articulum* 4, *spatii nudi super eum* $2\frac{1}{2}$.
Obs. This is a well-known species, but has hitherto been confounded with the *Himantopus melanopterus*, under which title it has been described by various authors.
Hab. Australiâ et insulis Javâ, Sumatrâ.

Mr. Gould also characterized two new species of the genus *Sterna*, from the collection in King's College, and a species of *Cormorant* in the United Service Museum, and three species of the genus *Orpheus*, from the Galapagos, in the collection of Mr. Darwin.

Sterna poliocerca. *Stern. fronte cinerascenti-albo in nigrum ad occiput mergente; gutture, collo anticè et posticè, corporeque subtùs albis; corpore suprà, alis, caudâque cinerascentibus; rostro flavo; pedibus nigris.*
Long. tot. $17\frac{1}{2}$ unc.; *rostri*, $2\frac{3}{4}$; *alæ*, $12\frac{3}{4}$; *caudæ*, 7; *tarsi*, 1.
Hab. in terrâ Van Diemen.

Sterna macrotarsa. *Stern. vertice et nuchâ nigris; corpore suprà primariisque argenteo-cinerascentibus; partibus reliquis corporis albis; rostro pedibusque nigris.*
Long. tot. 15 unc.; *rostri*, $2\frac{1}{2}$; *alæ*, 12; *caudæ*, $5\frac{1}{4}$; *tarsi*, $1\frac{5}{8}$.
Hab. in terrâ Van Diemen.

Phalacrocorax brevirostris. *Phal. rostro flavo culmine ad basinque nigrescenti-fuscis; gutture plumis auricularibus genisque albis. Nuchâ pectore corporeque subtus cum caudâ nitidè*

nigris; dorsi alarumque plumis intensè cinereis, nigro marginatis, pedibus nigris.
Long. tot. 23 unc.; *rostri*, $2\frac{3}{8}$; *alæ*, $9\frac{1}{2}$; *caudæ*, $7\frac{1}{2}$; *tarsi*, $1\frac{1}{4}$.

Orpheus trifasciatus. *Orph. vertice, nuchâ, et dorso nigrescentibus; uropygio rufo pallidè lavato; alis nigrescentibus tectricibus notâ albescente terminali, fascias tres transversas facientibus rectricibus caudæ duabus intermediis nigrescentibus, reliquis ad apicem pallidioribus; plumis auricularibus strigâ superciliari, gulâ, et corpore subtùs albis, lateribus notis guttisque fuscis ornatis; rostro pedibusque nigris.*
Long. tot. $10\frac{5}{8}$ unc.; *rostri*, $1\frac{3}{8}$; *alæ*, 5; *caudæ*, $5\frac{1}{2}$; *tarsi*, $1\frac{3}{4}$.

Orpheus melanotis. *Orph. vertice, nuchâ, dorsoque pallidè fuscis; plumis capitis et dorsi ad medium colore saturatiore; alis intensè fuscis singulis, plumis ad marginem pallidioribus, secondariis, tectricibusque majoribus notâ albâ terminali, fascias duas transversas facientibus; caudæ rectricibus nigrescenti-fuscis ad apicem albis, loro, plumisque auricularibus nigrescenti-fuscis; laterum plumis notâ fuscâ centrali, abdomine albo; rostro pedibusque nigris.*
Long. tot. $9\frac{1}{2}$ unc.; *rostri*, $1\frac{1}{4}$; *alæ*, $4\frac{1}{2}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, $1\frac{3}{8}$.

Orpheus parvulus. *Orph. vertice, nuchâ caudâque intensè fuscis, hujus rectricibus ad apicem albo notatis; alis fuscis secondariis tectricibusque notâ albâ apicali fascias duas transversas facientibus; loro, plumisque auricularibus nigrescentibus, gulâ, colli lateribus pectore, et abdomine albescentibus; plumis laterum notis fuscis per medium longitudinaliter excurrentibus.*
Long. tot. $8\frac{1}{8}$ unc.; *rostri*, 1; *alæ*, $3\frac{5}{8}$; *caudæ*, $3\frac{3}{4}$; *tarsi*, $1\frac{1}{4}$.

Mr. Waterhouse resumed the exhibition of the small *Rodents*, belonging to the collection presented by Mr. Darwin to the Society. Among them were three species allied to the genus *Mus*, but offering some slight modification, not only in the external form, but in the structure of the teeth. They have the fur soft and silky; the head large, and the fore legs very small and delicate; the *tarsus* moderately long and bare beneath; in the number and proportion of the toes they agree with the true rats; the tail is moderately long, and more thickly clothed with hair than in the typical rats. The ears are large, and clothed with hair. Like the true rats, they have twelve rooted molars; the folds of enamel, however, penetrate more deeply into the body of each tooth, and enter in such a way that the crowns of the teeth are divided into transverse and somewhat lozenge-shaped lobes, or in some instances into lobes of a triangular form. In the front molar of the upper jaw the enamel enters the body of the tooth twice, both on the outer and inner sides; and in the second and posterior molars, both of the upper and under jaws, the enamel penetrates but once externally and in-

ternally in each. In the front molar of the lower jaw the enamel enters the body of the tooth three times internally, and twice externally.

As the above-mentioned characters, in Mr. Waterhouse's opinion, evidently indicated an aberrant form of the Muridæ, he suggested the propriety of constituting a subgenus under the name of Phyllotis* for the reception of the species.

They were characterized as follows:—

Mus (Phyllotis) Darwinii. *M. suprà pilis cinnamomeis et nigrescentibus intermixtis; ante oculos cinerascentibus; genis, lateribus corporis, et caudâ prope basin, fulvo-cinnamomeis; partibus inferioribus pedibusque albis; auribus permagnis, ferè nudis; caudâ caput corpusque ferè æquante, suprà fusco-nigricante, subtùs albâ.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	6	0
——— *caudæ*	4	9
——— ab apice rostri ad marginem oculi	0	$8\frac{1}{4}$
——— ab apice rostri ad basin auris	1	$4\frac{1}{2}$
——— *tarsi digitorumque*	1	$1\frac{1}{2}$
——— auris	0	$11\frac{3}{4}$
Auris latitudo	0	$11\frac{3}{4}$

Hab. Coquimbo.

This little animal is remarkable for its large leaf-like ears.

Mus (Phyllotis) xanthopygus. *M. suprà pallidè brunneus flavo-lavatus, ad latera flavescens, subtùs albus; capite griscescente; natibus flavis; pedibus albis; auribus majusculis pilis albis et flavis intermixtis obsitis; caudâ longitudinem corporis ferè æquante, suprà nigricante; subtùs albâ; vellere longo et molli; pilis corporis omnibus ad basin plumbeis; mystacibus perlongis albescentibus, ad basin nigris.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	5	3
——— *caudæ*	3	10
——— ab apice rostri ad marginem oculi	0	$6\frac{3}{4}$
——— ab apice rostri ad basin auris	1	3
——— *tarsi digitorumque*	1	1
——— auris	0	7
Auris latitudo	0	$6\frac{1}{2}$

Hab. Santa Cruz.

Mus (Phyllotis) griseo-flavus. *M. suprà griseus flavo-lavatus, ad latera flavus, subtus albus; pedibus albis; auribus magnis et ferè nudis; caudâ caput corpusque ferè æquante, suprà fusco-nigricante, subtùs albâ; vellere longo, molli; pilis ad bases plumbeis.*

* *Phyllotis*, from Φυλλον, a leaf, and Ους, ωτος, an ear.

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	6	8
——— *caudæ*	5	6
——— ab apice rostri ad marginem oculi	0	8
——— ab apice rostri ad basin auris	1	$4\frac{1}{2}$
——— *tarsi digitorumque*	1	$2\frac{1}{2}$
——— *auris*	0	$8\frac{1}{2}$
Latitudo *auris*	0	$8\frac{1}{2}$

Hab. Rio Negro.

This species may be readily distinguished from *M. xanthopygus* by the greater proportionate length of its tail.

Two species of small Rodents were next characterized as constituting examples of a new genus, for which Mr. Waterhouse proposed the name of

REITHRODON.*

"*Dentes primores* $\frac{2}{2}$; inferioribus acutis, gracilibus, et anticè lævibus; superioribus gracilibus, anticè longitudinalitèr sulcatis.

Molares utrinque $\frac{3}{3}$ radicati; primo maximo, ultimo minimo: primo superiore plicas vitreas duas externè et internè alternatim exhibente; secundo, et tertio, plicas duas externè, internè unam: primo inferiore plicas vitreas tres externè, duas internè; secundo, plicas duas externè, unam internè; tertio unam externè et internè, exhibentibus.

Artus inæquales: *antipedes* 4-dactyli, cum pollice exiguo unguiculato: *pedes postici* 5-dactyli, digitis externis et internis brevissimis.

Ungues parvuli et debiles. *Tarsi* subtùs pilosi.

Cauda mediocris, pilis brevibus adpressis instructa.

Caput magnum, fronte convexo: oculis magnis: auribus mediocribus.

"In the present genus, the incisors, compared with those of the true rats, are rather smaller in proportion, and those of the upper jaw also differ in having a longitudinal groove, a character which exists in *Euryotis* (Brants), *Gerbillus*, *Otomys* (Smith), *Dendromys*, and some other genera, but not combined with molars similar in structure to those above described, nor yet with similar external characters. In other respects the incisors resemble those of the genus *Mus*; that is to say, those of the lower jaw are long, slender, and pointed, and those of the upper are deep from front to back, and somewhat flattened at the sides and in front. The molars gradually decrease in size from the front to the last posterior tooth. The folds of enamel penetrate deeply into the crowns of these teeth, so that those from one side are in contact with those of the other; these folds of enamel are each nearly opposed to the salient angles of the opposite side.

"In the two species of this genus with which I am acquainted the fur is long, very soft, and consists of hairs of two lengths. The

* Ρειθρος, a channel; Οδον, a tooth.

arched form of the head and the large eyes produce in these animals a slight resemblance to young rabbits; their affinity, however, is with the *Muridæ*."

Reithrodon typicus. *Reithr. vellere suprà pilis flavescenti-fuscis et nigrescentibus intermixtis composito; regione circa oculos, genis lateribusque corporis auratis, pilis pallidè fuscis intermixtis; partibus inferioribus auratis; rhinario ad latera flavescenti-albo; auribus magnis, intùs pilis flavis, extùs flavis et fuscis, indutis; caudâ suprà pallidè fuscâ, subtùs sordidè albâ; pedibus albis.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	6	0
——— ab apice rostri ad marginem oculi .	0	$8\frac{1}{4}$
——— ab apice rostri ad basin auris	1	$4\frac{1}{2}$
——— *tarsi digitorumque*	1	$2\frac{1}{2}$
——— *auris*	0	$8\frac{1}{2}$
Latitudo *auris*	0	$8\frac{1}{2}$

Hab. Maldonado.

Reithrodon cuniculoïdes. *Reithr. suprà griseus, flavo-lavatus, pilis nigris intermixtis; abdomine gulâque pallidè flavis; natibus albis; pedibus albis; auribus mediocribus, intùs pilis flavis, extùs pilis pallidè flavis, obsitis, maculâ nigrescente ad marginem anteriorem positâ; pone aures, notâ magnâ albescenti-flavâ; caudâ corpore breviore, suprà pallidè fuscâ, subtùs albâ.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	6	5
——— *caudæ*	3	$3\frac{1}{2}$
——— ab apice rostri ad marginem oculi .	0	$9\frac{1}{3}$
——— ab apice rostri ad basin auris	1	4
——— *tarsi digitorumque*	1	$4\frac{1}{2}$
——— *auris*	0	7

Hab. Santa Cruz.

In conclusion, two other new Rodents were characterized under the generic name of

Abrocoma.*

Dentes primores $\frac{2}{2}$ acuti, eradicati, anticè lævis: *molares* utrinque $\frac{4}{4}$ subæquales, illis maxillæ superioris in areas duas transversales ob plicas vitreas acutè indentatas divisis; plicis utriusque lateris vix æquè profundis; illis mandibulæ inferioris in tres partes divisis, plicis vitreis bis internè, semel externè indentatis, areâ primâ sagittæ cuspidem fingente, cæteris acutè triangularibus.

Artus subæquales.

Antipedes 4-dactyli, externo brevissimo, intermediis longissimis et ferè æqualibus.

* Ἁβρος, soft; Κομη, hair.

Pedes postici 5-dactyli; digito interno brevissimo. *Ungues* breves et debiles, illo digiti secundi lato et lamellari; omnibus setis rigidis obtectis.

Caput mediocre, auribus magnis, membranaceis; oculis mediocribus.

Cauda breviuscula.

Vellus perlongum, et molle.

" The genus Abrocoma is evidently allied on the one hand to *Octodon*, *Ctenomys*, and *Pæphagomys*, and it appears to me almost as evidently allied on the other hand, to the *Chinchillidæ*. The dentition, however, differs considerably from either of the above-mentioned genera, or, from either of those of the family *Chinchillidæ*, and in fact indicates a new generic form*. From *Ctenomys* and *Pæphagomys* the present genus is readily distinguished, by the comparatively large size of the ears, the small delicate claws, and smaller size of the incisors; and from *Octodon* by the uniform length of the hairs on the tail.

" In the structure of the feet the genus *Abrocoma* approaches very nearly to *Octodon*, not only in the form, but in having the soles both of the fore and hind feet (which are devoid of hair) covered with minute round fleshy tubercles. In *Octodon*, however, the toes have on their under side transverse incisions as observed in the *Muridæ*, a character, however, not found in *Abrocoma*; here the under side of the toes is, like the sole of the foot, covered with tubercles.

" The extreme softness of the fur of the animals about to be described, suggested for them the generic name of *Abrocoma*. The fur consists of hairs of two lengths, and the longer hairs are so extremely slender that they might almost be compared to the web of the spider. The specific names applied are those of the distinguished naturalists who first made us acquainted with the two genera *Octodon* and *Pæphagomys*, these being very nearly allied to *Abrocoma*."

Abrocoma Bennettii. *A. corpore suprà griseo, ad latera pallidiore et pallidè cervino lavato, subtùs albescenti-cervino; gulâ albescenti-griseâ; pedibus sordidè albis: auribus amplis, ad marginem posticum rectis, fere nudis, attamen extùs ad bases vellere, sicùt in corpore, obsitis: caudâ corpore breviore, ad basin crassiusculâ, pilis brevibus incumbentibus vestitâ.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	9	9
——— *caudæ*	5	0
——— ab apice rostri ad marginem oculi	0	11½
——— ab apice rostri ad basin auris	1	11
——— *tarsi digitorumque*	1	4
——— *auris*	0	10
Latitudo *auris*	1	0½

Hab. Chili.

* " I may here mention that the folds of enamel in the dentition of the lower jaw very much resemble those in the teeth of the genus *Arvicola*."

Abrocoma Cuvieri. *Ab. suprà grisea, levitèr ochraceo lavata; abdomine gulâque albescenti-griseis; pedibus sordidè albis; auribus amplis, ad marginem posticum distinctè emarginatis, ferè nudis attamen extùs ad bases vellere, sicùt in corpore, obsitis: caudâ corpore multò breviore, et nigrescente.*

	unc.	lin.
Longitudo ab apice rostri usque ad caudæ basin	6	6
——— *caudæ*	2	10
——— ab apice rostri ad marginem oculi ..	0	$6\frac{3}{4}$
——— ab apice rostri ad basin auris	1	4
——— *tarsi digitorumque*	1	1
——— *auris*	0	7
Latitudo *auris*	0	$7\frac{1}{2}$

Hab. Valparaiso.

March 14th, 1837.

Richard Owen, Esq., in the Chair.

A paper was read, "On the habits of the *Vultur aura*," by Mr. W. Sells, with notes of dissections of the heads of two specimens, by Mr. R. Owen.

The writer states that this bird is found in great abundance in the Island of Jamaica, where it is known by the name of *John Crow*; and so valuable are its services in the removal of carrion and animal filth, that the legislature have imposed a fine of £5 upon any one destroying it within a stated distance of the principal towns. Its ordinary food is carrion, but when hard pressed with hunger it will seize upon young fowls, rats, and snakes. After noticing the highly offensive odour emitted from the eggs of this bird when broken, Mr. Sells relates the following instances which have come under his own personal observation, for the purpose of proving, that the *Vultur aura* possesses the sense of smell in a very acute degree.

"It has been questioned whether the vulture discovers its food by means of the organ of smell or that of sight. I apprehend that its powers of vision are very considerable, and of most important use to the bird in that point of view; but that it is principally from highly organized olfactories that it so speedily receives intelligence of where the savory morsel is to be found will plainly appear by the following facts. In hot climates the burial of the dead commonly takes place in about twenty-four hours after death, and that necessarily, so rapidly does decomposition take place. On one occasion I had to make a post-mortem examination of a body within twenty hours after death, in a mill-house, completely concealed, and while so engaged the roof of the mill-house was thickly studded with these birds. Another instance was that of an old patient and much-valued friend who died at midnight: the family had to send for necessaries for the funeral to Spanish Town, distant thirty miles, so that the interment could not take place until noon of the second day, or thirty-six hours after his decease, long before which time, and a most painful sight it was, the ridge of the shingled roof of his house, a large mansion of but one floor, had a number of these melancholy-looking heralds of death perched thereon, beside many more which had settled in trees in its immediate vicinity. In these cases the birds must have been directed by smell alone as sight was totally out of the question.

"In opposition to the above opinion, it has been stated by Mr. Audubon that vultures and other birds of prey possess the sense of smell in a very inferior degree to carnivorous quadrupeds, and that so far from guiding them to their prey from a distance, it affords them no indication of its presence, even when close at hand. In confirmation of this opinion he relates that he stuffed the skin of a deer full of hay

and placed it in a field; in a few minutes a vulture alighted near it and directly proceeded to attack it, but finding no eatable food he at length quitted it. And he further relates that a dead dog was concealed in a narrow ravine twenty feet below the surface of the earth around it and filled with briers and high canes; that many vultures were seen sailing in all directions over the spot but none discovered it. I may remark upon the above experiments that in the first case the stag was doubtless *seen* by the birds, but it does not follow that they might not also have smelt the hide, although inodorous to the human nose; in the second case, the birds had undoubtedly been attracted by *smell*, however embarrassed they might have been by the concealment of the object which caused it. I have in many hundred instances seen the vulture feeding upon small objects under rocks, bushes, and in other situations where it was utterly impossible that the bird could have discovered it but through the sense of smell; and we are to recollect that the habit of the vulture is that of soaring aloft in the air, and not that of foraging upon the ground."

Mr. Sells's communication was accompanied by the following letter from Mr. Owen, addressed to the Secretary, W. Yarrell, Esq.

"Dear Sir,—I received the heads of the *John Crow*, which I suppose to be the *Vultur aura* or *Turkey Buzzard*, and have dissected the olfactory nerves in both; as also in a *Turkey* which seemed to me to be a good subject for comparison, being of the same size, and one in which the olfactory sense may be supposed to be as low as in the *Vulture*, on the supposition that this bird is as independent of assistance from smell in finding his food as the experiments of Audubon appear to show. There is, however, a striking difference between the *Turkey Vulture* and the *Turkey* in this part of their organization. The olfactory nerves in the *Vulture* arise by two oval ganglions at the anterior apices of the hemispheres from which they are continued $1\frac{1}{2}$ line in transverse diameter, and 2 lines in vertical diameter, and are distributed over well-developed superior and middle spongy bones, the latter being twice the dimensions of the former. The nose is also supplied by a large division of the supraorbital branch of the 5th pair, which ascends from the orbit, passes into the nose crossing obliquely over the outer side of the olfactory nerve, extending between the superior spongy bone and the membrane covering the middle spongy bone, then descending, and after supplying the inferior and anterior spongy bone escaping from the nasal cavity to supply the parts covering the upper mandible. This olfactory branch of the 5th pair is about $\frac{1}{4}$th the size of the true olfactory nerve.

"In the *Turkey* the olfactory branch of the 5th nerve is about the same size as in the *Vulture*, and is superior in size to the true olfactory nerve, which is only about $\frac{1}{5}$th the size of that in the *Vulture*. The olfactory nerve does not form a ganglion at its commencement, but is continued as a small round chord from the anterior apex of each hemisphere, and is ramified on a small middle spongy bone, there being no extension of the pituitary membrane over a superior turbinated bone as in the *Vulture*. Indeed the difference in the development of the nasal cavity is well marked in the different forms

of the head in these two species. In the *Vulture* there is a space between the upper parts of the orbits in which the olfactory ganglions and nerves are situated, and the nasal cavity anterior to these is of a much greater breadth and also longer, as well as exhibiting internally a greater extent of pituitary surface, than in the *Turkey*. In this bird the olfactory nerves are compressed within a narrow interorbital space, which would not admit of the lodgement of ganglions; the olfactory nerves after passing through this space then diverge to the nasal cavity.

"In the *Goose* the olfactory nerves are developed to the same size as in the *Vulture*, and expand upon superior spongy bones of similar form, but placed wider apart, and these supply the middle spongy bones which are longer but not so broad as in the *Turkey*. The olfactory branch of the 5th pair is double the size of that in the *Vulture* or *Turkey*; it gives, however, not a greater proportion of filament to the nose than in those birds, but is mainly expended upon the membrane covering the upper mandible.

"The above notes show that the *Vulture* has a well-developed organ of smell, but whether he finds his prey by that sense alone, or in what degree it assists, anatomy is not so well calculated to explain as experiment.

"I will bring my preparations showing the above at next meeting, and am truly yours,

"Royal College of Surgeons, March 7th." "R. Owen."

Mr. Gould brought before the notice of the meeting, from the collection of Mr. Darwin, a new species of *Rhea* from Patagonia, and after offering some observations upon the distribution of the *Struthionidæ*, and upon the great interest attending this addition to that family, he remarked that the new species is distinguished from *Rhea Americana* of authors, in being one-fifth less in size, in having the *bill* shorter than the head, and the *tarsi* reticulated in front instead of scutellated, and in being plumed below the knee for several inches. It has also a more densely plumed wing, the feathers of which are broader, and all terminated by a band of white.

Mr. Gould, in conclusion, adverted to the important accessions to science resulting from the exertions of Mr. Darwin, and to his liberality in presenting the Society with his valuable Zoological Collection; to commemorate which he proposed to designate this interesting species by the name of *Rhea Darwinii*.

Mr. Darwin then read some notes upon the *Rhea Americana*, and upon the newly described species, but principally referring to the former.

This bird abounds over the plains of Northern Patagonia and the United Provinces of La Plata; and though fleet in its paces and shy in its nature, it yet falls an easy prey to the hunters, who confound it by approaching on horseback in a semicircle. When pursued it generally prefers running against the wind, expanding its wings to the full extent. It is not generally known that the *Rhea* is in the habit of swimming, but on two occasions Mr. Darwin witnessed their

crossing the Santa Cruz river, where its course was about 400 yards wide and the stream rapid. They make but slow progress, their necks are extended slightly forwards, but little of the body appears above water. At Bahia Blanca, in the months of October and September, an extraordinary number of eggs are found all over the country. The eggs either lie scattered about, or are collected together in a shallow excavation or nest; in the former case they are never hatched, and are termed by the Spaniards *Huachos*. The Gauchos unanimously affirm that the male bird alone hatches the eggs, and for some time afterwards accompanies the young. Mr. Darwin does not doubt the accuracy of this fact, and states that the cock bird sits so closely that he has almost ridden over one in the nest. Mr. Darwin has also been positively informed that several females lay in one nest, and although the fact at first appears strange, he considers the cause sufficiently obvious, for as the number of eggs varies from 20 to 50, and, according to Azara, even 70 or 80, if each hen were obliged to hatch her own before the last was laid, the first probably would have been addled; but if each laid a few eggs at successive periods in different nests, and several hens, as is stated to be the case, combine together, then the eggs in one collection would be nearly of the same age. Mr. Burchell mentions that in Africa two ostriches are believed to lay in one nest.

Mr. Darwin then proceeds to notice the other species of *Rhea*, which he first heard described by the Gauchos, at River Negro, in Northern Patagonia, as a very rare bird, under the name of *Avestruz Petise*. The eggs were smaller than those of the common *Rhea*, of more elongated form, and with a tinge of pale blue. This species is tolerably abundant about a degree and a half south of the Rio Negro, and the specimen presented to the Society was shot by Mr. Martens at Port Desire in Patagonia, (in latitude 48). It does not expand its wings when running at full speed, and Mr. Darwin learned from a Patagonian Indian that the nest contains fifteen eggs, which are deposited by more than one female. It is stated in conclusion that the *Rhea Americana* inhabits the country of La Plata as far as a little south of the Rio Negro, in lat. 41°, and that the *Petise* takes its place in Southern Patagonia.

Mr. Chambers then brought before the notice of the Society a simple process for taking impressions from feathers, which is effected by placing the feathers between two sheets of paper, the lower one being previously well damped, and the upper covered with printers' ink; both are then passed through the rolling press of a copper plate printer, and on removing the upper sheet perfect figures of the feathers will be left, which may be coloured when dry, and will then have the resemblance of feathers placed on paper.

March 28th, 1837.

Dr. Bostock, in the Chair.

Mr. Chambers read a paper upon the habits and geographical distribution of *Humming Birds*, and exhibited the nest and eggs of the only species (*Trochilus colubris*,) which visits the United States, and which is there very commonly bred in confinement. Mr. Chambers adverted to the probability of success if attempts were made to domesticate these birds in this country. A lady residing at Boston informed him that in that city they are readily reared in cages, and she expressed great surprise on hearing that only one instance had occurred of their being domesticated in England, as the climate so nearly corresponds.

The first part of a paper was then read by F. Debell Bennett, Esq., corresponding member, on "The Natural History of the Spermaceti Whale."

Mr. Yarrell then brought before the notice of the meeting "A Synopsis of the *Fishes* of Madeira," by the Rev. R. T. Lowe, Corresponding Member of the Society. This synopsis includes all the *Fishes* hitherto found at Madeira, with observations upon many of the species, and the character of such genera and species as are new. The Author has also drawn up a table, showing the comparative number and distribution of the British, Mediterranean, and Maderan *Fishes*. It appears from this, that notwithstanding the uniformity of its shores, both in structure and materials, occasioning a corresponding uniformity in food and shelter, that the number of marine species found at Madeira equals two thirds the amount belonging to the British seas.

With the exception of the genus *Anguilla*, the fresh-water species are entirely absent, the physical structure of the island preventing the formation of lakes and pools, and reducing its streams to the character of rapid rivulets or mountain torrents. A result indicated by the table just referred to, and which Mr. Lowe particularly notices, is, that Madeira possesses as many species in common with Britain as it has with the Mediterranean, and also that there is a variation in the ratio between the marine *Acanthopterygians* and *Malacopterygians* proportionate to the latitude. In Britain the marine *Acanthopterygians* are to the marine *Malacopterygians* as one and a quarter to one; in the Mediterranean, as two and three fifths to one; while at Madeira the ratio increases to three and a half to one.

The Author's remaining observations principally relate to the particular periods of the year, and to the comparative abundance in which certain species are met with.*

* The paper will appear in the Society's Transactions.

A Notice by Thomas Wharton Jones, Esq., was then read, "On the mode of closure of the gill-apertures in the tadpoles of Batrachia."

Mr. Jones observes, that when the right gill of the tadpole disappears, it is not, as is usually supposed, by the closure of the fissure through which it protrudes, but by the extension of the opercular fold on the right side towards that of the left, forming but a single fissure, common to the two branchial cavities, through which the left gill still protrudes. He also remarks that conditions analogous to those which occur during several stages of this process exist in the branchial fissures of the anguilliform genera, *Sphagebranchus*, *Monopterus*, and *Synbranchus*.

April 11th, 1837.

The Rev. John Barlow, in the Chair.

The reading of Mr. F. De Bell Bennett's paper "On the Natural History of the Spermaceti *Whale*," was resumed.

Mr. Bennett first notices the gregarious habits of the sperm *Whales*, which are usually found in parties consisting of half-grown males, or of females attended by their young, and guarded by one or more males of the largest size. If a solitary *Whale* be ever observed, it almost invariably proves to be an aged male, probably driven from the society of its companions.

From the author's observations he is inclined to consider that the speed of an alarmed *Cachalot* does not exceed from eight to ten miles an hour, although when harpooned its temporary velocity may be estimated at from twelve to fifteen miles per hour.

When thus flying from pursuit, the spermaceti *Whale* moves with a regular and majestic although rapid pace, and with a gently leaping gait; the anterior and upper portions of the colossal head raised above the water, and a portion of the back being also often exhibited above the surface of the sea. When flying in parties they often move in lines like a troop of horse, exerting their peculiar leaping action, descending, rising, and often even spouting in unison.

When descending, the spermaceti *Whale* assumes a vertical position, raising the caudal fin or flukes *perpendicularly* in the air; an action that is performed leisurely, and one that distinguishes this from most other species of cetaceans. This manœuvre is not, however, invariably performed, since, when leisurely feeding, or carelessly avoiding a boat, the *Cachalot* will descend very gradually, lowering itself, or as it is technically termed, 'settling down.'

The following are Mr. Bennett's observations upon the spouting of the *Cachalot*:—

"From the position of the *larynx*, as well as the mouth being constantly beneath the water in the natural posture of the body, the only medium for respiration is through the nostril or spiracular canal, and from the external aperture of this organ a constant succession of jets of vapour is *cast* whilst the *Cachalot* continues on the surface of the water; each *spout* succeeding the other, after an interval of ten or fifteen seconds, and with a regularity highly characteristic of this kind of *Whale*. The respiratory jet, or spout, is thrown in a direction obliquely upward and forward, in the form of a dense white mist or cloud composed of many minute and scattered drops of condensed vapour. It is sent forth by one continued effort, seldom rises higher than six or eight feet, remains suspended in the air but a short time, and is accompanied by a prolonged rushing sound, resembling that

of a moderate surf on a smooth beach, the anterior portion of the head being raised higher above the surface of the sea at each explosive effort. The spout is neither abruptly terminated nor succeeded by any audible sound of suction or 'drawback' (produced by succeeding inspiration), as is the case with the spouting of some other of the less valued cetaceans, as fin-backs, &c. The sound, indeed, attending the spouting of the *Cachalot* is so peculiar that the practised whaler can detect the close vicinity of this *Whale* as well by sound as by sight, and in the darkness of night as by the light of day. Although a secondary use for the spiracle may be found in clearing the mouth of water received with the food, it is yet tolerably evident that the ordinary spouting of *Whales* is the simple act of breathing, and the moisture ejected the ordinary halitus of expiration more or less condensed in the atmosphere. This appears proved by the regular and constant renewal of the spout in correspondence with the *rhyme* of respiration, it being neither intermitted nor varied in aspect when *Whales* are alarmed and swimming rapidly through the sea, and their closed mouths admitting no water, and by its being equally well timed and unchanged when the spiracle is raised high above the calm and level sea, as when liable to be washed by turbulent waves. It is also reasonable to suppose that the necessity for casting forth sea water by this channel would exist to a greater degree, during their visits to the ocean's depths where they seize and generally devour their prey, and where it would be impossible for the spiracular canal to contain all the fluid thus received until the return to the air. Nor, indeed, could such delay be necessary, since the operation for its expulsion through the spiracle could be as completely performed, if required, under water. The nature of the spout, moreover, is rather that of a light mist, and can in no way be compared to a volume of water. It appears to me that the clearest idea and most correct view we can entertain of the nature of the *Whale's* spout, may be derived from the cloud of vapour produced by the expiration of terrestrial animals under a low temperature, as during the frosty weather of this climate; the sole difference existing in the vast bulk and capacity of the lungs in cetaceans causing the halitus of expiration to be evident under all temperatures, whilst in the smaller mammalia it is only to be noticed when the thermometer maintains a low grade.

"It is not unusual during a close encounter with the *Cachalot* for the *Whale* to spout into the boats amongst the crew, when those who experienced its contact described it to me as fœtid in odour and producing an acrid effect."

From the facility with which the *Whale* is approached by boats, provided they are not brought within the line of vision, Mr. Bennett infers that this animal possesses the sense of hearing in a very imperfect manner, a deficiency, however, which appears to be in some measure compensated for by the perfection in which it possesses the sense of touch, through the medium of a smooth skin, abundantly supplied with nervous papillæ. It even appears as though the *Cachalots* had the means of conveying impressions one to another through the water

at considerable distances, for it is a fact well known to the southern whalers, that upon a *Cachalot* being struck from a boat, others that are miles distant will almost instantaneously display by their actions an apparent consciousness of what has occurred, and either take themselves off or come down to the aid of their injured companion. This intelligence Mr. Bennett supposes can only be communicated by a concussion of the water. Speaking of the general temper and disposition of this species, he remarks, "like most terrestrial animals that are gregarious and herd together in great numbers, spermaceti *Whales* are naturally timid, and prone to fly from the remotest aspect of danger, and although many instances occur amongst them of a mischievous and combative temper, attacking and destroying boats and men with their flukes and jaws, (as I shall have occasion elsewhere to notice,) such is rather to be deemed appertaining to the individual than the common character, and on a par with similar traits of temper and excited by similar causes, as we find occasionally prevail amongst horses, oxen, and other *Herbivora*, between the cetacea and which a closer parallel of comparison may be drawn, both as regards mental character and anatomical structure, than upon a superficial view of the two tribes of animals would appear possible. A shoal of *Porpoises* mingling with and jumping amongst them is sufficient to alarm and put to flight a party of *Cachalots*, and when on a well-beaten cruising ground, where the *Whales* are usually exceedingly watchful and wary, the whaler is well on his guard not to excite or confirm their suspicion until he has secured his prizes. The signs exhibited by the sperm *Whale* of a suspicion of danger are, lying motionless in the manner of listening, occasionally ceasing to spout, sweeping their flukes slowly from side to side, and turning upon the side to bring the axis of vision upon any object above them."

"When pursued and attacked a shoal of these *Whales* may be considered to exhibit two degrees of alarm, viz., that of a less degree, which puts them to the top of their speed to escape, and which frequently baffles pursuit; and a more powerful and overwhelming impression of fear, arising either from the close approach of their enemies or from one of their number being injured or destroyed, when they often lie huddled together motionless and trembling, or make such confused and irresolute efforts to escape as afford the attacking boats every chance of success. It commonly occurs when female *Whales* are harpooned that they mutually assist each other, and remain around their injured companions for a long time; whilst the males, under the same circumstances, commonly make a speedy retreat, and leave their afflicted comrades to their fate. When suddenly surprised by a boat, the *Whale*, although uninjured, is seen to tremble, and void its excrement, which is semi-fluid, fœtid, and resembles coffee grounds spread on the water."

After detailing some circumstances connected with the gestation of the sperm *Whale* and its mode of copulation, the author remarks, "There is much reason to suppose the *Cachalots* are very prolific; sucking calves appear to be noticed at all seasons of the year. We

observed them during the voyage in the months of January, February, May, June, July, August, September and December."

It appears that the sperm *Whale* is not like the *Balæna mysticetus*, constantly found with *Barnacles* and other parasites adhering to its skin, a circumstance accounted for by Mr. Bennett from the former species inhabiting deep water, while the latter frequents soundings, and is also much more sluggish in its movements. One species of *Barnacle*, the *Otion Cuvieri*, is sometimes found attached in a single cluster to the lips or lower jaw of the *Cachalot*, and a few small *Onisci* occasionally adhere to the skin; in its blubber also numerous cysts of a species of *Cysticercus* are met with.

Mr. Bennett, in the latter part of his memoir, notices the obstinacy and determination which these *Whales* often display when attacked or wounded, and also enumerates some of the different species of animals which are thought to indicate their approach, and he concludes with a reference to their occurrence in the British seas, and some observations upon their geographical distribution.

Mr. Gould then called the attention of the meeting to a new and beautiful species of *Ortyx*, a native of California, from the collection of the late David Douglas, and characterized it under the name of *O. plumifera*.

ORTYX PLUMIFERA.

Ort. capite, nuchâ, pectoreque intensè cinereis; plumis duabus gracilibus et subpendentibus e vertice nigris; gulâ intensè castaneâ ad latera lineâ albâ, infra oculos notâ nigrâ; loro sordidè albo; corpore superiore olivaceo-fusco; rectricibus caudæ fuscis nigro irroratis; alæ primariis brunneis, pogoniis externis, pallidioribus; abdominis lateribus intensè castaneis; suprà lineâ albâ marginatis; infra fasciis nigris atque albis ornatis; abdomine medio crissoque castaneis; rostro nigro; pedibus pallide-brunnescentibus.

Long. tot. $9\frac{3}{4}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $5\frac{1}{4}$; *caudæ*, $3\frac{1}{2}$; *tarsi*, $1\frac{6}{8}$.

Hab. California.

Fœm. vel mas junior a mare adulto differt, corpore minore, coloribus obscurioribus, plumisque capitis brevioribus.

He remarked that this genus was first brought before the Society eight or nine years ago by Mr. Vigors, at which time only five species were known, but since that period the number had been doubled; and from the remarkable development of the feathers forming the crest in the species then exhibited Mr. Gould anticipates the discovery of others, which shall connect *Ortyx plumifera* with those species in which this character is less prominently shown. In support of this opinion Mr. Gould directed attention to the genera *Larus*, *Trogon* and *Caprimulgus*, which possess certain characters largely developed; but the degree of development increases gradually from the species in which it is least apparent to those in which it attains its greatest extent.

Mr. Gould then exhibited a new species of the genus *Podargus*, from Java, which he proposes to name *P. stellatus*.

PODARGUS STELLATUS.

Podarg. corporis plumis, alis, caudâque crebre guttulis, notisque irregulariter interruptis, his pallide brunneis, illis fuscis, ornatis, colli plumis lineâ angustâ nigrâ fasciatis ad apicem latis, et albescentibus lunulam facientibus; post oculos plumis pilosis elongatis orientibus, et posticè directis tectricibus alarum ad apicem marginis interioris notâ albescente, nigro posticè cinctâ, ornatis scapularibus inferioribus pallidioribus; pectoris plumis nonnullis flavescenti albo guttatis; rostro pedibusque pallide fuscis.

Long. tot. 8 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, 4; *tarsi*, $\frac{1}{2}$.

Hab. Java.

Some observations on the *Physalia*, by George Bennett, Esq., F.L.S., Superintendant of the Australian Museum at Sydney, and Corresponding Member of the Zoological Society, were then read.

Some specimens of *Physalia pelagica* having been captured by Mr. Bennett while on his voyage to Sydney, he had an opportunity of observing the action of the numerous filamentary bodies attached to the air-bladder of this animal.

The longest of these appendages are used by the *Physalia* for the capture of its prey, and are capable of being coiled up within half an inch of the air bladder, and then darted out with astonishing rapidity to the distance of 12 or 18 feet, twining round and paralyzing by means of an acid secretion any small fish within that distance. The food thus seized by the *tentacula* is rapidly conveyed to the short appendages or tubes, which are furnished with mouths for its reception. These tubes appear to constitute the stomach of the animal, for upon a careful dissection nothing like a common receptacle for food could be observed, nor could Mr. Bennett detect any communications between them and the air-bladder, to the inferior portion of which they are attached by means of a dense muscular band. After an examination of an immense number of specimens, Mr. Bennett was unable to discover the orifice usually stated to exist at the pointed end of the bladder, nor could he ever succeed in expelling any portion of the contained air without a puncture being previously made. This organ consists of two coats, the outer of which is dense and muscular, readily separating from the inner, which resembles a cellular membrane.

The partial escape of air from the bladder did not at all affect the buoyancy, or appear in any way to incommode the *Physalia*; and even when it had completely collapsed, the animal still floated on the surface; upon removing the bladder entirely, the mass of tentacula sank to the bottom of the vessel, and though their vitality remained, all power of action was entirely destroyed.

A letter was then read, addressed to Mr. Gould, from M. Natterrer, describing a new species of *Pteroglossus*, from Para in Brazil, which the writer proposes to name *P. Gouldii*, in commemoration of the valuable contributions which ornithology has derived from the labours of Mr. Gould.

Pteroglossus Gouldii.

Ptero. summo capite, nuchâ, gutture, pectore, abdomineque nigris; plumis auricularibus aurantiaco-flavis ad apicem stramineis; fasciâ semilunari nuchali flavâ; dorso, alis, caudâque olivaceo-fuscis; hujus rectricibus sex intermediis apice castaneo; lateribus aurantiaco-flavis; femoribus castaneis, crisso coccineo, cute circa oculos viridi; rostri mandibulâ superiore nigrâ, apicem versus livide corneâ, apice albo, fasciâque angustâ albâ ad basin; mandibulâ inferiore albâ fasciâ nigrâ, apiceque livide corneo, pedibus plumbeis.

Fœmina differt partibus, quæ in mare nigræ, in illâ castaneis, et lateribus plumisque auricularibus pallidioribus.

Long. tot. 11 unc.; *rostri*, $2\frac{1}{8}$; *alæ*, 5; *caudæ*, $4\frac{3}{4}$; *tarsi*, $1\frac{1}{8}$.

April 25th, 1837.

Thomas Bell, Esq. in the Chair.

A letter was read addressed to N. A. Vigors, Esq., M.P., from Mr. Henry Denny of Leeds, stating that a fine male specimen of the Snowy Owl had been recently captured at Selby in Yorkshire.

Mr. Gray then exhibited the horn of a Deer supposed to come from India, which he considered as characteristic of a new species peculiar for the elongate acute form of the basal branch, which appears to have been depressed, and directed obliquely across the forehead of the animal. This horn, which had not attained its full period of growth, agreed with that of the Rein Deer, in being palmate, and in having the basal frontlet depressed, in which latter character it is allied to an Indian species called by Mr. Gray *Cervus Smithii*, known by a drawing belonging to the collection of General Hardwick in the British Museum.

Mr. Gray then adverted to some observations which he had made on a former occasion during a discussion upon the nature of the relation existing between the Argonaut shell and the Cephalopod which inhabits it. On that occasion, one argument made use of by him in favour of the parasitic nature of this animal, was, that the nucleus of the Argonaut shell is larger than could be contained within the eggs which often accompany the Ocythöe. He is now disposed to attach less importance to this circumstance, having recently observed that the eggs of some mollusca, as the *Buccinum undatum*, prior to the period of hatching, are eight or ten times as large in diameter as when first deposited.

A paper was then read by Thomas Bell, Esq., entitled "Observations on the genus *Galictis*, with a description of a new species." Mr. Bell in 1826 laid before the Zoological Club of the Linnean Society some remarks upon a living female Grison which had been several years in his possession, and he then proposed to consider the species as constituting a new generic type, to which he gave the name of *Galictis*, but without assigning its distinctive generic characters. Since that period the examination of a specimen in the collection of the Zoological Society, exhibiting a distinct specific difference from the former, but agreeing with it in the more essential particulars, has confirmed the propriety of establishing this genus; and in the present communication the author points out the characters and affinities of *Galictis*, and gives a description of the new species under the name of *G. Allamandi*, M. Allamand having figured a specimen in the fourth edition of Buffon's Natural History, which may perhaps be identical with this second species. In constituting this new genus of *Mustelidæ*, Mr. Bell has been guided solely by the semiplantigrade form of the foot, for in no other important character does it deviate from the typical genus of that family. A know-

ledge of this character led Thunberg to place it among the *Ursidæ* under the name of *Ursus Brasiliensis*, to which group it slightly approximates, and in which it may probably be represented by the genus *Ratellus*. By Desmarest it is arranged in the genus *Gulo*, and the name *Gulo vittatus* given to it by that author has been adopted by the Cuviers, and all other subsequent writers, with the exception of Dr. Traill, who in the third volume of the Memoirs of the Wernerian Society restores it to its proper family, the *Mustelidæ*, but under the erroneous name of *Lutra vittata*, for it has no nearer affinity to the Otters than any other genus of that family. By Schreber it was placed among the *Viverræ*, under the name of *Viverra vittata*, and the name has been retained by Gmelin and others.

The characters of *Galictis*, and the description of the two species which at present constitute this genus, are as follows.

Fam. Mustelidæ.

Genus *Galictis*, Bell.

Char. Gen. *Dentes molares spurii* $\frac{2\cdot2}{3\cdot3}$.

Rostrum breve.

Palmæ atque *plantæ* nudæ subplantigradæ.

Ungues breviusculi, curvi, acuti.

Corpus elongatum, depressum.

Sp. 1. *Galictis vittata.*

G. vertice, collo, dorso, atque caudâ flavescenti-griseis; rostro gulâ et pectore fuscescenti-nigris; fasciâ a fronte usque ad humeros vescenti-albidâ; pilis longis laxis.

Viverra vittata, Schreber, Langth., p. 447, t. cxxiv. Gmel., Syst. Nat. Linn., I. p. 89.

Ursus Brasiliensis, Thunb., Mem. Acad. Petersb., VI. p. 401, t. xiii.

Lutra vittata, Traill, Mem. Wern. Soc., III. p. 437, t. xix.

Gulo vittatus, Desmar., Mammal., p. 175, sp. 268. Isid. Geoffr. in Dict. Class., VII. p. 384. Fred. Cuv. in Dict. des Sc. Nat., XIX. p. 79.

Galictis vittata, Bell, Zool. Journ., II. p. 552.

Petit furet, D'Azara, Essai sur l'Hist. Nat. de Parag. (Trad. Franç.), I. p. 190.

Fouine de la Guyane, Buffon, Suppl., III. p. 161, t. xxiii.

Grison, Shaw, Gen. Zool., I. p. 392. Cuv., Reg. An., I. p. 146. Fred. Cuv., Mam., I.

Habitat in Guyanâ, Paraguay, Braziliâ.

"The general form, attitudes, and movements of this animal resemble those of the common Polecat. The head is depressed; the muzzle moderately acute, but not attenuated, projecting beyond the lower jaw; the eyes are moderately large, the iris dark brown or nearly black; the ears short, broad, and rounded; the teeth are almost exactly similar to those of true *Mustela*, particularly *M. putorius*; the body is elongated and much depressed, covered with

rather long, loose hair, the under hair soft and short; the tail more than half the length of the head and body; the hair of the tail very long and lax: the legs are rather short; the toes five on each foot, with short, strong, curved, rather acute claws; the upper part of the toes hairy; the soles of the feet naked; the fore feet with a thick pad under each toe; the palm furnished with a broad tubercle consisting of three elevated portions, with a slight one internally, and a round simple one at the wrist, behind the little or outer toe; the hinder foot likewise furnished with a thick pad beneath each toe, and a broad trifid tubercle beneath the metatarsus; there is also a long tubercle beneath the heel, at the outer side: the whole of these parts, that is to say the soles of all the feet, are covered with a soft naked skin, and are evidently placed on the ground in progression.

"The colours are very remarkable and the markings distinct and decided. The whole of the upper part of the head, the neck, the back, the flanks, and the tail, are a yellowish or light brownish grey, produced by the mixture of a dirty yellowish white with brownish black, the hairs being brownish black for about two thirds of their length, the tip dirty yellowish white; the muzzle, the cheeks, the throat, the under part of the neck, the belly, the anterior legs, and the hinder feet, are black with a brownish tinge, lighter towards the back part, and on the belly interspersed with a few whitish hairs; the grey of the upper, and the black of the under parts, are separated by a rather broad fascia extending on each side from the centre of the forehead above the eye backwards as far as the shoulder, including the ears; this fascia is of a buff or yellowish white colour.

"There is a large round follicle situated on each side the anus, covered with a muscle, and opening by a round duct within the anal orifice, secreting an unctuous matter, less fœtid than that of the Polecat, but not possessing the rather agreeable odour of the Martin or the powerful perfume of the *Viverræ*. The stomach is very simple, the pyloric extremity long, cylindrical, and curved; there is no *cæcum*.

Galictis Allamandi.

G. vertice, collo, dorso, atque caudâ nigricanti-griseis; partibus inferioribus nigris; fasciâ a fronte usque ad collum utrinque albâ; corpore pilis brevibus adpressis.

Habitat.

"This species, although evidently distinct from the former, exhibits the same general character of colour and marking, with some remarkable differences however, which, though not easily expressed in a specific phrase, are tangible and important. The whole of those parts which in the former species are yellowish are here perfectly white; and those which are blackish brown in the former are in this pure black. The base of the hairs on the back therefore is black, and the tips quite white, forming a pure blackish grey, or black with white points and lines; whilst all the under parts of the throat and front of the belly are black. The fascia extending from the forehead back to the sides of the neck is also white. This fascia does not

extend in the specimen described so far back as in the former species. The hairs of the whole body are very short in comparison, and much stiffer and more closely set. The animal is considerably larger, as far as can be ascertained, and the tail, for a stuffed specimen, shorter in proportion."

Specimens of both species were upon the table, and Mr. Bell exhibited drawings, showing the plantigrade character of the foot, and some of the internal organs.

Mr. Gould exhibited a small collection of rare European birds which had just been received by him from M. Temminck of Leyden. Among them were examples of *Grus leucogeranus*, *Strix ascalaphus*, *Limosa Terek*, *Pyrrhula rosea*, *Emberiza Lesbia*, *Larus Audouinii*, and a rare species of Harrier which had been killed on the banks of the Rhine; this, Mr. Gould observed, was the *Circus pallidus* lately characterized by Col. Sykes in his Catalogue of the Birds observed by him in the Dukhun, and published in the second part of the Proceedings (1832.).

May 10th, 1837.

William S. Macleay, Esq. in the Chair.

The group of groundfinches, characterised, at a previous meeting, by Mr. Gould, under the generic appellations of *Geospiza*, *Camarhynchus*, *Certhidea*, and *Cactornis*, were upon the table; and Mr. Darwin being present, remarked that these birds were exclusively confined to the Gallapagos Islands; but their general resemblance in character, and the circumstance of their indiscriminately associating in large flocks, rendered it almost impossible to study the habits of particular species. In common with nearly all the birds of these islands, they were so tame that the use of the fowling-piece in procuring specimens was quite unnecessary. They appeared to subsist on seeds, deposited on the ground in great abundance by a rich annual crop of herbage.

The remainder of the evening was occupied with the examination of an extensive series of drawings, taken from various subjects in zoology, during the progress of the late exploring expedition into central Africa; and which will form the materials for a separate Work, now preparing for publication by Dr. Andrew Smith.

A considerable proportion of the illustrations were those of new and highly interesting species; and Dr. Smith stated that it was his intention, on a future evening, to bring a part of his collection before the Society, that the Members might have the opportunity of examining the original specimens, from which the drawings had been taken.

May 23d, 1837.

W. S. Macleay, Esq. in the Chair.

A letter was read addressed to the Secretary, by Dr. Weissenborn of Weimar, Saxony, expressing the very high opinion he entertained of the value of the scientific publications of the Zoological Society, and the pleasure which it would give him to promote the interests of the Society, if it lay in his power. The letter was accompanied by a very interesting preparation of the head and cheek-pouches of the black variety of the German Marmot (*Mus Cricetus*, Linn.).

A second letter was then read from Dr. Weissenborn, addressed to the Assistant Zoological Secretary, containing some new information upon the economy of the Marmot. Dr. Weissenborn states that when this animal hybernates, the entrance to its burrow is closed by earth, which is moulded into pellets of the size of a pea or bean, so that the external air is not entirely excluded. Upon putting a number of these animals in a place of confinement, although supplied with abundance of food, they fought with and devoured one another, until only a few of the strongest were left.

This letter was accompanied with a donation of a stuffed specimen of the usual colour.

The first part of a paper on "Marine Noctilucæ," by F. De Bell Bennett, Esq., Corresponding Member of the Society, was then read.

A communication was then read from Dr. Rüppell, entitled, "A Notice of the *Phytotoma tridactyla* of Abyssinia." Dr. Rüppell states that during his travels in Abyssinia, he endeavoured, but unsuccessfully as he then supposed, to discover the bird described by Bruce, and known to naturalists as the *Phytotoma tridactyla*; since then, while engaged in the publication of the birds from that part of Africa, he found that the *Phytotoma tridactyla* was a species belonging to the genus *Pogonias*, and which had been referred by Lord Stanley to the genus *Bucco*, under the name of *Bucco Saltii*. This Dr. Rüppell proposes to change to *Pogonias Brucei*, in honour of Bruce, who was the first describer.

Dr. Rüppell sent along with this communication two copies of a plate from his Abyssinian Fauna, containing figures of the above bird, and stated that he had previously deposited stuffed specimens in the British Museum and the Collection of the Zoological Society.

June 13th, 1837.

Richard Owen, Esq., in the Chair.

The reading of Mr. Frederic Debell Bennett's paper upon Marine *Noctilucæ* was resumed.

Mr. Bennett's notes upon the phænomena connected with the luminous appearances so often exhibited by the ocean, made during a voyage round the globe, agree in their essential details, and lead to the same general inferences, as the observations of his brother, Mr. George Bennett, published in the Society's Proceedings for January 1837; the experiments in all instances, as recorded in the present memoir, tending to show that where the condition of marine phosphorescence obtains, organized bodies, secreting phosphoric light, will be found in greater or less abundance distributed throughout the ocean; these bodies being sometimes so minute as not to be detected by the naked eye, whilst at other times the luminosity appears to originate in the presence of vast numbers of *Pyrosomata* and *Medusæ*, which latter, when removed from the water, retain, while vitality lasts, their luminous properties, and are capable of communicating the phosphoric matter to objects with which they may be brought in contact. An interesting fact noticed by the author is that the *Cleodora cuspidata*, which is found floating in great numbers on the surface of the sea in various parts of the Pacific Ocean, exhibits a speck of delicate blue light, shining through the apex of its extremely thin shell.

In the following passage Mr. Bennett refers to a paper communicated by him on a previous occasion, and published in the Society's Proceedings.

"On the night of the 11th of last October, when in lat. 4° S., long. 18° W., I again witnessed the beautiful spectacle afforded by the presence in the sea of vast numbers of the *Pyrosoma Atlanticum*. Upon this occasion their number must have been very great, since the ship, proceeding at a rapid rate, continued during the entire night to pass through distinct, but extensive fields of those molluscs, floating, and glowing as they floated, on all sides of her course, and capable of being captured by net to almost any amount. Not far from the same spot I first noticed these luminous molluscs, during a voyage to India; and an account of their effects in illuminating the ocean, accompanied by some obtained specimens, I communicated in a paper to this Society, published in No. 6 of the Proceedings. To that account I have to add, from more recent observations, that since the *Pyrosoma* is enveloped by a firm membranous tunic, and the luminous power resides in small brown particles abundantly imbedded in the *parenchymatous* structure of the body, no luminous matter is communicated from its surface to any fluid or solid in contact with it. But if the *Py-*

rosoma be cut open and immersed in water, the brown particles that escape diffuse themselves through the fluid, and shine as numerous scintillations, independent of the perfect structure. It is also worthy of remark that general friction or contact is not essential to elicit the perfect light of *Pyrosoma*, since touching one small portion of the body is sufficient to produce a brilliant glow throughout the whole. When first removed from its native element, the broader extremity of this aggregate of molluscs presented a wide and circular orifice, forming nearly a continuous surface with the central tube constituting the interior of the body; but when kept in a vessel of sea-water, or much handled, this orifice was closed by the contraction of a smooth, dense membrane at its margin, and which either obliterated the aperture, or left but a minute central orifice; water at the same time being contained in the barrel or tube of the body. Except in the action of this sphincter-like membrane, no motive power was perceptible in the *Pyrosoma*.

"Fresh water appears to act as a powerful and permanent stimulus on marine *Noctilucæ*. Those who have intervals of repose from their phosphorescence immediately emit their light when brought in contact with fresh water, and this fact was very strikingly exhibited in the *Pyrosomata*. When placed in a vessel of sea-water and permitted to remain quiet, these molluscs afforded no light, and when touched, gleamed forth only as long as the irritating cause remained, and then gradually returned to their original state. When, however, the same creatures were placed in a vessel of fresh water, they never ceased glowing with their brightest refulgence until life was extinct, which was not until after the lapse of several hours. When also the same molluscs were mutilated, or so near death as to refuse to emit light upon irritation in sea-water, immersing them in fresh water produced at least a temporary revival of their brightest gleam; indeed I have always felt assured that the contact of fresh water in a darkened room would ever elicit the luminous power of a marine creature, were the latter of a luminous nature."

At the request of the Chairman the following notes, relating chiefly to the natural history of Ireland, were read by W. Thompson, Esq., V.P., Nat. Hist. Society of Belfast.

Of the species so marked *, specimens were exhibited.

Mammalia.

* *Vespertilio Nattereri*, Kuhl. Reddish-grey Bat. I am induced to exhibit a specimen of this bat, which I obtained in July 1835 among the ruins of Harlech Castle, North Wales, it being hitherto only known as British from individuals procured in the east and south-east of England.

* *Mus Hibernicus*. Irish Rat. On questioning a person some years ago respecting a black rat which he had seen in the north of Ireland, my curiosity was excited by the statement that it had a white breast. In autumn last a similar description was given me of one that had

been caught some time before in Tollymore Park, county of Down. Mr. R. Ball, of Dublin, informs me that black rats, with the breast white, have been reported to him as once common about Youghal, county of Cork, though they are now very rare or perhaps extinct. But until April last, when a specimen was sent from Rathfriland, county of Down, to the Belfast Museum, I had not an opportunity either of seeing or examining the animal. This individual differs from the *M. Rattus* as described by authors, and also from specimens preserved in the British Museum, and in the collection of this Society, in the relative proportion of the tail to that of the head and body; in having shorter ears, and in their being better clothed with hair, as is the tail likewise; and in the fur of the body being of a softer texture. The difference in colour between the *M. Rattus* and the present specimen is, that the latter exhibits a somewhat triangular spot of pure white extending about nine lines below the breast, the fore feet being of the same colour.

The following is a comparison of this specimen with the *M. Rattus* as given by Mr. Jenyns. The same dimensions, with the very trivial difference of the ears being half a line less, appear in Mr. Bell's "British Quadrupeds."

	M. Hibernicus.			M. Rattus.	
	in.	line.		in.	line.
Length of the head and body	7	6	..	7	4
——————— head	1	10	..	1	10
——————— ears	0	9	..	0	11½
——————— tail.....	5	6	..	7	11
——— from the base of the ear to the snout	1	6			
——— from the tarsal joint to the end of the toes	1	6			

These differences incline me to consider this animal distinct from *M. Rattus*, and being unable to find any species described with which it accords, I propose to name it provisionally *M. Hibernicus*. Should future investigation prove it to be a variety only of *M. Rattus*, it can be so considered under the present appellation.

* *Lepus Cuniculus*, Linn. Rabbit. Persons who take rabbits in the north of Ireland distinguish two kinds, the one they call the *burrow*, the other the *bush* rabbit. The meaning of the former term is obvious, but of the latter it may be stated that the animal is so designated, in consequence of having a "form" like the hare, and which is generally placed in bushes or underwood. The circumstance is noticed at present in connection with a specimen of each kind which I have the pleasure of presenting to the Society.

Cervus Alces, Linn. Elk. A horn of the true elk, *C. Alces*, was some time since presented to the Natural History Society of Belfast, as that of the fossil Irish species, *C. Hibernus*. On inquiry from the donor I learned that it had been given him by a relative residing in Tyrone, and in whose possession it had for a long time been on account of the value attached to it as a relic dug out of a peat-bog on his own property in that county. Further particulars cannot now be ob-

tained, as the gentleman is since deceased, but I have thought it proper to lay the statement as I received it before this Society, with the additional remark that the horn is quite perfect and appears recent; but again, might not this be attributed to the well-known preservative property of the soil in which it is said to have been found? The number of snags upon the horn, and its dimensions show that it belonged to a very old animal: its breadth, measured in a straight line across the centre, without the curve being reckoned, is 35 inches; its height, similarly estimated in a straight line from the base, 26½ inches.

As the elk inhabited a wide range of latitude on the continent of Europe it does not appear singular to me that it should have been a native of Ireland, especially when the *Cervus Hibernus*, a species of greater magnitude, was indigenous to the country. In the *Annales des Sciences Naturelles* for 1835, t. iv. (new series), portions of the horn of the *Cervus Alces* are figured and described by M. Christol, from specimens found in a fossil state at Pézénas.

Birds, *new to Ireland.*

Strix Scops, Temm. Scops-eared Owl. I have been informed by Robert Ball, Esq., of Dublin, that an owl of this species was shot in the month of July a few years ago by the gamekeeper at Loughcrew, county of Meath, the seat of J. W. L. Napier, Esq., in whose possession it now is. The specimen was kindly sent to Dublin for the examination of Mr. Ball, who states in a letter to me that it proved identical with a *Strix Scops* that I have seen in his collection.

Colymbus arcticus, Linn. Black-throated Diver. In the collection of Dr. J. D. Marshall, of Belfast, there is a specimen of this bird, which was shot during winter in Larne Lough, county of Antrim. It is in the plumage of the first year.

* *Procellaria Puffinus*, Linn. Cinereous Shearwater. Of this species one individual only has yet been recorded with certainty as British. I have now to notice a second specimen, respecting which Mr. Robert Davis, Jun., of Clonmel, has favoured me with the following particulars. "It was taken in August 1835, by a boy who saw it scrambling towards a hole at the base of a cliff near Dungarvan, county of Waterford. They are called *hagdowns* by the fishermen, who say that they breed there and live in holes in the rocks, but are at all times very scarce. The specimen was sent to me alive, and apparently in good health, but it would not eat any thing, and died after having been in my possession for about ten days or a fortnight. It had an extremely rank, fishy, or oily smell at all times, but I never saw any appearance of oil being discharged from its mouth or nostrils. It seemed unable to walk, but scrambled along with its breast about an inch from the ground. Although its wings were perfect and uninjured, it made no attempt to fly, but if let fall from a height dropped heavily to the ground. It showed an inclination to climb, having several times mounted up the handle of a long spade that

rested against the wall of the yard in which it was kept. It did not ramble about, nor care much for water, but when put in a large tub very dexterously pulled itself up by the hooked bill, until the claws got on the edge. When handled, it bit severely."

The specimen now belongs to Mr. W. D. King, of Sudbury, to whom I am indebted for the opportunity of examining it, and also of exhibiting it here. It accords well with Temminck's description of the adult bird.

Fishes.

The first to be described in this class is a new genus of the family *Tænioideæ*, for which I propose the name of *Echiodon*. It is founded upon a specimen obtained on the coast of the county of Antrim, by Dr. J. L. Drummond, in June 1836.

Echiodon.

Head oval; body much elongated, compressed, narrow, lanceolate; snout moderately long; mouth cleft obliquely, both jaws terminated by large cylindrical teeth; no ventral fins, nor scales instead; fin-rays all soft; dorsal and anal fins continued throughout almost the entire length; branchiostegous membrane with seven rays.

Considered relatively to the other *Tænioideæ* it agrees with *Trichiurus* and *Stylephorus*, in wanting ventral fins, but not in any other generic character; from the head posteriorly it approaches most nearly to *Cepola*, but in the form of the head and in dentition differs remarkably from all the other genera.

* *Echiodon Drummondii*. Length 11 inches, depth 6 lines, breadth 3 lines, head one-ninth of the whole length, eye occupying the entire upper half of head, teeth numerous and small, except two, which are large and fang-like at each side the extremity of the upper jaw, and one long cylindrical tooth terminating the lower jaw on each side; upper jaw the longer; dorsal, anal, and caudal fins united; body without scales (?); lateral line inconspicuous; vent $1\frac{1}{4}$ inch from point of lower jaw; vertebræ 98.

D. 180? A. 180? P. 16? C. 12?

* *Crenilabrus microstoma*, Couch MS. Small-mouthed Wrasse. In June 1836, Dr. Drummond found a *Crenilabrus*, on the beach at Cairnlough, county of Antrim, which he liberally handed over to me, and appearing to be a new species, I at once drew up a detailed description of it. I now find that the same Wrasse has been met with in Cornwall by Mr. Couch, who likewise considered it as new and sent two specimens to Mr. Yarrell, under the appropriate name of *Cren. microstoma*, a term, though unpublished, which I consider it but fair to adopt, as Mr. Couch had the priority in obtaining the species.

My specimen is about 3 inches long and moderately deep in proportion, its depth being to its length as 1 to $3\frac{1}{5}$. Its most prominent characters are,—mouth small, jaws equal, teeth few in number and

without serratures, a single row in the lower, and two rows in the upper jaw; scales very large, those of the body concealing the base of the dorsal and anal fins, but none apparent on the fins; anal fins with six spinous rays, ventral scale half the length of ventral fin; pre-opercle strongly denticulated.

D. 19+6; A. 6+7; P. 13; V. 1+5; C. (which is injured) 14?

* *Crenilabrus multidentatus*. Ball's Wrasse. Three specimens of a *Crenilabrus*, taken at Youghal in the summer of 1835, have been sent me for examination by Mr. Ball. As in the instance of the last noticed, I cannot by careful research find any species described with which they agree, I, though with hesitation, bring them forward as new, under the name of *Cren. multidentatus*. The specimen from which the description has been drawn up is $2\frac{1}{2}$ inches in length. Its chief characters are,—form elongated, mouth large and powerfully armed, upper jaw the longer, pre-opercle slightly denticulated, scales of moderate size, ventral scale one-fourth the length of ventral fin; a blackish spot behind the eye, another at the base of the last ray of the dorsal fin, and a third at the lowermost portion of the tail, branchiostegous membrane five rays.

D. 19+10; A. 3+8; P. 14; V. 1+5; C. 13, well developed.

* *Abramis Buggenhagii*. Large-scaled Bream. *Cyprinus Buggenhagii*, Bloch. Part 3, tab. 95. On inspecting the produce of a fishing-rod at the river Lagan, near Belfast, on the 6th of May, 1836, I detected a bream differing from the common species, and secured it for examination. It agreed so fully with Bloch's description of the *Cyprinus Buggenhagii* as to satisfy me of its identity, the only difference consisting in the number of rays in the pectoral fin, 12 being enumerated by him, and 18 appearing in the specimen; several of them, however, being very short, may have escaped Bloch's notice.

The description drawn up from my specimen the day it was procured, is as follows: Length, $5\frac{1}{2}$ inches; depth, $1\frac{1}{2}$ inch; head one fourth of the entire length; diameter of the eye equal to one fourth of the length of the head; scales on the lateral line about 45, about 9 rows between it and the dorsal ridge and 5 rows below it; under point of the caudal fin longer than the upper. Colour of the sides silvery, tinged with blue towards the back; irides very pale yellow; the dorsal, pectoral, ventral, and anal fins nearly transparent, or very slightly tinged with dusky, chiefly towards their extremities; caudal fin pale yellow.

D. 11; P. 18; V. 1+9; A. 20 (first extremely short); C. 18.

This species, which is new to Britain, is stated by Bloch to be found in Swedish Pomerania, in the river Pene, and in the lakes communicating with it*.

* On my showing this specimen to Mr. Yarrell, he immediately produced from his own collection another example of this species of much larger size, measuring fourteen inches in length, which had been presented to him by a

New to Ireland.

* *Trigla Cuculus*, Bl. Red Gurnard. Of this fish two small specimens, taken at Youghal in the summer of 1835, have been submitted to my examination by Mr. Ball. In both, the second ray of the first D. fin is the longest.

Mugil Chelo, Cuv. Thick-lipped Grey Mullet. The common "mullet" of the north of Ireland is of this species, as are likewise the only two specimens that I have seen from the southern coast.

Gobius gracilis, Jenyns. Slender Goby. From the coasts of Down and Louth I have obtained two specimens of this fish. The difference in colour between them and *Gob. minutus* attracted me at first sight; but I did not examine further, until my attention was directed to them by Mr. Jenyns' description of *Gob. gracilis*, with which they in all respects agree.

* *Crenilabrus rupestris*, Selby. Jago's Goldsinny. In September, 1835, I procured two individuals of this species at Bangor, Down, where they were taken along with *Cren. tinca* and *Cren. cornubicus*.

Salmo eriox, Linn. Bull Trout. The first specimens of this trout which occurred to me were three, about 20 inches in length, that were taken with *Sal. trutta*, in the sea at Donaghadee.

* *Gadus callarias*, Linn. Dorse. Amongst fishes kindly forwarded for my inspection by Mr. Ball are specimens of the *Gad. callarias*, caught at Youghal in the autumn of 1834. On subsequently looking over some captures from Larne, county Antrim, presented without regard to species to the Belfast Museum, I also found one of these fishes.

* *Gadus minutus*, Linn. Poor. From three localities in Down and Antrim I have the *Gad. minutus*, and in the collection of Mr. Ball have recently seen two specimens from the coast of Cork.

* *Motella glauca*, Jenyns. Mackrel Midge. I include here, though unable to see any specific difference between it and *Mot. mustela*. The only Irish specimens I have seen sufficiently minute to be considered *Mot. glauca*, were brought by Mr. Ball from the South Islands of Arran.

Phycis furcatus, Flem. Common Fork-beard. To C. G. M. Skinner, Esq., of Glynn-park, I am indebted for a very fine male specimen of this fish, 25 inches in length, which was caught near Car-

friend, who caught it in the waters of Dagenham Breach, in Essex, from which place others have since been taken. This bream is at once distinguished from both the other species of British bream, by the much greater thickness of its body.

rickfergus in February, 1836. The chief characters of this species, given in the '*Règne Animal*,' and adopted in the 'Manual of the British Vertebrata,' are, "Sa première dorsale plus relevée, et son premier rayon très élongé, les ventrales deux fois plus longue que la tête," 2nd edit., p. 335. In the first character only as here given my specimen agrees, the third ray of its first dorsal fin being considerably the longest, and the ventrals being only one fifth longer than the head.

* *Platessa pola*, Cuv. Pole. In Belfast market on the 26th of April last, I procured six individuals of this species. They were from 12 to nearly 15 inches in length, and were taken in a trawl-net near Ardglass, in the county of Down. On the 5th of May I obtained a seventh specimen from the same place.

* *Solea lingula*, Rond. Red-backed Sole. In August, 1836, three small specimens of this fish were captured by Mr. Hyndman and myself, when dredging off Dundrum, county of Down.

Anguilla latirostris, Yarr. Broad-nosed eel. Inhabits loughs Neagh and Erne, the river Shannon, &c.

Ammodytes tobianus, Bl. Wide-mouthed Sand-eel. I have from several localities on the Down coast, and from one on that of Antrim.

Syngnathus typhle, Linn. *Syng. æquoreus*, Linn. *Syng. ophidion*, Bloch. The first native specimens of these three species that I have seen were taken on the coast of Cork in 1835, and forwarded for my inspection by Mr. Ball; subsequently I have had all three from the coast of Antrim.

Hippocampus brevirostris, Cuv.? Sea-horse. In July, 1821, a recent specimen of *Hippocampus*, presumed to be this species, was found on the beach at Red-bay, county of Antrim, by William Ogilby, Esq., F.L.S.

Petromyzon planeri, Cuv. Fringed-lipped Lamprey. Specimens procured in the vicinity of Naas, county Kildare, have been presented me by Mr. Ball.

Miscellaneous notes.

Gasterosteus brachycentrus, Cuv. Short-spined Stickleback. In Minster-pool, Lichfield, I captured an immense specimen of this fish in July, 1836.

* *Labrus lineatus*, Don. *Lab. maculatus*, Bloch. *Lab. psittacus*, Risso? On September 26, 1835, I obtained at Bangor, Down, two specimens of a *Wrasse*, which agreed pretty well with the *L. lineatus* of Donovan, a species but little understood. They seemed also identical with the *L. psittacus* of Risso, used as a synonym of the *L. lineatus*

in the works of Mr. Yarrell and Mr. Jenyns; by the latter author it is marked with doubt. At the same time I could not consider these specimens else than the young of *L. maculatus*, an opinion which subsequent examination has tended to confirm, as in the same individual I have seen the lineated marking of *L. lineatus* and the spots of *L. maculatus*. The specimens alluded to as corresponding with Donovan's *L. lineatus* are small, as he describes the species to be; those conspicuously spotted over were large, and the individuals presenting partially both appearances were of an intermediate size; hence it would appear that the *L. lineatus* generally* is the young fish, and the *L. maculatus* the adult. It must be added that specimens of equal size, taken at the same time and place, vary much in colour and in the relative depth of the body. The head too is more elongated in the young than in the mature fish.

In concluding his description of the *Labri*, Pennant observes, "Besides these species we recollect seeing taken at the Giant's Causeway, in Ireland, a most beautiful kind, of a vivid green spotted with scarlet; and others at Bandooran, in the county of Sligo, of a pale green." He adds, "We were at that time inattentive to this branch of natural history, and can only say they were of a species we have never since seen." I have no hesitation in saying that the beautiful kind of a vivid green, spotted with scarlet, was the ordinary *L. maculatus*, and as little in stating my belief that the pale green kind was also the same species. On examining the produce of one rod after a day's fishing, I have seen specimens varying from the palest green to the very darkest tint of this colour.

As the three names under which this fish appears, viz., *L. lineatus*, *L. psittacus* (when it is uniformly green), and *L. maculatus*, apply to the individual rather than to the species, and thus tend to confusion, it seems to me desirable that there should be an appellation under which all the varieties could be brought, and as such I would suggest *Labrus variabilis*.

* *Crenilabrus tinca*, Risso. *Cren. cornubicus*, Risso. *Cren. gibbus*, Flem. In the autumn of 1835 an attentive examination of specimens of the *C. tinca* and *C. cornubicus*, of all sizes, and in a recent state, satisfied me of their identity. The depth of *C. tinca* in proportion to its length being found to vary considerably, though not to the extent described in the *Gibbus Wrasse* of Pennant, together with the general accordance of other characters, disposed me at the same time to believe that the *C. gibbus* is but an accidental variety of it.

* *Leuciscus Lancastriensis*, Yarr. Graining. Several very small individuals of this species occurred to me in the river Leam, near Leamington, in July, 1836.

* *Cobitis tænia*, Linn. Spined Loche. In July, 1836, when

* I have seen some specimens of the largest size entirely green, and displaying the lineation in a darker shade of this colour.

using my net for fresh-water *Mollusca*, in a drain near Guy's Cliff Warwick, a specimen of this minute fish was captured.

* *Platessa flesus*, Flem. Flounder. The specimen exhibited is from Strangford lough, Down, and presents a malformation of the head, precisely similar to that of the brill (*Pleuronectes rhombus*,) figured in Mr. Yarrell's *British Fishes*, vol. ii., p. 242.

Pleuronectes hirtus, Mull. Muller's Top-Knot. If not inconsistent with the brevity characteristic of the "Zoological Proceedings," I would remark that the fish which I exhibited at the meeting of this Society, on June 9, 1835, under the name of "*Pleuronectes punctatus*, Penn." is identical with the "*P. hirtus*, Mull." of Mr. Jenyns's 'Manual of the British Vertebrata' and the "Rhombus hirtus" of Mr. Yarrell's 'British Fishes,' a circumstance which reference to the synonyma of this species might indeed indicate, but I am induced to notice the subject on account of the specific name "*punctatus*" being applied in both works to a nearly allied species.

My specimen, critically examined when recent, exhibited the following characters, which are unnoticed in the description of *P. hirtus*, given in the above-mentioned works.

P. fin, which is quite perfect, on the upper side $9\frac{1}{2}$ lines long, and containing 6 rays, on the under side $6\frac{1}{2}$ lines long, and having 12 rays. Lateral line on the under side less strongly marked than on the upper, and considerably less curved towards its origin. A bright silver spot, two lines in diameter, at the base of the P. fin on the upper side; irides silvery, clouded with brown: they are described as sea-green by Hanmer, (Penn. Brit. Zool., vol. iii. p. 323, ed. 1812.) It is in allusion to this individual, which I had the pleasure of showing Mr. Yarrell, when in London in June, 1835, that he remarks, "I have a record of one [Rhombus hirtus] that was caught on the coast of the county of Down in Ireland." Brit. Fish. vol. ii. p. 245.

Syngnathus lumbriciformis, Jenyns? Yarrell. As it has recently been discovered that two species of *Syngnathi* have hitherto been confounded under the name of *S. Ophidion*, it should be stated, that those which I brought under the notice of this Society on June 9, 1835, as taken in Strangford lough, are identical with the *S. lumbriciformis*, as described by Mr. Yarrell, (Brit. Fish., vol. ii. p. 340.) It may be added that from Mr. Ball I have since received nine specimens which were taken by him in June, 1835, at the South Islands of Arran, off Clare, and from Captain Fayrer, R.N., several, likewise caught in the same month at Donaghadee.

The dorsal fin and vent in all these specimens, including one from Belfast bay, 19 in number, which are from under 3 to 6 inches long, about one-third of the entire length from the snout, and the head occupying about one-twelfth of the whole length. In these characters they correspond with Mr. Yarrell's description. Mr. Jenyns describes the "dorsal and vent at about the middle of the entire length," and the head "scarcely one-seventeenth" of it. Some of them exhibit ova "in hemispheric depressions, on the external sur-

face of the abdomen, anterior to the vent," as mentioned in the 'Manual of the British Vertebrata,' p. 489.

I cannot conclude without acknowledging the benefit I have received, not only on this, but on all previous occasions, when visiting London, from Mr. Yarrell's liberality, in affording me the unlimited use both of his library and of his extensive collection of British fishes.

* *Trigla pœciloptera*, Cuv. and Val. Little Gurnard.

Amongst a number of fishes submitted to my examination by Mr. Ball, is a Gurnard, apparently of this species, which was taken at Youghal, I believe, along with sprats, (*Clupea Sprattus*,) early in the summer of 1835. In *form*, it agrees in every character by which the *T. pœciloptera* is said to be distinguished, (Cuv. and Val. *Hist. de Pois.*, t. iv. p. 447.) Judging from its present appearance, I have little doubt that when recent it would in *colour* also have corresponded. Its length is 2 inches, D. 10, (last extremely short)—15. P. 10—3, free. V. + 5. A. 15. C. 15.

Second dorsal ray longest; 25 dorsal spines; caudal fin a little forked; lateral line spinous. Thence to D. fin, and to about an equal distance below the line, rough with spinous scales; (this is not mentioned by Cuv. and Val.) lower portion of sides smooth.

With the *T. aspera*, Viviana, as described in the last-quoted work, t. iv. p. 77, and which in length is stated like the *Tri. pœciloptera* to be about 4 inches, the present specimen agrees in many respects, but chiefly differs in the profile being less vertical, in the anterior lobes of the snout, and in the negative character of wanting "une échancrure transversale et profonde," behind the posterior orbital spine; nor with the highest power of a lens can any of the anterior dorsal spines be distinguished as "dentelée," nor the first and second rays of the D. fin as serrated, both of which characters are attributed to *T. aspera**.

In the course of this examination specimens of *T. cuculus*, Bl., *T. lineata*, *T. hirundo*, *T. pini*, Bl., and *T. Gurnardus* were before me, *T. lyra* was not available, but the remarkable development of the anterior lobes of the snout in this species would have rendered its comparison with the specimen under consideration unnecessary.

The *T. pœciloptera* has previously been obtained only at Dieppe, where it was discovered by M. Valenciennes.

* *Gobius Britannicus*. British Black Goby.

When at Galway-bay, on the western coast of Ireland, accompanied by Mr. Ball, in June 1834, I captured a species of Goby, whose thicker and more clumsy form at once led me to consider it different from a *G. niger* taken at Youghal, with which I had been

* Since the above was written I have had an opportunity of comparing the *Trigla* here treated of with two specimens of *T. aspera*,—one 3½, the other 4⅓ inches long, which are part of a collection of fishes, sent last year from Corfu, to the Belfast Natural History Society, by Robert Templeton, Esq., Roy. Art. This comparison served strongly to confirm every thing above stated. The *T. aspera* is admirably described by Cuv. and Val.

favoured by that gentleman. On a recent examination it proved identical with the *G. niger* of Cuvier and Valenciennes, whilst the latter corresponded with the *G. niger* of Montagu (Yarrell's Brit. Fish., vol. i. p. 252.) and Jenyns. This species is considered by Cuv. and Val., but without recourse being had to a comparison of specimens, to be the same as theirs; but the two individuals under consideration, unquestionably distinct, agree so well with the detailed descriptions of those just quoted under the same name, as to leave not a doubt upon my mind as to the propriety of separating them. Amongst other differential characters, they present the following:

G. niger, Mont. (from Youghal.)	*G. niger*, Cuv. and Val. (from Galway.)
Jaws, the lower one the longer.	*Jaws* equal.
Teeth, several irregular rows in both jaws, those of the outer row not very much larger than the others, and, like them, straight and truncated at the summit.	*Teeth*, outer row very much the largest, and curving inwards.
Sulcus, extending from the head to D. fin.	*Sulcus*, wanting.
*Papillæ** so numerous on the head as to give it the appearance of being delicately carved all over.	*Papillæ* less numerous by half.
D. 6—14. P. 18. V. $\frac{1}{5}$ each. A. 12. C. 15, and some short.	D. 6—16. P. 20—21. V. 5. A. 13. C. 14.

Though of British authors, the *G. niger* of Montagu and Jenyns only is quoted with certainty; the species described as such by Pennant and Yarrell appears to be the same, the exceptions being that two rows only of teeth are attributed to it by the former, and 17 rays are described by the latter as contained in its 2nd D. fin. The *G. niger* of Donovan and Fleming is the *G. Ruthensparii* (*G. bipunctatus*, Yarr.) of Euphrasen.

Bloch's *G. niger* does not agree with either species here treated of; as like Pennant's, it is stated to have but two rows of teeth. It differs, more especially from that of British authors as now restricted, in the jaws being of equal length, the teeth pointed, and having 16 rays in the 2nd D. fin; and from that of Cuv. and Val. in the shortness of the P. fin, a character represented both in his figure and description. The *G. niger* of Risso having the jaws equal, and the teeth curved, approximates it to that of Cuv. and Val., but the number of fin-rays differs considerably.

The species taken at Galway, which is new to the British catalogue, occurs also in the Mediterranean, the collection of fishes from Corfu, alluded to in the note to *Trigla pœciloptera*, as being in the

* With respect to these resembling the *G. geniporus*, as described by Cuv. and Val., t. xii. p. 32, but very different in other characters.

Belfast Museum, containing an individual in all respects, but that of size, quite identical.

Although the *G. niger* of Montagu and Jenyns accords better with the description of Linnæus—consisting only of the number of fin-rays—than the species for which Cuv. and Val. have adopted his name, yet, as several other European Gobies equally well agree with the brief characters in the '*Systema Naturæ*,' and it being necessary to give one of the two which have been confounded together a new name, it appears to me that the species described as *G. niger* in the '*Histoire Naturelle des Poissons*' of the last-named authors,—the greatest and most comprehensive work yet attempted on the subject—should retain the term there given it, and that it is to the *Gobius niger* of British authors that the new appellation should be applied. With this view I propose the name of *Gobius Britannicus*, not to indicate its existence only on the British shores, but in the hope that it may perhaps better than any other term mark it as the species of British authors.

As M. Valenciennes has observed that "M. Yarrell a publié une charmante figure de *nôtre* gobie," (t. xii. p. 18.) it must be added that this figure is more illustrative of my *G. Britannicus* than what I have considered the *G. niger* of Cuv. and Val.; in hypercriticism all it indeed wants to be a perfect representation of that fish is—the lower jaw a little longer, and the teeth smaller, less regular and truncated.

Mr. Owen then laid before the Meeting the following observations upon the structure of the shell in the Water-clam, (*Spondylus varius*. Brod.)?

Having been led to reflect, while considering the uses of the camerated part of the shell of the *Nautilus*, upon the degree or extent to which that structure might depend upon the mode of growth of the animal and its shell, and how far it was a necessary physical consequence of the increase and change of position of the animal, independently of any special purpose served by the forsaken parts or chambers of the shell, I have paid attention to all the cases that have come under my observation of the formation of chambers in shells, by the secretion, on the part of the animal, of a nacreous layer, forming a new basis of support to the soft parts, and cutting off the deserted portion of the shell from the chamber of occupation.

It is well known that this process is not the only mode adopted to suit the shell to the changing form and bulk or other exigencies of its occupant. In the genus *Magilus* the part of the shell from which the body gradually recedes is filled up by a continuous compact secretion of calcareous matter, and a solid massive elongated shell is thus produced, which would be a great incumbrance to a locomotive mollusc, but is of no inconvenience to an univalve destined by nature to live buried in a mass of lithophytous coral.

In *Helix decollata*, again, the deserted part of the shell, after being partitioned off by the nacreous layer secreted by the posterior part of the mantle, is broken away by some yet unexplained process, and consequently no chambers nor any solid apex of the shell remains.

The retention of the deserted chambers and the interception of certain spaces of the shell by calcareous septa, though not unknown in the gastropodous univalves, is more common in bivalves.

An oyster kept without food will frequently expend its last energies in secreting a new nacreous layer, at a distance from the old internal surface of the concave valve, corresponding to the diminution of bulk which it has experienced during its fast, and thus adapt its inflexible outward case to its shrunken body.

In the calcareous tube exuded from the elongated mantle of the *Septariæ*, Lam., the closed extremity of the tube is divided into chambers by a succession of layers at a distance of half an inch from each other, having a regular concavity towards the open extremity of the shell. These concave septa are composed entirely of the nacreous constituent of the shell; in one example which I have examined, they were six in number; they are thin, smooth, and closely resemble the partitions in the *Nautilus* and *Spirula* save in the absence of the siphonic perforation.

Among Bivalves the *Ostreæ* not unfrequently present shallow and irregular chambers in the substance of the shell: the *Etheriæ* again have vesicular cavities interposed between the testaceous laminæ; but the most constant and remarkable example of the camerated structure of the shell is presented by a large *Spondylus* or *Water-clam*, so called from the fluid which (until lost by slow evaporation) occupies the chambers, and which is visible in the last-formed chamber through the thin semitransparent exposed septum.

In order to examine this camerated structure, and more especially to see how it was modified by the presence and progressive change of place of the adductor muscle, I had a fine specimen sawn through vertically and lengthwise. In the specimen now on the table, which measures eight inches in length, the substance of the concave valve, which is two inches one-third in thickness, at the thickest part includes fourteen chambers, separated from each other by very regularly formed and stout partitions, composed, as in other chambered shells, of the nacreous portion or constituent of the shell. The septa are slightly undulating in their course, but present a general concavity towards the outlet of the shell. Not any of these partitions are, however, continued freely across the shell, but each becomes continuous at the muscular impression, which is near the middle of the shell with the contiguous septa. In general, also, the septa commence singly from the cardinal or upper wall of the valve, and divide into two when about one-fourth of the way towards the opposite or lower wall; the thickness of the undivided part of the septum being equal to, or greater than that of the two divisions or layers into which it splits.

We can readily understand why the septa must necessarily become united together at the point of insertion of the adductor. The muscle never quits its attachment to the valves; while the lobe of the mantle, except in its circumference, and where it is attached to the adductor muscle, must detach itself from the surface of the valve which is about to be partitioned off, when it secretes upon the interposed fluid the new

septum or basis of support. It is obvious, therefore, from the conditions under which the partitions are successively secreted, that they must adhere not only to the circumference of the valve, but to the preceding and succeeding septum at the part occupied by the adductor muscle, and for an extent corresponding to its circumference. The progressive change in the position of this muscle by the absorption of the posterior fibres, and the addition of others anteriorly, changes in a corresponding degree the relative position of these subcentral confluent parts of the septa, and a beautiful undulated disposition of the whole chambered part results. If the adductor muscle were a tube instead of a solid mass, the central confluent part of the septa would of course be perforated, and a siphon would result, the calcareous walls of which, from the proximity of the chambers, would no doubt be continuous, as in many fossil *Polythalamous* shells.

A disposition to form chambers is manifested, but in a much less degree, in the smaller flattened or superior valve of the *Water Spondylus*. In the specimen here described there are three chambers, with narrower intervals, and much thicker partitions than in the lower valve. These partitions are confluent opposite the muscular impression, as in the lower valve, and each partition expands from this attachment in an infundibular manner, which reminds one of the *emboitement* of the calcareous parts of the siphon in the *Spirula*.

The secreting power of the lower lobe of the mantle in the *Spondylus* is greater than in the upper; and the layers of nacre which are successively deposited on the cardinal margin push forward in a corresponding degree the upper valve, leaving a heel or *umbo* behind the hinge of the lower valve, which, from the inactivity of the secreting surface of the upper lobe of the mantle, is not opposed by a corresponding *umbo* in the upper valve.

The laminæ, which are deposited in a continuous series of superimposed layers at the hinge of the lower valve, are not continued in a like state of superposition throughout; they soon separate from each other, and do not again unite except at the space corresponding to the adductor muscle, and at the circumference of the valve.

The interspaces of these successive layers of the growing *Spondylus* cannot, from the absence of a medium of intercommunication, serve any purpose hydrostatically with reference to locomotion: it is a singular fact, indeed, that the *Spondylus*, in which the chambered structure is constant, and the *Ostreæ*, and other bivalves, in which it is occasional, are cemented to extraneous bodies by the outer surface of the shell, generally by the concave valve. So that the septa must be regarded as mere dermal *exuviæ* still left adhering to the animal, to which, as a motionless bivalve, they are no incumbrance. It is highly probable that all the chambers are originally filled with fluid, as more or less is found in the outer ones of the specimens brought to this country.

In the *Testaceous Cephalopods* a new structure is added, viz., the siphon, whereby the exuvial layers of the old shell and the deserted chambers are converted into a hydrostatic instrument, subservient to the locomotion of the animal. The operation of the siphon and

chambers has been ably explained by Dr. Buckland in the *Nautilus*, where the calcareous inflexible tube protecting the membranous siphon is not continuous. The working of the siphon is, however, less intelligible in those species in which the outer calcareous tube is continued from chamber to chamber, as in the *Spirulæ*, *Orthoceratites*, &c., and it is with respect to camerated shells of this kind that I would ask how far the reasoning suggested by the chambers in the water *Spondylus* may be applicable in their case; and whether a final intention can be clearly traced beyond the diminution of specific gravity occasioned by a large proportion of the shell being converted into receptacles of gas; if indeed we have sufficient evidence to assume that they do not contain a denser fluid, like the *Spondylus*.

Mr. Owen placed upon the table, as illustrative of his observations, sections of both valves of a large specimen of the Water-clam, and also stated that Dr. Bostock had kindly undertaken to submit the fluid contained in the chambers of the shell to a chemical analysis.

Dr. Bostock being present laid before the Meeting the following remarks upon the fluid in question.

Mr. Owen having put into my hands, for examination, a fluid which was obtained from the cavities in the valves of the *Spondylus varius*, I obtained from it the following results.

It was turbid, had an acid saline taste, and a rank disagreeable odour. After standing for twenty-four hours, it deposited a whitish curdy sediment, and became clear and transparent. The clear fluid, amounting to 54^{m}., was poured from the sediment, and was subjected to various tests. It was neither acid nor alkaline; it produced a very copious precipitate with the nitrate of silver, indicating the presence of a large proportion of muriatic acid; the muriate of barytes indicated a slight trace of sulphuric acid, while the appropriate tests of lime, magnesia, and iodine produced no effect. A portion of the fluid was evaporated by a gentle heat, when a quantity of crystals of the muriate of soda was obtained, amounting in weight to very nearly twenty per cent of the fluid. After the removal of the crystals, a little brown matter was left in the capsule, but in too minute a quantity to enable me to ascertain its nature and properties, except that it was not soluble in alcohol; we may, however, presume that it gave the fluid its peculiar flavour and odour.

It appears therefore that the fluid in question consisted almost entirely of a solution of pure muriate of soda, differing therefore, in its chemical constitution, from sea-water.

The sediment mentioned above I returned to Mr. Owen; it appeared to consist of small globular or rather pyriform bodies, probably of an organic origin.

June 27th, 1837.

Thomas Bell, Esq., in the Chair.

A Letter was read addressed to Mr. Gould, from Mr. Thomas Allis of York, in which the writer remarks that the sclerotic ring of the great *Podargus* does not present the slightest appearance of distinct plates, being simply a bony ring; the first instance in which Mr. Allis had observed this peculiarity.

A Letter was also read from His Excellency Hamilton Hamilton, Esq., Her Majesty's Minister at Rio, announcing the present of a *Chilian Eagle* for the Society's Gardens.

Mr. Gray exhibited a specimen of a *Paradoxurus* which had been presented to the Museum of the Society by the President, the Earl of Derby, and for which he proposed the specific name of *Derbianus*.

PARADOXURUS DERBIANUS. *Parad. pallidè fuscescenti-albus, rostri lateribus, strigâ superciliari, notâ in medio fronte et in utroque latere capitis super aures nigris, necnon strigâ ad utrumque latus colli in humeros obductâ, vittis tribus, quatuor, vel quinque transversis in dorso (ad latera angustioribus), annuloque ad basin caudæ, cum hujus dimidio postico. Artubus cinerescenti-fuscis.*
Hab. in Peninsulâ Malayanâ.

Mr. Gray also brought before the notice of the Meeting some Mammalia, which he had lately purchased for the British Museum from a collection made by the late Colonel Cobb in India, among which was an adult specimen of the *Once* of Buffon (Hist. Nat.), on which Schreber formed his *Felis uncia*, which has been regarded by Cuvier, Temminck, and most succeeding authors as a leopard, but which is a distinct species, easily known by the thickness of its fur, the paleness of its colour, the irregular form of the spots, and especially by the great length and thickness of the tail. Mr. Gray observed that a more detailed description of this animal was unnecessary, as it agreed in all particulars with the young specimen described by Buffon.

Two new species of *Sciuroptera*, which agree with the American species in colour, but differed from one another in the size, make, and form of the soles of the feet, were described as follows :—

SCIUROPTERA FIMBRIATA. *Sciur. vellere longo molli cinerescente, nigro variegato ; pilis supernè plumbeis, complanatis, pallide fuscis, ad apicem nigris ; facie albidâ, regione circumoculari nigrâ, mystacibus longissimis, nigris ; mento corporeque*

subtus albis, caudâ latâ, paululùm decrescente, fulvâ, pilis basalibus ad apicem nigris. Pedibus anticis latis, pollice minuto; pedibus posticis penicillâ latâ ad marginem externum indutis; plantis tuberculo oblongo parvo ad medium marginis externi, tuberculo antico, et tuberculis duobus inæqualibus internè ad partem posticam.

Hab. in Indiâ.

Sciuroptera Turnbulli. *Sciur. vellere brevi, molli, nigrescente, pilis annulum albidum subterminalem exhibentibus; buccis, mento, corporeque subtùs albis; regione circum-oculari, et mystacibus nigris; caudâ angustâ, decrescente, nigrescenti-fuscâ, subtùs pallidiore; pedibus anticis parvulis, pollicibus minutis; pedibus posticis externè vix fimbriatis, plantis angustis sine tuberculis centralibus ad marginem externum, tuberculo attamen anteriori, necnon duobus inæqualibus posticis ad marginem internum.*

Long. 11½ unc.; caudæ, 8 unc.

Hab. in Indiâ.

A new species of *Fox*, nearly allied to *Vulpes Bengalensis*, but evidently larger, Mr. Gray designated as *Vulpes xanthura*. In describing this species, he remarked, that it had a large gland, covered with rigid brown hair, on the upper part of the base of its tail, very distinctly marked; and that on looking at the tail of the several other species of this genus, as *V. Bengalensis*, *V. vulgaris*, *V. fulva*, and some others, a similar gland was easily recognisable, though it appeared to have been hitherto overlooked.

Mr. Ogilby afterwards characterised a new species of Gibbon (*Hylobates*), which had been presented to the Society many years ago, by the late General Hardwicke, and hitherto considered as the female of the Hoolock. A specimen of the latter species had been presented to the Society at the same time, and from the same locality; but their specific identity was sufficiently disproved, not only by the fact of both specimens being of the same sex, and from our being perfectly acquainted with both sexes of the Hoolock, but likewise by the marked difference of colour and external structure exhibited by the two animals, The greater height of the forehead and prominence of the nose in the new species were pointed out as alone sufficient to distinguish it from all the other Gibbons; whilst its ashy-brown colour and large black whiskers rendered it almost impossible to confound it with the Hoolock, which has fur of a shining black, and a pure white band across the forehead. Mr. Ogilby observed, that we have had two distinct instances of real Apes from the continental parts of India; and referred to various passages of Pliny, in which the Roman naturalist professed to describe different races of human beings from the remote provinces of India, whom he relates to have teeth like dogs, to live among trees, and to converse by frightful screams. These distorted accounts Mr. Ogilby conceives to have been founded upon

the vague tales brought back by the few Greek and Roman travellers who at that time penetrated beyond the Ganges, and proposed therefore to call the new Gibbon by the name of *Hylobates Choromandus*, the name of one of the supposed tribes of men described by Pliny. The same gentleman afterwards exhibited and described the skin of a new species of Colobus, or four-fingered monkey from Africa; for which he proposed the specific name of *Colobus leucomeros*, on account of the white colour of the thighs, the rest of the animal being a deep shining black.

Dr. Smith exhibited some small Quadrupeds, forming part of the collection obtained during his recent expedition into South Africa. They consisted of some new or rare species belonging to the genera *Macroscelides*, *Chrysochloris*, *Pteromys*, and *Otomys*. Dr. Smith entered into some interesting details respecting their habits, which will be published in his forthcoming work on African Zoology.

July 11th, 1837.

William Yarrell, Esq., in the Chair.

A letter was read from Mr. Hugh Cuming, Corresponding Member, dated Manilla, December 24th, 1836, addressed to the late Secretary, E. T. Bennett, Esq.

Mr. Cuming states in this letter that he is actively engaged in his favourite pursuit, that of collecting objects in various deportments of natural history, and he speaks very highly of the assistance afforded him by the public authorities at Manilla in prosecuting his researches. This letter was accompanied by a large box of skins of birds and quadrupeds, part of which were a donation to the Society.

A letter was read from Keith Edward Abbott, Esq., Corresponding Member, dated Erzeroum, May 12, 1837, stating that he had dispatched a box of bird-skins for the Society.

Mr. Martin then laid before the meeting the following observations on the Proboscis Monkey, or '*Guenon à long nez.*' (*Simia Nasalis.*)

The genus *Nasalis*, of which the "Guenon à long nez" of Buffon, (suppl. vii.,) or Proboscis Monkey of Shaw is the type, was founded by Geoffroy St. Hilaire in his '*Tableau des Quadrumanes*,' published in the 'Annales du Muséum d'Histoire Naturelle' for 1812. In this outline of the *Simiadæ*, the genera *Semnopithecus* and *Cercopithecus* are blended together under the latter title; but from this group are excluded two monkeys, the Douc, constituting the type of the genus *Pygathrix* (*Lasiopyga*, Ill.) and the "guenon à long nez". With respect to the genus *Pygathrix* or *Lasiopyga*, founded upon the alleged want of callosities, most naturalists I believe, (aware of the error committed both by Geoffroy and Illiger, in describing from an imperfect skin,) have regarded it as merging into the genus *Semnopithecus*, at least provisionally, until the internal anatomy of its assumed representative be known.

The characters of the genus *Nasalis*, formed for the reception of the "*Guenon à long nez*," (*Simia Nasica*, Schreb. *Cercopithecus larvatus*, Wurmb,) are laid down as follows:

"*Muzzle* short, forehead projecting, but little elevated; *facial angle* 50°; *nose* prominent, and extremely elongated; *ears* small and round; *body* stout; *cheek-pouches*, *anterior hands*, with four long fingers, and a short thumb, ending where the index finger begins; *posterior hands* very large, with fingers stout, especially the thumb; *callosities* large; *tail* longer than the body."

At a subsequent period, however, in his 'Cours de l'Histoire Naturelle,' published 1828, Geoffroy, adopting the genus *Semnopithecus*, established by Fred. Cuvier, places the "*Guenon à long nez*," within

its limits, doubtfully it is true, and with the acknowledgment that his genus *Nasalis* has not been generally adopted, but at the same time with a bias in its favour; for observing that the manners of these monkeys are those of the Semnopitheci, he adds,—"Cependant, il ne nous parait encore démontré que le singe nasique soit une véritable semnopitheque, et il est fort possible que lorsque l'espèce sera moins imparfaitement connue, on soit obligé de rétablir le genre *Nasalis*, dans lequel on l'isolait autrefois, mais que n'est pas été admis par la plupart des auteurs modernes."

Setting aside the singular conformation of the nose, so remarkable in the *Simia Nasalis*, its external characters are not different from those of the *Semnopitheci* in general, and it is to be observed that in a second species, lately added by Mr. Vigors and Dr. Horsfield, under the title of *Nasalis recurvus*, the proportions of this part of the face are much diminished, and its form also modified. This species (which though doubted by some as being distinct, is, we believe, truly so) takes an intermediate station between the *Simia Nasalis*, and the ordinary *Semnopitheci* with flat noses, thereby showing that the transition in this particular character is not abrupt; even were it so, an isolated point of this nature does not form a philosophical basis upon which to ground a generic distinction.

So far I have alluded to external characters only; it remains for me to give some account of the anatomical characters of this singular monkey, of which, as far as I can learn, modern naturalists do not appear to be aware.

It would seem that M. Otto*, who described the sacculated form of the stomach in one of the monkeys of the genus *Semnopithecus*, is not the first observer of this peculiarity, for I find that Wurmb, in the Memoirs of the Society of Batavia, notices this point in the anatomy of an individual of the *Simia Nasalis*. After giving some interesting details respecting the habits and manners of the species, he proceeds as follows:—"The brain resembles that of man; the lungs are of a snow-white colour; the heart is covered with fat, and this is the only part in which fat is found. The *stomach is extraordinarily large, and of an irregular form;* and *there is beneath the skin a sac which extends from the lower jaw to the clavicles.*" Audebert (with whose work 'Histoire des Singes,' Geoffroy St. Hilaire was well acquainted,) refers to this account of Wurmb; yet Geoffroy does not, as far as I can find, advert to these points, unless indeed his statement of the presence of *cheek-pouches* be founded on the observation of a sac extending from the lower jaw to the clavicles; and if so, he has made a singular mistake, for the sac in question is *laryngeal*, and the words as they stand cannot be supposed to mean any thing else; I know of no monkey whose cheek-pouches extend beneath the skin to the clavicles; but the laryngeal sacs in the *Orang* and *Gibbons*, and also in the *Semnopitheci* themselves are remarkable for development. It is evident, however, from the silence of M. Geoffroy St. Hilaire respecting the laryngeal *sacculus* in the Proboscis

* See his paper in the "Nova Acta Academiæ Cæsareæ," vol. xii.

Monkey that he was not aware of the real character of the structure to which Wurmb had alluded. With respect to the structure of the stomach, neither Wurmb nor M. Otto drew any general inferences from it; they described it as it presented itself in single species, and regarded it in an isolated point of view; it is, if I mistake not, to Mr. Owen that we owe its reception as an anatomical character, extant throughout the *Semnopitheci*. (See his paper on the subject, in the Proceedings for 1833, and in the Transactions of the Zoological Society.)

This is perhaps scarcely the place in which to introduce any speculations, but I cannot help observing that the same structure may be expected in the genus *Colobus*, which in form is a mere repetition of the genus *Semnopithecus*, except that the thumb of the forehands, which in the latter begins to assume a rudimentary character, is in the former reduced to its lowest stage of development. In both genera the teeth precisely agree, and present early that worn surface which is the consequence of a continued grinding *rodent-like* action, upon the leaves and herbaceous matter which constitute the chief diet of the animals.

The statement of Wurmb respecting the stomach and laryngeal apparatus of the Proboscis Monkey I have lately been enabled to confirm.

Among the specimens in store brought within the last few months from the Gardens to the Museum occurred an example of the Proboscis Monkey, in brine, but in a state of decomposition which induced me to lose no time in making such an examination as its condition would admit, being indeed extremely anxious to ascertain the relationship of this curious monkey to the other groups of Indian *Simiadæ*, groups to which I have been lately directing my attention.

The specimen in question was a female, measuring from the *vertex* to the *ischiatic callosities* one foot nine inches.

The body was meagre and slender, and the limbs long and slim; the contour of the animal being very unlike that displayed in the mounted specimen in the Museum of the Society, which gives the idea of great robustness.

The abdominal cavity had at some former period been opened and the liver removed, in doing which the stomach had been cut, but not so much as to spoil it entirely. In every essential point this *viscus* is the same as in all the *Semnopitheci* hitherto examined. It consists of a large cardiac pouch with a strong muscular band, running as it were around it so as to divide it into two compartments, an upper and lower, slightly corrugated into *sacculi*; the *cardiac apex* of the upper pouch projects as a distinct *sacculus* of an oval form, and is not bifid. From this *upper pouch* runs a long and gradually narrowing *pyloric portion*, corrugated into *sacculi* by means of three muscular bands, of which one is continued from the band dividing the cardiac pouch into two compartments. The elongated *pyloric portion* sweeps around the *lower cardiac pouch*.

The *œsophagus* enters the first compartment about four inches

from its terminal apex, giving off a radiation of longitudinal muscular fibres over the central portion of the first compartment. The second or lower compartment is the largest and deepest, and is embraced by longitudinal muscular fibres from the œsophagus to the division-band, but unlike the same compartment in the stomach of the *Semnopithecus Entellus*, it is very slightly sacculated; indeed it can scarcely be said to be so at all. The admeasurements are as follow:

	feet.	inches.
1st compartment, round the greater curve.....	1	6
2nd compartment, measured in the same manner	1	$8\frac{1}{2}$
From the entrance of the œsophagus, round the 2nd compartment to the division-band	1	1
The same measurement, round the 1st compartment.....	0	$8\frac{1}{2}$
Length of *pyloric portion*	2	1
Circumference at base.....	0	$9\frac{1}{2}$
Circumference just above pyloric orifice.....	0	$5\frac{1}{2}$
Length of small intestines	18	0
Length of large intestines	6	2

The average diameter of the small intestines, lying flat, was $\frac{3}{4}$ of an inch; the ileum, however, was rather more, but not quite an inch.

The *cæcum* is of a pyramidal figure, 5 inches in length, pointed, and somewhat sacculated by three slight muscular bands. Circumference at the base, $5\frac{1}{4}$ inches.

The large intestines are puckered into *sacculi* by two longitudinal bands; they commence large, becoming gradually smaller, the bands in the meantime gradually disappearing. Advancing towards the *rectum* the intestine again enlarges, and here, to the extent of $2\frac{1}{2}$ feet from the anus, all trace of bands is lost.

The circumference of the large intestines at their commencement is $3\frac{1}{2}$ inches.

The lungs consisted of two lobes on each side, the fissure dividing the lobes on the right side being the most complete.

The laryngeal sac was of enormous size, and single. It extended over the whole of the throat, and advanced below the clavicles, communicating by means of a single but large opening with the larynx. This opening is on the left side, between the *larynx* and the *os hyoides*, and is capable of being closed by means of a muscle arising from the anterior apex of the *os hyoides*, and running down the central aspect of the *trachea* to the *sternum*. The contraction of this muscle draws the *os hyoides* down, so as to press upon the edge of the thyroid cartilage.

There were no cheek-pouches nor any traces of them.

The teeth were much worn, but the fifth tubercle of the last molar tooth of the lower jaw was very distinct.

Mr. Gould afterwards called the attention of the Meeting to the common British Wagtail, and stated his firm conviction of its being

distinct from the *Motacilla alba* of Linnæus. He proposed for it the name of *M. Yarrellii*, and observed, that it might be easily distinguished from the continental one, with which it had hitherto been confounded, by an attention to the following characters.

The pied wagtail of England (*M. Yarrellii*) is somewhat more robust in form, and in its full summer dress has the whole of the head, chest, and back of a full, deep, jet black; while in *M. alba*, at the same period, the throat and head alone are of this colour, the back and the rest of the upper surface being of a light ash-grey. In winter the two species more nearly assimilate in their colouring; and this circumstance has doubtless been the cause of their being hitherto considered identical; the black back of *M. Yarrellii* being grey at this season, although never so light as in *M. alba*. An additional evidence of their being distinct (but which has doubtless contributed to the confusion), is, that the female of *M. Yarrellii* never has the back black, as in the male; this part, even in summer, being dark grey; in which respect it closely resembles the other species.

July 25th, 1837.

E. S. Hardisty, Esq., in the Chair.

Mr. Waterhouse directed the attention of the Meeting to several small Quadrupeds which he considered undescribed, and which he proceeded to characterize as follows:

Phascogale flavipes. *Phasc. fuscescenti-flava, pilis nigris intermixtis; corpore subtùs pedibusque flavis; gulâ albidâ; caudâ, corpus quoad longitudinem excellente, nigrescenti, subtùs flavâ, pilis minutis et adpressis vestitâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	4	8
——— *caudæ*.....	3	5
——— ab apice rostri ad basin auris	1	0
——— *tarsi digitorumque*.....	0	$9\frac{3}{4}$
——— *auris*.....	0	6

Hab. North of Hunter's River, New South Wales.

The fur of this animal is moderately long, not very soft, and consists of hairs of two lengths. On the back the shorter hairs are of a palish ochre colour at the apex, and the longer hairs are black: on the sides of the body and limbs the ochreous hue prevails, the black hairs being less numerous: the under parts of the body are of a yellow colour, inclining to white on the throat and mesial line of the belly; all the hairs are of a deep gray at the base both on the under and upper parts of the body. The general hue of the head is gray, a tint produced by the mixture of black and white hairs; the eyelids are black: the hairs immediately above and below the eye are of a yellow-white colour, as are also those of the upper lip and lower part of the cheeks. The moustaches are moderately long; the hairs are black at the base and grayish at the apex. The ears are of moderate size, and have the hinder portion emarginated; they are furnished externally with minute hairs, those on the inner side being chiefly of a yellow colour. The feet are of an uniform deep ochre colour. The tail is about equal in length to the body and half the head, and is furnished with small and closely adpressed hairs, between which rings of scales are visible; on the apical portion of the tail the hairs are longer, slightly exceeding one eighth of an inch in length; the hairs on the under side of the tail are of a deep buff colour, and those of the upper side are black and yellow, excepting at the apex, where all the hairs are black.

The teeth in this species agree in number with those of *Phascogale penicillata*, and in fact scarcely differ in any respect, making allowance for the difference in the size of the animals. The two front incisors of both upper and lower jaws are perhaps smaller in proportion, and the third false molar in the lower jaw is decidedly smaller in proportion, being scarcely visible unless the gum be removed.

The last molar of the upper jaw is of the same narrow form, and placed obliquely as in *P. penicillata*.

Not having a skull of *P. penicillata*, I am guided in my observations by M. Temminck's figure in the 'Monographies de Mammalogie.'* Upon comparing the skulls of *P. flavipes* with the same figure, the resemblance is great; in the smaller animal, however, the skull is somewhat narrower in proportion (especially the fore part); the nasal bones are not so broad at their base.

PHASCOGALE MURINA. *Phasc. cinerea levitèr flavo lavata; corpore subtùs pedibusque albis; caudâ, corpus quoad longitudinem excellente, pilis albis valdè minutis et adpressis vestitâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	3	0
——— *caudæ*	2	7
——— ab apice rostri ad basin auris	0	$8\frac{1}{2}$
——— *tarsi digitorumque*	0	$7\frac{3}{4}$
——— *auris*	0	$4\frac{1}{2}$

Hab. North of Hunter's River, New South Wales.

This species may be readily distinguished from the former by its much smaller size, being in fact rather less than the common mouse (*Mus musculus*), or less than half the bulk of *P. flavipes*. The fur is rather short and soft; its general hue is gray with a faint yellowish tint, the longer hairs on the upper parts of the body being gray at the apex, and the shorter hairs tipped with pale yellow or cream colour; the feet and under parts are white, as are likewise the sides of the face beneath the eye. All the hairs of the body are of a deep slate colour at the base. The tail is covered with very minute closely adpressed silvery white hairs. The dentition is evidently that of an adult animal: the canines and anterior incisors of both upper and lower jaws appear to be smaller in proportion than in *P. flavipes*.

MUS HAYI. *Mus auribus majusculis, rostro obtuso, tarsis elongatis, caudâ corpus cum capite quoad longitudinem excellente; corpore suprâ fusco; lateribus flavis; pedibus corporeque subtùs albis; pectore notâ flavescente notato.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	3	8
——— *caudæ*.....	3	10
——— ab apice rostri ad basin auris	0	$11\frac{2}{3}$
——— *tarsi digitorumque*.....	0	11
——— *auris*	0	$6\frac{2}{3}$

Hab. Morocco.

* In M. Temminck's figure the three lateral incisors of the upper jaw are represented as being close to the anterior pair. There is, however, a space between the anterior incisors and the lateral, both in *P. penicillata* and in the two species here described.

This species, which is rather larger than *Mus musculus*, was presented to the Zoological Society by E. W. A. Drummond Hay, Esq., Corr. Mem., after whom I have taken the liberty of naming it.

Mus Alleni. *Mus auribus parvulis, caudâ corpore cum capite, longiore, corpore suprà nigrescenti-fusco, subtùs cinereo; pedibus obscuris.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	1	$9\frac{1}{2}$
——— *caudæ*.....	1	11
——— ab apice rostri ad basin auris	0	7
——— *tarsi digitorumque*.....	0	$7\frac{1}{4}$
——— *auris*	0	3

Hab. Fernando Po.

This species is less than the harvest mouse (*Mus messorius*), and of a deeper colour than the common mouse (*Mus musculus*), being in fact almost black. The ears are smaller in proportion, and more distinctly clothed with hairs. The tail is very sparingly furnished with minute hairs. The tarsi are covered with blackish hairs above; the toes are dirty white.

I have named the species after Lieut. W. Allen, R.N., Corr. Mem. by whom it was discovered and presented to the Zoological Society.

Mus Abbottii. *Mus auribus mediocribus, caudâ corpore cum capite longiore : corpore suprà intensè fusco, subtùs canescente ; pedibus obscuris.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	1	6
——— *caudæ*.....	1	11
——— ab apice rostri ad basin auris	0	$6\frac{1}{2}$
——— *tarsi digitorumque*.....	0	$7\frac{1}{3}$
——— *auris*	0	4

Hab. Trebizond.

This species is less than the harvest mouse (*Mus messorius*), and of a deeper colour than the *Mus musculus*, in which respects it agrees with *Mus Alleni*; from this, however, it may be distinguished by the tail being longer in proportion, the ears larger, and the tarsi more slender. It was presented to the Zoological Society by Keith E. Abbott, Esq., Corr. Mem., after whom it has been named.

Mr. Gould then continued the exhibition of Mr. Darwin's Birds, a series of which were upon the table. One only among them was considered new, a species belonging to the genus Pyrgita from the island of St. Iago. Mr. Gould characterized it under the name of

Pyrgita Iagoensis. *Pyr. summo capite, et maculâ parvâ gulari intensè nigrescenti-fuscis, strigâ superciliari, collo, humeris dorsoque intensè castaneis, hujus plumis strigâ fuscâ centrali notatis ; alis caudâque brunneis, tectricibus alarum minoribus albis,*

qui color fasciam transversam efficit; lineâ angustâ a nare ad oculum; genis corporeque subtùs albis, hoc colore in cinereum ad latera transeunte; rostro, pedibusque fuscis.

Long. tot., 5 unc.; *caud.*, $2\frac{1}{4}$; *alæ*, $2\frac{1}{2}$; *rost.* $\frac{1}{2}$; *tarsi*, $\frac{5}{4}$.
Hab. St. Iago.

Obs. This is in every respect a typical *Pyrgita*, and rather smaller than the common species, *P. domestica*.

Mr. Gould then called the attention of the Members to some specimens of *M. alba* and *M. Yarrellii*, which presented in a very decided manner the distinctions referred to by him at the last Meeting. He afterwards characterized a new species of that genus under the name of

Motacilla leucopsis. *Mot. facie, vertice, plumis auricularibus, gulâ, abdomine, crisso, rectricibus caudæ duabus externis albis; primariis, tertialibus, tectricibus majoribus minoribusque alarum albis; notâ pectorali semilunari, occipite, collo, dorso, humeris, uropygio, rectricibusque octo caudæ intermediis nigris, primariis ad apicem et internè nigrescenti-fuscis; rostro pedibusque nigro-fuscis.*

Long. tot., 7 unc.; *alæ*, $3\frac{3}{4}$; *caud.*, $3\frac{3}{4}$; *rost.*, $\frac{3}{4}$; *tars.*, 1.
Hab. India.

August 8th, 1837.

Richard Owen, Esq., in the Chair.

A letter was read from J. B. Harvey, Esq., of Teignmouth, Devonshire, Corresponding Member, addressed to W. Yarrell, Esq., accompanying a donation to the Society of some very beautifully preserved specimens of *Radiata* and Fish.

Mr. Gould then called the attention of the Meeting to the concluding part of his work on the Birds of Europe, which he laid on the table as a donation to the Library; and he expressed the gratification which he felt at having brought to a successful termination a publication upon which he had been engaged with almost unremitting attention for more than five years.

The Chairman, in returning the thanks of the Meeting to Mr. Gould for his donation, spoke of the advantages accruing to the Society from being connected with a naturalist whose works on Ornithology were justly held in the highest estimation both here and on the Continent.

Mr. Gould then characterised the following birds from the Society's collection as new species:

Corvus nobilis. *Corv. corpore toto nitidè nigro, non sine fulgore purpureo ac viridi præcipuè ad alas ac scapulas, necnon ad gulam pectusque ubi plumæ sunt elongatæ et lanceolatæ; caudâ latâ et gradatâ; rostro pedibusque nigris.*

Long. tot. 25 unc.; *rostri*, $3\frac{1}{4}$; *alæ*, 18; *caudæ*, 11; *tarsi*, 3.

Hab. Mexico.

Obs. This beautiful species is a true raven, and may be distinguished from the European, and from that inhabiting the United States of America, by the more metallic lustre of its plumage, by its more lengthened and slender bill, the greater length of its primaries, and the more cuneate form of its tail.

Ortyx guttata. *Ort. capite cristato; summo capite nigrescenti-brunneo; fronte et lineâ supra-oculari usque ad occiput tendente pallidè brunneis, singulis plumis ad apicem pallidioribus; gutture nigro in longum lineis albis exiguis striato. Plumis auricularibus, lineâ utriusque colli lateris ad nucham coalescente, castaneo-brunneis; dorso rufo-brunneo, plumis singulis lineis obscuris subfuscis delicatè fasciatis, strigâ centrali albescenti-cervinâ interpositâ. Scapularibus alæque tectricibus majoribus magis brunneis, notis conspicuis nigerrimis, transversim et irregulariter striatis, interspatiis guttulis undulatis repletis: plumis scapularibus, tectricibusque majoribus et minoribus notam*

triangularem cervinam ad apicem ostendentibus; uropygio pallidè luteo obscurè nigro guttato; caudâ fuscescenti-nigrâ notis fasciisque rufescenti-cervinis irregularitèr ornatâ; pectore abdomineque intensè fuscis, hôc colore in rufum ad latera transeunte; singulis plumis ad apicem notam albam triangularem plùs minùsve nigro cinctam exhibentibus; rostro nigro; pedibus nigrescenti-brunneis.

Long. tot., 10 unc.; *rostri*, $\frac{3}{4}$; *alæ*, $5\frac{3}{4}$; *caudæ*, 3; *tarsi*, $1\frac{5}{8}$.

Obs. This is one of the largest species of the genus, and is from the Bay of Honduras. Presented to the Museum of the Society by Captain Barlow.

THAMNOPHILUS FULIGINOSUS. *Thamn.* Mas. *Capite, cristâ, genis, gutture et pectore nigerrimis. Dorso, alis, corpore subtùs, caudâque cinerescenti-fuliginosis, hujus pogoniis internis lineis angustis transversis albis fasciatis; rostro pedibusque nigris.*

Fœm. *Summo capite, dorso alisque castaneo-fuscis; loro, lineâ super oculos, plumis auricularibus, colli lateribus, gutture, corpore subtus et caudâ intensè cineraceo-cœruleis; plumis singulis lineis cinerescenti-albis fasciatis; pogoniis internis rectricum albis lineis fasciatis; rostro pedibusque nigro-brunneis.*

Long. tot., $7\frac{1}{2}$ unc.; *rostri*, $1\frac{1}{8}$; *alæ*, $3\frac{1}{2}$; *caudæ*, 3; *tarsi*, $1\frac{1}{4}$.
Hab. Demerara.

Obs. This species is distinguished from the other members of the genus by its robust and powerful frame. The female is of the same size as the male, or a trifle larger in all its proportions.

Mr. Gould from his own Collection presented to the Society, and characterised a fourth species of his genus *Dendrocitta*, under the name of

DENDROCITTA RUFIGASTER. *Dend. facie, summo capite plumis auricularibus, gutture, pectoreque brunneis, hôc colore gradatim in rufo-brunneum transeunte apud abdominem; lateribus crissoque nitidè castaneis; occipite et nuchâ cinerescenti-albis; dorso rufo-brunneo; uropygio tectricibusque caudæ superioribus cinerescentibus; rectricibus caudæ duabus intermediis nigrescenti-griseis, ad apicem nigris, utrisque proximis nigris, ad basin nigrescenti-griseis; rectricibus cæteris nigris; alis nigerrimis, primariis omnibus ad basin (externis exceptis) albis, qui color notam conspicuam in alis mediis efficit; femoribus griseis; rostro nigro; pedibus brunneis.*

Long. tot. $16\frac{1}{2}$ unc.; *rostri*, $1\frac{1}{2}$; *alæ*, $7\frac{1}{2}$; *caudæ*, $11\frac{1}{2}$; *tarsi*, $1\frac{1}{8}$.
Hab. India.

Obs. This species is nearly allied to, but differs from *Dendrocitta leucogaster* in its shorter tail, and in the less extent of the black colouring on the tips of the two centre tail feathers, in the chestnut brown colouring of the under surface, and in its thickened and more robust bill.

Mr. Ogilby exhibited skins of two species of his new genus *Kemas*, and directed the attention of the Society to their generic and specific characters. Mr. Ogilby observed, that the genus in question occupied an intermediate station between the goats and the *Oryges*, agreeing with the former in its mountain habitat and general conformation, and with the latter in the presence of a small naked muzzle and four teats in the females. Of the two species exhibited, one was a fine male specimen of the *Iharal*, presented by James Farrall, Esq., and the other a new species from the Neilgherry Hills, known to Madras and Bombay sportsmen by the name of the Jungle Sheep, and which Mr. Ogilby had long looked for. In form and habit of body, as well as in the character of the horns, this animal is intermediate to the *Iharal* and *Ghoral*; the specific name of *Kemas Hylocrius* was proposed for it in allusion to its local appellation. The body is covered with uniform short hair, obscurely annulated like that of most species of deer, and more nearly resembling the coat of the Ghoral than that of either the *Iharal* or *Chamois*, the other species of which the genus is at present composed. The horns are uniformly bent back, surrounded by numerous small rings, rather flattened on the sides, with a small longitudinal ridge on the inner anterior edge: the ears are of moderate length, and the tail very short. Mr. Ogilby entered at some length into the characters and relations of the genus *Kemas*; he observed that naturalists and commentators had greatly puzzled themselves to discover the derivation of the word *Kemas*, and the animal to which the ancient Greeks applied that name. Among others, Col. H. Smith applies it to the *Chira*, with which the ancients certainly were not acquainted: but Mr. Ogilby observed, that the root, both of the Greek *Kemas* and the modern *Chamois*, was manifestly traceable to the German word *Gems*, which is still the name of the Chamois eastward of the Rhine, and which the Dutch colonists have transferred to the Cape *Oryx* (*Oryx capensis*).

August 22nd, 1837.

Thomas Bell, Esq., in the Chair.

Mr. Owen brought before the notice of the Society, through the kindness of Mr. Edward Verreaux, the cranium of an Orang Outang (*Simia Wurmbii*, Fisch.), exhibiting an intermediate or transitional state of dentition, there being in the upper jaw the first or middle incisors, and first and second molares on each side belonging to the permanent series, and the lateral incisors, the canines, and the first and second molares (which are replaced by the bicuspides) belonging to the deciduous series; and in the lower jaw, both the middle and lateral incisors, and first and second molares on each side belonging to the permanent series, and the second left lateral deciduous incisor (not yet shed), the deciduous canines, and the first and second deciduous molares.

The permanent teeth, which were in place, corresponded in size with those of the great *Pongo* of Wurmb, and prove that the Orang differs from man in the order of succession of the permanent teeth, having the second true molar, (or fourth if the bicuspides are reckoned as molars), in place before the appearance of the permanent canines.

Mr. Owen remarked, that the intermaxillary suture still remained unobliterated in the immature cranium exhibited, and he conceived that the ultimate obliteration might be caused by the increased vascularity of the parts during the protrusion of the great laniary teeth. In the Chimpanzee this obliteration takes place at a much earlier period.

Although the marks of immaturity, and consequently those which impress an anthropoid character upon the skull of the Orang, were generally present in the head exhibited, yet, on a comparison of it with the skull of a younger Orang in which all the deciduous teeth were retained, an approach to the condition of the mature cranium might be observed in the greater protrusion of the intermaxillaries, the lengthening of the maxillary bones, a thickening and greater prominence of the external and superior boundary of the orbit, an enlargement and thickening of the malar bone and zygoma, in the commencement of the development of the cranial ridges, and in the widening and deepening of the lower jaw.

Mr. Owen then directed the attention of the Meeting to an exceedingly interesting preparation of a fœtal Kangaroo, with its accompanying uterine membranes, upon which he proceeded to offer some observations. He remarked, that in a paper read before the Royal Society in 1834, he described the fœtus and membranes of a Kangaroo (*Macropus major*), at about the middle period of uterine gestation, which in that animal lasts thirty-eight days. In this instance the condition of the membranes, and the relation of the fœtus to the mother, were essentially such as are found to exist throughout

the ovo-viviparous reptiles, with the exception of there being no trace of the existence of an allantois. Mr. Owen, in order to determine whether an allantois was developed at a subsequent period of the growth of the embryo, dissected very young mammary fœtuses of different marsupial animals, as the *Kangaroo*, *Phalangista*, and *Petaurus*; and finding in them the remains of a *urachus* and umbilical vessels, he stated that "it would appear that an allantois and umbilical vessels are developed at a later period of gestation, but probably not to a greater extent than to serve as a receptacle of urine." (Phil. Trans., 1834, p. 342.)

The examination of a uterine fœtus of a Kangaroo kindly placed at Mr. Owen's disposal by Dr. Shearman, and exhibited on this occasion to the Society, has proved the accuracy of this prevision. The chorion, which enveloped and concealed the fœtus, was a sac of considerable capacity,exceeding probably by ten times the bulk of the fœtus and its immediate appendages, and adapted to the smaller cavity of the uterus by being disposed in innumerable folds and wrinkles. It did not adhere at any part of its circumference to the uterus, but presented a most interesting modification not observed in the previous dissection of the Kangaroo's impregnated uterus, viz., that it was in part organized by the extension of the omphalo-mesenteric vessels upon it from the adherent umbilical sac. The fœtus was further advanced than the one previously described in the Philosophical Transactions. The digits on the hinder extremities were distinctly formed. The umbilical chord extended nearly three lines from the abdominal surface of the fœtus; the amnios was reflected from this point, to form the usual immediately investing tunic of the fœtus; and, beyond the point of reflection, the chord divided into a very large superior vascular sac, organized by the omphalo-mesenteric vessels, corresponding in all respects with the vitelline sac described and figured in Mr. Owen's first paper; but below the neck of this sac there extended a second pyriform sac, about one-sixth the size of the vitelline sac, having numerous ramifications of the umbilical vessels, and constituting a true allantois. This sac was suspended freely from the end of the umbilical chord: it had no connexion, at any part of its circumference, with the chorion, and consequently was equally free from attachment to the parietes of the uterus in which the fœtus was developed*.

* The following note has been communicated by Mr. Owen to be appended as a postscript to the above remarks. "Having been anticipated in the description of my preparation, so far as relates to the allantois, by M. Coste, I here subjoin, by permission of the Committee of Publication, a statement of the circumstances which enabled that embryologist to announce the discovery of the allantois to the Academy of Sciences. In a recent work on Embryogeny, M. Coste * has stated that the Marsupiata differ from other Mammalia in the absence of an allantois,—a statement which appears to have arisen from a misconception of my memoir in the Philosophical Transactions for 1834, in which, although the allantois was

* *Embryogenie comparée*, p. 118.

Mr. Charlesworth then exhibited a series of specimens of the paper nautilus, in several of which injuries to a very considerable extent had been repaired with new substance agreeing in every respect with the original shell; affording the most decisive evidence that the animal by which they were constructed possessed the same reparative powers as other testaceous molluscs. It would appear from the observations of Captain Rang, who had recently repeated at Algiers the experiments originally undertaken by Madame Jeanette Power at Messina, that the Poulp does not fill up the breaches artificially produced in its habitation by a deposit of shelly matter, but with a transparent diaphragm, which has neither the texture, whiteness, or solidity of the original shell. This fact, in connection with the specimens exhibited to the Meeting, appeared to Mr. Charlesworth strongly to confirm the opinion entertained by Mr. Gray, De Blainville, and others, of the parasitic character of the genus *Ocythöe*.

Mr. Owen remarked, that he could not admit the validity of the line of argument adopted by Mr. Charlesworth, because the differences in the nature of the reproduced portions might depend upon the particular part of the shell in which the perforation or fracture had been effected, and a consequent difference in the reproductive powers of the corresponding part of the mantle.

not developed in the embryo, whose dissection is there figured, (Pl. VII. fig. 1.), yet the evidences of the ulterior development of an allantois in different marsupial genera, are described in the text, (p. 338, 342.) I therefore took the opportunity of showing to Dr. Coste during his visit to England the fœtal Kangaroo with the allantois now before the Society; and Mr. Coste having expressed some doubts respecting my determination of the two appended sacs, we together dissected the fœtus, and found that the vessels ramifying on the larger sac, which I had before described as the umbilical vesicle, had the usual disposition and connections within the abdomen of omphalo-mesenteric trunks, corresponding with the figure above-cited in the Philosophical Transactions, and that the allantois was continued from an urachus, such as is represented in figs. 6, 7 and 8, pl. VII., Philos. Trans., 1834."

September 12th, 1837.

Dr. Bostock in the Chair.

Some observations were made by Dr. Andrew Smith, Corresp. Member, on the necessity for a revision of the groups included in the Linnean genus *Squalus*.

Dr. Smith commenced with stating that in the course of his examination of the Sharks which he had obtained while at the Cape, he found that although they could all readily be referred to the genus *Squalus*, as defined by Linnæus, yet there were many forms among them which would not admit of being placed in any of the subdivisions proposed by Cuvier, This led him to perceive the necessity of either altogether remodelling Cuvier's groups, or of establishing additional ones for the reception of the new species. After mature consideration, he determined upon the adoption of the latter course, finding the new forms so distinct and numerous that they could not with propriety be included in any divisions which only ranked as sub-genera.

Dr. Smith stated that he could not attempt to indicate the higher groups of the family of *Squalidæ*, but he was satisfied that all the sub-genera of Cuvier would receive such alterations and additions as would raise them to the rank of sub-families. In the very first subgenus *Scyllium*, he had detected nine distinct minor groups, most of which included several well-marked species. Since fixing upon names for these groups, he had learned that several of them had been described as genera about a month previously by Prof. Müller and Dr. Henle of Berlin, and he had consequently adopted their nomenclature in preference to the terms under which it was his intention to have characterized them, with only this difference, that he regarded these divisions as sub-genera rather than genera.

Dr. Smith enumerated the sections above referred to of the genus *Scyllium* as follows:

1. *Scyllium*, restricted, includes four species, *Scyl. stellare*, Linn., *Squalus Canicula*, Bloch, *Scyllium capense*, Smith, *Scyl. bivium*, id.

2. *Catulus*, Willoughby, (three species,) *Squalus Canicula*, Linn., *Scyl. marmoratum*, Bennett, *Catulus Edwardii*, Smith.

3. *Poroderma*, Smith, (four species, all found in the Cape seas,) *Scyllium Africanum*, Cuv., *Poroderma pantherinum*, Smith, *Por. submaculatum*, id. *Por. variegatum*, id.

4. *Ginglymostoma*, Müller and Henle, (one species) *Squalus Gata*, Garra.

5. *Chiloscyllium*, Müller and Henle, (two species) *Scyllium plagiosum*, Bennett, *Le Squale dentelé*, Lacep.

6. *Stegostoma*, Müller and Henle, (two species) *Squalus fasciatus*, Bloch, *Squal. maculatus*, id.

7. *Hemiscyllium*, Müller and Henle, (one species) *Squalus ocellatus*, Bloch.

8. *Chrossorhinus*, Müller and Henle, (one species) *Squalus lobatus*, described in Phillips's Voyage to Botany Bay.

9. *Pristiurus*, Bonaparte, (one species) *Scyllium melanostomum*, Bonap.

Some drawings were exhibited by Dr. Smith, of the forms presented by the teeth of the species composing several of the above sections, and he remarked that on a future evening it was his intention to lay before the Society some further observations upon other groups of the cartilaginous fishes.

Professor Müller of Berlin being present confirmed the views entertained by Dr. Smith as to the number of divisions which might properly be made of the family *Scyllium*, several of which he had already published, as mentioned by Dr. Smith. As to the rank which these groups should hold in a systematic arrangement, he considered this a point upon which we are hardly in possession of sufficient evidence to justify a decided opinion.

September 26th, 1837.

Richard Owen, Esq. in the Chair.

Two small quadrupeds from the Society's collection were exhibited by Mr. Waterhouse, who stated that he believed them to be undescribed species. The first was characterised as

GALAGO ALLENI. *Gal. auribus permagnis, digitis perlongis; vellere intensè plumbeo, rufescente lavato; corpore subtùs flavo lavato.*

	unc.	lin.	
Longitudo ab apice rostri ad caudæ basin	8	1	205.0 H&B
——— *caudæ*	10	0	254.0 TL
——— *auris*	1	$2\frac{1}{2}$	30.5 mm. Car.
Latitudo *auris*	0	11	23.5
Longitudo *pollicis* antipedum	0	6	12.8
——— *digiti longissimi*	1	1	27.5
——— *pollicis* pedum posticorum	0	7	15.0
——— *digiti longissimi*	1	2	30.0
——— pedis postici a calce ad apicem digitorum	2	11	74.2 H.F.

Hab. Fernando Po.

Obs. This specimen, which has four incisors in the upper jaw, and six in the lower, is about the same size as the *Galago Senegalensis*, but may be readily distinguished from that species by the greater size of the ears, (the length of which is equal to the distance between the tip of the muzzle and the base of the ear,) and the great length of the fingers and toes. In the colouring there is also a difference, *G. Senegalensis* being grey, washed with yellow, whereas *G. Alleni* is of a deep slate grey, all the hairs of the upper parts being of a rusty yellow at the apex, or, as on the fore legs, rusty at the tip. The under parts of the body are of a paler hue than the upper, the hairs being of a dirty yellow colour at the tip; but like those of the upper parts, they are of a slate grey for the greater portion of their length: on the throat and chin each hair is whitish at the apex. The hairs covering the feet are of a deep brown colour. The tail is dusky brown.

The animal here described was presented to the Zoological Society by Lieut. Wm. Allen, R.N., Corres. Memb.

PTEROMYS (Sciuropterus) HORSFIELDII. *Pter. fuscus, pilis flavescenti-fuscis crebrè intersparsis; corpore subtùs flavescenti-albo, genis et patagio lumbari ad marginem rufescenti-flavis; caudâ subtùs nitidè ferrugineâ; auribus mediocribus.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	9	6
——— *auris*	0	$7\frac{1}{2}$
——— *tarsi digitorumque*	1	5

Obs. This species is of a larger size than the *Pteromys sagitta*, from which it differs in having the ears larger in proportion; the tail more bushy and of an uniform bright rust colour beneath; the margin of the flank skin is of a reddish yellow colour, as are also the sides of the face below the eye. On the upper parts of the body the fur is of a deep brown, each hair being grey at the base; the interspersed longer hairs, which are abundant, are of a bright brown or reddish-yellow colour at the apex. The general tint produced by this mixture is rufous brown. On the under parts of the body the hairs are of a yellow or yellowish white colour, and not grey at the base.

The specimen from which the above description is taken was presented to the Zoological Society by the Earl of Derby, and is either from Java or Sumatra. I have taken the liberty of naming it after the author of the "Zoological Researches in Java," &c.

Mr. Gould exhibited from his Australian collection of Birds two species of the genus *Platycercus*, which he considered new: for one of these he proposed the specific name of *hæmatonotus*, from the red spot upon its rump; and for the other, which he had very recently received, and which he remarked was one of the most beautiful species of the genus hitherto discovered, that of *hæmatogaster*.

Platycercus hæmatonotus. *Plat. summo capite, fronte, genis, nuchâ pectoreque smaragdino-viridibus; dorso fuscescenti-viridi; uropygio coccineo; articulo humerali, alâ spuriâ et pogoniis externis primarium ad partem basalem nitidè cæruleo-nigris, notâ sulphureâ humerali. Remigibus majoribus et minoribus, rectricibusque caudæ duabus intermediis viridibus, hoc colore in cæruleum transeunte ad apicem, apicibus ipsis nigro-fuscis; rectricibus reliquis ad bases viridibus, ad apices et ad pogonia externa cineraceo-albis; abdomine medio flavo; femoribus obscurè cæruleo-viridibus; crisso cineraceo-albo; rostro corneo; pedibus fuscis.*

Long. tot. 11 unc.; *alæ* 5; *caudæ* $6\frac{1}{2}$; *tarsi* $\frac{5}{8}$.

Pullus *intra annum primum, ab ave adultâ differt partibus, quæ in hâc smaragdino-viridibus, in illo cinerescenti-viridibus; necnon crisso haud coccineo, abdomine haud flavo; ast primariis nonnullis, secondariisque ad bases albis.*

Hab. Novâ Cambriâ Australi.

Obs. This species unites *Platycercus* to *Nanodes*, and is in fact so directly intermediate between these genera in size and other characters, that it is difficult to decide to which group it should be referred; but I am induced to include it among the *Platycerci*.

Platycercus hæmatogaster. *Plat. fronte facieque cæruleis; summo capite, nuchâ, plumisque auricularibus flavescenti-cinereis; pectore cinereo tincto brunneo; plumis auricularibus ad partem superiorem stramineis; uropygio, tectricibusque superioribus caudæ cerinis; articulo humerali pallidè cæruleo; primariis intensè fuscis et ad apicem acutis; secondariis tectricibusque majoribus violaceo-cæruleis; tectricibus minoribus alisque ad partem superiorem intensè coccineis; lateribus tectricibusque inferioribus pallidè flavis; abdomine medio nitidè coccineo; plumis duabus intermediis caudæ ad bases pallidè olivaceo-viridibus ad apices in cæruleum transeunte. Reliquis plumis ad bases intensè cæruleis ad apices in album transeunte; rostro corneo; pedibus fuscis.*

Long. tot. 12 unc.; *alæ* $\frac{5}{8}$; *caudæ* 7; *tarsi* $\frac{3}{4}$.

Hab. Novâ Cambriâ Australi.

Mr. Gould also exhibited, on the part of Mr. Burton, a new species of Kingfisher, from the collection at Fort Pitt, Chatham, belonging to the genus *Ceyx*, of Lacepède. Mr. Burton had proposed to characterize it under the specific name of *microsoma*.

Ceyx microsoma. *Ceyx subcristata, capite caudâque suprà, nuchâ et humeris rufis; strigâ ab oculis ad nucham (ponè oculos leviter, apud nucham intensè) dorso et uropygio hyalino splendentibus; alis brunneis, pogoniis remigum internis rufo marginatis, tectricibus punctis hyalinis ornatis: infrà pallidè rufa hôc colore apud ventrem dilutiore; mento, gulâ et strigâ auriculari albidis: rostro prægrandi, aurantiaco. Pedibus rubris.*

Long. corp. $4\frac{1}{2}$ unc.; *capitis* 2; rostri ab apice ad rectum $1\frac{1}{2}$; *caudæ* 1.

Hab. in Indiâ Maderaspatanâ.

Mr. Gould afterwards exhibited, on the part of the same gentleman, a specimen of the genus *Caprimulgus*, supposed to be the female of *C. monticolus*, and of which Mr. Burton had furnished the following description:

Caprimulgus monticolus, Franklin*. Fœmina? *Capr. pallidior mari: remigibus maculâ notatis rufâ, ubi mas gaudet albâ; jugulo rufo tincto; caudâ rufâ nigro fasciatâ et inspersâ, rufo rectrices apud exteriores dominante, caudâque externâ maris albo omninò carente.*

Formâ et staturâ mari simillimâ.

Hab. in Indiâ septentrionali. In Musæo Medico-militari, Chatham.

Obs. The general form, character and colouring of this specimen harmonize so perfectly with those of *Caprimulgus monticolus*, that I have thought it safe to consider it as the female, until local obser-

* Proceedings of the Committee of Science and Correspondence (Zool. Soc.), 1830–1.

vation or dissection shall have decided the question: at all events, it is new, and hitherto undescribed.

A species of the genus *Carduelis*, also from the collection at Chatham, was characterized by Mr. Gould as

CARDUELIS BURTONI. *Card. fronte et regione circum-oculari pulchrè roseis; vertice genisque nigris; corpore obscurè fuscescenti-roseo, alis externè nigris, singulis plumis plùs minùsve albo ad apicem notatis; alâ spuriâ albâ; rectricibus caudæ nigris; duabus, intermediis ad apicem albis, duabus proximis longius ad apicem albis, reliquis albâ notâ internè ad basin excurrente, ornatis; rostro, pedibusque pallidè fuscis.*

Long. tot. $6\frac{1}{4}$ unc.; *rostri*, $\frac{5}{8}$; *alæ*, $3\frac{7}{8}$; *caudæ*, $2\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Hab. Himalaya.

Obs. I am indebted to the collection of Fort Pitt, at Chatham, for the knowledge of this very fine species of *Carduelis*: the specimen here characterized is, as far as I am aware, unique. It departs in some respects from the other members of the genus, particularly in the robust form of the beak, which is slightly angulated at the base: the form of its wings and tail, together with their peculiar markings, however, clearly points out that it is only an aberrant species of that group.

I have been induced to give this fine bird the specific appellation of *Burton*, for the purpose of paying a just compliment to Staff-Surgeon Burton, for the warm interest he took in the formation of the Fort Pitt collection, and for the readiness he has at all times evinced to aid in any way the advancement of zoological science.

October 10th, 1837.

Richard Owen, Esq., in the Chair.

A paper was read by Colonel Sykes "On the identity of the "Wild Ass of Cutch and the Indus, with the *Dzeggetai* (*Equus He-*"*mionus* of Pallas)."

The author commences with observing, "it is somewhat strange and anomalous, that an animal known to and named by Aristotle, and noticed by Ælian, Pliny, and subsequent authors, down to our own day, an animal remarkable for its beauty of colour, the antelope lightness of its limbs, and the tales of its swiftness, and its classic locality, should have attracted so little the attention of men of science, that it was not even figured* until Pallas put it before the public. The magnificent work of Buffon does not boast a representation of it; and as the proceedings of the scientific body at Petersburg are necessarily rare, and confined to some few great public libraries, it was in fact scarcely known to the European world, even though Pennant copied Pallas's account in 1793. To remedy this defect we are indebted to M. Isidore Geoffroy Saint Hilaire, who took advantage of the importation by M. Dussumier, of a female into the Paris Menagerie, to have a correct coloured figure made to accompany his paper, 'Sur le Genre Cheval,' in the Nouvelles Annales du Muséum d'Histoire Naturelle†. But even in this case the defect of it not appearing before the public in a sufficiently accessible and popular form, limited the benefit that should have resulted from M. Saint Hilaire's zeal and talents. Though I have been an amateur of Natural History for a great part of my life, I must confess that it is to a private copy of M. St. Hilaire's paper, obligingly presented to the Zoological Society of London, that I am indebted for my first view of a coloured representation of the *Dzeggetai*, and it was only last week that this fell into my hands. I have been thus particular in noticing the want of readily accessible figures of animals (for my observation will apply to many other animals beside the *Dzeggetai*,) as this want of means to correct my judgement led me into the belief that a recently imported Wild Ass of Cutch, which was sent to England by an old friend of my own from Bombay, was a different species from the *Dzeggetai* of Pallas, which is represented as inhabiting the desert regions between the rivers Onon and Argun, on the southern parts of Siberia, through Tartary, even to the frontiers of China and Thibet; and I might have been justified in my supposition had I attached the same weight that

* In the *Novi Commentarii Academiæ Scientiarum Petropolitanæ*, t. xix. 1774, p. 417.

† t. iv. p. 97.

some naturalists do, to the opinion that the geographical distribution of animals is regulated by mean temperature, the *Dzeggetai* of Pallas inhabiting the borders of the arctic regions, the Wild Ass of India the borders of the torrid zone. There might be yet further question for doubt, did we take the description of colour from Griffith's edition of the 'Règne Animal,' in which it is stated 'there is a *black* dorsal line which enlarges on the crupper. In winter the hair is very long; but of a smooth and shining appearance in summer. The colour of the body is an *uniform* light bay, but in winter it partakes more of red*;' and the forehead is described as 'flatted and narrow.'

"M. St. Hilaire, who describes from the life, says 'Les deux couleurs dominantes de l'*Hemione*, le blanc et l'isabelle passent l'une à l'autre par nuances insensibles sur le ventre, vers sa partie inférieure, et sur le cou, presque à égal distance de son bord supérieur, et de son bord inférieur. Sur la tête au contraire, le blanc n'occupe guère que le museau et la gorge, le cou étant presque entièrement isabelle. Sur les membres, contrairement à ce qui a lieu sur le corps, c'est le blanc qui domine, &c.' Again, 'Tout ce système de coloration est rebassé supérieurement par une *bande* dorsale longitudinale, *non pas noire* comme on l'a dit, mais d'un brun legèrement roussâtre.' And now with respect to the *change* of colour with the season of the year, instead of getting redder in winter it would appear from the observations of M. Fred. Cuvier, that the 'animal a le poil plus *gris*, plus *pale* et plus long l'hiver que l'été.' These discrepancies would have afforded to those strongly disposed to multiply species, some feeble grounds (particularly when I come to notice a point of conformation in the head,) for asserting the right of the Wild Ass of Cutch to the dignity of a specific character, for it will be borne in mind that M. St. Hilaire describes his specimen, which was a native of Cutch; while in Griffith's Cuvier the description refers to the *Dzeggetai*, whose habitat is from southern Siberia to Thibet and China; and we do not want instances of equally trifling discrepancies having been made available for multiplying species.

"And now with respect to the animals in the Zoological Gardens, the one being called Dzeggetai, and marked on its ticket Mongolia and Asia; the other known positively as the Wild Ass from Cutch. The first, a male, has been in the possession of the Society since the 3rd of March 1832, and was presented to the Society by Captain Glasspoole, R.N. Its birth-place is not known, but from the nature of Captain Glasspoole's maritime duties, which carried his ship along the coasts Cutch, Scind, and Persia, there is little doubt of its being from one of these states; and as it is absolutely identical with the animal I am about to speak of, my own judgement is formed on the subject. This creature has long been known in the gardens from its great beauty, its fine condition, its vivacity, and its wickedness. The second animal was sent while quite a colt by an old friend of mine, the British Minister in Cutch, to the Military Auditor General of Bombay. It was allowed for a considerable period, (pending an answer from me, whether or not I would accept of it,) to amuse the

* Quarto edit., vol. iii. p. 460.

children; it was permitted to attend at breakfast-time, and eat from the table; but manifesting as it grew up symptoms of ill nature (no doubt having been heartily teased,) it was put on board the Marquess of Hastings, Captain Clarkson, and brought to England: there cannot therefore be any doubt respecting its origin and its history; and having one animal certainly from Cutch, we have a positive standard of comparison. Like the preceding it is a male, and with the exception of being younger and smaller, and with a less short and glossy coat, it is identical with it in every feature; and these two agree in all essentials with M. St. Hilaire's very able and minute description and coloured figure of a female in the Paris Menagerie. There is one point only in which there may be a difference, and there are two or three others in which there is a difference. M. St. Hilaire does not state whether the forehead be flat or prominent; and though the figure represents it to be somewhat raised, it is certainly not so much so as in the animals in the Zoological Gardens: with them the frontal development is a very prominent feature; such feature, however, being opposed to the descriptions in Griffith's 'Règne Animal.' M. St. Hilaire also mentions another character, which it required some little perseverance to discover in the larger animal in the Zoological Gardens, the smaller animal being absolutely destitute of it. He states that on the isabella colour on the limbs, there are transverse lines or very narrow bands of a darker isabella, in the manner of the markings of the Zebra. These lines had never been observed by the keepers in the Zoological Gardens, and for sometime I could not discover them; but at last with a reflected light I could just discern the transverse lines noticed by M. St. Hilaire, but I was not so fortunate with the smaller animal. M. St. Hilaire, on the authority of M. Geoffroy-Chateau, who sent to him a description of a male Dzeggetai in Cross's Menagerie in London, states that there was a disposition in the dorsal band on that animal, by lateral projections at the withers, to form a small cross, like that of an ass. There is not the slightest trace or manifestation of such a thing in either of the animals in the Zoological Gardens. Finally, M. St. Hilaire speaks of the blending by insensible degrees of the isabella and white markings of the Dzeggetai, but in our animals the lines of demarcation are sufficiently strong.

"M. St. Hilaire's humorous description of the habits of kicking of the female at Paris, is laughably exact with respect to our animals, particularly the smaller one. I had sent one of the keepers into its yard with some hay, to throw down before it, to keep it stationary (at least its body) while I took a rapid sketch of it with the assistance of the camera lucida. The moment the hay was thrown down, the creature turned round and commenced flinging out most vigorously for some time, although the man was gone, and the odd beast all the time was gravely munching its hay. So petulant were both these creatures, that after having sketched them I could not get any of the keepers to take their measurements, nor could I succeed in obtaining them, but by getting them thrown down, which I declined to do. With respect to the swiftness of the Wild Ass of Cutch, without quoting

from Griffith 'that it runs literally with the rapidity of lightning,' or from M. St. Hilaire, who says, 'it appeared to him to go as fast as the best race horses;' I will mention in confirmation of its extraordinary swiftness, that my friend Major Wilkins, of the Cavalry of the Bombay Army, who was stationed with his regiment for years at Deesa, on the borders of the Run or Salt Marshes, east of Cutch, in his morning rides used to start a particular Wild Ass so frequently that it became familiar to him, and he always gave chase to it; and though he piqued himself upon being mounted on an exceedingly fleet Arabian horse, he never could come up with the animal.

"It now remains to express my reasons for believing with M. St. Hilaire, that the Wild Ass of Cutch is the same as the *Equus Hemionus* of Pallas. There are certainly sundry discrepancies in the accounts of the two animals; in the colour, the dorsal line, the forehead, and above all in the difference of mean temperatures between the northern and southern habitat of the species. But all the discrepancies of descriptions may be easily remedied by the supposition that animals examined by different individuals at different seasons of the year, did really slightly differ, owing to the difference of seasons; and some part of the differences may be attributed to inattention to terms. There are slight discrepancies between M. St. Hilaire's description and mine, both taken from life, and the animals from the same locality; no one therefore can doubt their identity. In the main features the Dzeggetai and the Wild Ass of Cutch perfectly agree; and with respect to the extent of geographical distributions, I have elsewhere proved that it is no bar to the identity of species inhabiting mean temperatures varying nearly 40° of Fahr., and separated by half the earth in longitude. But in the case of the Dzeggetai and the Wild Ass of Cutch, there are not any insuperable difficulties of geographical position. The Wild Ass of Cutch and the north of Goojrat, is not found further south in India than Deesa on the banks of the Bunnas river, in lat. about 23° 30′, nor have I heard of it to the eastward of the 75° of longitude in the southern side of the Himalayan Mountains. In Cutch and Northern Goojrat it frequents the salt deserts and the open plains of Thoodpoor, Jaysulmer, and Bickaneor. By swimming the Indus it may communicate through Scind and Buloochestand with Persia; and in Persia it evidently exists from Sir Robert Kerr Porter's descriptions; to the east and north of Persia abuts upon the peculiar localities of the Dzeggetai, through Bucharia to the deserts of Cobi, where it delights in the salt marshes, as it does in India, and thence to Tartary, Thibet, and South Siberia. The latitudinal range may be from 35° to 40°; but the longitudinal range is necessarily very great, probably from the 45° to the 130° or 140°, or 95° of longitude; but in case it ever was found in Cappadocia it would have a still greater range, or 100°. If it be desirable to believe that the animal migrates according to the season, there do not appear to be any insuperable physical impediments; and its extraordinary fleetness and hardihood would sanction the belief in its making very long journeys, even to the banks of the Indus. But the animal of

Cutch and the Burmass river, would have to cross the Indus and its branches to get to the north and west; and as they are seen at all seasons of the year in their Indian localities, I am quite content to believe that the Dzeggetai of Southern Siberia and the Wild Ass of Cutch are identical in species, and yet do not wander further than is necessary for forage from their respective localities. I say little of the advantage of domesticating this beautiful animal in Europe, but I do say that it would be worthy of the reputation of the great Society, to continue the attempt until success crowned its efforts.

"I have yet one other object in laying this paper before the Zoological Society. I have stated the difficulties under which I laboured in obtaining the means to enable me to assist my judgement with respect to form. Language is sufficiently precise to enable us to judge correctly of descriptions of colour in animals; but the most lucid mind, and the most studied terms and phraseology, cannot give just impressions of the contour and outlines, in fact the ensemble of animals. I would therefore through the medium of the Society's Proceedings call the attention of naturalists, amateurs, and ordinary travellers, who cannot even draw at all, to the means the camera lucida affords them of recording outlines with celerity and precision. I exhibit to the Society five sketches of the two Wild Asses in the Zoological Gardens; and though I do not profess not to be able to draw, I do not hesitate to say that I can give much more correct figures of animals by its means than without it. It may be objected that the restlessness of animals renders the use of the camera lucida abortive; but I say that the rapidity with which the lines may be traced with the pencil, enable a person using it to make twenty sketches, where the draughtsman would otherwise make but one, and it will be hard if more than one of the twenty do not prove just. The five sketches exhibited were made in a few minutes; and only one proved abortive, making six attempts in all; and yet I have not used the camera lucida since 1830. The outlines have been subsequently traced in ink. I trust therefore this notice may lead to its more extended use; a use in natural history that cannot fail to be beneficial to the science. One word in conclusion. I have been a declaimer in the Transactions of this Society against the modern habit in natural history of generalization from a limited number of facts; and in pursuing the above inquiries I met with a new proof of the risk to truth of such a system. In the history of the Domestic Ass it is stated, 'The countries most suitable to the Ass are those of the south. Accordingly it is in Persia, Egypt, and Arabia that the strongest and finest varieties of this species are to be found. Some, very different from the small and feeble natives of our climates, almost equal the Horse in magnitude and stature. Spain also possesses some fine races of the Ass, which are also occasionally to be found in the southern provinces of France; as *we advance northward*, the animal diminishes in size and becomes more and more difficult of preservation.' Opposed to this is the fact, that in Western India, which it will be admitted is sufficiently far to the south, the Asses are not much larger than good-sized Newfoundland dogs. They are used in droves to carry small loads of salt or

grain; they are also used by the pot-makers to carry their clay; and they are always seen, as in Europe, associated with gipsies."

The Prince of Musignano exhibited to the Meeting a lithographic print of the Gigantic Salamander, brought by Dr. Siebold from Japan, and preserved alive at Leyden.

Mr. Gould called the attention of the Meeting to a collection of Birds from Australia and the adjacent islands, belonging to the Raptorial Order, and upon which he proceeded to offer the following observations.

"My attention during the last few days having been directed to the Raptorial Birds of Australia and the adjacent islands, and my own collection from those parts being particularly rich in the birds of this order, I am induced to lay before the Society a slight sketch of all the species found in that portion of the globe, and to exhibit to the Meeting a few which I conceive to be now for the first time made public. From our limited knowledge, however, of this vast continent, my observations will more particularly refer to the birds of the southern parts of Australia and Van Diemen's Land, these being the districts which up to the present time have been most extensively explored.

"Most of the forms now exhibited will be found to bear a striking resemblance to those inhabiting Europe; indeed, the similarity is so strikingly obvious as to leave no doubt of the influence of temperature on the form of animals.

"A remarkable deficiency, and that a very important one, is the total absence of any of the *Vulturidæ*, or of any form by which this family might be represented. It is true that a bird has been described by Dr. Latham under the name of 'New Holland Vulture;' but this bird is now almost universally admitted to belong to a totally different order, that of the *Rasores*. I have placed an example of this singular species on the table, an examination of which will enable any member present (who has not before had an opportunity of inspecting it,) to judge of the impropriety of assigning it a place among the *Raptores*. The nearest approach to the *Vulturidæ*, said to be from New Zealand, and brought from thence by Captain Cook, is the *Polyborus Novæ-Zelandiæ*, the *Falco Novæ-Zelandiæ* of Dr. Latham: now as I conceive that the specimen brought home by Captain Cook will prove to be identical with those so frequently transmitted from the Straits of Magellan, as I am not aware of any other specimen except Captain Cook's having been received direct from New Zealand, and, moreover, that the form is strictly confined to America and its adjacent islands, some mistake may have arisen in labelling the specimen brought home by our celebrated navigator, a circumstance which, if my opinion be correct, has involved the history of the species in considerable confusion.

"Of the genus *Aquila* only one species has as yet been discovered, viz., the *Aquila fucosa* of Cuvier, which doubtless represents in Australia the Golden Eagle of Europe, from which it may be readily

distinguished by its more slender contour, and by its lengthened and wedge-shaped tail.

"Of the genus *Haliaetus* or Sea Eagles, there are four species, the largest of which, clearly the analogue of the European *H. albicilla*, is one of the species which I consider to be new, and which from the wedge-shaped form of its tail I would characterise as *H. sphenurus*. I cannot but consider the form of the tail in this species as particularly interesting, inasmuch as it is a character peculiar to all the species of Eagle inhabiting Australia, although in a less degree to the others than to the present species. The second is a small species, described by Messrs. Vigors and Horsfield in the Linnæan Transactions as *Hal. canorus*, the European representatives of which are not so clear to me as those just alluded to. The third is the *Haliaetus Calei* of Messrs. Vigors and Horsfield, of which a single specimen exists in the collection of the Linnean Society, and which I should be rather inclined to assign to the genus *Astur* than to that of *Haliaetus*. In size this species equals the Common Buzzard, but has the rounded wing and several other characters peculiar to the genus *Astur*. The fourth is the White-breasted Eagle of Dr. Latham, a species inhabiting the continent of Australia and Van Diemen's Land. At a cursory glance this powerful bird might be said to represent the *Haliaetus leucocephalus* of northern Europe and America, and although I cannot but admit their resemblance, I discern characters sufficiently distinct to warrant its separation into a new genus. I am not, however, prepared to make this division at the present moment; still I am of opinion this bird will prove to be one of a group ranging between *Haliaetus* and *Pandion*, of which latter genus the Osprey of Europe may be regarded as the type, and of which a single species inhabits Australia. This bird appears to accord most accurately with European specimens excepting in its smaller size; and if this should ultimately prove to be identical with our bird, it may then be said to be universally distributed over the Old World. The Osprey of America, on the contrary, presents us with some slight differences, which being constant, may I think be safely regarded as specific.

"Of the genus *Falco*, the *Peregrinus* is replaced by a species most nearly allied to and hitherto considered identical with that bird: the experienced eye of the ornithologist will, however, readily distinguish an Australian specimen when placed among others from various parts of the globe, so that there will be but little impropriety in assigning to it a separate specific name. As, however, my engagements have not allowed me to make that minute examination which is necessary to determine the point, I defer for the present affixing a new specific name for this species. The Hobby, so familiar as a European bird, is represented by the Falcon, for which I now propose the specific name of *rufiventer*, as I believe it to be undescribed. The third species, which I have provisionally followed Messrs. Vigors and Horsfield in placing among the true Falcons, is the *Falco Berigora*, whose lengthened and slightly-formed tarsi indicate a difference in structure, which may ultimately prove to be generic. The *Cerchnis*

cenchroïdes (*Falco cenchroïdes* of Messrs. Vigors and Horsfield,) exhibits a beautiful analogy with the Common Kestril of our island, but although nearly allied possesses several important and permanent differences.

"The great variety of changes to which the members of the genus *Astur* are subjected, has led to vast confusion, and it is only by a minute examination of the numerous examples in my collection in various stages of plumage, that I have been able to determine the species with satisfaction to myself; and if I have found it necessary to consider as identical two or three species of this genus characterised by Messrs. Vigors and Horsfield, I feel confident that it was owing to the absence of sufficient materials at the time the Linnean collection was so ably named by those gentlemen, that they were described as distinct.

"My attention has of course been directed to the great difference in size which exists between the males and females, and the various changes from youth to maturity which occur in the members of the genera *Astur* and *Accipiter*, and I must now call the attention of the members present to the beautiful analogy which exists between the *Accipiter torquatus* and the *Astur approximans* of Messrs. Vigors and Horsfield, of which several examples are on the table; I say analogy, because it is in colour alone that so great a similarity exists between them. These gentlemen having applied the names of *approximans* and *fasciatus* to two birds which I believe to be synonymous with the *Falco radiatus* of Dr. Latham, whose description was taken from a young bird, I retain the name of *Astur approximans* in preference to *radiatus*, from the near approach of these two birds to *Accipiter torquatus*. It will, perhaps, not be out of place to say a few words on the difference in structure of these birds, which in outward appearance offer so close a resemblance to each other. The females in both these minor groups far exceed the males in size, and both groups appear with a trifling deviation to be subject to the same changes of plumage; while in their structure they exhibit considerable differences, the chief of which are the more delicate, slender, and lengthened form of the legs of *Accipiter*, the great prolongation of the middle toe, and the square or forked form of the tail. On comparison it will be found that the centre toe of the little male *Accipiter* on the table is fully as long as that of the male *Astur approximans*, a bird nearly double its size; that the tarsi in the latter bird are comparatively shorter and more robust; and that the middle tail-feathers are the longest, giving a rounded form to that organ.

"It may be truly said that Australia abounds in anomalies, witness its Black Swan and White Hawk, which latter bird has not a little puzzled me, and I am not yet satisfied as to whether it be not a permanent albino variety of another species, examples of which are now on the table with a corresponding number of birds in the white plumage. Much difference will be found in their size, but this may be readily accounted for by the difference of size in the two sexes.

"The males and females of the white birds agree so accurately in their measurements with those in the grey plumage, as to induce me

to believe that they are identical; and after a close examination I am also led to consider the *Astur Raii* of the Linnean Catalogue as the young of the same species.

"Of the genus *Milvus* my collection contains two species, and two more beautiful representatives of the two species inhabiting Europe cannot be imagined; for one of these, whose affinities ally it closely to the Common Kite of England, I would propose the name of *Milvus Novæ-Hollandiæ*; and for the other, which is equally allied to the *Milvus ater*, that of *M. aterrimus*.

"The bird which has hitherto been considered as identical with the *Elanus melanopterus* of Africa, is evidently distinct from that species; an unerring difference may be found in the jet black spot on the white part of the under surface of the wing; for this hitherto undescribed species I would propose the name of *notatus*.

"One species of Harrier only, but a very interesting one, inasmuch as it represents there the *Circus rufus* of Europe, has come into my possession. I believe the female of this species to be the *Circus affinis* of Messrs. Jardine and Selby; but as the male has not yet been characterised, and moreover differs very much from the female, to which alone the name of *affinis* would apply, I propose to drop that appellation and to give that of *Jardinei* instead.

"On examining the family of *Strigidæ* or Owls, we cannot but observe the deficiency which exists in some of the subgenera, and the abundance of others; thus while we have never seen any birds belonging to the genera *Bubo*, *Otus*, *Scops*, &c., we have numerous species of the restricted genera *Strix* and *Noctua*: the name of *Noctua*, however, having been applied by Linnæus to one of the tribes in Entomology, ought not perhaps to be adopted; that of *Athene*, proposed by M. Boje, and employed by some German naturalists, may be used in its stead.

"Four species of this genus are now on the table, the two largest of which are new to science. For the largest I would propose the name of *Athene strenua*, and for the other that of *A. fortis*. The third has been characterised by Messrs. Vigors and Horsfield as the *Noctua Boobook*, and the *Noctua maculata* of these gentlemen seems to be identical with it. For the fourth and last species of the genus, which is from Van Diemen's Land, and which is evidently distinct from either, I propose the name of *leucopsis*, from the white colouring of its face. The species of the genus *Strix* which I have called *delicatus*, together with my *Strix cyclops* and *Strix castanops* and the *Strix personata* of Messrs. Vigors and Horsfield, may be said to be closely allied, but distinct species.

"In conclusion it may be remarked that the birds belonging to the Raptorial Order inhabiting Australia and the adjacent islands are extremely few in number, when compared with those found in other countries; at the same time, as our knowledge of this part of the world is very limited, the number will in all probability be considerably increased as these countries become more fully known to us.

"At present the species are twenty-six in number, and are distributed as follows.

1 True Eagle ..... *Aquila.*
4 Sea Eagles ..... *Haliaetus.*
1 Osprey ..... *Pandion.*
4 Falcons..... *Falco.*
3 Hawks ..... *Astur* and *Accipiter.*
3 Kites..... 2 *Milvus* and 1 *Elanus.*
1 New form allied to *Pernis.*
1 Harrier..... *Circus.*
8 Owls..... *Strix* and *Noctua* or *Athene.*"

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October 24th, 1837.

Richard Owen, Esq., in the Chair.

The Prince of Musignano read a short communication upon the Long-tailed Trogon (*Trog. resplendens* of Gould).

Through the exertions of M. Gonzales, Minister of the United States of Central America, at Washington; and Mr. Rebello, who represented the Brazilian government in that city, the Prince succeeded in procuring some slight information respecting the above species, the most beautiful of the Trogon family.

The Quesalt, the native name of this species, is a rare bird, and very shy in its habits; it is confined to restricted limits, being solely found in a peculiar section of the mountainous district of Vera Paz in the province of the same name, now forming one of the five independent states constituting the Federal republic of Central America. A single instance is on record of its having been domesticated. It builds its nest in the shape of a barrel or bag, open at both ends, by which means injury to its long tail-feathers is avoided. The Prince stated that he had communicated the present notice of the history of the Long-tailed Trogon to an American Journal some years since, and that so long as the year 1826, he had proposed that the specific name of *Paradiseus* should be given to the species.

Mr. Gray exhibited a drawing of a new species of the genus *Tetrapturus*, in the British Museum, which had been obtained at the Cape, and for which he proposed the specific name of *Herschelii*.

Mr. Gray afterwards called the attention of the Meeting to some pieces of chalk, which he had recently found in the cliffs at Brighton, exhibiting perforations made by the *Patella* and *Pholas*, and presenting appearances which he considered to have been produced in the case of the latter genus by the rotatory action of the valves.

The remarks of Mr. Gray elicited considerable discussion as to the manner in which certain molluscous genera penetrate limestone rocks and other hard substances, a phænomenon which Mr. Owen thought could not be explained upon the supposition of its being exclusively caused by a rotation of the valves, but that it was chiefly due to the mechanical influence of the currents of water produced by the vibratile *cilia* of the animal, as noticed by Mr. Garner in a communication made to the Society in 1835.

Mr. Martin exhibited a new Bat from Fernando Po, belonging to the genus *Rhinolophus*, which he characterised as

Rhinolophus Landeri. *Rhin. vellere molli, et pulchrè castanco-*

rufescente; auribus acutis, patulis, erectis, ad latus exterius emarginatis, et lobo rotundato accessorio instructis; prosthemate duplice; anteriore bidentato cum scypho parvulo ad basin anticam, hôc ferro-equino membranaceo circumdato; prosthemate posteriore ad basin transversìm sinuato, ad apicem acuto; ferro-equino membranaceo, lato, margine libero anticè bifido; pollice brevi, gracili, in membranâ subtùs per dimidium incluso: ungue parvulo; antibrachiis robustis; cruribus gracilibus; patagiis nigricantibus.

	unc.	lin.
Longitudo corporis cum capite	1	$4\frac{1}{2}$
——— *caudæ*		9
——— *aurium*		$7\frac{1}{2}$
——— *antibrachii*	1	$7\frac{1}{2}$
——— *cruris*		8
——— *calcanei*		$4\frac{1}{2}$
Prosthematis longitudo		2
Alarum amplitudo	9	

Habitat in Insulâ Fernando Po.

"This beautiful little species of Bat is a genuine *Rhinolophus*; the nasal appendages consist of a horse-shoe, a crest, and an elevated leaf. The horse-shoe is broad with indications of a double furrow; its outer margin is free and bifid anteriorly. In its centre is placed a little cup-like depression with an elevated rim, from the back of which rises a bifid crest not much elevated: the larger apex is the posterior of the two. On each side of this crest and behind it, the skin continued from the horse-shoe, and forming the base of the leaf, is furrowed by two deep but unequal *sulci*, with a marked posterior ridge, elevated across the base of the leaf, which latter ends in a short acute lanceolate point; posteriorly it is covered with short hairs, anteriorly it is nearly naked. Its length is two lines. The ears are large, broad, and pointed; the outer margin is emarginate, and passes into a large rounded accessory lobe, closing the ear anteriorly. The *anti-brachia* are short, the thumbs small, the *tibia* slender.

"The fur is soft and delicate, and of a fine light or rufous chestnut, a little darker on the middle of the back; the wings are blackish.

"I have ventured to name this species in honour of the late enterprising, but unfortunate Mr. Lander, during whose expedition it was taken at Fernando Po."

Mr. Martin also communicated to the Meeting the following notice of a new species of Hedgehog.

"Among the specimens of Natural History, from the neighbourhood of Trebizond, presented to the Society by Keith Abbot, Esq., is a species of Hedgehog, decidedly differing from our well-known British species, and appearing to be at present undescribed. It is much smaller than the *Erinaceus Europæus*, measuring from the tip of the muzzle to the root of the tail, over the arch of the back, only $9\frac{1}{2}$ inches. The spines advance upon the forehead, and overshadow the eyes; the general colour presented by the spines 'en masse' is mahogany

brown, but each spine individually taken is yellowish brown for three parts of its length from the basal extremity; this colour then becomes darker, and again passes into yellowish brown at the extreme apex; the annulation, however, is far less decided than in the British animal.

"The ears are short and rounded, a white patch is placed before them, and also on the forehead; the chest is dirty white; the sides of the muzzle, and the whole of the under surface are intensely blackish, or umbre brown, several long white hairs being intermixed with the rest on the shoulders, extending from the chest.

"The *tarsi* are longer than in *E. Europæus*. In a very large specimen of the latter, measuring from the nose to the root of tail, over the back, $14\frac{1}{2}$ inches; the foot from the heel to the end of the middle toe, excluding the nail, measures 1 inch $\frac{4}{8}$, while in this smaller species it measures 1 inch $\frac{6}{8}$.

"For this species I propose the name of *Erinaceus concolor*. It may be thus characterised.

"Erinaceus concolor. *Er. obscurè fuscus, spinis in frontem, et super oculos obductis; spinis rigidis, flavescenti-fuscis ad basin, apicem versus intensè fuscis, apice extremo pallidè rufescenti-brunneo; auribus parvis, rotundatis; rostro breviusculo; in frontem notâ albâ, necnon ante aures; pectore sordidè albo, vellere corporis subtùs nigrescenti-fusco, pilis longis albis ad humeros sparsìm intermixtis.*

	unc.	lin.
"Longitudo corporis, a rostro ad caudæ basin, super dorsum	9	6
"Longitudo pedis postici a calce ad apicem digiti intermedii ungue excluso	1	$7\frac{1}{2}$

"Habitat apud Trebizond."

Mr. Waterhouse called the attention of the members to two species of Kangaroos, which were upon the table. One of these had lately been procured by the Society, and was from the neighbourhood of Hunter's River, the other had died in the Menagerie. Of this latter species the Society has possessed several living specimens; and there is still one in the Gardens, which was bred there.

Mr. Waterhouse stated that his object in bringing the animals in question before the Meeting, was to show that the specimen from the Menagerie was not, as had been supposed, the *Macropus ualabatus* of Lesson, but that it was in fact an undescribed species, being distinguished from that of Lesson, (which Mr. Waterhouse considered as identical with the specimen from Hunter's River,) by the following characters:—the under parts are grayish white, instead of buff yellow; the ears are rather longer in proportion, and the tail hoary gray, white beneath, and with a white tip, instead of being almost totally black. Mr. Waterhouse proposed that the name *Macropus Bennetti* be adopted for this species, and proceeded to characterise it as follows:

Macropus Bennetti. *Mac. intensè cineraceus, regione scapulari,*

clunibus, et regione circum-oculari, rufo-brunneis ; corpore subtùs cinerescenti-albo ; rostro, auribus posticè, digitis anticis posticisque nigris ; lineâ albescenti vix distinctâ ab angulo oris, ad genas excurrente ; caudâ cinerescente, ad apicem nigrâ, et subtùs sordidè flavescenti-albâ.

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	24	10
——— *caudæ*	24	7
——— ab apice rostri ad marginem oculi ..	3	0
——— ab apice rostri ad basin auris	5	10
——— *tarsi digitorumque* (sine unguibus) ..	8	9
——— *auris*	3	1

Hab. Novâ Cambriâ Australi.

" The fur of this animal is rather long and moderately soft; the longest hairs on the middle of the back measure about two inches, and the shorter about one and a half inches in length. Its general line is a very deep gray, inclining to black on the back, somewhat paler on the sides of the body, and a rust-like tint is observable on the back of the neck and base of ears externally, over the haunches and shoulders and in the region of the eye. The under parts of the body, and the inner side and fore part of the hinder legs, are of a grayish white colour. The muzzle is black, and the crown of the head is brown black; an obscure whitish line extends backwards from the corners of the mouth, and becomes obliterated on the cheeks; the hairs on the lips are dirty white ; the chin is blackish. The ears are furnished with white hairs internally, and longish black hairs externally, excepting at the base. The limbs externally are of the same hue as the sides of the body; the fore feet, and the toes of the hind feet are black, the outer side of the heel is also black. The hairs of the tail (excepting at the base, where they are of the same colours and character as those of the body) are rather harsh, black, and broadly annulated with silvery white near the apex ; the general tint is hoary gray, the white portion of each hair being most conspicuous ; the apex of the tail is black, and on this part the hairs are long and form a kind of tuft; the under side of the tail is white. The hairs on the upper part of the body are of a deep slate colour at the base, the remaining portion of each hair is black annulated with white, or more generally with pale rust colour; on the under parts of the body, the hairs are of a deep slate colour with the apical portion white.

" The above descriptions and dimensions are taken from an adult male; the two females in the Society's Museum are of a smaller size and paler colour, their prevailing tint being reddish gray: around the entrance to the pouch the hairs are of a deep rusty brown colour."

A species of Mouse from the Cape of Good Hope was next described by Mr. Waterhouse under the name of

Mus subspinosus. *M. pilis subspinosis, corpore suprà fuscescenti-*

griseo ; ad latera flavescente ; subtùs niveo, oculis flavido cinctis ; caudâ capite corporeque breviore ; auribus mediocribus.

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	3	4
——— *caudæ*	2	11
——— ab apice rostri ad basin auris	0	$10\frac{1}{2}$
——— *tarsi digitorumque*.....	0	$8\frac{1}{4}$
——— *auris*	0	$3\frac{1}{4}$

Hab. Cape of Good Hope.

" This species is allied to the *Mus Cahirinus* of Geoffroy; it is, however, not so large; and although the hairs are flat and bristle-like, they are less harsh than those of the North African species; it also differs in its colouring."

Mr. Gould introduced to the notice of the Meeting a very singular form among the *Caprimulgidæ* for which he proposed the generic appellation of

AMBLYPTERUS.

Rostrum debile et elongatum.

Nares elevatæ et rotundatæ.

Rictus setis robustis instructus, rostro longioribus.

Alæ truncatæ ; remigibus externis sextis ferè æqualibus et falcatis ; remigibus 2do, 3^{tio}, 4to ad externum pogonium emarginatis, 7mo, 8vo, 9no ad apices elongatis et attenuatis, 10mo abrupte brevi; secondariis brevissimis, rotundatis et ab tertiariis tectis, his longissimis.

Cauda brevissima et quadrata.

Pedes ambulatorii.

Tarsi elongati, graciles, squamis indistinctis antice et postice fasciati ; digito intermedio longissimo et gracillimo ; digitis lateralibus brevibus et æqualibus ; digito postico parvo, debili et libero ; unguibus elongatis, ungue medio pectinato.

AMBLYPTERUS ANOMALUS. *Amb. summo capite, corpore suprà et alis cinereo-fuscis, singulis plumis nigro irregularitèr sparsis et maculatis ; primariis nigris, ad bases rubrescenti-cervinis, ad apices albis ; secondariis cervinis, nigrescenti-fusco irregularitèr fasciatis ; rectricibus caudæ cervinis, nigrescenti-fusco irregulariter fasciatis et maculatis ; duabus centralibus cinereo-fuscis ; gutture, pectore et abdomine ad partem superiorem nigrescenti-fuscis, singulis plumis cervino maculatis ; abdomine imo pallide cervino, singulis plumis nigrescenti-fusco transversìm fasciatis ; rostro fusco ; pedibus pallide fuscis.*

Long. tot. unc. $6\frac{3}{4}$; *rostri*, 1 ; *alæ*, $5\frac{3}{4}$; *caudæ*, 3 ; *tarsi*, $\frac{7}{8}$.

Obs. Mr. J. E. Gray believes this bird to be from Demerara, or the Brazils ; the specimen is in the collection at the British Museum, and so far as I am aware is unique.

Mr. Gould afterwards exhibited a species of *Ibis*, having many characters in common with the *Ibis religiosa* of Cuvier, and two new species of the genus *Platalea*, which were accompanied with the following descriptions.

Ibis strictipennis. *Ib. capite et collo superiore nudis, et nigrescenti-fuscis, cæruleo lavatis; corpore toto, et alis albis, cervino lavatis; plumis in gulâ longis, angustis, lanceolatis et rigidis; primariis ad apices cæruleo-viridibus; tertiariis valdè productis et nigro-cæruleis, albo sparsis; tarsis et spatio nudo sub alâ rufo-fuscis.*

Long. tot. unc. 30; *rostri*, 6; *alæ*, $14\frac{1}{2}$; *caudæ*, 6; *tarsi*, 4.

Hab. Australiâ.

Platalea regia. *Plat. cristâ occipitali pendente et corpore toto, pectore excepto, albo; pectore flavo parum lavato; fronte facie anteriori et gulâ plumis prorsus nudis; notâ super oculos atque in occipite medio aurantiacâ.*

Long. tot. unc. 39; *rostri*, $8\frac{1}{2}$; *alæ*, 15; *caudæ*, $5\frac{1}{2}$; *tarsi*, $5\frac{1}{2}$.

Hab. Novâ Cambriâ Australi.

Fœm. *differt a mare adulto, staturâ minore.*

Platalea flavipes. *Plat. corpore toto albo; parte faciei nudâ angustiore quàm in Plat. regiâ; parte nudâ et rostro aurantiacis; pedibus flavis.*

Long. tot. unc. 28; *rostri*, $7\frac{1}{4}$; *alæ*, $14\frac{1}{2}$; *caudæ*, $5\frac{1}{2}$; *tarsi*, $4\frac{3}{4}$.

Hab. Novâ Cambriâ Australi.

November 14th, 1837.

Thomas Bell, Esq., in the Chair.

Dr. Martin Barry, of Edinburgh, exhibited a living specimen of the *Proteus anguinus*, and read the following communication from Professor Rudolph Wagner, of Erlangen in Bavaria.

"I was so fortunate, at the end of the late summer, as to obtain three living *Protei*; of which I have examined two, just killed, that proved to be a male and female, and have given the third alive to my friend Dr. Barry, who may perhaps have an opportunity for bringing it forward at a meeting of the Zoological Society. The results of my examinations correspond perfectly with the statements of Cuvier, R. Owen, J. Müller, and others, on the *Proteidea*; but are opposed to several of the views lately put forth by Rusconi (*Observations sur la Sirène*, 1837). I have, for instance, no doubt that the pulmonary sacs or vesicles really perform the function of lungs. Each lung contains a large artery and a still larger vein, which are connected together by means of large and numerous vessels. To me the most important point was the examination of the blood globules and the generative organs. I conjectured, on various grounds, that the *Proteidea* would be found to have, of all animals, the largest blood globules:—first, because the size of the latter in the naked *Amphibia* in general is the largest in the animal kingdom; 2ndly, because, remarkable as it is, the blood-globules are here (in the naked *Amphibia*) so much the larger, the longer the gills continue in the larval state; hence the land and water salamander have much larger blood globules than the frog. I conjectured also that the *Protei* (probably also the Siren, &c.), because they permanently have both gills and lungs,—being therefore permanently *larvæ*,—would be found to have the largest blood globules. The latter are indeed gigantic; flat, oval, resembling those of the salamander, and from $\frac{1}{300}$ to $\frac{1}{170}$ of a Paris line in length; hence, as minute points, visible to the naked eye. They are from once to twice the size of the blood globules of the salamander, nearly three times as large as those of the frog, and about twelve or fifteen times the size of those of man.

"In a female, I found the *ova* very beautifully developed; their structure, as well as that of the ovary, corresponding perfectly with that of the other naked *Amphibia*, especially the *Triton*. The smallest ova consist of a delicate *chorion*, yellow yolk, large germinal vesicle, and *manifold* germinal spot*. I regret to say that in the otherwise tolerably developed *testes* of the male there were no *spermatozoa*. I conjecture however that the *spermatozoa* of this animal resemble those of the *Triton*. I would just remark, that the form and size of the blood globules, the formation of the *ova*, and the form

* Compare my "*Prodromus Historiæ Generationis.*"

of the *spermatozoa*, in different animals, have a great zoological and physiological interest. Already is it in my power, from a drop of blood or *semen* placed before me, to determine with the microscope, not only the class, but frequently the genus and the species from which these fluids have been taken. R. Wagner."

Dr. Barry stated that, from his own microscopical examination, he was able fully to confirm the correctness of Prof. Wagner's observations upon the size and shape of the blood globules in the *Proteus*.

The Prince of Musignano laid before the Meeting the following communication, containing notices and descriptions of new or interesting birds from Mexico and South America.

I. Messrs. Swainson and Wagler have, as far as their materials would allow them, ably described the Birds of Mexico. Through the kindness of the Messrs. Paris I have been allowed to examine a small collection from that country, a list of which, with descriptions of new or interesting species, I shall subjoin ; hoping thereby to add a little to our acquaintance with the ornithology of that interesting part of North America.

1. Thrasaëtos Harpyia, G. R. Gray. *Harpyia destructor*, Cuv. *Falco destructor*, Lath. *Vultur Harpyja*, L.

2. Polyborus Brasiliensis, Swains. *P. albo nigroque varius ; pileo nigro, plumis cervicalibus elongatis ; rectricibus albis, nigro fasciatis, apice latissime nigris.*

Falco Brasiliensis, Lath. *Polyborus vulgaris*, Vieill. *Quebranta huesos*, Mexic.

Figured by Vieillot, Swainson, and Audubon.

3. Ceryle torquata, Nob. *C. subcristata, cano-cærulescens, torque albo ; subtus castanea ; alis caudáque albo maculatis.*

Mas. *Pectore cano-cærulescenti, crisso ferrugineo.* Fem. *Pectore castaneo, crisso albo.*

Buff. Pl. Enl. 284. *Alcedo cinerea*, Vieill, *Martin pescador*, Mexic.

Interesting for the locality, as it has been doubted, even by Mr. Swainson, the able discriminator of this group. (See Birds of Western Africa, II. p. 93.)

4. Ceryle alcyon, L. *Ispida Alcyon*, Sw.

The most southern limits of this North-American species hitherto ascertained are Mexico and one or two of the West Indian islands.

5. Ramphastos carinatus, Swains., Wagl. *R. nigerrimus, uropygio albo, gulâ pectoreque flavis ; crisso ac fasciolâ colli infimi coccineis ; rostro viridi apice coccineo, maculâ submediâ aurantiâ, culmine percarinato flavo.*

Edwards, t. 329. *Sw.* Zool. Ill. t. 45.

This species, so rarely to be found in collections, has been con-

founded with a Linnean *Toucan*, notwithstanding Edwards's figure and description.

6. Trogon, *mas adultus. T. viridi-aureus, gulâ nigrâ, abdomine miniaceo; alis fuscis, tectricibus albo irroratis; caudâ nigrâ, rectricibus tribus extimis albo fasciatis; rostro flavo.*
Pito real. Mexic.
Jun. *fusco-cinereus; abdomine luteo; tectricibus alarum strigis albis.*
Gabilan, Mexic.

7. Trogon Mexicanus, Swains. ? ♀. *T. olivaceus; abdomine rubro; caudâ nigricante; rectricibus truncatis, duabus mediis ferrugineis fasciâ terminali albidâ nigráque, lateralibus tribus apice albo et latere externo albo fasciatis.*
I have not given names to these birds, because they will certainly be included in Mr. Gould's beautiful Monograph.

8. Macrocercus militaris, Vieill. *M. viridis; uropygio remigibusque cæruleis; fronte rubrâ; genis nudis lineis plumosis; caudâ rubricante, rectricibus apice cæruleis.*
Psittacus militaris, L. *Edw.,* t. 113. *Guacamaja,* Mexic.

9. Melanerpes formicivorus, Swains. *M. niger; occipite rubro; fronte, uropygio, remigumque fasciâ basilari, albis; gulâ flavidâ; pectore nigro striis albis; abdomine albo, lateribus crissoque nigro striatis.*
Picus melanopogon, Licht. Temm., pl. enl. 451. *Carpintero negro,* Mexic.

10. Centurus subelegans, Nob. *C. albo nigroque fasciatus; subtus cum capite dilutè cinerescens; vertice rubro, fronte et cervice subauratis.*
This bird resembles Mr. Swainson's *Centurus elegans,* but is well distinguished by wanting the very conspicuous black superciliary spot, and by the much less brilliant gold colour of the crown.

11. Colaptes rubricatus, Nob. *C. griseo-rufescens, nigro supra fasciatus, subtus maculatus; uropygio albo; gulâ cinereo-vinaceâ immaculatâ; remigum rectricumque scapis rubris.*
Mas. *Fasciâ mystacali rubrâ.* Fœm. *Fasciâ rubrâ nullâ.*
Colaptes collaris, Vig. *Picus rubricatus,* Licht. *Colaptes Mexicanus,* Sw. *Carpintero rosado,* Mexic.
Nearly allied to the *Colaptes auratus* of North America. To this group belong also the *Picus arator* (*Geocolaptes terrestris,* Sw.) of Caffraria; the *Picus Chilensis,* Lesson, Zool. Coq. t. 32; the beautiful *Colaptes Fernandinæ,* Vig., from the Island of Cuba, and two or three others.

12. Cyanocorax coronatus, Nob. *C. cristatus, cyaneus; cristâ ex toto cæruleâ, capitis lateribus tantum nigricantibus; mento, fronte, et superciliis albicantibus; alarum tectricibus, remigibus scapularibusque nigro fasciatis; caudâ parum rotundatâ.*

Garrulus coronatus. Jardine and Selby's Ill. Orn., t. 64. *Azul Capetan*, Mexic.

This must not be confounded with the larger *Garrulus Stelleri*. Nob. Am. Orn. II. t. 13. f. 1.

13. Quiscalus major, Vieill. *Urraca*, Mexic.

14. Xanthornus gularis, Wagler. *X. rubro-aureus, loris, gulâ et fasciâ jugulari, dorso, alis caudâque nigris; tectricibus alarum minoribus supra infraque aureis; remigibus basi, tectricibus majoribus apice, remigibusque secundariis margine externo, albis.*

Calandria de Bergara, Mexic.

A species very similar to *Oriolus Xanthornus*, L., and still more so to *Icterus Mexicanus*, Leach, Zool. Misc., I. t. 2 (*leucopteryx*, Wagler), having its robust bill and extent of white marking on the wing, but is well distinguished from both by its black back and more vivid colour.

15. Icterus Parisorum, Nob. *I. niger, tergo, abdomine, tectricibus minoribus alarum, rectricibusque lateralibus a basi ad medium flavo-olivaceis; tectricibus alarum majoribus remigibusque secundariis apice albis.*

Calandria, Mexic.

Nearly allied to *Ict. Dominicensis* (*flavigaster*, Wagl.), from which, however, it is distinguished by the white on the wing and the yellow on the tail. The bill in both is remarkably slender and very acute.

I have much pleasure in naming this bird after the brothers Paris, who, notwithstanding the arduous nature of their professional engagements in Mexico, allowed no opportunity of furthering the interests of science to pass unimproved. I quite agree with the opinion, that in a country whose commercial transactions are so extensive as they are in this, the captain of a trading-vessel bringing home "a 'curious bird,' which may prove to be new, has no claim to have his name immortalized;" but the same rule I would not apply to the Roman state, where a person crossing the sea is a rare occurrence.

16. Agelaius gubernator. *A. niger, alarum tectricibus minoribus ruberrimis unicoloribus.*

Psarocolius gubernator, Wagl. in Isis, 1832, p. 281.

This species, hardly established by Wagler under the specific name we have adopted, differs from the common *Phœniceus* of the United States by having the red spot on the shoulder of a uniform lively colour, wanting the ochraceous band beneath it; whilst the new Rocky mountain closely allied species, figured by Mr. Audubon under the name of *tricolor*, has, as the name implies, three most distinct colours on the shoulder spot. Our Mexican species is larger than the common, has the wings longer and broader, and the tail less rounded.

The diagnosis of *Phœniceus* will be

Ag. *Niger, alarum tectricibus minoribus rubris bicoloribus, fasciâ terminali ochraceâ.*

The diagnosis of *tricolor*,

Ag. *Niger, alarum tectricibus minoribus rubris bicoloribus, fasciâ terminali candidâ latissimâ.*

17. Sturnella Hippocrepis, Wagl. Also found in the island of Cuba, and registered by Mr. Vigors in his paper on the birds of that island, under the name of *Sturnella collaris*.

Frigüevo, Mexic.

18. Guiraca cœrulea, Sw. *Azulero*, Mexic.

An adult male: this is worthy of remark, as Mr. Swainson's specimens were all immature.

19. Guiraca melanocephala, Sw. *G. fulvo-ferruginea; pileo, genis, dorso, alis caudâque nigris, tectricibus alarum inferioribus et medio corpore subtus flavissimis; alis caudâque albo variis.*

Fringilla xanthomaschalis, Wagl. Isis, 1831. p. 525. *Fr. maculata*, Audubon, necnon Lath. *Figuerillo*, Mexic.

The *Coccothraustes Bonapartei* of Lesson's Zool. Ill. is the same bird as the one described by Dr. Richardson in the Fauna Boreali-Americana, as the female of *Coccothraustes vespertina*, Cooper.

20. Cardinalis Virginianus, Nob. *C. ruber; gulâ et capistro nigris; caudâ valdè rotundatâ; rostro conico, subdentato.*

Hab. Throughout N. America.

Finding in the collection of the Zoological Society two beautiful undescribed species of this my new form, I take this opportunity of making them known, especially as both come from Mexico. They all preserve the short rounded wings and lengthened tail, and even the crested head and red colours. As to the different shape of the bills, it is only an additional proof of the little importance to be attached to the form of that member in the conirostral birds.

Cardinalis phœniceus, Gould. *C. ruberrimus; capistro tenuissimo nigricante; caudâ rotundatâ; rostro robustissimo conico-turgescenti sinuato-dentato.*

A small but most splendid species, received by Mr. Gould from the country south of the Bay of Honduras.

Cardinalis sinuatus, Nob. *C. rubro cinereoque varius; gulâ et capistro coccineis; caudâ vix rotundatâ; rostro compresso turgido sinuato.*

Hab. Western parts of Mexico.

21. Phileremos cornutus, Nob. *Alauda chrysolaëma?*, Wagl. *Fildio de Llano*, Mexic.

Six species are now known of this peculiar subgenus of *Alauda*.

22. Turdus migratorius, L. *Sarsal*, Mexic.

23. Icteria viridis, Nob. *Pipra polyglotta*, Wils. *Icteria dumicola*, Vieill. *Arriero*, Mexic.

The tints are somewhat darker than in the United States' specimens.

24. Erythrospiza frontalis, Nob. *Pyrrhula frontalis*, Say. Nob. Am. Orn. 1. t. 6. f. 1. mas. 2. fœm. *Fringilla hæmorrhoa*, Licht. Wagl. Isis, 1831, p. 525. *Gornion*, Mexic. *Nocktotl*, Hernand. Thes. p. 31. c. 81.

This beautiful bird, reckoned until now very rare, and thought to be peculiar to the Rocky Mountains, in districts far removed from civilization, is very common in the city of Mexico, where according to Mr. Paris it takes the place of our common sparrow, provoking the science of the professors in the very yard of the university.

25. Tyrannula coronata. Sw. *T. fusca; capite, cristâ erectâ rotundatâ et corpore subtus coccineis.*

Fœm. *griseo-fusca; capite lævi concolore et pectore albidis; ventre tantum subminiaceo.*

Muscicapa coronata, Lath. Buff. Pl. Enl. 675. f. 1. male. *Cardenal*, Mexic.

Its southern range extends to Demerara, where it is very common. Contrary to what happens in the other species of the group, the female now described for the first time differs considerably from the other sex.

26. Tyrannula divaricata, Nob. *T. cristata, cinereo-olivacea; mento orbitisque albicantibus; dorso alisque olivaceo-rufescentibus; alis acuminatis; remigibus* 1^mo^ et 5^to^ *subæqualibus;* 2^do^, 3^tio^, et 4^to^ *omnium longissimis; caudâ divaricatâ corpore longiori rectricibus quatuor mediis dorso concoloribus; duabus hinc inde nigricantibus, extimis duabus utrinque dimidiato-cinereis. Rostro brevissimo nigerrimo.*

Long. 8″; *rostr.* 8‴; *al.* 6″; *caud.* 4″; *tars.* 1‴.

Riusito, Mexic.

We have dwelt at greater length on the characters of this bird, as it is likely to become the type of a new group.

27. Lanius Ludovicianus. *Berduquillo*, Mexic.

A specimen with the two middle tail feathers only entirely black, in which condition it is most probably the *L. excubitorides*, Sw.

When Mr. Swainson says, that he cannot reconcile the measurements and proportions of the quills of *L. Borealis* and *excubitor*, as stated by me, he is perfectly right, and no one but myself can explain the reason: the fact is, that while comparing I unfortunately must have taken up a specimen of *L. Italicus*, Lath., instead of one of the *excubitor*. Mr. Swainson has taken much pains to point out several species of North American shrikes; but we know only two species of that genus in America, his *L. Borealis* and *Ardesiaceus*; which latter, by the by, should be called *Ludovicianus* on our account, if not on Brisson's.

28. Pipra elegantissima, Nob. *P. purpureo-nigra; fronte cas-*

tanco-fuscâ ; vertice nuchâ et cervice pulchre cyaneis ; pectore abdomineque fulvo-æruginosis.

This most elegant species of square-tail Manakin resembles the *P. cyanocephala*, Vieill., but is at once distinguished by the general blackness of its plumage, and especially by its having a black throat. It might be taken for an undescribed state of that most variable species, the *P. serena*, L., which however has always been found with a white forehead, a blue rump, the blue colour of the head much more circumscribed. The rufous belly will at once distinguish it from the *P. cyaneocapilla* of Wagler, Isis, 1830. p. 934., figured by Spix under the name of *P. coronata*, II. 67. f. 1. As to the *Pipra Musica* (*Euphonia cæruleocephala*, Sw.), it differs by its black frontlet and orange rump.

29. Pipra linearis, Nob. *P. capite alis caudâque nigris ; vertice cristato coccineo ; rectricibus duabus intermediis lineari-acuminatis, nigris, cæteris triplo longioribus.*

Mas. *Niger ; dorso cæruleo.* Fœm. *Olivacea.*

Two species have been confounded by authors and by Wagler himself under the name of *Pipra caudata*, which are however well distinguished by the shape of the elongated tail feathers. The name of *P. caudata* must be retained, for the species figured by Shaw, t. 153. Nat. Misc. V. whilst the *longicauda* of Vieill., of which D'Azara speaks under the characteristic name of *Queue en pelle* is at once distinguished by the dilatation in the apex of its elongated tail-feathers. We subjoin the characters of both.

Pipra longicauda, Vieill. *P. cærulea ; capite, collo, alis caudâque nigris ; pileo cristato fulvo-coccineo ; rectricibus duabus intermediis cæteris dimidio longioribus, cærulescentibus, apice dilatatis.*

Jun. *subvirescens.*

Pipra melanocephala, Vieill. *P. nigra dorso cæruleo ; vertice cristato coccineo ; rectricibus duabus intermediis cæteris sesqui-longioribus, nigris, acuminatis.*

P. lanceolata, Wagl, Isis, 1830, p. 931.

30. Columba flavirostris, Wagl. Isis, 1830, p. 519. *C. rufo-vinacea ; alis extus et totis subtus, uropygio, caudâ, ventre abdomineque plumbeis ; rostro pedibusque rubris ; rectricibus saturatioribus ; remigibus albo minutissime externe limbatis.* Long. 1′.

31. Leptoptila rufaxilla, Swains. *L. brunneo-vinacea ; nitore colli vix conspicuo, fronte gulâ et pectore dilute vinaceis, abdomine albo ; rostro nigro ; pedibus rubris ; tectricibus alarum minoribus et pennis axillaribus longissimis vivide castanco-cinnamomeis ; caudâ parum rotundatâ ; rectricibus tribus extimis obscurioribus apice albis sine ullo vestigio fasciæ nigricantis.*

Long. 9″ 6‴ ; *caud.* 3″ 6‴ ; *al.* 5″ 3‴ ; *rostr.* 10‴ ; *tars.* 1″.

Columba frontalis, Temm. *C. rufaxilla*, Wagl.

Closely resembles *C. aurita*, Temm., from which it differs in wanting black spots to the wings, in having a less rounded tail without the black band, and in the wing coverts being rufous, and not grey.

32. Ortyx Montezumæ, Vigors, Jard. and Selby. Ill. Orn. fasc. 9. t. 126. *O. cinereo-violacea; plumis nigro fasciatis, secundum rachim cinnamomeo lineatis; tectricibus alarum maculis rotundatis nigris: subtus nigra maculis perlatis albis; abdomine medio longitudinaliter castaneo.*

In our specimens, perhaps arising from immaturity, the throat is whitish, and not black.

Fœm. *Tectricibus alarum maculis non rotundatis at fasciformibus; subtus læte vinacea, nigro signata, maculis albis obsoletis.*

Codarniz, Mexic.

Among the numerous *Ortyges* lately discovered in Mexico, and especially among the crestless species, the *Ortyx Montezumæ*, of which we now, for the first time, introduce the female to the notice of naturalists, is the most handsome.

33. Egretta Leuce, Nob. *Ardea leuce*, Ill. *Ctanza blanca*, Mexic.

34. Rallus Chiricote, Vieill. *Gallina de Montensoma*, Mexic.

35. Parra Jacana, L. *P. purpureo-castanea; capite, collo corporeque subtus nigro-violaceis; remigibus flavo-olivaceis nigro marginatis; spinâ alarum robustâ flavâ.*

Jaquanar at Vera Cruz. Buff. Pl. Enl. 272.

All the Mexican specimens I have seen are of a much darker tinge and of a larger size than the Brazilians.

II. Having lately, through the kindness of Colonel Velasquez de Leon, had an opportunity of examining a collection of birds, formed by him during a fortnight's scientific tour in Guatamala, I think it desirable to give the Society a list of the known species contained in it, with concise descriptions of those birds which appear to me to be new. I hope they may prove not uninteresting to the naturalist, for whom that part of Central America possesses attractions not inferior to those of any other country.

1. Herpetotheres cachinnans, Vieill. *H. albus, nigro coronatus; dorso alisque fuscis, remigibus interne rufo fasciatis; rectricibus albo nigroque fasciatis.*

Falco cachinnans, Lath. *Macagua ricaneur*, D'Azara.

2. Buteo. A species which I am unwilling to give a name to, owing to the immature state of the only specimen I have seen.

It is of an ashy brown colour, with the vent feathers whitish, banded with rusty. The wings reach a little beyond the middle of the tail; the primaries are rusty red, with black bands except at the tip. The tail-feathers ashy, with four wide black bands.

3. Prionites Momotus. *P. viridis, subtus fulvescens; pileo*

nigro, coronâ cyaneâ; rectricibus duabus mediis ultra rachim nudam cæruleis, apice nigricante.

Momotus, Briss. *Ramphastos momota*, L. *Momotus Brasiliensis*, Lath.

4. Crotophaga Sulcirostra, Sw. *Cr. Casasii*, Less. Long. 11″ 6‴.

5. Corvus Cacalotl. Wagl. Isis, 1831, p. 527. *Cacalotl.* Hernandez Thes. p. 48, c. 174.

This bird is very properly regarded and characterized by Wagler as distinct from the European *Corvus Corax*, although its differential characters have escaped the notice of all writers on North American ornithology. It therefore diminishes still further the daily decreasing list of birds which have been regarded as common to the two great continents.

Besides the different form of the bill, contour of the feathers, and shape of the tail, the proportions in the lengths of the primaries differ, as is usual in the different species of crows. The first quill is shorter than the seventh, the second and sixth are equal; the third is shorter than the fifth, the fourth being the longest; while in the European bird the second quill is longer than the fourth, and the third is the longest of all. In the American species, the second is much shorter than the fourth, which is even longer than the third and fifth.

This species must not be confounded with the more brilliant and more strongly marked *C. splendens* of Gould, also from Mexico.

6. Cyanurus Bullocki, Nob. *Pica Bullockii*, Wagl.

The numerous synonyms and descriptions of this magnificent and well-known species need not be recited here.

7. Cyanocorax coronatus, Nob. *Garrulus coronatus*, Sw.

Not to be confounded with the closely-allied species, *G. Stelleri.*

We propose retaining *Cyanurus*, Sw., for the long-tailed *Blue Magpies*, whilst *Cyanocorax*, Boje, belongs by right to the American *Blue Jays.*

8. Cassicus. A small white-billed species, of an uniform intensely black colour, with a remarkably robust tail. This can be referred to the *C. nigerrimus* of Spix, or, perhaps with still more propriety to the *C. solitarius* of Azara. In consequence of the confusion which still reigns among these black American birds, I am unwilling to increase it by giving the present bird a specific name, but must content myself with subjoining a description.

C. in toto nigerrimus; rostro valido acuminato ex virescente albo; plumis capitis elongatis, latis, rotundatis; remigibus rectricibusque latissimis, subfasciatis; caudâ gradatâ.

9. Coccyzus Cayanus. *C. rufus, pectore abdomine femoribusque plumbeis; caudâ longissimâ valde cuneatâ, rectricibus lateralibus apice albis.*

Cuculus Cayanus, L.

10. Trogon. An immature specimen, which, as the young of several other species, agrees with the *Trogon strigilatus* of Linn.

11. Centurus Santa Cruzi, Nob. *C. albo nigroque striatus, capite et corpore subtus griseo-olivaceis; vertice cerviceque rubris; fronte et abdomine aureis; uropygio albo; remigibus rectricibusque nigris.*

Nearly allied to the *Picus Carolinensis*; but distinct, by its bill being more arcuated, the tail feathers all black, and the golden front and belly; distinct also from the *albifrons* of Mr. Swainson, which, with a golden belly, has the front, the sides of the head, and half of the throat, white: its rump is also thickly banded.

A much smaller undescribed species in Mr. Swainson's collection (*Picus aurifrons*) comes still nearer to mine, which, at the request of Colonel Velasquez, I have named after a scientific professor in Mexico.

12. Icterus Baltimore. *Oriolus Baltimore*, L. An adult male and a young bird.

13. Icterus spurius. *Oriolus mutatus*, Wilson. *Psarocolius castaneus*, Wagler. An adult male and a young bird.

14. Icterus.

A female bird, closely allied to the *Baltimore* and the *spurius*, but different from either: its colours would bring it much closer to the *Baltimore*, but it wants the black on the throat, whilst all its under parts are much more vivid than the corresponding portions in any stage of the *spurius*. Its rump is olive-yellow, the head and the back olive-brown, the white bands on the wings very broad and conspicuous.

15. Icterus Bonariensis. *Psarocolius sericeus*, Wagl. Pl. Enl. 710. Adult male.

16. Guiraca Ludoviciana, Sw. *Loxia Ludoviciana*, L. *Fringilla punicea*, Lath. A young bird.

17. Pyranga æstiva, Vieill. *Tanagra æstiva*, Lath. Male, in moult.

18. Pyranga Ludoviciana, Nob. *P. flava; facie rubricante, dorso alis caudâque nigris; alarum fasciâ duplici-flavâ ob apicem tectricum.*

Tanagra Ludoviciana, Wils. *Pyranga erythropis*, Vieill.

19. Tanagra chlorotica.

20. Tanagra episcopus, L. *T. cinereo-cærulescens, subtus paullo dilutior, remigibus rectricibusque fuscis, margine externo cæruleo; rostro plumbeo-nigro.*

21. Tanagra vicarius, Lesson. *T. rostro nigro robusto; capite cyaneo, capistro nigro; dorso sordide virescente; abdomine fla-*

vescente ; tectricibus alarum minoribus cyaneis, speculo alari flavo.

This beautiful species, figured by Lesson in his Centurie Zoologique, pl. 68, considerably resembles the several blue species of *Tanagra*, often confounded with the *T. episcopus*, L., on account of their similarity to it ; I mean the *T. archiepiscopus*, Desm. ; *T. Sayaca*, L. (*T. glauca*, Sparrm) ; *T. olivascens*, Licht. (erroneously taken for the female of the *T. Sayaca*) ; but the beautiful goldfinch-like yellow spot, which it bears at the base of the primaries, as well as the blacker and much more robust bill, almost bullfinch-shaped, distinguish it from them all.

22. Euphonia violacea. *E. nigro-chalybea ; fronte pectore abdomineque flavissimis ; tectricibus alarum inferioribus, remigibus intus basi, maculâque mediâ pogonii interni, rectricisque lateralis albis.*

23. Euphonia hirundinacea, Nob. *E. olivaceo-flava, fronte et subtus flavâ, vertice genisque nigro-chalybeis, remigibus rectricibusque nigricantibus, margine externo olivaceis ; rostro nigro valde uncinato, subhirundineo.*

24. Arremon giganteus, Nob. *A. læte olivaceus ; rostro robustissimo nigerrimo, capite nigro ; gulâ mediâ albâ (unde nigro-cincta) ; pectore abdomineque plumbeo, crisso flavo, æruginoso ; remigibus nigris, caudâ olivaceâ, valde rotundatâ.*

As the chief difference between this bird and the *Silens* consists in its greater dimensions, I subjoin them :

Long. tot. 9″ 6‴ ; *rostr.* 1″ ; *al.* 4″ 6‴ ; *caud.* 4″ 6‴ ; *tars.* 1″.

25. Icteria Velasquezi. *I. viridis ; pectore flavo-aurantiaco ; rostro nigricante, mandibulâ albicante.*

An important addition to the genus *Icteria*, which hitherto comprehended only one species, the *Pipra polyglotta* of Wilson, *Icteria viridis*, Vieill., from which it differs in the more intense, almost orange-colour of the breast, and by the whiteness of the under mandible of the bill, which is entirely black in the *viridis*. *I. viridis* may stand characterised as follows :

I. viridis, pectore flavo ; rostro ex toto nigro.

26. Thamnophilus doliatus. *T. albo nigroque fasciatus, vertice candido, nigro cincto.*

27. Thamnophilus rutilus, Vieill. *T. rufo-cinnamomeus, subtus flavo-cinnamomeus, rostro robusto, genis albo nigroque variis ; remigibus medio fuscis ; rectricibus rufis, unicoloribus.*

28. Todus cinereus, Briss. (Pl. Enl.) *T. cinereo-olivaceus, subtus flavissimus, pileo nigricante ; alis nigricantibus, tectricibus remigibusque externe flavo limbatis, caudâ gradatâ nigrâ, rectricibus lateralibus apice albis ; rostro nigro, subtus albido.*

29. Setophaga ruticilla, Sw.
A female.

30. Setophaga rubra, Sw. *S. rubra, alis caudâque fuscis: genis albo-sericeis.*
Sylvia miniata, Lafresn., Mag. de Zool., 1836. Cl. II. tab. 54.

31. Sylvicola decurtata, Nob. *S. læte viridis, subtus, cum tectricibus alarum, albo-virescens; capite colloque supra plumbeis, subtus albis; alis majusculis, remigibus subfuscis, supra externe viridi marginatis, subtus interne albo limbatis. Primo dimidium, secundo æqualis duodecimi, 3, 4, 5, 6*toque *omnium longissimis. Caudâ parvâ angustâ æquali, rectricibus virescentibus.*
Long. 4″; *rostr.* 7‴; *al.* 2″; *caud.* 1″ 3‴; *tars.* 7‴.
This very singular small bird, partaking partly of the characters of *Vireo* and *Sylvia,* is very remarkable from the abbreviated form of its body; its wings and tail are also very singular, and almost entitle it to rank as a distinct genus.

32. Turdus Grayi, Nob. *T. olivacco-fuscus, subtus flavo-cinnamomeus, gulâ tantum vix fuscescenti striatâ: tectricibus alarum inferioribus remigumque margine interno aurantio-cinnamomeis, remigum primo sextam æquante, 4*to *et 5*to *omnium longissimis, tertiam et sextam vix superantibus; caudâ æquali, duo pollices ultra alas prætensâ; rectricibus submucronatis.*
Long. tot. 8″; *rostr.* 1″; *al.* 4″ 3‴; *caud.* 3″ 3‴; *tars.* 1″ 1‴.
A typical species: which I have much pleasure in dedicating to Mr. G. R. Gray, a young ornithologist.

33. Tyrannus superciliosus. Swains. *T. fusco-olivaceus, subtus cum tectricibus alarum flavissimis; caudâ emarginatâ; vertice basi rubro; superciliis amplis gulâque candidis.*
Long. tot. 6″ 6‴; *caud.* 3″; *al.* 3″ 5‴; *rostr.* 9‴; *tars.* 8‴.

34. Synallaxis cinerascens, Temm., Pl. Col. 227, f. 3. *S. fusco-badia, capite toto saturatiore, pectore alis caudâque læte castaneis, ventre cinerascente; remigum apicibus flavescentibus; rostro nigro.*

35. Miniotilta varia, Vieill. *Sylvia varia,* Lath. *Oxyglossus maculatus.* Sw.

36. Cœreba cyanea, Vieill. *Certhia cyanea,* L.

Scolopacinus, Nov. Gen.
Rostrum longissimum, basi trigonum, gracile, rectissimum; mandibulis æqualibus, superiore apice extimo subcurvato, subhiantibus: nares fossâ majusculâ, membranulâ fere omnino clausæ.
Pedes elongati; tarso digito medio sesquilongiore: digiti omnes a

basi fissi, valde inæquales, postico validiore, ungue robusto valde arcuato.

Alæ maxime rotundatæ; remigibus 1^mo^, 2^do^, 3^tio^ sensim longioribus; 4^to^ cæteris sed vix longiore, omnibus latis.

Cauda breviuscula, valde gradata.

37. Scolopacinus rufiventris, Nob. *Sc. brunneo-olivaceus; genis et subtus aurantio-cinnamomeis; gulâ albâ inferne striis nigris; remigibus fuscis; caudâ nigrâ, rectrice extimâ maculâ transversali, 2^nda^ maculâ internâ apicali, tertiâ apice tantum, albis. Rostrum fuscum subtus basi album.*

Longit. 4″ 6‴; *al.* 2″; *caud.* 1″ 6‴; *tars.* 10‴.

This bird is closely related to the *Troglodytes rectirostris* of Swainson's Zool. Ill., t. 140, which, though its bill be shorter than in this our typical species, belongs to the same genus; which the learned author could not but anticipate when he placed it with the *Wrens*. A specimen of it in the British Museum wants the white markings on the tail, and has the bill shorter than in our *rufiventer*.

Since writing the above, I find that Mr. Sundeval has formed the latter species into a genus, which he named *Acontistes*.

38. Caprimulgus vociferus, Wils. Common in the United States.

39. Penelope vetula, Wagl. *P. brunneo-olivacea; capite colloque ardesiaceis; epigastro et ventre albis, crisso vix rufescente; rectricibus æneo-viridibus, lateralibus apice late albis; remigibus integris; tarso digito medio breviore; meatu nudo, vittâ intermediâ subpiloso-plumosâ.*

It differs too little from the *P. vetula*, Wagler, Isis, 1830. p. 1111. sp. 14, for me to venture to make a distinct species.

III. I subjoin the description of some new or rare species (placed in my hands by Mr. Leadbeater, during my stay in London), from that portion of Brazil bordering on Peru; and interesting, as further elucidating the Ornithology of that little-known country. I understand that they will hereafter form a portion of that valuable collection which belongs to the Earl of Derby.

1. Crypticus Martii, Nob. *C. virens, capite, collo, pectoreque rufo-fulvis: fasciâ oculari, maculisque jugularibus nigris.*

Momotus platyrhynchus, Leadb. *Prionites Martii*, Spix.

A specimen with the middle tail-feathers entire.

To this new genus of Mr. Swainson will also belong the *Momotus superciliosus* of Mr. Sandbach, lately described at a meeting of the British Association at Liverpool,

2. Capito macrodactylus, Nob. *C. fusco-brunneus, pileo castaneo, cervice cinnamomeâ; gulâ juguloque albidis, collari latissimo nigro; abdomine nebuloso.*

Cyphos macrodactylus, Spix, pl. 39, fig. 2.

3. Micropogon aurovirens, Nob. *M. olivaceus, pileo ruberrimo, gulâ pectoreque aurantiacis.*
Bucco aurovirens, Cuv. Le Vaill. Suppl. pl. E.
From Sarayacu. "The eyes were red, the legs grey."

4. Micropogon flavicolle, Nob. *M. niger luteo maculatus, pileo luteo-virescenti: gulâ aurantiacâ: abdomine flavo.*
Mas. *Jugulo immaculato.* Fœm. *Jugulo maculis nigris.*
Resembles *Capito aurifrons,* Vig. from Chili; but is sufficiently distinct.

5. Galbula tombacea, Spix, pl. 58. *G. aureo-viridis, abdomine rufo: jugulo immaculato.*
A tail-less specimen belonging certainly to that species, distinct from the numerous ones just described by Mr. Swainson; differing from all by the uniform green colour of the chin, throat, and breast.

6. Dendrocops platyrostris, Nob. *D. rufescens, nigro undulatus, uropygio, remigibus, rectricibusque puris.*
Dendrocolaptes platyrostris, Spix, pl. 89.
A large and very remarkable species, in which the characters of the genus, as beautifully described and drawn by Mr. Swainson, are strongly developed.

7. Astiienurus rufiventris, Nob. *A. fuscus, subtus cum genis rufis: pileo nigro, rubro maculato.*

8. Melanerpes meropirostris, Nob. *M. niger, fronte rubrâ: vittâ superciliari albâ, postice aureâ: uropygio candido: abdomine medio coccineo; lateribus, crisso, remigibusque albo nigroque fasciatis.*
Picus meropirostris, Wagl.
The bill is rather more curved than in other species of the group, and has the culminar and nasal ridges remarkably distinct.

9. Xanthornus mentalis, Wagl. A young specimen.

10. Sturnella militaris, Vieill.

11. A female of a species of *Dolichonix,* with a belly tinged with red, and less acute tail-feathers than in the type, intermediate between the only two species of the group hitherto known: perhaps the female of the *Agelaius phœnisomus,* Swains.

12. Guiraca magnirostris, Nob. *G. griseo-flavida nigro maculata; subtus cum superciliis flavis: crisso albo: remigibus rectricibusque fuscis: tectricibus alarum majoribus scapularibusque apice albo notatis.*
A female bird of an unknown species, allied to the *G. melanocephala,* Sw.; but differing by the bill being much longer and thicker.

13. Spiza versicolor, Nob. *S. violacco-cyanea purpureoque varia: uropygio cyaneo: capistro nigro: alis caudâque fuscis.*
Found near Temascallepec: "has a sweet song; feeds on seeds;

eyes brown." With the *amœna*, the *ciris*, and the *cyanea*, it belongs to my genus *Spiza*, as I have lately restricted it; that is, to my Tanager-like *Spizæ*.

14. Ramphocelus nigrogularis, Spix. *R. coccineus, facie, dorso, ventre, alis caudâque nigris.*

Ramphocelus ignescens, Less., Cent. Zool., pl. 24.

This synonym is interesting as settling the point of the identity of the Mexican and Brazilian birds, which I left undecided in my small monograph on this genus. Sir W. Jardine's *Ramphopis flammigerus* (Ill. of Zool., tab. 131.) is the same as my *R. Passerinii*. M. d'Orbigny figures a fifth species of the genus, in his recent voyage, under the name of

Ramphocelus atro-sericeus, D'Orb. Voy. Am. M. Ois. pl. 24, fig. 1. *R. niger capite guláque atro-coccineis.*

Ramphocelus icteronotus, Nob., *R. niger, dorso postico uropygioque flavissimis.*

This description is added, from a specimen contained in the Paris Museum.

15. Tanagra cyanocephala, D'Orb., pl. 23. fig. 2. *T. viridiflava, pileo cerviceque azureis; subtus canescens; alarum tectricibus inferioribus, remigibus interne, crisso femoribusque flavissimis.*

The bill is rather more compressed than in many other typical species of Tanagers. This beautiful bird resembles several other blue-headed species of the genus, but is most easily distinguished by our diagnosis.

16. Tanagra striata, Gm. *T. nigra, capite, collo, alarumque tectricibus cæruleis; pectore uropygioque aurantiacis; abdomine flavo: femoribus cinereis.*

This species closely resembles a Chilian bird in the British Museum, brought to this country by the expedition under Capt. Fitzroy; the latter, however, may be distinguished by its longer bill, by being yellow instead of orange on the breast and rump, and by being brownish olive on the back. It may be distinguished as the

Tanagra Darwinii, Nob. *T. olivacea, capite, collo, alarumque tectricibus cæruleis: subtus ex toto cum uropygio flavis: femoribus cinereis.*

17. Tanagra celestis, Spix, pl. 55, fig. 1. *T. cæruleo-grisea: tectricibus alarum minoribus apiceque majorum albis.*

It is not unworthy of note, that whilst so many different species, closely related to the *Tanagra Episcopus* of Linnæus, should be distinguished by the peculiar hue of the shoulder spot, varying from pink to yellow in some species, to different shades of blue in others, in this it should be pure white: the tips of the greater wing-coverts, being also white, give to the wing a quite peculiar appearance.

18. Aglaia nigro-cincta, Nob. *A. viridi-cyanea, dorso, pectore remigibus caudâque nigris, abdomine albo.*

It differs from *Agl. Brasiliensis* by its smaller size and more delicate bill; the greenish tinge of the blue is much more extended, as it invades the whole of the head and tail-coverts as well as the interior of the wing.

19. Aglaia Schrankii, Nob. *A. viridis nigro maculata, uropygio et medio corpore subtus luteo-aureis: fronte genisque nigris: remigibus rectricibusque fuscis externe cyaneo marginatis.*

Tanagra Schrankii, Spix, tab. 51, fig. 1 and 2. D'Orbign., pl. 24, fig. 1.

Closely resembling *Agl. punctata*, Edw., pl. 262, but differs in having the rump, and the middle of the body underneath golden yellow, and without spots.

20. Pipra striolata, Nob. *P. olivacea, subtus rufa, albo striata: pileo cristato coccineo.*

Exceedingly like the *Pipra strigilata* of the Prince Max. of Wied, from Brazil, but sufficiently distinguished by the under parts being rufescent striped with white, instead of white striped with rufous. Wagler describes, however, my species.

Mr. Blyth exhibited some portion of the skeleton of the Great Auk, *Alca impennis*, and proceeded to offer some observations on the distinctions subsisting between the Auks and the Penguins. He remarked that these two genera differ in the type of their skeleton as well as in the progressive changes and structure of their plumage, for which reason he had long wished to obtain a sight of the skeleton of the *Alca impennis*, with a view to ascertain to what extent the similarity of its mode of life to that of the Penguins would, in this species, modify the Auk type of structure. Through the kindness of his friend Mr. Bartlett, he had succeeded in obtaining the wing and leg bones of this remarkable bird, which had been left in a preserved skin, and which proved to resemble those of the Penguin genus in weightiness, if not in structure, the *humerus* possessing a very small internal cavity, while the *tibia* was completely filled with marrow. These bones were exhibited, together with the analogous bones of *Alca torda*, which latter were even proportionally considerably smaller, as well as lighter, and quite hollow. Mr. Blyth remarked that the gradual absorption of the marrow in the bones of other birds was about coincident with the developement of the volar organs; and stated the highly curious fact, on the authority of Mr. Gould, that the marrow was permanent in the leg bones of the genus *Cinclus*. He then made various observations on the structure of the northern or true *Alcadæ*, more particularly with relation to the developement of the air-cavities in the species which could sustain themselves on wing, observing, that in these the wings were reduced to the minimum extent adequate for aerial support, in order that they might be more effectual under water; and that when once the object of aerial flight was abandoned, as in the instances of the great Auk and Penguins, these organs were accordingly reduced to exactly

that size, which was most efficient of all for subaquatic progression; species of an intermediate character of course never occurring. It was obvious that a high standard of respiration is necessary to enable the Puffin and its allies to maintain aerial flight with their short and narrow wings: and the great development of the lateral air-cavities in these birds, incidentally remarked by Mr. Ord (in his continuation of Wilson's Ornithology) in the particular instance of the Rotche, he believed bore reference to that especial object. Mr. Blyth also called attention to the resemblance of the Puffin's mode of flight to that of a Beetle, and stated that its actions when under water so much resembled those of the *Dyticidæ*, that whoever had seen the one could form a quite accurate notion of the other; the bird advancing solely by means of the wings, and the insect making use of only its middle pair of legs to oar itself along; a further striking resemblance was pointed out in this exterior conformation, being a beautiful instance of analogy or adaptation of two extremely dissimilar types to the same mode of life.

Mr. Gray communicated to the Meeting the following arrangement of the *Sorices*, accompanying his observations upon this group by the exhibition of the shrews in the Society's collection.

Mr. Gray remarked that Wagler, in the *Isis* for 1832, divided the European shrews into three genera, according to their habits and the structure of their teeth; and Duvernoy in 1834 or 1835, overlooking the natural characters pointed out for the groups by Wagler, divided them into artificial genera according to the size and form of the cutting teeth. On examining the species in the British Museum, Mr. Gray found it necessary to further divide them in the following manner; the various groups forming a series returning into itself.

A. *Land Shrews. Tail simple, feet not ciliated on the sides.*

1. *Corsira.*—Front lower cutting teeth sharp-edged, and toothed above: tail with short close-pressed hairs.

2. *Myosorex.*—Front lower cutting teeth sharp-edged, entire above: tail with short close-pressed hairs.

3. *Sorex.*—Front lower cutting teeth rounded, and simple above: tail with short hairs and longer scattered bristles.

B. *Water Shrews. Tail with a series of bristles beneath: feet and toes ciliated on the sides.*

4. *Amphisorex.*—Front lower cutting teeth simple: 4 hinder cutting teeth gradually smaller, hinder very small.

5. *Crossopus.*—Front lower cutting teeth sharp-edged, and toothed above: hinder cutting teeth rapidly smaller.

1. Corsira, Gray. *Sorex*, Wagler? *Hydrosorex* part, Duvernoy*.

Head elongate, muzzle slender, produced; ears hid in the fur. Tail elongate, slender, when young round, becoming quadrangular, covered with short, rigid, close-pressed hairs, (not ciliated,); feet simple, not ciliated; front wrist bearded beneath. Skull elongate. Teeth coloured; cutting teeth $\frac{12}{6}$, large, two upper central, strong,

* Since these observations were made, M. Duvernoy has transferred his name of *Hydrosorex* to the group which he had formerly named *Amphisorex*, and *vice versâ*. The references in the text are to his earlier arrangement.

nearly equally bifid, hinder ones rapidly decreasing in size : two central lower elongate, above sharp-edged, and toothed; grinders $\frac{4}{3}$, moderate.

Like *Crossopus*, but the tail and feet not ciliated, and the nose more produced.

* *Tail moderate. Upper cutting teeth rather large, grinders moderate.*

1. *Corsira vulgaris.* (*Common Shrew*, Shaw.)

Sorex vulgaris, Linn. Mus. Ad. 10.

Sorex araneus, Linn. F. Suec.—Jenyns's Man. Brit. Anim. 17. Mag. Zool. and Bot. ii. 27. t. 1. f. 2.

Sorex tetragonurus, Hermann, Obs. Zool. 48. Geoff. Ann. Mus. xvii. t. 2. f. 3. *Sorex* (*Hydrosorex*) *tetragonurus*, Duvernoy, Mem. Nat. Hist. Strasb. ii. t.

S. cuniculuria, and *S. eremica*, Bechst.

Fœtid Shrew, Penn.

Inhab. N. Europe, Sweden, England. Brit. Mus.

2. *Corsira Forsteri.* (*American Shrew.*)

Sorex Forsteri, Richardson, Fauna A. B.—Gapper, Zool. Jour. v. t. 7.

Inhab. N. America. Mus. Dr. Richardson, and Roy. Inst. Bristol.

This is probably the genus *Sorex* as restricted by Wagler, to which he refers *Sorex pygmæus*, Pallas, and three of his species, *S. rhinolophus*, *S. concinnus* and *S. megalodon*, which are probably only varieties of *vulgaris* : here also perhaps should be added *S. constrictus*, Geoffroy, which agrees with them in the ears being hid, and in the face being lengthened. See Ann. Mus. xvii. t. 3. and 4.; see also *S. longirostris*, *S. Cooperi*, *S. Richardsonii*, Bachman.

*** *Tail short; fore feet strong.* Blarina.

3. *Corsira* (*Blarina*) *talpoides.*

Sorex talpoides. Gapper, Zool. Jour. v. t. 8.

Inhab. N. America. Mus. R. Inst. Bristol.

To this section probably should be referred *Sorex brevicaudatus* and *S. parvus*, Say, *S. Dekayi*, *S. personatus*, Geoffroy, *S. Carolinensis*, and *S. cinereus*, Bachman.

2. Myosorex, Gray. Head elongate, ears hid under the soft fur; tail elongate, slender, covered with short, rigid, close-pressed hairs, when old quadrangular; feet and toes not ciliated: teeth white; cutting teeth $\frac{8}{6}$, two upper central unequally bifid, the second lateral moderate, the third very small, rudimentary, the fourth small but larger than the third. Front lower cutting teeth elongate, with an entire sharp upper edge ; second and third lateral teeth small, simple, crowded on the base of the front ones.

Myosorex varius.

Sorex varius, Smuts, p. 108. *Sorex cinnamomeus.* Licht. Saugth. *t.* ?.

Inhab. Cape of Good Hope. Mus. Zool. Soc.

Like *Sorex pilorides* in appearance, but at once known by the shape of the tail and lower cutting teeth. Teeth shining white.

3. Sorex. Head elongate ; ears exposed ; fur soft, perpendicular : tail elongate, tapering, with whorled scales, covered with

short hairs and scattered longer bristles. Feet not ciliated; toes 5—5, free. Cutting teeth $\frac{8}{6}$ (or $\frac{10}{6}$?), white, the front upper unequally bifid, the 3 (or 4?) others becoming rapidly smaller to the last; front lower cutting teeth produced, upper edge rounded and entire.

a. *Larger, tail thick, tapering, sides with a white glandular spot.*

Sorex pilorides, Shaw.

Sorex gigantea, Geoff.

Inhab. India.

To this division should be referred *Sorex myosurus*, Geoff. Ann. Mus. xvii. t. 3. f. 2. 3. *S. crassicaudatus*, *S. capensis*, Geoff., *S. flavescens*, (C. G. H. Mus. Zool. Soc.) *S. capensoides*, (C. G. H. Mus. Zool. Soc.) *S. pulchellus*, and *S. pumilus* if they are all distinct from one another. Gmelin in the description of the latter, probably misled by the plate, considers the scattered longer hairs as forming a subdistichous tail.

b. *Smaller; tail very slender. Crocidura*, Wagler. *Sorex*, Duvernoy. *Sunkus*, Ehrenb.

1. *Sorex araneus*, Schreb. t. 160. (*French Shrew.*) Pale grey brown, paler beneath.

Sorex araneus, Schreb. t. 160. Geoff.—Duvernoy, Mem. N. H. Strasb. ii. t. cop. Jenyns, Mag. Zool. and Bot. ii. t. 1. f. 1.

Inhab. Europe, France. Brit. Mus.

Cutting teeth $\frac{3}{2}$, small.

2. *Sorex leucodon*, Herm. (*White toothed Shrew*, Penn.) Black brown, whitish beneath.

Inhab. Europe, France. Brit. Mus.

See also *Sorex etruscus*, Sav. *Crocidura major*, *C. rufa*, *C. moschata*, and *C. poliogaster*, of Wagler, which are probably only varieties of *S. araneus*.

4. Amphisorex, Duvernoy. Head elongate, ears entirely hid. Tail elongate, slender, covered with short close-pressed hairs, when young round, becoming subquadrangular; under side and edge of the feet ciliated with a series of mobile bristles. Skull elongate, muzzle narrow; cutting teeth $\frac{10}{6}$; two centre upper unequally bifid, the three next on each side gradually smaller, the hinder very small, two lower central simple. Grinders $\frac{4}{3}$, rather large.

This agrees with *Crossopus* in the structure of the tail and feet, and in its aquatic habits, but differs in the form of the teeth.

1. *Amphisorex Pennantii.* (*Pennant's Water-shrew.*)

Sorex fodiens. Flem.—Jenyns's Brit. Anim.—Mag. of Zool. and Bot. ii. t. 1. f. 4.

Water Shrew. Penn.—Don.—Bell, Brit. Mam.

Inhab. Europe, England. Brit. Mus.

2. *Amphisorex ciliatus*, (*Black water shrew.*)

Sorex ciliatus, Sow. Brit. Misc. (1806)

Sorex remifer, Geoff. Ann. Mus. (1811) xvii. t. 1. f. 1.

Inhab. Europe, England and France. Mus. Brit.

Duvernoy describes another species under the name of *Amph. Hermannii.*

3. *Amphisorex palustris.*

Sorex palustris, Richardson, Faun. Amer. Bor.

Inhab. N. America. Mus. Richardson.

5. Crossopus (part) Wagler, 1832. *Hydrosorex* (part) Duvernoy, 1835. *Pinalia*, Gray, MSS.

Head elongate. Ears hid in the fur, valvular. Tail elongate, squarish, with short close pressed, rigid hairs, grooved, and with a row of long bristles beneath the tip. Hind feet ciliated with mobile bristles. Cutting teeth $\frac{12}{6}$, the two upper central strong, equally nicked; hinder upper rapidly decreasing in size: the two central lower cutting teeth flattened, sharp edged, and toothed above.

Crossopus Daubentonii, (*White-bellied water shrew*).

Sorex fodiens, Pallas? Duvernoy. *S. carinatus*, Herm. Geoff. A. M.—*S. canaliculatus*, Lynge. *S. Daubentonii*, Erxl.

Europe, France. Brit. Mus.

Brehm has described what he considers three German species allied to *S. fodiens* under the name of *S. amphibius*, *S. natans*, and *S. stagnalis*; Wagler, two others which he calls *C. musculus* and *C. psilurus*. Duvernoy refers to *Hydrosorex*, *Sorex tetragonurus*, Hermann and Geoff. Ann. Mus. xvii. t. 2. f. 3, which being a land shrew, I have referred to the genus *Corsira*; see also *Sorex fimbripes*, Bachman.

A small collection of birds from Erzeroum in Persia, recently presented to the Society by Keith E. Abbott, Esq., Corr. Mem., was brought before the notice of the meeting, accompanied with the following observations by Mr. Gould:—

"Of the nine specimens composing this collection, I find eight are distinct species, two of which are known to inhabit Britain, and six, including these two, belong to the Fauna of Europe; the remaining two I have no hesitation in considering as undescribed species, though referable to European types, being closely allied to the *Fringilla nivalis* and *Alauda alpestris* of authors. The great length of wing, square tail, and other prominent characters presented by *Fringilla nivalis* would seem to indicate the propriety of separating it from the rest of the *Fringillidæ*, in which case the present species will probably be placed along with it in a distinct genus, which it appears to me would exhibit the same relation to *Fringilla*, as *Plectrophanes* does to *Emberiza*.

"The Lark is a second example of that singular form distinguished by lengthened tufts on each side of the head resembling horns, and for which *Al. penicillata* will, perhaps, serve as an appropriate specific designation.

"The remaining species are *Lanius minor*, *Phœnicura ruticilla*, *Alauda calandra*, *Al. rupestris*, *Pyrgita petronia*, *Linaria cannabina*.

"I would observe that the collection though small is a most interesting one, since it adds to ornithology two new examples of forms, previously known to us by only solitary species; and I would remark that collections from this part of the world are almost sure to be productive of highly interesting results."

The two new species noticed by Mr. Gould in the above collection were characterised as

Alauda Penicillata. *Al. fronte, mento, auricularibus, abdomine, pectore alisque subtùs albis; fasciâ super frontem, peni-*

cillis capitis lateralibus et lineâ super nares latè per genas excurrente, colloque anteriori nigris; summo capite et nuchâ vinaceo-cinereis; corpore suprà cinereo; remigibus alarum cinereo-fuscis, remige primo externè albo; rectricibus caudæ duabus intermediis fuscis, ad marginem pallidioribus; reliquis nigrescentibus externâ utrinque albo marginatâ; rostro pedibusque nigris.

Long. tot. unc. 8; *alæ*, $4\frac{1}{2}$; *caud.*, 3; *rost.*, $\frac{4}{5}$; *tars.*, 1.

Hab. Erzeroum.

Fringilla sanguinea. *Fring. brunnea, summo capite nigro; remigum pogoniis externis sanguineo lavatis; primariis nigris; secondariis nigris, ad apices albis; tectricibus caudæ et regione circum-oculari sanguineo lavatis; rectricibus caudæ duabus intermediis nigris, reliquis plus minusve albo notatis, externâ utrinque ferè albâ; rostro flavo; pedibus fuscis.*

Long. tot. 6 unc. $\frac{3}{4}$; *alæ*, 4; *caud.*, $2\frac{1}{2}$; *rost.*, $\frac{2}{3}$; *tars.*, $\frac{3}{4}$.

Hab. Erzeroum.

Mr. Gould afterwards described a new *Ibis* from Hayti, presented by John Hearne, Esq., Corr. Mem., as

Ibis erythrorhyncha. *Ib. dorso, alis caudâque metallicè viridibus; capite colloque superiore nigrescenti-cinereis, albo sparsis; corpore subtùs nigrescenti-cinereo; rostro pedibusque rubris; rostro ad basin nigro.*

Hab. Hayti.

Mr. Yarrell exhibited a quill from the wing of a Harpy Eagle, which had died while in the Menagerie of the Earl of Derby, and which was found upon examination to be infested with a great number of a species of *Pediculus*. It appeared that these minute creatures had chosen for their place of retreat the hollow of the large quill-feathers; and the specimens forwarded to Mr. Yarrell by the President were filled with their *exuviæ*; two circular apertures situated near the base of the quill afforded the animals access to its interior.

A specimen of the White-bait presented to the Society by Mr. Williams, was exhibited by Mr. Yarrell in order to show the large size sometimes attained by this species; its dimensions were as follow:

Entire length 6 inches.

Depth, measured about midway between the dorsal fin and the extremity of the head, 1 inch 2 lines.

A collection of insects were upon the table which had been collected at Manilla by Mr. Cuming, at whose request Mr. Westwood had furnished the following descriptions of some of the more interesting species for insertion in the Society's Proceedings.

Collyris (Colliuris Latr.) femorata (albitarsis Erichs.?) *affinis* C. Robynsii *et lugubris*, V. L. *C. capite thoraceque violaceis, labro 7-dentato, antennis capite longioribus, fere filiformibus, articulis 3 et 4 annulo apicali, 5^to^ in medio, et basi 6^to^ et 7^mo^ fulvis, palporum labialium articulo basali albo; thorace strigis nonnullis transversis in parte anticâ cum punctis paucis posticis;*

elytris æneo-cyaneis, valde punctatis, punctis distinctis, versus apicem punctis multo minoribus, apice ipso truncato emarginato; pedibus cyaneis, femoribus ferrugineis, tarsis piceo-nigris, (duobus posticis albidis in mare exceptis.)

Long. corp. ♂. lin. 6; ♀ lin. 7.

Obs. The possession of both sexes of this insect agreeing precisely together, except in size and the colour of the posterior *tarsi*, induces me to give it as a distinct species, since on comparison, its characters will not agree precisely with those of the species previously described by Dejean, MacLeay, Van der Linden, &c.

Therates coracina. Erichs. Act. Acad. Cæs. Nat. Cur. 16. Suppl. *T. nigra nitidissima, elytris nitore sub purpureo nitentibus, his tuberculo basali alteroque minori ante medium; labro, antennarum articulo basali, abdomine, pedibusque luteis, tarsorum articulo* 1^mo^ *et* 2^do^ *ad apicem, cæteris fuscis, mandibulis luteis, dentibus nigris.*

Long. corp. lin. $9\frac{1}{2}$.

Morio orientalis. Dejean Species Gen. i. p. 433.

Clivina castanea. *C. capite thoraceque castaneis, elytris pedibusque pallidioribus. Cl. Fossori dimidio major, capite minori convexo lateribus valde impresso, fronte puncto minuto nec stria longitudinali impressa, thorace subquadrato (postice parum latiori) ad angulos posticos impresso, elytris elongatis parallelis sub-punctato-striatis punctisque tribus majoribus in striam tertiam, femoribus anticis crassis, haud dentatis, tibiis anticis extus dentibus tribus elongatis.*

Long. corp. lin. $3\frac{1}{2}$.

Nigidius lævicollis. *N. niger nitidus, capite supra depresso punctato, thoracis dorso lævi, lateribus punctatis margineque antico simplici tuberculo minutissimo vix apparenti, elytris inter strias elevatas triplici punctorum impressorum ordine instructis, tibiis anticis 6 dentatis.*

Long. corp. lin. 9.

Prionocerus cæruleipennis. Perty, Obs. Coleopt. Ind. Orient. p. 33.

Rhynchites manillensis. *R. oblongus, cyaneus, nitidus, rostro longiori nigro, punctato, lineis duabus supra ad basin impressis, thorace conico, punctis minutissimis, longitudinaliter haud canaliculato, impressione transversa cum margine postico parallela, elytris magis cæruleis basi-virescentibus punctato-striatis, corpore subtus et femoribus cyaneis, tibiis tarsis et antennis nigris.*

Long. corp. (*cum rostro*) lin. 3.

Lamia pulchellator. Affinis L. Rubo et Sehestedii. *L. luteo-fusca, sericea, thorace utrinque spina armato punctisque duobus nigris ante medium disci, elytris basi scabris, singulo maculis* 4^tis^ *irregularibus lacteis, scil.* 1^ma^ *majori obliqua marginali, ante medium locata,* 2^da^ *media, ovata prope suturam,* 3^tia^ *obliqua marginali,* 4^ta^ *versus apicem suturæ, maculisque nonnullis minoribus versus apicem elytrorum, in speciminibus variis vari-*

antibus, et irregularibus, ejusdem coloris ; antennis concoloribus, apicibus articulorum obscurioribus.

Long. corp. lin. 11—16.

Eurycephalus nigripes. Dej. Catal.

Cerambyx nigripes. Oliv. G. 67. Sp. 68. t. 20. f. 149. ♀.

————*maxillosus.* Oliv. G. 67. Sp. 69. t. 20. f. 147. ♂.

Obs. *Species valde varians, maribus, giganteis. In individuis Manillæ macula thoracis discoidalis multum magnitudine variat. In maribus macula communis nigra versus apicem elytrorum rotundata, nec ad apicem nec ad marginem elytrorum extensa. In fœminis vero apicem totum elytrorum occupat.*

Genus Colaspis, Scelodonta Subgenus novum.

Corpus breve, rugosum.

Caput oculis prominentibus fere thoracis latitudine.

Labrum parvum quadratum antice marginatum.

Mandibulæ parvæ acutæ subtus dente parvo ante apicem armatæ.

Maxillæ lobo interno truncato, externo distincto, tenui, longo acuto.

Palpi maxillares et labiales apice acutæ.

Antennæ longitudine thoracis articulo 2do 3^{tio} breviori, articulis 5 ultimis majoribus.

Thorax fere rotundatus, postice parum latior. *Sterna* simplicia lata.

Elytra brevia obtusa, thorace dimidio latiora.

Femora omnia subtus dente armata. *Tibiæ* 4 posticæ ad apicem externe emarginatæ.

Scelodonta Curculionoides. *S. aureo-viridis cyaneo varia, capite viridi ruguloso-punctato vertice lineis tribus impressis antice conjunctis, lateralibus obliquis, antennis nigris, articulis basalibus viridibus ; thorace aureo-viridi, utrinque macula oblonga extus lobata, cyanea ; transverse anguloso ; elytris rugulosis, punctis majoribus in lineas longitudinales irregulariter dispositis, aureo-viridibus fasciis tribus irregularibus suturaque cyaneis.*

Long. corp. lin. 3.

Forficula tarsata. *F. nigra, thorace postice et elytris punctis elevatis nitidis ; capite nigro sericeo, antennis longis 25-articulatis, pedibus piceis, apice tibiarum tarsisque albidis, forcipe ♂ longissima, fere corporis longitudine gracili, e basi usque ad medium curvata, denticulis nonnullis internis armata ; e medio fere ad apicem recta, apice ipso incurvo acuto ; segmentis abdominis in ♀ tuberculis minutis elevatis scabris, serieque in singulo ad marginem posticum tuberculorum majorum, denteque obtuso porrecto in singulo segmento utrinque ad angulum lateralem posticum.*

Long. corp. ♂. lin. 7. *forcipis*, lin. 5. = 12.

Hymenotes. Genus novum e familia Locustidarum Tetrici affine.

Corpus valde compressum.

Caput mediocre, obliquum.

Antennæ breves gracillimæ, filiformes, articulo 1^mo^ crasso rotundato, 2^do^ multo minori, reliquis longitudine sensim crescentibus.

Prothorax maximus foliaceus, valde compressus folium aridum exacte referens, supra et ante caput angulariter porrectus, valde elevatus et postice supra abdomen protensus ; parte posticâ subtus, pro receptione alarum et abdominis canaliculata, prosternum in collare pro receptione oris formatum.

Pedes inter se basi longe distantes, femoribus præsertim posticis foliaceis, tarsis 3-articulatis, articulo 2^ndo^ minutissimo. *Pulvilli* nulli.

Species 1. *Hymenotes rhombea.* Membracis r. Fabricius, Ent. Syst. 4. 8. 2. p. Syst. Rh. 7. Cicada r. Linn. Syst. Nat. 2. 704. Alatus.

Habitat in Jamaica. In Mus. Soc. Linn. Lond. olim Banks.

Species 2. HYMENOTES 3-ANGULARIS. *H. fusca, prothorace subtriangulari, margine, e fronte ad medium integro et curvato, dein ad apicem obliquo, serrato, femoribus anticis vix foliaceis, posticis latioribus, supra irregulariter incisis.*

Long. corp. lin. 5½. Long. *prothoracis* lin. 8.

FULGORA APICALIS. Westw. Monogr. Fulg. Trans. Soc. Linn. inedit.

MACHAEROTA ENSIFERA. Burmeister, Handb. der Ent. 2. p. 128.

CENTROTUS BIFOLIATUS. *C. fuscus punctatus prothorace antice in cornu longissimum erectum conicum, postice setigerum elevato ; apice bifido, parte bifida fere longitudine cornú, retro extensa, cum apice extremo singuli dilatato, acuto ; parte postica prothoracis compressa, longitudine corporis apice sensim attenuato et paullo deflexo-curvato, prothorace in medio, supra dorsum, fascia lata albida ; hemelytris fuscis punctis nonnullis obliquis pallidis ad marginem internum, tibiis anticis latioribus, posticis gracilibus.*

Long. corp. lin. 2½. Long. e basi usque ad apicem cornu prothoracis, lin. 6.

Obs. Valde affinis Centr. Hardwickei, Kirby in Loudon's Mag. Nat. ii. p. 21. a. e Nepalia.

CENTROTUS HORRIFICUS. *C. fuscus rude punctatus, abdomine nigro, punctis majoribus ; prothoracis parte antica in cornua duo elongata erecta divergentia setigera, apice singuli dilatato et acute emarginato, producta ; parte postica, abdominis longitudine, basi (supra scutellum distinctum bifidum) in nodum setigerum curvata, nodoque paullo ante apice multo majori elevato-compresso supra rotundato, setigero, armata ; tibiis 4 anticis oblongo-ovatis, hemelytrorum venis basalibus tuberculatis.*

Long. corp. lin. 2.

REDUVIUS TIBIALIS. *R. amœno*, Guér. (Icon. R. An. Ins. pl. 56. f. 17.) *valde affinis, capite postice magis attenuato. Niger, punctatus, thoracis lobo antico parvo tuberculis duobus elevatis armato, hemelytris fuscis, plaga obliqua media, maculaque minori ovata subapicali albido-hyalinis, abdominis lateribus valde dilatatis, antennis, rostro, pedibusque rubris, femoribus nigris apice rubris.*

Long. corp. lin. 12. Expans. *alar.* lin. 19.

November 28, 1837.

Richard Owen, Esq., in the Chair.

Mr. Ogilby brought before the notice of the Society a new species of *Phalanger*, hitherto confounded with *Ph. Cookii*, but possessing distinctive characters, which made Mr. Ogilby determine to separate it from that species under the name of *Ph. Viverrina*. It may be readily distinguished from *Ph. Cookii* by its superior size, dark ashy brown colour, and white ears, and by the absence of the clear red tinge which is so conspicuous on the throat, flanks and extremities of that species. Its characters, however, are in other respects much the same: it has the same small round ears, the same long slender tail, similarly tipt with white, and the same division of the fingers into two groups, which Mr. Ogilby formerly pointed out as characteristic of the *Ph. Cookii*, and which led him to distinguish that species from the other *Phalangers*, as a subgenus, under the name of *Pseudocheirus*. The two species distinguished on the present occasion differ in habitat, as well as in the characters pointed out; the *Ph. Cookii* being confined to continental Australia, whilst the *Ph. Viverrina* is only found in the neighbouring island of Van Diemen's Land.

Mr. Gray then laid before the Meeting a general arrangement of Reptiles, and observed, that since the publication of his *Synopsis Reptilium* he had found it necessary to modify the arrangement which he had adopted in that work, and he now proposes to divide the class *Reptilia* into the following orders:

1st. *Squamata*, or Scaly Reptiles, being the typical group, and including 1st, *Saurians*, and 2nd, *Ophidians*;

2nd. The annectant group *Cataphracta*, or shielded Reptiles, containing 3rd, *Amphisbænians*; 4th, *Chelonians*; and, 5th, *Emydosaurians*.

Mr. Gray observed that in his previous arrangement he had foreseen the difficulty connected with the *Amphisbænians*, and hesitated to make an order of a group then containing so small a number of species; such extensive additions however have resulted from the recent labours of Zoologists that the genera now exceed in number the amount of species formerly known.

Mr. Gray then proceeded to remark that the class *Reptilia* exhibits a regular series of affinities returning into each other, so as to present a circular disposition; and he also observed that many points of resemblance may be noticed between the *Saurians* and the *Primates*, the *Ophidians* and the *Feræ*, and the *Chelonians* and *Ungulata*; but that the resemblance of the *Amphisbænians* and the *Emydosaurians* to the *Glires* and the *Cetacea* is not so evident; though the *Emydo-saurians* among the *Reptilia*, like the *Cetacea* among the *Mammalia*, are the most truly aquatic of their class.

Mr. Gray then proposed to divide the *Saurians* into the following five sub-divisions :

1. *Pachyglossæ*, or thick-tongued Lizards, including, 1st. the Nocturnal, or family of the *Geckoes* ; and, 2nd. the Diurnal, as the *Chameleons* and *Agamas* of the Old World, and the *Guanas* (*Iguanidæ*) of the New World.

2. *Leptoglossæ*, or slender-tongued Lizards, including three sections characterized by the form of the tongue, containing, 1. the families of *Lacertidæ, Zonuridæ, Cercosauridæ, Cherocolidæ, Chamæsauridæ, Helodermidæ* ; 2. *Monitoridæ* ; 3, *Scincidæ*.

Mr. Gray then laid before the Society a catalogue containing a list of the Slender-Tongued *Saurians* in the collections of the British Museum and the Zoological Society, and the descriptions of many new genera and species.

Mr. Gray afterwards exhibited from the collection of the Earl of Derby a new Fox from Senegal, and a very young specimen of *Genetta Senegalensis*, which he remarked corresponded exactly with the adult animal in the peculiar form of the naked band on the soles of the hind feet.

The new fox he designated as

C. Vulpes dorsalis, (the Senegal Fox). Fur greyish-white, varied with black tips to the hairs ; face rather yellowish ; fore and hind limbs rather pale foxy ; back with a dark brown dorsal streak, varied with black ; chin and belly whitish ; tail rather slender, black tipped : length of body and head 15, tail 8 inches. The black tips of the hairs form indistinct spots on the sides of the back, a streak on the upper part of the base, and a black tip to the tail, where there are a few elongate white hairs. There is a very narrow black streak on the front of the fore legs. This species is very like the small Indian fox, (*V. Bengalensis*, Gray,) and the *C. Caama* of Dr. Smith, but it is smaller, and has a less bushy tail, and a distinct dorsal streak, not found on either of them. It has not the black lips, nor the black spot on the hinder edge of the thighs of the Cape species.

The Earl of Derby having forwarded to the Society a number of interesting birds, with a view to their exhibition at one of the scientific meetings, Mr. Gould, at the request of the Chairman, remarked upon such of them as were especially worthy of notice, and pointed out one new species of Grouse belonging to Mr. Swainson's subgenus *Lyurus*, which Mr. Gould characterized as

Lyurus Derbianus. *Lyu. vertice, collo, corporeque suprà metallice nigrescenti-cyaneis, nitide brunneo, fasciatis et irroratis; tectricibus alæ majoribus ad bases et apices albis; caudâ nigrâ, rectricibus externis brunneo irroratis; corpore subtùs nigrescenti-brunneo, albo brunneoque irrorato; crisso albo; femoribus albis; tarsis obscurè brunneis; rostro digitisque brunneis.*

Long. tot. unc. 15; *rostri*, 1; *alæ*, 9; *caudæ*, 7; *tarsi*, 2.

Obs. The subgenus *Lyurus* has been separated from *Tetrao* by Mr. Swainson, and in this species the tail very closely approximates

in form to that of the common black cock, the type of Mr. Swainson's section.

The bird above described has every appearance of being adult, and, as far as I have been enabled to ascertain, is from Siberia; it is less in all its proportion than the common species, but has the tail-feathers more developed; there are traces of some white feathers about the throat and cheeks, but as the markings thus produced are not regular, I have reason to consider it as accidental. I have given it the specific appellation of *Derbianus*, in honour of the Earl of Derby, in whose collection it is contained.

Mr. Gould afterwards exhibited, from his own collection of Australian birds, an entirely new group of four species, for which no generic title has yet been applied, so far as he was aware, and but one species only characterized, by Messrs. Vigors and Horsfield, under the name of *Acantheza frontalis*; for this genus Mr. Gould proposed the generic name of *Sericornis*, and for the three species, those of *citreo-gularis*, *humilis*, and *parvulus*.

Family SAXICOLINÆ.

Genus SERICORNIS.

Rostrum robustum, rectum, caputque quoad longitudinem ferè æquans, ad apicem compressum, et indentatum.

Nares basales, laterales, ovales, et operculo tectæ.

Alæ mediocres, rotundatæ; remige primo perbrevi, quarto, quinto, atque sexto longissimis et inter se ferè æqualibus.

Cauda mediocris et æqualis.

Tarsi elongati; *digitus* posticus cum ungue validus, digitum intermedium ferè æquans; digitis externis æqualibus.

Plumæ molles et sericeæ.

Typus est *Acanthiza frontalis*, Vig. and Horsf.

SERICORNIS HUMILIS. *Ser. loro nigrescenti-fusco; et super hoc strigâ indistinctâ albâ; vertice, corpore suprà, alis, caudâque olivaceis, rubro lavatis; alâ spuriâ nigrescente; plumis singulis albo marginatis; gulâ cinereâ fusco guttatâ; pectore abdomineque medio, fuscescenti-flavis, illo fusco indistincte guttato; lateribus castaneis; rostro nigrescente; pedibus fuscis.*

Long. tot. 5 unc.; *rostri*, $\frac{7}{8}$; *alæ*, $2\frac{5}{8}$; *caudæ*, $2\frac{1}{8}$; *tarsi*, 1.

Hab. Terrâ Van Diemen.

SERICORNIS CITREOGULARIS. MAS. *Ser. loro, annulo circumoculari, plumisque auricularibus intensè nigrescenti-fuscis; lineâ flavescente a naribus super oculos excurrente; vertice, corporeque suprà, rectricibus, secondariisque alarum, caudâque rufo-brunneis; primariis ad marginem externum olivaceis; alâ spuriâ nigrescente; gulâ citrinâ; pectore lateribusque olivaceo-fuscis; abdomine medio albo; rostro nigro; pedibus brunneis.*

Long. tot. $5\frac{1}{2}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{3}{4}$; *caudæ*, $2\frac{3}{8}$; *tarsi*, $1\frac{1}{8}$.

Hab. Novâ Cambriâ Australi.

Obs. The female is less brilliant in all her markings than the male.

SERICORNIS PARVULUS. *Ser. loro pallidè fusco, et super hoc strigâ cinereâ; vertice, corpore suprà, alis, caudâque olivaceo-fuscis, rubro lavatis; alâ spuriâ nigrescente, plumis singulis albo marginatis; pectore, abdomineque medio citrinis, lateribus olivaceo-fuscis; rostro nigrescente; pedibus luteis.*

Long. tot. 4 unc.; *rostri*, $\frac{5}{8}$; *alæ*, $1\frac{7}{8}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.

Hab. in orâ orientali Novæ Hollandiæ.

December 12, 1837.

Thomas Bell, Esq., in the Chair.

Mr. Gray read a paper, consisting of a revision of the genera and species of venomous, prehensile-tailed and water snakes, with the descriptions of some new species contained in the British Museum collection, and that of the Zoological Society. Mr. Gray stated that the family of *Crotalidæ* in this catalogue includes twelve genera and twenty-five species; of which six genera and ten species are confined to America, three genera and twelve species to Asia and its islands, while one genus and two species are peculiar to Africa. Schlegel in his recently published work, describes seventeen species, and there are nineteen species in the National collection.

The family of *Viperidæ* contains eight genera and ten species, of which two genera and three species are from Asia, four genera and nine species from Africa; two genera and four species occur in Europe; and one genus, including but one species, inhabits Australia. All the genera are confined to a single quarter of the globe but *Echis*, which has one species from Africa and the other from India. Schlegel described ten species, but then he has referred some of the species which have not come under his examination, without sufficient consideration, to the more common species. Specimens of all the species but one noticed in the last family, are in the collection at the British Museum.

The family of *Boidæ* contains seventeen genera and twenty-seven species; of these seven genera and nine species are confined to tropical America, three genera and four species are found in Africa, six genera and eight species in Asia, three genera and four species are found in New Holland, and one species in Europe. The species of the genus *Python* are found in Africa, Asia, and New Holland: but each species has its peculiar country, and one species of *Eryx* is common to South Europe and North Africa.

The family of *Hydridæ* consists of twenty-three genera and forty-eight species, of which twenty are found in the Indian Ocean, and sixteen in the salt-water ditches of India and the neighbouring islands, and six are found in similar situations in tropical America. Schlegel described only twenty-seven species, and thirty of the species described in the present Catalogue are in the British Museum.

Mr. Yarrell, on the part of Mr. John Leadbeater, exhibited to the Meeting a male Hybrid, the produce of a Pheasant and a Black Grouse. Mr. Yarrell observed that this was the third specimen which had been sent to the Society for exhibition within a comparatively short space of time. The first bird, from Cornwall, was more of a Grouse in appearance than a Pheasant: the second, from Shropshire, was more pheasant-like; but the present bird was deci-

dedly intermediate, exhibiting characters belonging to both. The head, neck, and breast were of a rich dark maroon colour, the feathers on the breast showing the darker crescentic tips; the upper part of the *tarsi* were covered with feathers; the back and wings mottled blackish gray, like that of a young Black Cock after his first moult, but with some indications of brown; the feathers of the tail rather short, but straight, pointed, graduated, and pheasant-like. Mr. Yarrel also remarked that this bird more closely resembled the Hybrid discovered by Gilbert White than any of the previous specimens which he had examined.

Mr. Gould then brought before the notice of the Meeting a valuable collection of Birds from the Himalaya Mountains, recently presented to the Society's Museum, by James Farell, Esq., consisting of 114 specimens, among which he characterised the following new species.

Athene erythropterus. *Ath. disco faciali, capite corporeque lineis fuscis et fulvescenti-albis, alternate fasciatis; lateribus gulæ, femoribus crissoque cinerescenti-albis; primariis secondariisque rufis et fuscis fasciis distinctis, latioribus quam corporis; caudâ caryophillaceâ fasciis angustis albis crebre notatâ; rostro pedibusque flavescenti-olivaceis.*

Long. tot. $9\frac{1}{2}$ unc.; *alæ*, $4\frac{1}{2}$; *caudæ*, 3; *tarsi*, $1\frac{1}{4}$.

Obs. Nearly allied to but less in size than *Athene cuculoides* (*Noctua cuculoides*, Proc. of Comm. Sci. and Corr. of Zool. Soc., Part I.)

Turdus unicolor. *Turd. cinereus; abdomine medio, crissoque albis; humeris subtùs rufis; rostro pedibusque livido-fuscis.*

Long. tot. $9\frac{1}{4}$ unc.; *rostri*, 1; *alæ*, $3\frac{1}{4}$; *caudæ*, $3\frac{5}{8}$; *tarsi*, $1\frac{1}{8}$.

Obs. Size of the Common Thrush. The young differs in having the gray strongly tinged with brownish olive, and the throat grayish white, bounded down each side with spots of reddish brown.

Oreocincla parvirostris. *Or. capite, nuchâ, pectore, lateribus corporeque supra olivaceo-fuscis; singulis plumis versus apicem nitide cervino lavatis, et nigro-fusco late marginatis; primariis obscure fuscis, pogoniis externis nitide cervino marginatis, pogoniis internis ad bases cervino-albis; tectricibus majoribus alarum obscure cervinis; alâ spuriosâ eodem colore externe marginatâ; caudâ fuscâ margine subfusco, apiceque cinerescenti-albo; gulâ, abdomine medio, uropygio, crissoque albis; rostro pedibusque corneo-fuscis.*

Long. tot. 10 unc.; *rostri*, 1; *alæ*, $5\frac{1}{8}$; *caudæ*, 4; *tarsi*, $1\frac{1}{8}$.

Obs. This species has all the characters of the *Oreocincla varia* and *O. Whiteii*, but may be readily distinguished from them, by its much smaller size and its very diminutive bill.

Cinclidia. Genus novum.

Rostrum caput longitudine æquans, leviter arcuatum, ad apicem emarginatum ad latera compressum; *nares* basales, laterales, in

fossâ tribus vel quatuor setis ad basem instructâ; *alæ* brevissimæ, concavæ, rotundatæ: *remigibus* 6^to^ et 7^mo^ longioribus; *cauda* mediocris, rotundata; *tarsi* majusculi; *pedes* elongati; *digito* postico, medio longiore; *digitis* lateralibus æqualibus et fere usque ad articulum primum conjunctis.

Cinclidia punctata. *Cinc. summo capite, et nuchâ rufis, singulis plumis stemmatibus albicantibus; loro, plumis super-ocularibus cervino-albis ad apices nigris; auricularibus, lateribus colli, corpore supra, alis caudâque rufo-fuscis; pectore corporeque subtùs cervinis, singulis plumis maculâ fuscâ apicem versus longitudinaliter notatis; rostro pedibusque pallide fuscis.*
Long. tot. $6\frac{3}{4}$ unc.; *rostri*, $\frac{7}{8}$; *alæ*, $2\frac{5}{8}$; *caudæ*, 3; *tarsi*, 1.

Brachypus plumifera. *Brac. capite, pectore, lateribus colli, guláque nitide viridescenti-nigris; corpore, alisque olivaceo-flavis; primariis fuscis, olivaceo-flavo marginatis; secundariis, pogoniis internis fuscis; caudâ fuscâ; rostro pedibusque nigris.*
Long. tot. $7\frac{1}{2}$ unc.; *rostri*, $\frac{5}{8}$; *alæ*, $3\frac{1}{2}$; *caudæ*, $3\frac{1}{2}$; *tarsi*, $\frac{1}{2}$.

Cuculus micropterus. *Cuc. summo capite, corpore supra alisque obscure plumbaceis; caudâ nigrescenti-plumbaceâ, plùs minùsve albo notatâ; primariis interne ad bases maculis oblongis albisque notatis; gutture pectoreque cinereis; corpore subtùs albo, nigro crebre fasciato; rostro ad apicem nigro, ad basin carneo.*
Long. tot. 12 unc.; *rostri*, 1; *alæ*, $7\frac{1}{2}$; *caudæ*, $6\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Pomatorhinus leucogaster. *Pom. strigâ albâ super-oculari, a rostro per collum excurrente; loro, lineâ infra-oculari, auricularibusque nigris; summo capite, corpore supra, alis crissoque olivaceo-fuscis; caudâ fuscâ; lateribus colli, pectoris, corporisque nitidè rufis; gulâ, pectore, abdomineque medio albis; rostro flavo; pedibus plumbaceis.*
Long. tot. 9 unc.; *rostri*, $1\frac{1}{8}$; *alæ*, $3\frac{3}{4}$; *caudæ*, 4; *tarsi*, $1\frac{1}{8}$.

December 26, 1837.

John Edward Gray, Esq., in the Chair.

Mr. Gould exhibited a very extensive series of Australian birds principally from his own collection, including about eighty new species, all of which were severally brought before the notice of the meeting, Mr. Gould remarking upon such of them as presented characters of novelty or importance. The names proposed by Mr. Gould for the birds forming this great addition to our knowledge of Australian ornithology, and their respective characters, are as follow:

HALIAETUS SPHENURUS. *Hal. capite, nuchâ, gutturcque pallidè cervinis; corpore suprà alisque intensè fuscis, singulis plumis ad apicem pallidè cervinis; caudâ cuneiformi, ad basin albescenti-cervinâ, apicem versus fuscâ, ad apicem albâ; pectore fusco, plumis cervino marginatis; abdomine, cervino fuscoque picto, crisso, caudâque subtùs albis; rostro fusco; tarsis flavis.*
Long. tot. 32 unc.; *rostri*, 2; *alæ*, 25; *caudæ*, $14\frac{1}{2}$; *tarsi*, $3\frac{1}{2}$.
Hab. in terrâ Van Diemen.
Obs. The above description was taken from two specimens in the United Service Museum, which are doubtless male and female, but which are not quite mature.
This fine species would appear to represent the European *Haliaëtus albicillus* in Australia. In size it nearly equals the *Aquila fucosa*, and like that bird it has a wedge-shaped tail, a character common to many of the Raptorial birds of Australia.

HALIAETUS LEUCOSTERNUS. *Hal. capite, collo, pectore, abdomineque summo niveis; dorso, alis, abdomine imo, femoribus, crissoque lætè castaneis; primariis ad apicem nigris; caudâ castaneâ, subtùs pallidiore, rectricibus sex intermediis ad apicem cinerescentibus; rostro ad basin plumbaceo, ad apicem flavescente; pedibus flavescenti-plumbaceis.*
Long. tot. $22\frac{1}{2}$ unc.; *rostri*, $1\frac{5}{8}$; *alæ*, $15\frac{1}{2}$; *caudæ*, 9; *tarsi*, 2.
Hab. in Australiâ.
Obs. This species is nearly allied to *Hal. Pondicerianus*, but differs from that bird in the smaller extent of the cere, and in the uniform snow-white colouring of the neck and chest.

PANDION LEUCOCEPHALUS. *Pand. vertice, nuchâ, gulâ, abdomine, femoribus, crissoque albis; plumis pectoris fusco ad apicem notatis; plumis auricularibus fuscescenti-nigris; colli lateribus fuscis; dorso, alis, caudâque brunneis, singulis plumis notâ albâ angustâ apicali ornatis; primariis nigris; rostro nigro; tarsis olivaceo-plumbaceis.*

Long. tot. 21 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, $16\frac{1}{2}$; *caudæ*, 8; *tarsi*, $2\frac{1}{2}$.
Hab. in Australiâ.

Obs. I venture to characterise this bird as distinct from the *Pandion Haliaëtus*, as it appears to be always smaller in size, and is moreover said to have yellow *tarsi*. The individual from which my description was taken has this character to a certain extent, although a leaden tint pervades in some parts. I have never seen a specimen of *P. Haliaëtus* with so much white on the head and back of the neck as is found in the Australian bird.

Falco frontatus. *Falc. fronte cinerescenti; vertice, genis, plumis auricularibus, corporeque suprà cinerescenti-plumbaceis; primariis intùs maculis ovalibus cervinis ornatis; rectricibus caudæ duabus intermediis cinereis, nigro obscurè fasciatis, reliquis cinereo et rufescente alternatìm fasciatis; gulâ, pectoreque pallidè cervinis, hujus plumis in medio lineâ fuscâ notatis; corpore subtùs obscurè rufescenti-aurantiaco; rostro plumbaceo, cerâ pedibusque flavis.*
Long. tot. 12 unc.; *rostri*, $\frac{7}{8}$; *alæ*, $9\frac{1}{2}$; *caudæ*, $5\frac{1}{2}$; *tarsi*, $1\frac{1}{4}$.
Hab. in Novâ Cambriâ Australi.

Obs. I find the young of this species much darker than the adult, particularly in the markings of the chest and abdomen; the upper surface also has most of the feathers tinged with reddish brown, and the tail-feathers are tipped with this colour.

This species is nearly allied to *Falco subbuteo* and *F. Æsalon*.

Falco melanogenys. Mas. *Falc. capite toto fuscescenti-nigro; corpore suprà, alis, caudâque cinereo fuscoque alternatìm fasciatis; primariis extùs intensè fuscis, intùs cervino fasciatis; gulâ pectoreque cervinis; abdomine rufescenti-cinereo, guttis ovalibus intensè fuscis ornato; lateribus crissoque rufescenti-cinereis, fasciis intensè fuscis contortìm notatis; rostro ad apicem plumbaceo, ad basin flavo; cerâ pedibusque flavis.*
Fœm. *A mari differt staturâ majore, necnon colore gulæ, pectoris, abdominisque intensiore.*
Mas. Long. tot. 15 unc.; *rostri*, $1\frac{1}{8}$; *alæ*, $11\frac{1}{2}$; *caudæ*, $5\frac{3}{4}$; *tarsi*, $1\frac{1}{2}$.
Fœm. ———— 17 ——; ——, $1\frac{3}{8}$; —, $13\frac{1}{2}$; ———, $6\frac{1}{2}$; ——, $1\frac{3}{4}$.
Hab. per totam Australiam.

Obs. This species is closely allied to the *Falco Peregrinus*, from which it may be at all times distinguished by the black colouring of the cheeks.

Falco brunneus. *Falc. capite, corporeque superiore intensè fuscis; primariis intùs notis albis triangularibus ornatis; caudâ lineis fuscescentibus septem obscurè et angustè fasciatis; gulâ, notâque ante oculos cervinis; pectore pallidè cervino, plumis lineâ fusco centrali notatis; corpore subtùs albo fuscoque commixtis ornato; iridibus flavis; rostro nigro; pedibus plumbaceis.*
Long. tot. 16 unc.; *rostri*, $1\frac{1}{3}$; *alæ*, 10; *caudæ*, $7\frac{1}{2}$; *tarsi*, $2\frac{1}{2}$.
Hab. in Novâ Zealandiâ.
Obs. In the Collection of the Zoological Society.

IERACIDEA. Genus novum.

Rostrum, ut in genere *Falco* dicto; *alis* attamen minùs rigidis, remige tertio longissimo; *tarsis* longioribus, gracilioribus, et anticè squamis hexagonalibus tectis; *digitis* gracilioribus, digito postico breviore, *unguibus* minùs robustis.

Typus est *Falco Berigora*, Vig. et Horsf.

LEPIDOGENYS SUBCRISTATUS. *Lep. vertice, genis, plumis auricularibus, dorsoque superiore fuscescenti-cinereis; occipite, cristâque occipitali nigrescenti-fuscis; dorso, scapularibusque fuscis, alis suprà fuscescenti-cinereis, subtùs argenteo-cinereis, primariis secondariisque fasciis duabus nigris notatis; uropygio, tectricibusque caudæ superioribus fuscis; caudâ fuscescenti-cinereâ, nigro fasciatâ, et ad apicem largè nigrâ; gulâ, pectore, humeri parte, crissoque, cinereis rufo tinctis; corpore subtùs pallidè cervino, castaneo fasciato; rostro pallidè plumbeo, tarsis flavis.*

Long. tot. 18 unc.; *rostri*, $1\frac{1}{4}$; *alæ*, 13; *caudæ*, $8\frac{1}{2}$; *tarsi*, $1\frac{1}{4}$.

Hab. in Novâ Cambriâ Australi.

Obs. This bird would belong to M. Lesson's genus *Lophotes*; but that term having been previously employed, I have been induced to adopt the generic title proposed by Mr. J. E. Gray in its stead. The form is somewhat allied to *Pernis*.

MILVUS AFFINIS. *Milv. plumis capitis, nuchæ, collique laterum rufescenti-cervinis, strigâ centrali fuscâ notatis; corpore suprà brunneo, tectricibus alarum rufescentibus; singulis plumis nigrâ lineâ centrali notatis et ad apicem pallidè brunneis; primariis nigris, secondariis nigrescentibus; caudâ fuscâ, nigrescente fasciatâ, et ad apicem cinereâ; gulâ fuscescenti-cervinâ, singulis plumis lineâ centrali nigrâ; corpore subtùs rufescenti-fusco, singulis plumis lineâ centrali fuscâ apud pectorales maximè conspicuâ ornatis; rostro nigro; pedibus flavescentibus.*

Long. tot. 21 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, $15\frac{3}{4}$; *caudæ*, $10\frac{1}{2}$; *tarsi*, 2.

Hab. in Australiâ.

Obs. This species is very nearly allied to the *Milvus ater* of Europe: the circumstance of nearly the whole of the *Fauna* of Australia being distinct from those of all other parts of the world has induced me to separate it specifically from that bird; the chief difference is in its being somewhat smaller in size.

MILVUS ISURUS. *Milv. fronte, lineâque supra-oculari cervinis; singulis plumis, apice, lineâque centrali nigris notatis; vertice, dorso, lateribus colli, gutture, humeris suprà et subtùs, corporeque subtùs rufescenti-aurantiacis; plumis singulis verticis, occipitis, et præcipuè pectoris notam longitudinalem apicalemque nigram habentibus; dorso superiore, plumisque scapularibus intense fuscis; primariis ad apicem fuscis, nigro obscurè fasciatis, ad basin intùs cinereis; secondariis intensè fuscis nigro fasciatis; uropygio crissoque albis, nigro cervinoque fasciatis; caudâ ferè quadratâ, et cinereo-fuscâ; rectricibus, duabus externis utrinque exceptis, obscurè fasciis quatuor angustis nigris*

ornatis ; omnibus ad apicem nigris ; rostro fusco ; cerâ, tarsisque flavis.

Long. tot. 20 unc. ; *rostri*, $1\frac{5}{8}$; *alæ*, $81\frac{1}{2}$; *caudæ*, $8\frac{1}{4}$; *tarsi*, $1\frac{3}{4}$.

Hab. in Australiâ.

Obs. This species, the immediate locality of which is not known, offers the nearest approach to the Common Kite, *Milvus vulgaris*, that has yet been discovered ; but is readily distinguished from that species by the square form of the tail.

Elanus notatus. *El. oculis nigro anguste circumdatis ; fronte, lateribus faciei corporeque subtùs albis ; nuchâ, dorso, scapularibus, tectricibusque caudæ majoribus delicatè cinereis ; alis maximis ex partibus nigris, humeris subtùs albis ; primariis supra nigrescenti-cinereis, subtùs fusco-nigris ; caudâ cinerascenti-albâ ; rostro nigro ; cerâ pedibusque aurantiaco-flavis.*

Long. tot. unc. 14 ; *alæ*, $11\frac{3}{4}$; *caudæ*, $6\frac{1}{4}$; *tarsi*, $1\frac{5}{8}$.

Hab. in Novâ Cambriâ Australi.

Obs. Distinguished from *Elanus melanopterus* by the oval spot of black on the under surface of the wing, whence its specific name ; it also differs from *Elanus leucurus* in the form of the tail and other characters.

Circus Jardinei. Mas. *Circ. vertice, genis, plumisque auricularibus intensè castaneis, fusco longitudinalitèr notatis ; disco fasciali, nuchâ, dorso superiore, pectore necnon dorso imo, scapularibusque, intensè cinereis, his albo levitèr notatis ; humeris, alis subtùs, abdomine, femoribus, crissoque, castaneis, albo perpulchrè notatis ; tectricibus alarum fusco-cineraceis, irregularitèr albo notatis ; secondariis cineraceis, fasciis tribus fuscis angustè notatis, fasciâque latâ terminali ; primariis ad basin cervinis, per reliquas partes nigris ; tectricibus caudæ superioribus fuscis, fascias albas, apicemque album ostendentibus ; caudâ cinereo fuscoque alternatim fasciatâ ; rostro nigro ; pedibus flavis.*

Long. tot. 19 unc. ; *alæ*, 16 ; *caudæ*, 10 ; *tarsi*, $3\frac{5}{8}$.

Hab. in Novâ Cambriâ Australi.

Syn. *Circus assimilis*, Jard. and Selb. Ill. Orn., vol. i. pl. 51, female ?

Obs. I am induced to believe that the bird figured by Messrs. Jardine and Selby under the name of *Circus assimilis* will prove to be the female of this bird ; but as I am not quite certain, I have thought it best to characterise the present bird under a new name.

Athene? fortis. *Ath. facie gulâque cinerascenti-albis ; vertice, corporeque suprà fuscis, purpureo tinctis ; scapularibus, secondariis tectricibusque alæ majoribus albo guttatis ; primariis alternatim fusco griseoque fasciatis ; fasciis pallidis ad marginem externum albescentibus ; caudâ fuscâ lineis sex vel septem cinerascentibus transversim fasciatis, apice cinerascente ; corpore subtùs brunneo alboque marmorato, hôc colore marginem plumarum ornante ; tarsis ad digitos vestitis, fusco cervinoque*

marmoratis ; rostro flavescenti-corneo ; digitis longis, flavis, pilisque tectis.

Long. tot. $15\frac{1}{4}$ unc.; *alæ*, $11\frac{1}{2}$; *caudæ*, $7\frac{1}{2}$; *tarsi*, $1\frac{3}{4}$.

Hab. in Novâ Cambriâ Australi.

Atiiene? strenua. *Ath. vertice, corpore suprà, alis, caudâque intense fuscis, fasciis purpurescenti-brunneis transversìm ornatis ; his majoribus pallidioribusque ad imum dorsum ; secondariis, rectricibusque caudæ ad marginem internum, facie, gulâ, pectoreque superiore, badiis, plumis partium harum notâ brunneâ centrali ornatis ; corpore subtùs albo, levitèr badio lavato, et fusco fasciato ; rostro corneo ad basin, ad apicem nigro ; pedibus flavis.*

Long. tot. 24 unc.; *rostri*, 2 ; *alæ*, 15 ; *caudæ*, $10\frac{1}{2}$; *tarsi*, $2\frac{1}{4}$.

Hab. in Novâ Cambriâ Australi.

Halcyon incinctus. *Halc. fronte, medio et vertice nigrescenti-fuscis, leviter cæruleo tinctis ; fronte in lateribus strigis badiis notatâ ; occipite et nuchâ cyaneis ; loro, lineâ infra-oculari auricularibusque nigris ; plumis in fronte leviter badio marginatis ; dorso medio lilacino viridi nitenti ; humeris caudæ tectricibus majoribus et minoribus viridescenti-cæruleis ; alis spuriosis, secondariisque cyaneis ; primariis brunneis ad bases niveis, et cæruleo-viridi externè marginatis ; tectricibus superioribus caudæ viridi-cæruleis, fulgore metallico ; caudâ cyaneâ ; gulâ albâ ; pectore corporeque subtus pallidè badiis ; mandibulâ superiori nigrâ ; mandibulâ inferiori ad marginem apicemque nigrâ, ad basin carneâ ; pedibus carneis.*

Long. tot. unc. 8 ; *rostri*, $1\frac{3}{4}$; *alæ*, $3\frac{5}{8}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{1}{2}$.

Hab. in Novâ Cambriâ Australi.

Obs. Nearly allied to *Halcyon MacLeayii* of Jardine and Selby.

CAPRIMULGIDÆ. *Fam.*

Eurostopodus. Genus novum.

Rostrum quam in Caprimulgo longius et robustius ; *nares* laterales et lineares ; *rictus* setis brevibus, debilibus, divergentibusque instructus ; *alæ* quam in Caprimulgo longiores et fortiores ; *remigibus* 1mo et 2do longissimis et æqualibus ; *cauda* ferè quadrata, mediocris ; *tarsi* robusti, plumis anticè instructi ; *digiti* breves, robusti, carnosi ; *digiti* externi æquales et intermedio per dimidium, membranâ conjuncti ; *digito* intermedio, *ungue* internè validè pectinato.

Typi sunt, *Caprimulgus guttatus*, in Linn. Trans., vol. xv. p. 192. *Caprimulgus albogularis*, Ibid. p. 194.

Myiagra nitida. *Myi. nigrescenti-viridi, fulgore metallico ; abdomine tectricibusque caudæ inferioribus albis ; rostro ad apicem nigro, hoc colore versus basin in cæruleum transeunte ; pedibus fusco-nigris.*

Long. tot. unc. $6\frac{1}{2}$; *rostri*, $\frac{5}{8}$; *alæ*, $3\frac{1}{2}$; *caudæ*, $3\frac{1}{4}$; *tarsi*, $\frac{5}{8}$.

Hab. in Novâ Cambriâ Australi et terrâ Van Diemen.

Obs. Differs from *Myiagra plumbea* in its larger size, and in the darker and richer colouring of the plumage.

Graucalus parvirostris. *Grauc. fronte, facie, lateribus colli, gulâque nigris; vertice, corpore suprà, alisque in medio cinereis; primariis, secundariisque intùs nigrescentibus, grisco marginatis; caudâ nigrescente, ad basin cinereâ, ad apicem largè albâ, rectricibus intermediis exceptis; pectore cinereo; abdomine imo, alâ internâ, crissoque albis; lateribus, femoribusque pallidè cinereis; rostro pedibusque nigrescenti-fuscis.*

Long. tot. 12 unc.; *rostri*, $1\frac{1}{6}$; *alæ*, $7\frac{1}{2}$; *caudæ*, 6; *tarsi*, 1.

Hab. in Novâ Cambriâ Australi.

Obs. This species differs from *Grauc. melanops* principally in the much smaller size of the bill and the lighter tint of the grey.

Graucalus melanotis. *Grauc. loro, lineâ infra-oculari, plumisque auricularibus nigris; vertice, nuchâ, collique lateribus, dorso, uropygio, caudæ tectricibus, humerisque pallidè cinereis; primariis, secundariisque intùs nigrescenti-fuscis, cinereo marginatis; rectricibus caudæ nigrescenti-fuscis, ad basin cinereis, ad apicem largè albis; gulâ, pectore, lateribusque cinereis, fusco fasciatis; abdomine imo, femoribus crissoque, albis; rostro nigrescente ad apicem, ad basin rufescente; pedibus fuscis.*

Long. tot. 13 unc.; *rostri*, $1\frac{5}{6}$; *alæ*, $7\frac{3}{4}$; *caudæ*, $6\frac{1}{2}$; *tarsi*, $1\frac{1}{6}$.

Hab. in Novâ Cambriâ Australi.

Obs. Messrs. Vigors and Horsfield considered this bird as identical with the Papuan Crow of Latham, but on comparison I find this is not the case; it may ultimately prove to be an immature male, or a female of *Grauc. melanops*, but until future observation has cleared up this point it will be better to characterize it as distinct.

Ceblepyris humeralis. Mas. *Cebl. fronte, vertice, nuchâ dorsoque nitide viridescenti-nigris; humeris, tectricibusque superioribus caudæ; alis nigris secundariis albo marginatis; dorso inferiore et uropygio cinereis; caudâ obscure nigrâ, plumis duabus externis utrinque apicibus albis; gulâ, pectore corporeque subtus rostro pedibusque nigris.*

Fœm. *vertice, nuchâ, dorsoque superiore brunneis; dorso inferiore, uropygio caudâque ut in mare; tectricibus majoribus minoribusque caudæ badio marginatis; secundariis mare latioribus albo marginatis; gulâ corporeque subtus fusco-albis; rostro pedibusque nigris.*

Long. tot. unc. $6\frac{1}{2}$; *rostri*, $\frac{3}{4}$; *alæ*, 4; *caudæ*, $6\frac{1}{4}$; *tarsi*, $\frac{7}{8}$.

Hab. in Novâ Cambriâ Australi.

Obs. Nearly allied to *Ceblepyris leucomela* (*Campephaga leucomela*, Vig. and Horsf.; *Lanius Karu*, Less.), but differing from that species in its smaller size, in the greater extent of the white mark on the shoulders, and in nearly wanting the stripe of white which crosses the secondaries.

Falcunculus leucogaster. *Falc. fronte albâ, cristâ occipitali nigrâ; genis albis lineâ nigrâ notatis ad nucham extendente; dorso, humeris, tectricibusque caudæ et uropygio olivaceo-flavis; primariis secondariisque brunneis, olivaceo marginatis; rectricibus caudæ duabus externis albis, duabus intermediis olivaceis, reliquis brunneis, olivaceo-marginatis; gulâ olivaceo-viridi; pectore tectricibusque caudæ inferioribus nitide sulphureo-flavis; abdomine femoribusque albis; rostro nigro; pedibus plumbaceis.*

Long. tot. unc. 6; *rostri*, $\frac{5}{8}$; *alæ*, $3\frac{3}{8}$; *caudæ*, $2\frac{7}{8}$; *tarsi*, $\frac{3}{4}$.

Hab. in Australiâ.

Obs. For a knowledge of this new species of true *Falcunculus*, I am indebted to the Earl of Derby, who lent me the example from which the above characters are taken; and which, from the olive colouring of the throat, may probably prove to be a female.

Falcunculus flavigulus. *Falc. loro albo; vertice et strigâ ab oculo usque ad latus colli nigrescenti-brunneis, super infraque strigis albis; dorso, tectricibusque superioribus caudæ virescenti-albis; gulâ olivaceo-viridi; alis fuscis, pallidè brunneo marginatis; caudâ fuscâ, rectricibus tribus utrinque plus minusve albo notatis; mento maculâ albâ; gulâ, pectore, abdomine tectricibusque inferioribus caudæ nitide flavis; rostro pedibusque cyaneo-nigris.*

Long. tot. unc. $5\frac{3}{4}$; *alæ*, $3\frac{5}{8}$; *caudæ*, $2\frac{7}{8}$; *tarsi*, $\frac{3}{4}$.

Hab. in Australiâ.

Obs. This species, independently of its smaller size, may be readily distinguished from all others, by the uniform yellow colouring of the under surface, from the chin to the vent. It would seem that this bird was overlooked by Messrs. Vigors and Horsfield, who appear to have thought it identical with *Fal. gutturalis*.

Eopsaltria parvula. *Eop. vertice, auricularibus, nuchâ dorsoque cinereis; gulâ pectoreque inferiori griseis; uropygio olivaceo; alis brunneis; caudâ brunneâ, rectricibus apicibus griseis; pectore corporeque subtùs nitidè flavis; rostro nigro; pedibus brunneis.*

Long. tot. unc. $5\frac{1}{2}$; *rostri*, $\frac{5}{8}$; *alæ*, 3; *caudæ*, $2\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Hab. in Novâ Cambriâ Australi.

Obs. The genus *Eopsaltria* was instituted by Mr. Swainson for the Yellow-Breasted Thrush of Lewin (*Pachycephala Australis* of Vig. and Horsf.), to which the present bird is nearly allied.

Eopsaltria griseo-gularis. *Vertice, auricularibus, nuchâ dorsoque griseis; gulâ pectoreque cinerescenti-albis; abdomine, uropygio, tectricibusque superioribus et inferioribus caudæ nitide flavis; alis caudâque fuscis; caudâ ad extremum apicem albâ; rostro pedibusque nigrescenti-brunneis.*

Long. tot. unc. 6; *rostri*, $\frac{3}{4}$; *alæ*, $3\frac{1}{4}$; *caudæ*, $2\frac{5}{8}$; *tarsi*, $\frac{7}{8}$.

Hab. in Australiâ apud flumen Cygnorum.

Obs. Closely allied to *Eopsaltria Australis*. In the collection at Fort Pitt, Chatham.

Sericulus magnirostris. *Ser. fronte, gulæ lateribus, corporeque subtùs griseis, singulis plumis brunneo marginatis; maculâ occipitali nigrâ et quadratâ; lineâ nigrâ irregulari in gutture centrali; nuchâ, dorso, scapulisque cinerescenti-albis, margine brunneo circumdatis; alis, uropygio, caudâque olivaceo-brunneis; rostro pedibusque nigris.*

Long. tot. unc. $11\frac{1}{2}$; *rostri*, $1\frac{1}{4}$; *alæ*, $5\frac{1}{2}$; *caudæ*, $4\frac{3}{4}$; *tarsi*, $1\frac{1}{2}$.

Hab. in terrâ Van Diemen?

Obs. This is in every respect a true *Sericulus*, and from what we know of the changes of the common species *Ser. chrysocephalus*, I conceive that it may prove to be a female, or immature bird.

Oreocincla. Genus novum.

Rostrum capitis longitudinem æquans vel superans, subincurvatum, lateraliter compressum, mandibulâ superiore apice prominente, denticulâ ab apice longè amotâ, *gonide* acuto; *rictus* setis paucis brevibus instructus; *alæ* mediocres, rigidæ, remige 1^mo^ brevissimo, 4^to^ et 5^to^ ferè æqualibus et longissimis; *cauda* subbrevis, quadrata, plumis rigidis; *tarsi* mediocres, squamis integris; *digiti* graciles, posticus præcipuè, digitis lateralibus ferè æqualibus, interno breviore; *plumæ* sericeæ.

Typi sunt, *Oreocincla Novæ Hollandiæ et Turdus varius*, Horsf.

Oreocincla macrorhyncha. *Or. summo capite, corpore supra, olivacco-brunneis, singulis plumis nigro ad apicem leviter marginatis; caudâ alisque olivaceo-brunneis; secondariis badio leviter marginatis; rectricibus duabus externis utrinque ad apicem albis; gulâ corporeque subtus cervino-albis, singulis plumis, maculis nigris lanceolatis ad apicem notatis; rostro alâque spuriosâ ad apicem nigrescenti-brunneis; pedibus pallidè brunneis.*

Long. tot. unc. $10\frac{1}{2}$; *rostri*, $1\frac{5}{8}$; *alæ*, $5\frac{1}{2}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, $1\frac{1}{4}$.

Hab. in Novâ Zealandiâ.

Obs. Nearly allied to, but differing from, the *Turdus varius* of authors, in the much larger size of the bill, and in the deeper black colouring of the margins of the feathers. In the British Museum.

Familia ————?

Symmorphus. Genus novum.

Rostrum subbreve, tumidum; *mandibulâ* superiori ad apicem leviter emarginatâ; *culmine commissurâque* subarcuatis; *nares* basales, ovales et plumis frontalibus ferè occultatæ; *alæ* mediocres, remige 1^mo^ breviore, 2^do^ per dimidium; 3^tio^, 4^to^ et 5^to^ longissimis et inter se ferè æqualibus; *cauda* mediocris, rectrice externâ utrinque per partem quartam cæteris breviore; *tarsi* et *pedes* mediocres, illi anticè scutellati; *digito* postico cum *ungue*, medio breviori; *digitis* lateralibus inæqualibus, interno brevissimo.

Symmorphus leucopygus. *Sym. loro nigrescenti-brunneo; lineâ supra-oculari cervino-albâ; summo capite, nuchâ, dorsoque*

intensè rufo-fuscis; humeris, tectricibus majoribus alarum ad apices, uropygio, gulâ corporeque subtùs albis, badio pallidè lavatis; primariis secondariisque nigrescenti-brunneis, badio obscurè marginatis; rectricibus caudæ quatuor mediis brunneis, ad apices cinerescenti-albis, tribus externis utrinque ad basin per dimidiam partem brunneis, per reliquam partem albis; rostro pedibusque nigris.

Long. tot. unc. $7\frac{3}{4}$; *rostri*, $\frac{7}{8}$; *alæ*, $3\frac{1}{2}$; *caudæ*, $3\frac{1}{2}$; *tarsi*, 1.
Hab. in Novâ Cambriâ Australi.

Acanthiza magnirostra. *Ac. vertice, corpore superiore, alis caudâque olivaceo-fuscis; hâc, fronteque rufescentibus; gulâ pectoreque cinereis; lateribus olivaceis; rostro nigro; pedibus brunneis.*

Long. tot. $4\frac{3}{4}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{1}{4}$; *caudæ*, $1\frac{7}{8}$; *tarsi*, $\frac{3}{4}$.
Hab. in Novâ Cambriâ Australi.

Acanthiza uropygialis. *Ac. capite, corpore suprà, alisque fuscis, levitèr olivaceo lavatis; uropygio tectricibusque caudæ lætè castaneis; caudâ nigrescenti-fuscâ, latè ad apicem albo notatâ; gulâ, pectore, abdomineque medio griseis; lateribus, crissoque pallidè cervinis; rostro, pedibusque nigris.*

Long. tot. $3\frac{3}{4}$ unc.; *rostri*, $\frac{1}{2}$; *alæ*, 2; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.
Hab. in Novâ Cambriâ Australi.

Acanthiza diemenensis. *Ac. fronte rufo-brunneo, notis semilunaribus cervinis, fuscoque adspersis, corpore superiore, alisque intensè olivaceo-fuscis; tectricibus caudæ fuscis, castaneo lavatis; rectricibus olivaceis, nigrescenti-fusco fasciatis; genis, gulâ, pectoreque cinereis, irregularitèr fusco adspersis; abdomine, crissoque cinerescenti-albis rufo tinctis, hâc colore in crisso lateribusque prævalente; rostro pedibusque pallidè brunneis.*

Long. tot. 4 unc.; *rostri*, $\frac{9}{10}$; *alæ*, $2\frac{1}{4}$; *caudæ*, 2; *tarsi*, $\frac{3}{4}$.
Hab. in terrâ Van Diemen.
Obs. Nearly allied to *Acanthiza pusilla*.

Acanthiza lineata. *Ac. vertice fusco-olivaceo, albo delicatè striato; dorso, alis, caudâque olivaceis; hâc apicem versus nigrescente fasciatâ, ad apicem cinerescenti-fuscâ; gulâ, pectoreque cinereis, olivaceo lavatis, et irregularitèr fusco guttatis; rostro pedibusque fuscis.*

Long. tot. $3\frac{3}{4}$ unc.; *rostri*, $\frac{5}{8}$; *alæ*, 2; *caudæ*, $1\frac{5}{8}$; *tarsi*, $\frac{5}{8}$.
Hab. in Novâ Cambriâ Australi.

SYLVIADÆ? *Fam.*

Psilopus. Genus novum.

Rostrum capite brevius, tumidum, ad apicem dentatum, tomiis rectis; *nares* basales, laterales, ovales; *rictus* setis paucis gracilibus obsitus; *alæ* mediocres, remige primo ferè spurio, secundo elongato, tertio, quarto, quintoque longissimis et inter se æqualibus; *cauda* brevis et æqualis: *tarsi* læves, graciles, mediocres; *digiti*

perbreves et debiles, externi utrinque æquales et intermedio adjuncti ferè ad articulum primum ; *ungues* incurvi.
Typus est *Psilopus albogularis.*

Psilopus brevirostris. *Psil. rostro perbrevi, pallidè fusco ; strigâ superciliari flavescente ; vertice fuscescenti-cinereo ; nuchâ olivaceâ ; dorso, uropygio, tectricibusque caudæ olivaceis ; plumis auricularibus, genisque pallidè rufo-brunneis ; gulâ, pectoreque albis, olivaceo lavatis, strigisque fuscis longitudinalibus, levitèr ornatis ; abdomine pallidè citrino ; rectricibus caudæ intermediis duabus fuscis ; reliquis ad basin fuscis dein nigrescente fasciatis, et internè albo notatis, apicibus pallidè fuscis ; pedibus nigrescentibus.*
Long. tot. $3\frac{1}{2}$ unc. ; *rostri*, $\frac{5}{8}$; *alæ*, 2 ; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{1}{2}$.
Hab. in Novâ Cambriâ Australi.
Obs. In my own Collection.

Psilopus fuscus. *Psil. vertice, corporeque toto supernè, saturatè fuscis, levitèr olivaceo tinctis ; rectricibus caudæ duabus intermediis fuscis ; reliquis ad basin albis, dein nigrescenti-fusco latè fasciatis, exindè albo notatis, apicibus pallidè fuscis ; gulâ, pectoreque cinereis ; abdomine, crissoque albis ; rostro pedibusque intensè fuscis.*
Long. tot. $3\frac{3}{4}$ unc. ; *rostri*, $\frac{1}{2}$; *alæ*, $2\frac{1}{4}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.
Hab. in Australiâ.
Obs. In the Collection of the Earl of Derby.

Psilopus olivaceus. *Psil. strigâ superciliari a basi mandibulæ flavâ ; vertice, corporeque suprà olivaceis ; alis fuscis, plumis extùs olivaceo marginatis ; rectricibus caudæ duabus intermediis fuscis ; reliquis ad basin fuscis, dein albo, nigrescenti-fusco, iterùmque albo fasciatis, apicibus fuscis ; rostro pedibusque fuscis.*
Long. tot. $4\frac{1}{4}$ unc. ; *rostri*, $\frac{1}{2}$; *alæ*, $2\frac{1}{8}$; *caudæ*, $1\frac{5}{8}$; *tarsi*, $\frac{5}{8}$.
Hab. in Novâ Cambriâ Australi.

Psilopus albogularis. *Psil. vertice, plumis auricularibus, corporeque suprà olivaceo-fuscis ; gulâ albâ ; pectore corporeque subtùs lætè citrinis ; rectricibus caudæ duabus intermediis fuscis, reliquis ad basin fuscis, albo, dein latè nigrescenti-fusco fasciatis, et internè ad apicem cervinis ; rostro, pedibusque intensè fuscis.*
Long. tot. $4\frac{1}{4}$ unc. ; *rostri*, $\frac{1}{2}$; *alæ*, $2\frac{3}{8}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{5}{8}$.
Hab. in Novâ Cambriâ Australi.

Petroica modesta. *Pet. summo capite, corpore suprà, alis caudâque rufo-brunneis ; gulâ albâ, brunneo lavatâ ; pectore et abdomine centrali coccineo lavatis ; abdominis inferiori, crissoque albis ; lateribus brunneis ; rostro nigrescenti-brunneo ; pedibus flavescenti-brunneis.*
Long. tot. unc. 5 ; *rostri*, $\frac{5}{8}$; *alæ*, $2\frac{5}{8}$; *caudæ*, 2 ; *tarsi*, $\frac{7}{8}$.
Hab. in Novâ Hollandiâ apud oram orientalem.
Obs. The female resembles the male, but is rather lighter in colour, and has only an indication of the scarlet tinge on the chest and sides.

ORIGMA. Genus novum.

Rostrum, caput quoad longitudinem ferè æquans, incurvatum, carinatum, ad apicem denticulatum; *nares* ovales, laterales, basales operculoque ferè tectæ; *alæ* mediocres, remige 1^mo^ brevissimo, 4^to^, 5^to^, 6^to^, 7^moque^ longissimis et inter se ferè æqualibus; *cauda* mediocris et subrotundata; *tarsi* mediocres; *digiti* breves, interno longior externus.

Typus est *Saxicola solitaria*, Vig. et Horsf. Rock Warbler, Lewin, Pl. xvj.

EPHTHIANURA. Genus novum.

Rostrum capite brevius, ferè rectum, lateraliter compressum, ad apicem indentatum; *nares* basales, lineares, membranâ tectæ; *alæ* elongatæ, remige, 1^mo^ spurioso, 2^do^ longo, 3^tio^ et 4^to^ longissimis et inter se æqualibus; tertiariis longis; *cauda* brevis et truncata; *tarsi* integri, mediocres, graciles; *digiti* graciles, posticus cum ungue medio brevior; *digitus* internus, externo brevior.

Typus est, *Acanthiza albifrons*, Jord. et Selb.

EPHTHIANURA AURIFRONS. *Ephth. capite, tectricibus superioribus caudæ, lateribus nuchæ, pectore corporeque nitidè aurantiacis, hôc colore in fronte et centrali abdomine prævalente; dorso olivaceo; alis brunneis olivaceo marginatis; caudâ obscurè fuscâ singulis rectricibus, duabus intermediis exceptis ad apicem internè albo maculatis; mento et gulâ centrali nigris; rostro nigro; pedibus brunneis.*

Long. tot. unc. 4; *rostri*, $\frac{5}{8}$; *alæ*, $2\frac{1}{2}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Hab. in Novâ Cambriâ Australi.

Obs. In the Collection of the Zoological Society.

MALURUS LONGICAUDUS. MAS. *Mal. summo capite, strigâ infra aures, dorsoque anteriore, obscurè cyaneis; nuchâ, scapulis, dorso uropygioque obscurè nigris; gutture pectoreque azureo-nigris; corpore infra cinerescenti-albo, lateribus brunnescentibus; rectricibus caudæ obscurè cyaneis, pallidioribus apicibus; rostro nigro; tarsis brunneis.* FŒM. *Corpore supra, alis caudâque rufo leviter tinctis; lineâ in fronte et super oculos, rostro pedibusque rufescenti-fuscis.*

Long. tot. unc. 5; *rostri*, $\frac{5}{8}$; *alæ*, 2; *caudæ*, $2\frac{7}{8}$; *tarsi*, 1.

Hab. in terrâ Van Diemen.

Obs. This species is closely allied to *Mal. cyaneus*, but is more richly coloured, and exceeds it in all its measurements, particularly in the length of the tail.

PARDALOTUS QUADRAGINTUS. *Pard. vertice, corporeque suprà olivaceis, plumis fusco levitèr marginatis; alis nigrescentibus, remigibus (primo et secundo exceptis), ad apicem albis; genis, crissoque flavescenti-olivaceis; corpore subtùs cinerescenti-albo; rostro intensè fusco; pedibus fuscis.*

Long. tot. $3\frac{3}{4}$ unc.; *rostri*, $\frac{3}{8}$; *alæ*, $2\frac{1}{4}$; *caudæ*, $1\frac{1}{4}$; *tarsi*, $\frac{3}{4}$.

Obs. This is the 'Forty-spot' of the colonists of Van Diemen's

Land, so called from the numerous white spots with which it is adorned.

Hab. in terrâ Van Diemen.

PARDALOTUS MELANOCEPHALUS. *Pard. vertice, loro, plumisque auricularibus nigris; strigâ superciliari aurantiacâ oriente, albâ desinente; genis collique lateribus albis; nuchâ, dorsoque cinerescenti-olivaceis; rectricibus caudæ fuscescenti-cervinis; caudâ nigrâ, ad apicem albâ; alis nigrescenti-fuscis; remigibus tertio, quarto, quinto, sexto, septimoque albis; secondariis albo marginatis atque terminatis; lineâ albâ obliquè per humeros abductâ; alâ spuriâ coccineo terminatâ; lineâ gutturali, pectore, abdomineque medio lætè flavis; crisso cervino; rostro nigro; pedibus fuscis.*

Long. tot. 4 unc.; *rostri*, $\frac{3}{8}$; *alæ*, $2\frac{1}{2}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Hab. in Novâ Cambriâ Australi, apud oram orientalem.

PARDALOTUS RUBRICATUS. *Pard. fasciâ frontali angustâ sordidè albâ; vertice, et occipite nigris, albo guttatis; nuchâ, dorso, uropygio, tectricibusque alarum cinereis; alis intensè fuscis; alâ spuriâ, primariis ad basin, secondariisque ad marginem externum lætè aurantiacis; notâ flammeâ ante oculos; strigâ super-oculari cervinâ; tectricibus caudæ olivaceis; caudâ intensè fuscâ, ad apicem albâ; gulâ abdomineque cinereis; pectore flavo; mandibulâ superiore fuscâ, inferiore cinereâ; pedibus fuscis.*

Long. tot. 4 unc.; *rostri*, $\frac{5}{8}$; *alæ*, $2\frac{1}{2}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{3}{4}$.

Hab. in Australiâ.

Obs. In my own Collection.

PACHYCEPHALA XANTHOPROCTA. *Pach. vertice, corporeque suprà olivaceis, hôc colore, ad crissum, et ad marginem remigum alæ, rectricumque caudæ, lætiore; abdomine pallidè fusco; crisso flavo; rostro ad apicem nigro, ad basin brunneo; pedibus fuscis.*

Long. tot. 6 unc.; *rostri*, $\frac{5}{8}$; *alæ*, $3\frac{1}{2}$; *caudæ*, 3; *tarsi*, $\frac{7}{8}$.

Hab. in Novâ Cambriâ Australi, apud oram orientalem.

Obs. This may possibly prove to be the female of some species the male of which is at present unknown.

PACHYCEPHALA LONGIROSTRIS. *Pach. vertice, corpore superiore, alisque olivaceis, primariis, secondariis, tectricibus, rectricibusque caudæ ad marginem nitidè olivaceo-aureis; gulâ, pectoreque pallidè cinerescenti-fuscis; crisso flavo; rostro nigrescenti-fusco; pedibus brunneis.*

Long. tot. 7 unc.; *rostri*, $\frac{7}{8}$; *alæ*, 4; *caudæ*, $3\frac{1}{4}$; *tarsi*, 1.

Hab. in Novâ Cambriâ Australi, apud oram orientalem.

SPHENOSTOMA. Genus novum.

Rostrum breve, durum, lateralitèr compressum, et cuneiforme; *nares* basales, rotundatæ, opertæ; *rictus* rectus; mandibulâ supe-

riori haud dentatâ; setis delicatis ad basin sparsis; *alæ* perbreves et rotundatæ, remigibus quarto, quinto, et sexto ferè æqualibus et longissimis; *cauda* elongata, et gradata; *tarsi* mediocres, robusti, anticè squamis tecti, posticè læves; *pedes* breves; *digito* postico valido, digitis externis inæqualibus, interno brevissimo.

Sphenostoma cristatum. *Sphen. capite plumis angustis acutis anticè curvatis cristato; corpore suprà et subtùs omninò fusco; abdomine medio cinerescenti-albo; caudâ fuscâ; rectricibus tribus utrinque ad apicem albis; rostro nigrescente; pedibus plumbeis.*

Long. tot. 8 unc.; *rostri*, $\frac{1}{2}$; *alæ*, $3\frac{1}{8}$; *caudæ*, $4\frac{1}{4}$; *tarsi*, $\frac{7}{8}$.
Hab. in Novâ Cambriâ Australi, apud oram orientalem.
Obs. This species is closely allied to *Struthidea.*

Cincloramphus. Genus novum.

Rostrum capite subbrevius; *culmen* leviter arcuatum, apice emarginato; *commissura* ad basin subangulata, incurvata per reliquam totam longitudinem; *nares* laterales, ovales; *alæ* mediocres, rigidæ; *remige* 1mo longo, 2do et 3^{tio} longissimis; *cauda* subparva, cuneiformis; *tarsi* robusti antice scutellati; *digiti* elongati, robusti, præcipuè posticus, qui ad basin tarsi est articulatus.
Typus est *Megalurus cruralis*, Vig. et Horsf.

Dasyornis? brunneus. *Das. summo capite, corpore supra, alis lateribus caudâque, flavo-brunneis; gutture, lateribus faciei, et abdomine medio, fusco-albis; rostro ad apicem obscurè fusco, ad basin pallidiore; pedibus brunneis.*

Long. tot. unc. $5\frac{3}{4}$; *rostri*, $\frac{5}{8}$; *alæ*, $2\frac{1}{8}$; *caudæ*, 3; *tarsi*, $\frac{3}{4}$.
Hab. in Australiâ.

Calamanthus. Genus novum.

Rostrum capite brevius, ad basin tumidum versus apicem lateraliter compressum, *culmine* prominente et acuto; *nares* laterales, magnæ, ovales et operculo tectæ; *rictus* sine setis; *alæ* breves, rotundatæ, *remige* 4to longissimo, 3^{tio}, 5to, 6to et 7mo inter se æqualibus; *cauda* perbrevis et rotunda; *tarsi* mediocres, scutellis indistinctis antice instructi; *hallux* subelongatus, ungue elongato munitus; *digiti* laterales inæquales, externus brevior.
Typus est *Anthus fuliginosus*, Vig. et Horsf.

Cysticola ruficeps. *Cyst. summo capite, nuchâ, pectore, lateribus, femoribus, uropygioque delicatè cervinis, hôc colore in fronte et uropygio prævalente; dorso superiore, secundariis, caudâque obscurè fusco-nigris, singulis plumis, marginibus badiis circumdatis; gutture et abdomine centrali albis; rostro brunneo; pedibus flavo-brunneis.*

Long. tot. unc. 4; *rostri*, $\frac{1}{2}$; *alæ*, $1\frac{7}{8}$; *caudæ*, $1\frac{7}{8}$; *tarsi*, $\frac{3}{4}$.
Hab. in Novâ Cambriâ Australi.

Familia ———— ?

OREOÏCA. Genus novum.

Rostrum capite brevius, robustum, lateribus compressis, ad apicem emarginatum; *maxilla* inferior, superiorem in robore ferè æquans; *nares* basales, rotundatæ, tenuibus, brevibus, capillaribus plumis (paucis elongatis intermixtis) ferè tectæ; *alæ* subelongatæ, remige 1^mo brevi, 3^tio longissimo; tertiariis perlongis, primarias ferè æquantibus; *cauda* brevis et subrotundata; *tarsi* sublongi et robusti, posticè integri, anticè scutellis duris muniti; *pedes* ambulatorii; *digiti* perbreves, posticus brevissimus, externo subbrevior internus; *ungues* breves et ferè recti.

Typus est *Falcunculus gutturalis*, Vig. et Horsf.

CALYPTORHYNCHUS XANTHONOTUS. *Cal. summo capite, genis, gutture, corporeque suprà et infrà fusco-nigris; plumis pectoralibus, apicibus olivaceis; auricularibus flavis; rectricibus caudæ duabus intermediis nigro-fuscis, reliquis ad bases et apices nigris, in mediis pallidè flavis, interdum plùs minùsve brunneo notatis; rostro albo, vel nigrescenti-brunneo; pedibus obscurè fuscis.*

Long. tot. unc. 24; *alæ*, 14½; *caudæ*, 12; *tarsi*, 1.

Hab. in terrâ Van Diemen.

Obs. Nearly allied to *Cal. Baudinii* and *Cal. funereus.*

PLATYCERCUS HÆMATONOTUS. *Plat. summo capite, nuchâ, genis, pectoreque smaragdino-viridibus, in fronte, genisque pallidioribus; dorso brunnescenti-viridi; uropygio coccineo; scapulâ infrà, alâ spuriosâ, marginibusque primariorum externis per partes basales, nitidè cyaneis; scapulâ centrali, maculâ sulphureâ notatâ: tectricibus alæ majoribus inferioribusque, cæruleo-viridibus; tectricibus caudæ rectricibusque duabus intermediis viridibus, hoc colore in cæruleis apices versus transeunte, apicibus ipsis nigro-fuscis; rectricibus reliquis ad bases viridibus, hoc colore in cinerescenti-albo ad interna pogonia apicesque transeunte; abdomine centrali flavo; femoribus cæruleo-viridibus; crisso cinerescenti-albo; rostro corneo; pedibus brunneis.*

Long. tot. unc. 11; *alæ*, 5; *caudæ*, 6½; *tarsi*, ⅝.

Obs. This species unites *Platycercus* to *Nanodes*, and is in fact so directly intermediate between these genera in size and other characters, that it is difficult to decide to which of them it should be referred.

SITTELLA PILEATA. *Sitt. fronte, strigâ superciliari, gulâ, pectore abdomineque medio albis; vertice nigro; plumis auricularibus, nuchâ, dorsoque cinerescenti-fuscis; hujus lineâ saturatiore per medias plumas excurrente; uropygio albo; tectricibus caudæ, crissoque, cinerescenti-fuscis, fusco alboque variegatis; caudâ nigrâ ad apicem albâ; alis nigrescenti-fuscis, notâ rufâ centrali; lateribus et ventre cinerescenti-fuscis; rostro ad basin flavo, ad apicem nigro; pedibus flavis.*

Long. tot. 4¾ unc.; *rostri*, ⅞; *alæ*, 3½; *caudæ*, 1⅝; *tarsi*, ⅝.

Hab. in Australiâ, apud Flumen Cygnorum.

Sittella melanocephala. *Sitt. vertice, occipite, plumisque, auricularibus nigris; dorso plumisque scapularibus cinerescenti-fuscis; alis nigris, primariis secondariisque plùs minùsve rufo notatis; uropygio, tectricibusque caudæ albis; caudâ nigrâ ad apicem albo notatâ; crisso albo, fusco fasciato; palpebris aurantiacis; rostro ad basin carneo, ad apicem nigro; pedibus flavis.*
Long. tot. $4\frac{3}{4}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $3\frac{1}{2}$; *caudæ*, $1\frac{5}{8}$; *tarsi*, $\frac{5}{8}$.
Hab. in Australiâ, apud Flumen Cygnorum.

Sittella leucocephala. *Sitt. capite, gulâ, corporeque, subtùs albescentibus, hôc lineis cinereo-fuscis longitudinalibus notato; corpore suprà cinerescenti-fusco; uropygio albo; caudâ fuscâ albo terminatâ; alis fuscis; primariis secondariisque latè rufo fasciatis; crisso fusco, albo variegato; rostro aurantiaco, ad apicem fusco; pedibus flavis.*
Long. tot. $4\frac{1}{2}$ unc.; *rostri*, $\frac{5}{8}$; *alæ*, $2\frac{3}{4}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{1}{2}$.
Hab. in Australiâ.

Meliphaga sericeola. *Mel. summo capite, loro, orbitis, gutture que nigris; fasciâ, indistinctâ super oculos et in fronte, albâ; genis, plumis capillaribus albis; nuchâ, dorso, uropygio, nigro-fuscis, singulis plumis brunnescenti-albo marginatis, hoc colore ad nucham prævalente; alis caudâque nigro-fuscis; primariis, secondariis flavis; rectricibus ad partes basales flavo-marginatis, et ad apices cinereo-albis, duabus intermediis exceptis; pectore corporeque subtùs albis, singulis plumis, lineis centralibus fusco-nigris; rostro nigro; pedibus obscurè brunneis.*
Long. tot. unc. $5\frac{1}{4}$; *rostri*, $\frac{7}{8}$; *alæ*, $2\frac{1}{2}$; *tarsi*, $\frac{3}{4}$; *caudæ*, $2\frac{1}{2}$.
Hab. in Australiâ.
Obs. This species very closely resembles in its markings the *Meliphaga sericea*: it is however full a third less in all its proportions, and is without doubt distinct.

Meliphaga inornata. *Mel. summo capite, corpore suprà, alis caudâque obscurè olivaceo-brunneis; primariis, secondariis et rectricibus caudæ (duabus intermediis exceptis) ad bases flavo marginatis; gutture, pectoreque superiori brunneis; abdomine centrali brunnescenti-albo; lateribus brunneis; rostro pedibusque brunneo-nigris.*
Long. tot. unc. $5\frac{1}{2}$; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{1}{2}$; *caudæ*, $2\frac{1}{2}$; *tarsi*, $\frac{7}{8}$.
Hab. in terrâ Van Diemen.
Obs. Closely allied to *Mel. Australasiana*, but distinguished from it by the obscurity of its markings.

Acanthagenys. Genus novum.

Rostrum caput æquans, compressum, levitèr arcuatum, ad apicem acutum, *naribus* sub-basalibus, mandibulæ superioris tomiis ad apicem indentatis, et delicatè serratis; plagâ nudâ a basi mandibulæ infra oculos excurrente; genis infra plagam spinis subrigidis tectis; *alæ* mediocres; remige primo brevissimo, tertio,

quarto, et quinto æqualibus ceterosque excellentibus; *cauda* mediocris subæqualis; *pedes* validi; digito postico forti, digitumque intermedium excellente; externo ad intermedium basalitèr adjuncto; unguibus incurvatis.

Hoc genus ad illud *Anthochæra* dictum appropinquat, differt caudâ æquali, plagâ faciali nudâ genisque spinosis.

Acanthagenys rufogularis. *Acanth. capite superiore, dorso, alisque fuscis, plumis ad marginem pallidioribus; uropygio, tectricibusque caudæ albis, in medio fusco tinctis; strigâ post oculos, et ad latera colli nigrescente; super strigam lateralem colli, lineâ albescente, fusco adspersâ; setis genarum albis, et infrà ad basin mandibulæ inferioris lineâ plumarum, albo nigroque fasciatarum; gulâ pectoreque summo pallidè rufis; corpore subtùs sordidè albo, plumis fusco notatis; caudâ nigrescenti-fuscâ, apice albo; plagâ faciali nudâ, rostroque basi aurantiacis; rostri apice, pedibusque nigris.*

Long. tot. $9\frac{3}{4}$ unc.; *rostri*, $1\frac{1}{8}$; *alæ*, $4\frac{1}{2}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, 1.

Hab. in Novâ Cambriâ Australi.

Anthochæra lunulata. *Anth. summo capite, nuchâ dorsoque anteriore olivaceo-brunneis; dorso inferiori uropygioque olivaceo-brunneis, singulis plumis, stemmatibus albis; tectricibus superioribus caudæ, olivaceo-brunneis, ad apices albis; primariis brunneis; secondariis tertiariisque brunneis, cinereo marginatis; rectricibus caudæ intermediis duabus, cinereo-fuscis; reliquis obscurè-fuscis, apicibus albis; plumis nuchæ lateralibus, elongatis; acutis cinereis; gulâ et nuchâ anteriore, pectore, corporeque infrà cinereo-brunneis; maculâ obliquâ niveâ ad latera; rostro nigrescenti-fusco; pedibus rufo-brunneis.*

Long. tot. unc. 12; *rostri*, $1\frac{3}{8}$; *caudæ*, $6\frac{1}{2}$; *alæ*, $5\frac{1}{4}$; *tarsi*, $1\frac{1}{8}$.

Hab. in Australiâ, apud Flumen Cygnorum.

Obs. Nearly allied to *Anth. mellivora*, but differs in its smaller size, in having a considerably longer bill, and in being entirely destitute of white *striæ* down the head and back of the neck. In the Collection of Fort Pitt, Chatham.

Plectorhyncha. Genus novum.

Rostrum capite brevius, levitèr arcuatum, ferè conicum, et acutum, *naribus* basalibus, operculo tectis; mandibulâ superiore obsoletè ad apicem indentatâ; *alæ* mediocres, *remige* primo brevissimo, tertio quartoque longissimis; *cauda* mediocris et æqualis; *tarsi* validi; *digito* postico cum ungue forti, et digitum intermedium anticum excellente; digitis lateralibus inæqualibus, externo longiore, et intermedio basalitèr conjuncto.

Plectorhyncha lanceolata. *Plec. vertice, plumis auricularibus, nuchâque, albo fuscoque variegatis; gulâ corporeque subtùs cinerescenti-albis; plumis pectoralibus sublanceolatis, et albis; corpore toto, caudâque supernè pallidè fuscis; rostro fuscescenti-corneo; pedibus nigris.*

Long. tot. 9 unc.; *rostri*, 1; *alæ*, $4\frac{1}{2}$; *caudæ*, $4\frac{1}{4}$; *tarsi*, 1.
Hab. in Novâ Cambriâ Australi.

ENTOMOPHILA. Genus novum.

Rostrum ferè capitis longitudinem æquans, ad basin latiusculum, dein compressum, et ad apicem, acutum; *mandibulæ* superioris tomiis arcuatis, et apicem versus levitèr indentatis; *nares* basales, ovales, in membranâ positæ, et operculo tectæ; *alæ* longiusculæ; *remige* primo spurio, secundo tertium ferè æquante, hôc longissimo; *cauda* brevis, sub-quadrata; *tarsi* breves, et subdebiles; digito posteriore brevi, forti; *digitis* externis haud æqualibus, interno paululùm breviore.

ENTOMOPHILA PICTA. Mas. *Ent. capite, genis, corporeque suprà nigris; plumis auricularibus posticè albo fimbriatis; alis nigris, primariis secondariisque extùs nitidè flavis; caudæ rectricibus nigris, extùs flavo marginatis, omnibusque (duabus internis exceptis) plùs minùsve extùs albo ad apicem notatis; gulâ, corporeque subtùs albis, hôc ad latera notis subfuscis longitudinalibus sparsè ornato; rostro flavescente; pedibus nigrescentibus.*

Fœm. vel mas junior? *Differt partibus fuscis, quæ in mare adulto nigræ; in cæteris mari simillima, flavo colore minùs nitido, rostroque ad apicem fusco.*

Long. tot. $5\frac{1}{2}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $3\frac{5}{8}$; *caudæ*, $2\frac{3}{8}$; *tarsi*, $\frac{5}{8}$.
Hab. in Novâ Cambriâ Australi.

Obs. The disposition of the yellow markings of the wings and tail of this kind reminds us of the Goldfinch (*Carduelis elegans*, Steph.): the lengthened wing, broad and short tail, the great breadth of the bill at its base, and the short tarsi lead me to believe that this species feeds principally upon insects which it pursues and captures on the wing.

GLYCIPHILA? OCULARIS. *Glyc. summo capite, corpore suprà, alis caudâque, obscurè olivaceo-brunneis, hoc colore ad uropygium et rectrices caudales in luteo transeunte; pone oculos plumis paucis parvis nitidè brunneo-flavis; gulâ pectoreque cinereo-fuscis; abdomine crissoque olivaceo-cinereis; rostro pedibusque nigro-brunneis.*

Long. tot. unc. $5\frac{1}{4}$; *rostri*, $\frac{7}{8}$; *alæ*, $2\frac{3}{4}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{3}{4}$.
Hab. in terrâ Van Diemen.

GLYCIPHILA? SUBOCULARIS.

Obs. A species from New South Wales, which differs from *Glyc. ocularis* in being rather smaller, and in its more olive colouring.

ÆGIALITIS? CANUS. *Æg. fronte, lineâ supra-oculari, genis, gulâ corporeque subtùs, albis; summo capite, corporeque supra cinereo-fuscis; primariis obscurè brunneis, stemmatibus albis; caudâ brunneâ, singulis plumis marginibus albis; rostro pedibusque nigris, olivaceo tinctis.*

Long. tot. unc. $7\frac{1}{4}$; *rostri*, $\frac{7}{8}$; *alæ*, $3\frac{7}{8}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $1\frac{1}{8}$.
Hab. in Novâ Cambriâ Australi.

ERYTHROGONYS. Genus novum.

Rostrum capite longius, rectum, paulò depressum; *nares* basales, lineares; *alæ* elongatæ, remige primo longissimo; tertialibus ferè ad apicem remigum tendentibus; *cauda* brevis, et ferè æqualis; *tarsi* elongati; *digiti* quatuor; postico parvulo; anticis inter se conjunctis, usque ad articulum primum; *tibiæ* ex parte nudæ.

ERYTHROGONYS CINCTUS. *Eryth. capite, plumis auricularibus, nuchâ, pectoreque nigris; gulâ, abdomine medio, crissoque albis; hôc fusco adsperso; dorso, alis mediis, scapularibusque olivaceis, brunneo metallicè lavatis; uropygio, rectricibus caudæ duabus intermediis fuscis, rectricibus reliquis albis; lateribus castaneis; tibiâ parte nudâ, cùm articulo, coccineâ; tarsis olivaceo-fuscis; rostro ad basin rubro, ad apicem nigro.*

Long. tot. 7 unc.; *rostri*, 1; *alæ*, $4\frac{1}{4}$; *caudæ*, $1\frac{7}{8}$; *tarsi*, $1\frac{1}{2}$.

Hab. in Novâ Cambriâ Australi.

HÆMATOPUS AUSTRALASIANUS. *Hæm. capite, nuchâ, pectore, dorso, alis obscurè viridi-nigris; rectricibus caudæ ad bases niveis; tectricibus alæ ad apices, abdomine, uropygio, et tectricibus caudæ superioribus inferioribusque niveis; rostro obscurè aurantiaco; pedibus rubris.*

Long. tot. unc. 17; *rostri*, $3\frac{1}{8}$; *alæ*, $10\frac{3}{4}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, $2\frac{1}{4}$.

Hab. in Novâ Cambriâ Australi.

Obs. Nearly allied to the *Hæm. ostralegus* of England.

RHYNCHÆA AUSTRALIS. *Rhyn. strigâ brevi pone oculum albâ; nuchâ castaneâ, fasciis angustis indistinctis, viridi-brunneis; summo capite obscurè brunneo; genis, lateribus nuchæ nigro-brunneis; mento albo; dorso olivaceo-viridi, cinereo tincto, et obscurè brunneo irrorato; pectore corporeque subtùs albis; rostro rufo-brunneo; pedibus obscurè fuscis.*

Long. tot. unc. $8\frac{1}{4}$; *rostri*, 2; *alæ*, $5\frac{1}{2}$; *caudæ*, $2\frac{1}{2}$; *tarsi*, $1\frac{1}{2}$.

Hab. in Novâ Cambriâ Australi.

Obs. Differs from the Chinese species by its extremely short toes and larger wing.

NUMENIUS AUSTRALIS. *Num. summo capite nuchâque nigro-fuscis, singulis plumis cervino marginatis; dorso nigrescenti-fusco, singulis plumis rubrescenti-cervino ad marginem irregulariter maculatis; tectricibus alæ nigro-fuscis, cinereo marginatis; tertiariis brunneis, marginibus pallidioribus irregulariter maculatis; uropygio tectricibusque superioribus caudæ nigro-fuscis, singulis plumis cinerescenti-cervino ad marginem fasciatis; tectricibus majoribus alarum, nigro-fuscis, ad apicem albis; 1, 2, 3, 4, et 5, primariis brunneis, stemmatibus albis, reliquis cum secundariis irregulariter albo fasciatis; lateribus faciei, gutture, corporeque infrà pallidè cervinis, singulis plumis, lineâ centrali nigrescenti-fuscâ; rostro ad basin flavescenti-brunneo, ad apicem nigrescenti-brunneo; pedibus olivaceis.*

Long. tot. unc. 20; *rostri*, $5\frac{3}{4}$; *alæ*, 11; *caudæ*, $4\frac{1}{2}$; *tarsi*, $\frac{3}{8}$.

Hab. in Novâ Cambriâ Australi.

Obs. Nearly allied to, but differs from, *Num. aquata* in the entire absence of the white rump; it is also rather less in size.

STERNA MELANURA. *Ster. summo capite corporeque suprà brunneis; primariis caudâque nigro-fuscis; caudâ furcatâ; fronte, gutture corporeque infrà albis; rostro pedibusque nigris.*

Long. tot. unc. 11; *rostri*, $1\frac{7}{8}$; *alæ*, 9; *caudæ*, $4\frac{3}{8}$; *tarsi*, $\frac{7}{8}$.

Hab. in Novâ Cambriâ Australi.

Obs. This appears to be an immature specimen. In the Collection of the United Service Museum.

SULA RUBRIPES. *Sul. capite, pectore, gutture, abdomine crissoque fusco-albis; dorso, rectricibusque caudæ caryophillaceis; alis pallidè caryophillaceis, fusco-cinereis irroratis; primariis secondariisque nigro-fuscis; rostro flavescenti-carneo, apice nigro; pedibus nitidè rubro-aurantiacis.*

Long. tot. unc. 23; *rostri*, 4; *alæ*, 14; *caudæ*, 7; *tarsi*, $1\frac{3}{8}$.

Hab. in Novâ Cambriâ Australi.

Obs. The specimen from which this description was taken appeared to be somewhat immature. In the Collection of the United Service Museum.

PUFFINUS ASSIMILIS. *Puff. summo capite, corpore suprà, alis caudâque fuliginosis; lateribus faciei, gulâ corporeque infrà albis; rostro fuscescenti-corneo; tarsis digitisque viridescenti-flavis; membranâ inter-digitali aurantiacâ.*

Long. tot. unc. 11; *rostri*, $2\frac{3}{8}$; *alæ*, $6\frac{1}{2}$; *caudæ*, 3; *tarsi*, $1\frac{1}{4}$.

Hab. in Novâ Cambriâ Australi.

Obs. Very closely allied to *Puffinus obscurus*, but considerably smaller.

PHALACROCORAX CARBOÏDES. *Phal. gulâ et faciei lateribus albis; summo capite, nuchâ corpore infrà, uropygio, caudâque nitidè nigro-viridibus; rectricibus caudæ 14; dorso, alis, lateribus superioribus nigro-brunneis, singulis plumis nitidè nigro-viridibus latè marginatis; nuchâ plumis gracilibus lanceolatis albis ornatâ; paucis apud femora externa; rostro corneo; pedibus nigris.*

Long. tot. unc. 34; *rostri*, 4; *alæ*, $13\frac{1}{2}$; *caudæ*, 8; *tarsi*, $2\frac{1}{4}$.

Hab. in terrâ Van Diemen.

Obs. Closely allied to the Common Cormorant of Europe (*Phal. Carbo*).

PHALACROCORAX LEUCOGASTER. *Phal. fronte, summo capite, nuchâ uropygioque viridi-nigris; dorso tectricibusque alæ viridibus, singulis plumis nigro marginatis; primariis secondariisque nigris; gutture, lateribus nuchæ, corporeque infrà albis; rostro nigro, rubro tincto; pedibus nigris.*

Long. tot. unc. 26; *rostri*, 3; *alæ*, $11\frac{1}{2}$; *caudæ*, $5\frac{3}{4}$; *tarsi*, $2\frac{1}{4}$.

Hab. in Novâ Cambriâ Australi.

Phalacrocorax flavirhynchus. *Phal. summo capite, nuchâ, dorso, uropygio, crissoque nigris; tectricibus alæ et scapularibus cinereo-nigris; lineâ super-oculari, gutture, corporeque infrà albis; rostro nitidè aurantiaco, culmine fusco; pedibus fuscis.*

Long. tot. unc. 23; *rostri*, $2\frac{1}{4}$; *alæ*, $9\frac{3}{8}$; *caudæ*, $6\frac{1}{2}$; *tarsi*, $1\frac{1}{2}$.

Hab. in Novâ Cambriâ Australi.

Obs. This species is distinguished by its much smaller size from the preceding, and by the conspicuous line of white over each eye.

INDEX.

The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of Species respecting which Anatomical Observations are made, in CAPITALS.

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PROCEEDINGS

OF THE

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OF LONDON.

PART VI.

1838.

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OF

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With References to the several Articles contributed by each.

ERRATUM.

P. 112. bottom line, after the word Australia, *add* and the Islands of the Indian Archipelago.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 9th, 1838.

Thomas Bell, Esq., in the Chair.

Mr. Gray exhibited a new species of *Perameles*, in size and general appearance very closely agreeing with *Per. nasutus*, but peculiar for its very short white tail, and in having several indistinct broad white bands over the haunches. The species inhabits Van Diemen's Land, where it frequents gardens, and commits great havoc amongst bulbous roots, which it is said to devour with avidity. Mr. Gray proposed for it the name of *Per. Gunnii*, after its discoverer, Mr. Ronald Gunn *.

It was suggested in the course of some discussion which followed Mr. Gray's observations, that the roots upon which this species was supposed to feed, were probably attacked for the purpose of procuring such insects as might be found in them; and Mr. Owen in reference to this point alluded to a dissection of a *Perameles* made by Dr. Grant, and published in the Wernerian Transactions, in which insects were found to constitute almost the sole contents of the stomach and intestines.

A very large and beautiful Antelope, of a species hitherto entirely unknown, and which had just arrived in England under the care of Captain Alexander from the Cape, was in the room for exhibition; and the history of the circumstances under which it had been discovered, were detailed in the following letter, addressed to the Secretary, by Capt. W. C. Harris, of the Bombay Engineers.

Cape Town, South Africa, Oct. 10, 1837.

Sir,—I beg the favour of your presenting to the Zoological Society the accompanying drawing and description of an entirely new and very interesting species of Antelope, which I discovered in the course of an expedition to the interior of Africa, from which I have lately returned. A perfect specimen that I brought down has been admirably set up by Monsieur Verreaux, the French naturalist at Cape Town, and will be sent to London in the course of a few days, to the care of Dr. Andrew Smith. It would appear to belong to the sub-genus *Aigocerus*, and in form, as well as in other respects, bears remote resemblance to the *Aigocerus Equina*, (Roan Antelope or Bastard Gemsbok,) with which it has been confounded by many

* Since described in the Annals of Zoology and Botany, for April, 1838.

persons imperfectly acquainted with the subject to whom it has been exhibited. A comparison of the two animals will, however, render the existing difference between them too obvious to demand any observation from me.

During nearly three months that I hunted over the country lying between the 24th and 26th parallels of south latitude, within 28° and 30° east longitude, I only once met with the Antelope in question. On the northern side of the Cashan range of mountains, about a degree and a half south of the tropic of Capricorn, I found a herd, consisting of nine does and two bucks, and followed them until I captured the specimen from which the enclosed drawing was made.

None of the natives of the country were familiar with the appearance of the animal when first interrogated on the subject, although after conferring amongst themselves, they agreed that it was Kōō-kāme, (*Oryx Capensis*,) the Gemsbok; and, of the many individuals to whom it has been shown, a trader named Robert Scoon is the only one by whom it has been recognized. He declares that he saw a herd of them some years ago near the very spot I have described, but could not succeed in killing one. It is, doubtless, very rare; and, judging from the formation of the foot, entirely confined to the mountains.

The females are somewhat smaller than the males, are provided with shorter and slighter, but similarly shaped horns, and are similarly marked; a deep chestnut brown, verging upon black, taking the place of the glossy black coat of the male. I did not obtain a female specimen; but whilst riding down the buck, I had abundant opportunities of narrowly observing them within the distance of a few yards, and am, therefore, positive as to the correctness of the description here given.

I have for the present designated the new Antelope "*Aigocerus niger*;" but of course it will rest with the Zoological Society either to confirm that name, or to bestow one more appropriate or more scientific; and I shall be gratified by their doing so.

I have the honour to be, sir,

Your most obedient servant,

W. C. Harris.

The following description of this interesting addition to the *Fauna* of Southern Africa was appended to the above letter.

Aigocerus niger. The Sable Antelope.

Adult male four feet six inches high at the shoulder; nearly nine feet in extreme length. Horns thirty-seven inches over the curve, placed immediately above the eyes, rather higher than occurs in the *Aigocerus Equina*; flat, slender, sub-erect, and then strongly bent back similar wise; at first gradually diverging, and then running parallel to each other; three-fourths annulated with about thirty strongly pronounced, incomplete rings, more rigid on the edges, but chiefly broken on the outside of the horn; the remaining one fourth smooth, round, slender and pointed. Head somewhat attenuated

towards the muzzle, and compressed laterally. Carcase robust. Withers elevated. Neck broad and flat. Hoofs black, obtuse, and rather short. Hair close and smooth: general colour of the coat intense glossy black, with an occasional cast of deep chestnut. A dirty white streak commencing above each eye, continued by a pencil of long hairs covering the place of the suborbital pouch, (of which cavity no trace is to be found in this Antelope,) and then running down the side of the nose to the muzzle, which is entirely white; the same colour pervading one half of the cheek, the chin and the throat. Ears ten inches long, narrow, tapering and pointed; white within, lively chestnut without, with black pencilled tips. A broad half crescent of deep chestnut at the base of each ear, behind. A small, entire black muzzle. A copious standing black mane, five and a half inches high, somewhat inclined forwards, and extending from between the ears to the middle of the back. Hair of the throat and neck longer than that of the body. Belly, buttocks, and inside of thighs, pure white. A longitudinal dusky white stripe behind each arm. Fore legs jet black inside and out, with a tinge of chestnut on and below the knees. Hind legs black, with a lively chestnut patch on and below the hocks. Tail black; long hair skirting the posterior edge, and terminating in a tuft which extends below the hocks. Sheath tipped with black.

Female smaller than the male, with smaller, but similarly shaped horns. Colour, deep chestnut brown verging upon black.

Very rare. Gregarious, in small families. Inhabits the great mountain range which threads the more eastern parts of Moselekatse's territory.

Dimensions.

Height at shoulder	54 inches.
Length of body	44
Length of neck	17
Length of head	19
Length of tail	25
Length of hind-quarter	19
Depth of chest	30
Length of fore-arm	16
Fore knee to foot	15
Croup to hock	36
Hock to foot	18½
Breadth of neck	16
Breadth of fore-arm	6
Breadth of thigh	6
Breadth of fore-leg	2½
Breadth of hind-leg	3
Length of horns	37
Breadth asunder at base	1
Breadth asunder at tips	9½
Length of ears	10
Breadth of head	9

A specimen of a marine snake (*Pelamys bicolor*) presented to the Museum by the Rev. William White, Wesleyan Missionary to the New Zealand Association, and which, with several others, had been picked up dead upon the beach on the west coast of that country, was upon the table; also another portion of the birds collected by Charles Darwin, Esq., to which Mr. Gould in continuation drew the attention of the Members.

January 23.

Richard Owen, Esq., in the Chair.

A selection of the *Mammalia* procured by Captain Alexander during his recent journey into the country of the Damaras, on the South West Coast of Africa, was exhibited, and Mr. Ogilby directed the attention of the Society to the new and rare species which it contained.

Among the former were the *Herpestes melanurus* and *Cynictis Ogilbii* of Dr. Smith, the *Canis megalotis*, &c. The latter consisted of five new species, which Mr. Ogilby characterized as follows:

Macroscelides Alexandri. Fur long and fine, very dark blue-black at the root, but pointed with pale sandy-red above, and white beneath; ears pretty large, subelliptical, and red behind; whole under lip red; *tarsi* white; tail long, hairy, and very much attenuated: length $5\frac{3}{4}$ inches; tail $4\frac{3}{4}$ inches.

Macroscelides melanotis. Of a rather larger size than the former, with large head, dark brown or black ears, rather sandy under lip, dunnish white throat and *abdomen*, but pale reddish brown chest; colour of the upper parts much the same, but rather more ashy; *tarsi* light brown; tail mutilated: length 6 inches.

Chrysochloris Damarensis. Brown, with a silvery lustre both above and below; a yellowish white semicircle extends from eye to eye, under the chin, covering the whole of the cheeks, lips and lower jaw; a very marked character which, as well as the peculiar shade of the colour, readily distinguishes it from the new species described by Dr. Smith: no tail: length $4\frac{1}{2}$ inches.

Bathyergus Damarensis. A species intermediate in size between *Capensis* and *Hottentotus*: colour uniform reddish brown both above and below, with a large irregularly square white mark on the *occiput*, much larger than in *Hottentotus*, and another on each side of the neck just under the ears; these two meet on the throat, which is thus covered with dirty dunnish white; tail, a large flat stump covered with coarse reddish brown bristles, which stand out from it in all directions like *radii*; paws reddish brown: length $8\frac{1}{4}$ inches; tail $\frac{1}{2}$ inch*.

Graphiurus elegans. Smaller than *Graph. Capensis* of Cuv., and of a purer and deeper ash colour above; the chin, throat, and cheeks are covered by a large patch of pure white, the rest of the under surface is mixed grey and ash, and all the *tarsi* and paws pure white: there is a mark of the same colour above and in front of each ear, and an oblique white stripe runs from the throat backwards over the

* This specimen, and the *Macroscelides melanotis*, were purchased for the British Museum, and the remaining three species for the Museum of the Zoological Society at the sale of Capt. Alexander's Collection, March 8, 1838.

shoulder, just in front of the arms; an intense black stripe passes from the commissure of the mouth, through the eye to the ear; the tail is covered with short coarse hair, pure white above, pure black below, and pencilled or shaded on each side; face greyish ash; whiskers abundant, and of a grey colour: length 5 inches; tail $2\frac{3}{8}$ inches.

Mr. Ogilby observed, that the above species, and the one described by F. Cuvier, under the name of *Graph. Capensis*, appeared to him to differ in no respect from the genus *Myoxus*, and that in characterising the present animal, he merely made use of the name *Graphiurus* to indicate its relation to that originally described by Cuvier.

Mr. Ogilby likewise called the attention of the Society to certain peculiarities in the structure of the hand, in a living specimen of a new species of *Galago*, which he proposes to call *Otolicnus Garnettii*, after the gentleman to whom he was indebted for the opportunity of describing it, and who has already conferred many advantages upon science by the introduction of numerous rare and new animals. The peculiarity of structure to which Mr. Ogilby alluded, consisted in the partially opposable character of the index finger of the fore hands, the fingers on these members being divided into two groups, composed of the thumb and index on one side, and the remaining three fingers on the other, as in the Koalas and Pseudocheirs. He remarked that the anterior index in all the inferior *Lemuridæ* was weak and powerless, and that it had the same tendency to divide with the thumb instead of the other fingers in the rest of the Galagos, as well as in the *Nycticebi*, *Microcebi*, *Cheirogalei*, and *Tarsii*, whilst in the Potto it was reduced almost to a tubercle. These genera consequently formed a little group analogous to the Koalas and Pseudocheirs among the *Didelphidæ*, being, exclusive of these animals, the only Cheiropeds in which this character occurs; and Mr. Ogilby regarded the fact as a strong confirmation of the truth of the relations which he had formerly pointed out as subsisting between these two families. The *Otolicnus Garnettii* is of a uniform dark brown colour on every part both above and below; the ears large, black, and rather rounded; the tail long, cylindrical and woolly; and the size of the animal about that of a small *lemur*, or considerably larger than *Oto. Senegalensis*.

A communication was then read to the Meeting by Prof. Owen, entitled, "Notes on the Anatomy of the Nubian Giraffe."

These notes contain the general results of the anatomical examination of three specimens of the Giraffe, which Mr. Owen had been so fortunate as to have the opportunity of dissecting; one of the three (a male) died in the Society's Menagerie, and the remaining two (male and female) were in the possession of Mr. Cross of the Surrey Zoological Gardens.

The author agrees with Cuvier in considering that the external characters of the Giraffe clearly indicate its position in the order *Ruminantia*, to be between the genera *Cervus* and *Antilope*; the true bony material of its horns, which are covered by a *periosteum* defended by hairy integument, resembling the growing antlers of the Deer; but the

non-deciduous character of this tegumentary covering to the *periosteum*, and the consequent permanency of the horns in the Giraffe, reminding us of the persistent nature of these organs as it obtains throughout the Antelopes.

The black callous integument on the upper surface in the horns, is noticed as a probable indication of a tendency to develope a superabundance of epidermic material; and Mr. Owen conceives that the strong black hair which grows in a matted tuft around their extremities may represent, in an unravelled state, the fibres composing the horny coverings of the core in the horns of the Antelope. A few examples occur among both Deer and Antelopes, in which the possession of horns is found in the two sexes, as in the Giraffe; but in this animal these organs present certain peculiar characters in the mode of their articulation to the skull, the basis of the horn being united by *sychondrosis* to the frontal and parietal bones, constituting an *epiphysis* rather than an *apophysis* of the *cranium*. With regard to the supposed occurrence of a third horn in the male Nubian Giraffe, as the osteological details bearing upon this point are given in that part of the memoir which embraces the description of the skeleton, Mr. Owen in this place merely observes, that the evidence afforded by the examination of the two individuals in question was rather opposed to, than in favour of its existence.

The general form of the Giraffe is obviously modified with especial reference to its exigencies and habits; the prolongation and extensibility of its hair-clad muzzle, the peculiar development, cylindrical shape and flexibility of its tongue; the oblique and narrow apertures of the nostrils, defended by hair and surrounded with cutaneous muscular fibres, enabling the animal to close them at will, and thus to protect the olfactory cavity from the fine particles of sand which in the storms of the desert would otherwise find ingress, are points referred to by the author as exhibiting marked adaptations of structure in especial harmony with a mode of life consequent upon the nature of its food and its geographical distribution.

For a description of the general external peculiarities of the body the author refers to Rüppell's Reise im Nordlichen Africa; Geoffroy in the Annales des Sciences, xi. p. 210; Salze, in the Mémoires du Museum, xiv. p. 68; and the 5th and 6th volumes of Sir E. Home's Comparative Anatomy.

Organs of Digestion.

The Giraffe differs from every other Ruminant in the form of the mouth, which resembles that of the Elk in the non-division and extensibility of the hair-clad upper lip, but differs widely from it in the elegant tapering shape of the muzzle. The muscles of the tongue, both as to number and arrangement, presented no peculiarities of importance, but the nerves were characterized by the beautiful wavy course in which they were disposed, and by which disposition they are accommodated to the greatly varying length of this organ. The erectile tissue, conjectured by Sir Everard Home to be present in the tongue of the Giraffe, and to be the cause of

its extension, has no existence: the only modifications of the vascular system worthy of notice were the large size and slight plexiform arrangement of the lingual veins at the under part of the base of the tongue. The inner surface of the lips, especially where they join to form the angles of the mouth, was beset with numerous close-set, strong, retroverted and pointed *papillæ*, similar to those distributed over the interior of the gullet in the *Cheloniæ*; a structure which is also present in other Ruminants.

The palate was beset with about sixteen irregular transverse ridges, having a free denticulate edge directed backwards; an apparatus for detaining the food, and insuring its deglutition, which Mr. Owen notices as especially required in the Giraffe, by reason of the small comparative size of its head and jaws: he also refers to the mechanical obstacles, which oppose the escape of the food when regurgitated, in the *Ruminantia* generally, as the presence of buccal *papillæ*, &c. as an evidence on which to found an argument of special adaptation or design. This structure is noticed by Cuvier, but considered by him as only coexistent with the occurrence of *papillæ* upon the lining membrane of the stomach, and as a condition of parts which furnishes no obvious indication of any connexion with final causes; with a view of showing that no such relation of coexistence as that imagined by Cuvier, in the presence of *papillæ* upon different portions of the alimentary canal, can be positively established, Mr. Owen instances the Turtle, which has these callous bodies in great abundance, but entirely restricted to the lining membrane of the *œsophagus*, in which situation their use is sufficiently apparent.

The *œsophagus* in size was found to be very regular and uniform throughout its entire length, being about an inch and three quarters in diameter, and surrounded with two strong layers of muscular fibres; the fibres being thickest, and arranged transversely in the external layers; those of the internal being oblique, with an approach towards a longitudinal disposition. These fibres on being examined with the microscope and compared with those of the stomach, were found by Mr. Owen to present a structure which he regards as intermediate between that which characterizes voluntary and involuntary muscular fibre; their ultimate filaments being aggregated into regular sized ultimate fascicles having a parallel disposition, and thus so far agreeing with the fibres of the voluntary muscles, but at the same time exhibiting an important structural difference in the total absence of transverse *striæ*; the fascicles in fact being perfectly smooth and substransparent.

The mucous membrane of the *œsophagus* was thick and firm, lined by a well-developed smooth *epithelium*, and connected to the muscular coat by a very lax cellular membrane.

As regards the position of the abdominal *viscera* in the female, the paunch occupied the ventral aspect of the anterior two-thirds of the short abdominal cavity, resting immediately upon the abdominal muscles and their strong elastic *fasciæ*. The great *omentum* which was studded reticularly with fat, as in the Ruminants generally, extended

from the paunch to below the brim of the *pelvis*: on raising it a fold of the *colon* appeared immediately below the paunch towards the left side; below this were several convolutions of the small intestines; the obtuse blind end of the *cæcum* made its appearance in the left hypogastric region, and below there was another portion of the great *colon*.

In the male the abdominal *viscera* presented nearly the same appearances; on raising the paunch the spiral coils of the *colon* (characteristic of the Ruminants) came into view, together with the rest of the *jejunum* and *ilium*, upon the removal of which the third and fourth stomachs, and the small liver wholly confined to the right of the mesial plane, were exposed.

The spleen, as usual in the *Ruminantia*, had its concave surface applied to the left side of the first stomach or *rumen*.

The *pancreas* extended transversely behind the stomach within the posterior duplicature of the *omentum* from the spleen to the *duodenum*.

The kidneys occupied the usual position in the loins, the right one a little more advanced than the left; their figure was rounded and compact, as in the Deer and Antelopes, and they were not externally lobated as in the Ox.

The cells of the *reticulum*, as in the Reindeer, were extremely shallow, their boundaries appearing only as raised lines; but there was the same form and grouping of the cells as obtains throughout the Ruminants generally, the arrangement being that by which the greatest number are included in the least possible space.

The folds of the *psalterium* resembled those of most other Ruminants, each two narrow folds having alternately placed between them one of great and one of moderate breadth.

In the fourth stomach the *rugæ* of the digestive membrane were slightly developed, and chiefly longitudinal; the *pylorus* was protected by a valvular protuberance placed above it just within the stomach.

The *duodenum*, which was dilated at the commencement, received the biliary and pancreatic secretions about ten inches from the *pylorus*.

The small intestines were rather tightly bound to the spine in short coils by a narrow mesentery; their diameter was about four inches.

The *ilium* ceases to be convolute towards its termination, ascending in a straight course, and entering the *cæcum* near the root of the mesentery.

The *cæcum* was a simple cylindrical gut, as in other Ruminants; its circumference about six inches.

The disposition of the *colon* resembled that of the Deer; it extended about eight feet before the spiral turns commenced, there it narrowed, and the separation of the *fæces* into pellets began at this point. The coils were not in exactly the same plane, but formed a depressed cone, with its concavity next to the mesentery, on the left of which the coils were disposed. There were four complete gyrations in one direction, having the same number of reverse coils in

their interspace. This part of the intestine measured fourteen feet in length.

The length of the intestines was as follows:

	Cross's Female.	Cross's Male.	Zool. Male.
Small....	91 ft. 0 in.	88 ft.	82 ft.
Large ...	43 2	43	40
Cæcum ..	2 2	2	2

The liver weighed six pounds eleven ounces avoirdupois; it consisted of one lobe of a flattened form, with a small posterior spigilean process.

The presence of a gall-bladder, distinguishing the hollow-horned from the solid-horned Ruminants, made the investigation of this point in the anatomy of the Giraffe one of extreme interest; and Mr. Owen remarks, that the result of his examination of three individuals shows the caution which should be exercised in generalizing upon the facts of a single dissection.

In the first Giraffe (Mr. Cross's female) a large gall-bladder was present, having the ordinary position and attachments, but presenting the unusual structure of a bifid *fundus*. Upon making a longitudinal incision down its side, it was found to be divided throughout its length by a vertical *septum* of double mucous membrane, forming two reservoirs of equal size; the organ in fact was double, each bladder having a smooth lining membrane, and communicating separately with the commencement of a single cystic duct.

In the two Giraffes subsequently dissected not a vestige of this organ could be detected, the bile in them being conveyed by a rather wide hepatic duct to the *duodenum*. Mr. Owen therefore concludes that the absence of the gall-bladder is the normal condition, and that the Giraffe in this respect has a nearer affinity to the Deer than to the Antelopes.

The *pancreas* was broader, thinner, and of a more irregular form than in the calf or human subject; it was attached on the left side to the *diaphragm* and posterior part of the stomach, extending transversely across the spine to the termination of the biliary duct.

The spleen was of a tolerably regular oval form, but very thin, not exceeding one inch and two-thirds at the thickest part.

In the chest the *viscera* presented the usual disposition.

Sanguiferous System.

The heart measured in the full length of the ventricles eight inches and a half, and the same in the transverse diameter of the base. The auricles were small as compared with the ventricles, which form a rounded cone. The right ventricle terminated two inches from the apex. The left flap of the tricuspid valve had its free margin attached by long *chordæ tendineæ* to the *septum ventriculorum* on one side, and to a single *columna carnea* on the other, which *columna* also gave attachment to some of the *chordæ tendineæ* of the right flap of the tricuspid; the rest of the *chordæ* of this flap, and all the *chordæ* of

the third or internal flap, were attached to a very short and thick *columna*, arising from the *septum*; below the left flap of the tricuspid valve was a fleshy column, connecting the wall of the right ventricle to the *septum*.

At the origin of the *aorta* there was a single small curved bone.

The arch of the *aorta*, after distributing the vessels to the heart, gave off, first, a large *innominata*, which subdivided into the right vertebral artery, the right brachial artery, and the common trunk of the two carotids; secondly, the left brachial artery; thirdly, the left vertebral artery. The common trunk of the two carotids was remarkable for its length. The cranial *plexus* of the internal carotid was much less developed than in the ordinary grazing Ruminants.

Nervous System.

The brain of the Giraffe closely resembled, in its general form, and in the number, disposition, and depth of the convolutions, that of the Deer: it was more depressed than in the Ox, and the *cerebrum* was wholly anterior to the *cerebellum*. The anterior contour of the cerebral hemispheres was somewhat truncated.

The convolutions might be readily divided, as in other Ruminants, into primary and secondary; they averaged a breadth of three lines, and were almost symmetrical in the two hemispheres. There was little symmetry in the disposition of the primary convolutions in the *cerebellum*: the middle one on the upper surface, representing the superior vermiform process, pursued a wavy course from side to side, but the inferior vermiform process was straight, and very prominently developed; these, with the lateral convolutions of the *cerebellum*, were subdivided by narrow and, for the most part, transverse folds. Mr. Owen also enters into a detailed account of the internal structure of the brain; and concludes his description of this organ by giving the following admeasurements:

	Inches.	Lines.
Total length of the brain	5	3
Vertical diameter of ditto.....	2	8
Breadth of the *cerebrum*.....	4	3
Length of the *cerebellum*	1	10
Breadth of ditto.	2	5
Length of *pons varolii*.....	1	0
Breadth of ditto.	1	6

Weight of the brain, 14oz. avoirdupois.

The olfactory nerves were large, as in most *Ruminantia*, and terminated in expanded bulbs, in length $1\frac{1}{2}$ inch, in breadth 1 inch: these were lodged in special compartments of the cranial cavity. The optic nerves and ninth pair were relatively larger than in the Deer. The other cerebral nerves presented no peculiarity.

The spinal chord had a close investment of *dura mater*, and was remarkable for the great length of its cervical portion, which, in the Giraffe dissected at the Zoological Gardens, measured upwards of three feet, the entire length of the animal from the muzzle to the vent being eight feet. Mr. Owen here particularly describes the appearance in the origins of the cervical nerves depending upon the

elongation of this part of the spinal chord; the space between the lower filaments forming the root of one nerve, and the upper filaments of the root of the succeeding nerve was not more than the space between the individual filaments of each root; whence it would seem that the elongation of the cervical portion of the chord was produced by a general and uniform interstitial deposition during fœtal developement, which thus effected an equable separation of these filaments; so that a single nerve, as in the case of the third cervical, might derive its origin from a space extending six inches in length.

The brachial *plexus* was principally formed by the first two dorsal nerves; seventeen pairs intervened between it and the large nerves forming the lumbar *plexus*.

The recurrent nerves were formed by the reunion of several small filaments derived from the *nervus vagus* at different parts of its course down the neck, instead of originating as usual in the *thorax*, and being reflected, as a single nerve, round the trunks of the great vessels.

The sympathetic nerve in the neck was found to present five ganglionic enlargements of various sizes.

Muscles.

In the dissection of the abdominal muscles no peculiarity of importance was noticed; but in the neck there existed a highly interesting modification of the parts which effect the retraction of the *os hyoides*. The pair of muscles which, as in some other Ruminants, combines the offices of *sterno-thyroideus* and *sterno-hyoideus*, arose in the Giraffe by a single long and slender carneous portion from the anterior extremity of the *sternum*; this fleshy origin was nine inches long, and it terminated in a single round tendon six inches in length; the tendon then divided into the two muscles, each division becoming fleshy, and so continuing for about 16 or 18 inches; then each muscle again became tendinous for the extent of two inches, and ultimately carneous again, prior to being inserted in the side of the thyroid cartilage, and continued thence in the form of a *fascia* into the *os hyoides*.

Mr. Owen observes that this alternation of a non-contractile with a contractile tissue, as exhibited by the above structure, displays in a most striking manner the use of tendon in regulating the amount of muscular contraction. Had the *sterno-thyroideus* been muscular throughout its entire length, the contraction of its fibres would have been equal to draw down the *larynx* and *os hyoides* to an extent quite incompatible with the connections of the adjacent parts; but the intervention of long and slender tendons duly apportions the quantity of contractile fibre to the extent of motion required.

The muscle analogous to the *omo-hyoideus* of other animals was adjusted to its office by a more simple contrivance, arising from the third cervical *vertebra* instead of the *scapula*, the diminished length of the muscle enabling it to act upon the *os hyoides* with the requisite power of contraction.

Mr. Owen remarks that the analogue of the *sterno-mastoideus*

should be called *sterno-maxillaris*, its insertion being by a slender tendon into the inner side of the angle of the jaw, after continuing fleshy to within a foot of its place of attachment.

The *scaleni* muscles, which were most powerfully developed, consisted of four distinct masses on each side, arising from the fourth, fifth, sixth, and seventh cervical *vertebræ*; they were inserted into the *manubrium sterni* and the first rib.

The *trapezius* consisted of two portions; one, arising from the transverse processes of the fifth and sixth cervical *vertebræ*, is lost in a strong *fascia* overspreading the shoulder-joint; the other arises from the *ligamentum nuchæ*, and is inserted into the *fascia* covering the *scapula*.

The *levator scapulæ* arose from the fifth, sixth, and seventh cervical *vertebræ*, and was inserted into the superior angle of the *scapula*.

The *rhomboideus* was single, and chiefly remarkable for its shortness; it was inserted into the broad elastic cartilage which is continued upwards from the base of the *scapula*.

The *pectoralis major* arose from the whole length of the *sternum*; it was composed of two portions, one superficial, the other deep seated; the former was inserted into the *fascia* covering the extensor muscles of the fore-leg; the latter into the *fascia* covering the brachial *plexus*.

With respect to the other muscles acting upon the distal joints of the extremities, with the exception of their greater length, they were not found materially to differ from the corresponding parts in other bisulcate mammals.

The *ligamentum nuchæ* was remarkable for its prodigious developement; it commenced at the sacral *vertebræ*, and receiving, as it advanced, accessions from each of the lumbar and dorsal *vertebræ*, became inserted into the spinous processes of the cervical, the extreme portion passing freely over the *atlas*, and terminating by an expanded insertion upon the occipital crest.

The bony attachment of the ligament afforded by the skull was raised considerably above the roof of the cranial cavity, the exterior table of the skull being widely separated from the vitreous plate by large sinuses, which commencing above the middle of the nasal cavity extended as far posteriorly as beneath the base of the horns; the sinuses were traversed by strong bony *septa*, forming a support to the exterior table. The sphenoidal sinuses were of large size.

The nasal cavity occupied the two anterior thirds of the skull, and the *ossa spongiosa* were proportionably developed.

The condyles of the *occiput* were remarkable for their great extent in the vertical direction, and the inferior and posterior parts of the articular surface meet at an acute angle; a structure which enables the Giraffe to elevate the head into a line with the neck, and even to incline it slightly backwards.

Male Organs of Generation.

The *testes* were elongate, oval, and situated in a short *scrotum*, on each side of which were the rudiments of two *mammæ*.

The *vasa deferentia* pursued the same course as in the Deer; they became slightly enlarged at the terminal two inches of their course, and the secreting surface of their lining membrane was augmented by various irregular folds and sinuses.

The *prostate* in being formed of two separate glands presented the true ruminant character; but the lobes themselves, as is the case with several of the typical ruminants, presented their own peculiar modification, each lobe at its distal extremity forming a large round bulbous body, the rest of the lobe diminishing towards its urethral portion.

Two Cowperian glands, each as large as a nutmeg, were situated at the base of the bulb of the *urethra*, surrounded by a special capsule of muscular fibres; they had no single central cavity, but three or four sinuses conveyed the secretion to the duct, which terminated in the bulbous part of the *urethra*.

The *penis*, when retracted, assumed the sigmoid form, as in other ruminants, the muscles producing the sigmoid retraction being inserted upon the sides of the *corpora cavernosa*, near the base of the *glans*. There was no *septum* dividing the cavernous texture of the *penis*.

The *glans* began by a somewhat sudden expansion, and continued to enlarge to its distal extremity, which was smooth and rounded. The prepuce was reflected upon the extremity, and not upon the root of the *glans*, so that its division only exposed a small portion of the latter. The urethral canal did not open upon the extremity of the *glans*, but was continued forwards for an inch and a half, attached to the inside of the prepuce, its *parietes* being merely membranous, and its extremity projecting freely, like a membranous bilabiate tube, about a line beyond the inner surface of the prepuce. A similar structure obtains in some other ruminants, as the Ram.

Female Organs.

The *ovaria* were irregularly oval, sub-compressed bodies, an inch and a half in length and one in breadth. The fallopian tubes had the margins of their expanded extremities almost entire. They open at the outer margin of a wide ovarian capsule, which does not, however, inclose the ovary. The inner surface of the pavilion is beset with numerous minute *plicæ*, which converge towards the orifice of the oviduct or fallopian tube; a few small but broad folds immediately surround the opening.

The external orifice of the common *vagina* resembled that of the Deer, in coming to a point, within which the *clitoris* was lodged. From this orifice to the communication with the *urethra*, measured five inches, and the length of the proper *vagina* six inches. The

vagina was lined by a smooth and polished membrane, disposed in numerous fine longitudinal *rugæ*. The *os tincæ* was a large, transversely oval prominence, having the orifice of the *uterus* in the centre. The length of the common *uterus* was two inches. The *cervix* was occupied by two circular series of close-set, short, longitudinal lamellar processes, about two lines in breadth, which projected from the *parietes* of the *uterus*, and had their free margins converging to the centre of the canal. Above these, the inner membrane of the *uterus* sent off several thickened processes. Each *cornu* of the *uterus* was about eight inches in length, and became bent in a spiral form when distended with fluid: four longitudinal rows of flattened processes projected from the inner surface, showing that the *fœtus* is developed in the Giraffe by means of a cotyledonous subdivided *placenta*, as in other horned Ruminants, and not, as in the Camel, by an uniform vascular villosity of the *chorion*.

February 13th, 1838.

William Yarrell, Esq., in the Chair.

Mr. Martin exhibited an insectivorous animal which had fallen under his observation in examining a collection of specimens, presented some time since to the Museum, by the late William Telfair, Esq.

In the Zoological Proceedings for 1833, reference is made to a letter of Mr. Telfair's, accompanying a very young insectivorous animal, known to the natives of Madagascar by the name "Sokinah," and which Mr. Telfair was disposed to refer to the genus *Centenes*. The above specimen being only seventeen days old, its characters could not be satisfactorily determined; but the present animal, which Mr. Martin considers to be the adult of the same species, appears to be more nearly related to the genus *Erinaceus* than *Centenes*; but at the same time it differs so materially in the character of its dentition, as to warrant the establishment of a new genus for its reception. Mr. Martin therefore proposed to characterize it under the generic appellation of *Echinops*, with the specific title of *E. Telfairi*, in memory of the lamented and zealous Corresponding Member of the Society from whom it had been received.

ECHINOPS.

Corpus supernè spinis densis obtectum.

Rostrum breviusculum.

Rhinarium, aures, caudaque ut in *Erinaceo*.

Dentes primores $\frac{4}{2}$, superiorum duobus intermediis longissimis, discretis, cylindraceis, antrorsùm versis; proximis minoribus.

Canini $\frac{1-1}{0-0}$.

Molares $\frac{5-5}{7-7}$; utrinsecùs antico 1mo suprà, et 3^{bus} infrà spuriis; reliquis, ultimo suprà excepto, tricuspidatis, angustis, transversìm positis; ultimo suprà angustissimo; molaribus infrà inter se ferè æqualibus, ultimo minore.

Pedes 5-dactyli, ambulatorii; halluce breviore; unguibus parvulis, compressis; plantis denudatis.

ECHINOPS TELFAIRI. *Ech. auribus mediocribus, subrotundatis intùs atque extùs pilis parvulis albidis obsitis; capite supernè pilis fuscis; buccis, mystacibus corporeque subtùs sordidè albis, spinis fuscescenti-albis ad basin, apicibus castaneis; caudâ vix apparente.*

	unc.	lin.
Longitudo *corporis* totius	5	2
——— ab apice rostri ad auris basin ..	1	2
——— *tarsi, digitorumque*	,,	$10\frac{3}{4}$
——— *auris*	,,	5

Habitat. Madagascar?

"*Sokinah*" of the Natives of Madagascar?

In the *upper jaw* the incisors are four in number, and apart; the two middle are large, sub-cylindrical, elongated, and placed at the apex of the jaw; the two others are small, and seated behind the former. Separated from these by a small space, succeed the canines, similar in character to the incisors, but stouter and with a slight posterior notch. The molars are five on each side: the first false and simple; the three next transversely elongated, with two external tubercles in contact, and one internal; hence their crowns assume the form of an elongated triangle, the apex being internal; the fifth molar is a slender *lamina* transversely placed, but not advancing so far laterally as the molar preceding it.

The *under jaw* presents two small incisors, somewhat apart from each other, and directed obliquely forwards; behind these there follow on each side in succession three larger and conical teeth, directed obliquely forwards, and which may be regarded as *false molars*. Separated from the last of these by a small space, succeed four molars on each side, vertical and smaller than those above, with two tubercles internally and one externally, so that the worn surface is triangular, with the apex outwards; the last is the smallest: the surfaces of all are apart, but their bases are in contact.

Mr. Martin observes, that this system of dentition (very distinct from that which characterizes the Tenrecs, (*Centenes*,) and the genus *Ericulus* of Isidore Geoffroy) presents us with characters which decidedly separate *Echinops* from *Erinaceus*, notwithstanding their approximation. In *Erinaceus* the upper incisors are six; there are no canines, but three false molars on each side, and four true molars, of which the last is small and narrow; the others square, with two outer and two inner tubercles; while in the lower jaw, the incisors, two in number, are very large, followed on each side by two false molars, and four true molars. In *Echinops*, as in *Erinaceus*, the feet have five toes; the thumb of the fore-feet is small and seated on the wrist, the other toes are small, and armed with feeble, compressed, hooked claws, the last toe the smallest: the toes of the hind-feet resemble those of the fore-feet, and the inner and outer are the smallest. The snout, ears, tail, and spiny covering of the upper surface of the body, as in *Erinaceus*.

In addition to the above description of the external characters of *Echinops*, Mr. Martin communicated to the Meeting some details of the anatomy of the soft parts, but the condition of the specimen was not such as to enable him to give any very complete account of the appearances presented by the internal organs.

The skull, as compared with that of *Erinaceus*, was proportionally very inferior in size; it was more level above, and narrower, the cranial cavity being contracted, and the muzzle shorter. The occipito-parietal ridge was elevated, the zygomatic arches were almost obsolete. The palate was narrow, and the posterior *foramina*, which in the hedgehog are large open fissures, were reduced to minute orifices.

The *pelvis* was very narrow, and the pubic bones were separate in front.

The vertebral *formula* was as follows:

Cervical	7
Dorsal	15
Lumbar	7
Sacral	2
Coccyeal	8?

The ribs consisted on each side of 8 true and 7 false.

Mr. Yarrell exhibited a recently preserved example of a new species of Swan, closely allied in external appearance to the well-known Domestic Swan, but having the legs, toes, and interdigital membranes of a pale ash-grey colour, which in the *Cygnus olor*, Ill., are deep black. Mr. Yarrell observed, that this species had been known to him for some years past as an article of commerce among the London dealers in birds, who receive it from the Baltic, and distinguish it by the name of the Polish Swan. In several instances, these swans had produced young in this country, and the cygnets when hatched were pure white, like the parent birds, and did not assume at any age the brown colour borne for the first two years by the young of all the other known species of White Swans. Mr. Yarrell considered that this peculiarity was sufficient to entitle the bird to be ranked as a distinct species, and in reference to the unchangeable colour of the plumage, proposed for it the name of *Cygnus immutabilis*.

During the late severe weather, flocks of this swan were seen pursuing a southern course along the line of our north-east coast, from Scotland to the mouth of the Thames, and several specimens were obtained. The specimen exhibited belonged to the Rev. L. B. Larking, of Ryarsh Vicarage, near Maidstone, for whom it had been preserved. It was shot on the Medway, where one flock of thirty, and several smaller flocks were seen.

Mr. Waterhouse exhibited a new species of Squirrel from the Society's Museum, and characterized it as:

Sciurus sublineatus. *Sc. suprà fusco-olivaceus flavescente lavatus; lineis dorsalibus quatuor nigris tribus albescentibus, a humeris ad uropygium excurrentibus: abdomine flavescente: caudâ nigro flavoque annulatâ.*

	unc.	lin.
Longitudo *corporis* ab apice rostri ad caudæ basin..	6	0
——— ab apice rostri ad auris basin.....	1	$2\frac{1}{2}$
——— *caudæ* (pilis inclusis)	0	5
——— *tarsi digitorum*que	1	$2\frac{1}{4}$
——— *auris*	0	$2\frac{1}{2}$

Habitat ———?

"This animal is less than the Palm Squirrel (*Sciurus palmarum*, Auct.), but like that species has four dark and three pale lines on the back: these lines, however, are very narrow, and occupy only the central portion of the back; they are not continued on to the shoulders, neither do they extend over the haunches. The general colour is

olive-brown, a tint arising from the hairs being each minutely annulated with deep yellow and black. The throat, chest, and rump, are whitish, and the belly is yellow. The hairs covering the feet above are annulated like those of the body, but of a deeper tint. The tail is cylindrical and rather slender, and exhibits obscure annulations, each hair being annulated with deep golden yellow and black. The fur is short and soft, that on the back is grey at the base; on the under parts the hairs are very obscurely tinted with grey at the base. The hairs of the moustaches are numerous, moderately long, rather slender, and of a black colour. The head is very nearly uniform in colour with the body, it is however less yellow."

Mr. Blyth called the attention of the Society to a peculiarity in the structure of the feet in the *Trogonidæ*, which he thought had not been previously noticed. This family, although *zygodactylous*, have the toes disposed on quite a different principle from the Woodpeckers, Parrots, and other birds, which present an analogous structure; their first and second toes being opposed to the third and fourth, in lieu of the first and fourth to the second and third, in consequence of which, that toe, which corresponds to the middle one in birds that are not yoke-footed, that is to say, the third or longest toe, is the inward of the two forward toes in the *Trogon* family, and the outward in the Woodpeckers and Parrots.

A continuation of Mr. Owen's paper, on the Anatomy of the Giraffe was then read, embracing the principal features of interest in the osteological peculiarities of this animal.

The author, in the first place, details the result of his investigation into the evidence bearing upon the supposition of there being in the male Nubian Giraffe a third horn, situated anteriorly in the mesial line of the *cranium*.

Upon making a section of the skull of the male Cape Giraffe, the anterior protuberance was shown to be due only to a thickening and elevation of the anterior extremities of the frontal, and the contiguous extremities of the nasal, bones; and in the Nubian Giraffe the existence of a third distinct bony *nucleus* was also satisfactorily negatived; for, upon macerating the skulls of individuals which had not attained the adult age, the posterior horns became detached from the bones of the *cranium*; but no such separation took place in respect to the protuberances forming the supposed third horn, which would have been the case had its relation to the *cranium* been that of a distinct *epiphysis*.

In both the Cape and Nubian Giraffe, the horns were placed immediately over the coronal suture, which traversed the centre of their expanded bases. The frontal bones were distinct and joined by a well-marked suture, continued along the posterior two-thirds of the frontal protuberance, or as far as the nasal bones. The sagittal suture was persistent on both sides external to the horns. The parietal bone was single and anchylosed with the occipital and interparietal bones.

The male Giraffe, in both the Cape and Nubian varieties, has the horns nearly twice as large as those of the female; the expanded bases of the horns also in the former, meet in the middle line of the skull, but in the female the bases of the horns are at least two inches apart.

The nasal bone was bifurcate at its anterior extremity as in the Deer, not simply pointed as in most of the Antelopes.

With respect to the cervical *vertebræ* of the Giraffe, Mr. Owen observes, that they are not only remarkable for their great length, but also, as has been recently shown by Dr. Blainville, for the ball and socket form of the articulations of their bodies; the convexity being on the anterior extremity, and the concavity posteriorly, agreeing in this particular with the *vertebræ* of the Camel.

The *axis* was joined to the *atlas* by the anterior extremity of its body and the *processus dentatus*, which were blended in one common articulation, and inclosed in one capsular ligament, The spinous process of the *axis* was developed from the whole longitudinal extent of the superior arch, but had a very slight elevation. In the rest of the cervical *vertebræ*, the spinous processes were thin triangular *laminæ*, their *apices* rising about an inch and a half from a broad base resting upon the middle of the superior arch. Processes, analogous to the inferior transverse processes in the Crocodile, extended downwards and outwards from the lower part of the anterior extremity of each of the cervical *vertebræ* (except the *atlas* and *dentata*), but of much smaller size than the corresponding processes in the Camel.

The perforations for the vertebral arteries were large, and present in the seventh as well as in the rest of the cervical *vertebræ*; they were situated above the transverse processes in the side of the bodies of the *vertebræ* at the base of the superior *laminæ*. Mr. Owen observes, that although this position of the arterial *foramina* is somewhat peculiar, yet, in this respect, the Giraffe comes nearer the horned Ruminants than the long-necked *Camelidæ*.

In viewing the vertebral column of the Giraffe from above, the cervical *vertebræ* are seen to present the broadest bodies; of these the third and fourth are the narrowest and longest, the rest gradually increasing in breadth and diminishing in length to the seventh: the dorsal *vertebræ* thence grow narrower to the ninth, after which the *vertebræ* increase in breadth chiefly by the progressive development of the transverse processes.

The *sacrum* consisted of four *vertebræ* anchylosed together, but of these only the first articulated with the *ilium*.

Mr. Owen gives the following as the vertebral *formula* of the Giraffe.

Cervical	7
Dorsal	14
Lumbar	5
Sacral	4
Caudal	20

The number of ribs was fourteen pairs, seven true and seven false. The first pair was straight, the rest became gradually more and more curved to the last. They increased in length to the eighth, and then gradually became shorter: in length the increase was to the fifth, from which they gradually became narrower.

The *sternum* consisted of a single series of six bones, and an ensiform cartilage; it was chiefly remarkable for its great curvature. The first sternal bone was the narrowest and longest; the succeeding ones progressively diminished in length, and increased in thickness.

As the osteology of the Giraffe has been illustrated by Pander and D'Alton, and also described with more detail in the second edition of Cuvier's *Leçons d'Anatomie Comparée*, Mr. Owen considers it unnecessary to treat at large of the rest of the skeleton, merely giving a brief notice of the several bones of the extremities: in conclusion, he remarks that the order *Ruminantia*, perhaps the most natural in the mammiferous class, if we look to the condition of the organs of nutrition, presents, however, more variety than any of the carnivorous orders, in the local development of the organs of relation, and the consequent modification of external form: the most remarkable of these modifications is undoubtedly that which we admire in the Giraffe, and the anatomical peculiarities, which its internal organization presents, are principally confined to the skeleton in respect to the proportions of its different parts; and to those parts of the muscular and nervous systems immediately relating to the local peculiarities in the development of the osseous framework.

February 28, 1838.

Richard Owen, Esq., in the Chair.

Some observations were made by M. Bibron upon two European species of *Triton* indigenous to this country, *Triton cristatus* and *Trit. marmoratus*, which many naturalists consider to have been erroneously separated. M. Bibron, however, entertains no doubt whatever of their being really distinct, and pointed out a character by which he states they may readily be distinguished, and which he believed to have been hitherto unnoticed. This distinction consists in the form of the upper lip, which in *Triton cristatus* is so largely developed as to overlap the under lip posteriorly when the jaws are closed, a condition never present in *Trit. marmoratus*.

Mr. Ogilby exhibited and characterized, under the name of *Macropus rufiventer*, a new species of Kangaroo which Mr. Gould had received from Tasmania, where it is known by the name of Wallabee. The external incisor tooth of the upper jaw was marked by a duplication or fold: the general colour of the animal above was grayish brown, considerably darker than the wild rabbit, and copiously intermixed on the back with pure black hairs, which in certain lights gives this part a perfectly black appearance; the paws and outer surface of the fore-legs are of the same colour; the *tarsus* and hind paws brown; the chin, throat, belly, and abdomen, sandy red, more or less intense; ears yellowish red within, brownish black without; tail rather short, dark brown above, dirty yellowish on the sides, naked, and granulated two-thirds of its length on the under surface; claws long and pointed; nose naked; length of body 2 feet; of tail 1 foot 2 inches.

Mr. Waterhouse exhibited a drawing, and the tail and jaws of a new species of *Delphinus*, which he characterized as

Delphinus Fitzroyi. *Delph. suprà niger; capitis corporisque lateribus, corporeque subtùs, niveis; caudâ, pedibus, labioque inferiore, nigris; fasciis latis duabus per latus utrumque obliquè excurrentibus, hujusque coloris fasciâ utrinque angulo oris ad pedem tendente.*

	ft.	in.	lin.
Total length (measuring along curve of back).....	5	4	0
Length from tip of muzzle to vent	3	10	9
Length from tip of muzzle to dorsal fin	2	6	5
Length from tip of muzzle to pectoral.....	1	4	5
Length from tip of muzzle to eye.....	0	9	9
Length from tip of muzzle to breathing aperture (following curve of head)	0	10	7

	ft.	in.	lin.
Length from tip of muzzle to angle of mouth	0	7	9
Length of dorsal fin (along the anterior margin)	1	0	5
Height of ditto	0	6	4
Length of pectoral, (along anterior margin)	1	2	8
Width of tail	1	4	5
Girth of body before dorsal fin	3	0	6
Girth of body before pectoral fin	2	8	2
Girth of body before tail fin	0	7	8
Girth of head over the eyes	2	0	0

Habitat, Coast of Patagonia, lat. 42° 30′. (April).

"This species, which I have taken the liberty of naming after Captain Fitzroy, the Commander of the Beagle, approaches, in some respects, to the *Delphinus superciliosus* of the 'Voyage de la Coquille,' but that animal does not possess the oblique dark-gray bands on the sides of the body; it likewise wants the gray mark which extends from the angle of the mouth to the pectoral fins. In the figure, the under lip of the *Delph. superciliosus* is represented as almost white, whereas in the present species it is black: judging from the figures, there is likewise considerable difference in the form. The figure which illustrates this description agrees with the dimensions, which were carefully taken by Mr. Darwin immediately after the animal was captured, and hence is correct."

Mr. Gould exhibited two species of the genus *Ptilotis*, which he characterized as *Ptil. ornata*, and *Ptil. flavigula*.

Ptilotis ornata. *Ptil. vertice, alarum marginibus externis, nec non caudæ olivaceis; dorso uropygioque brunneis; gulâ, genisque olivaceo-fuscis; pectore corporeque subtùs cinerescentibus, singulis plumis notâ latâ brunneâ in medio ornatis; crisso pallidè badio plumis fusco striatis, penicillâ nitidè flavâ utrumque colli latus ornante; notâ longitudinali sub oculos olivaceâ; primariis rectricibusque caudæ fuscis, his ad apicem externum albis; rostro nigrescente; pedibus brunneis.*

Long. tot. $6\frac{1}{2}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $3\frac{5}{8}$; *caudæ*, $3\frac{1}{8}$; *tarsi*, $\frac{3}{4}$.

Hab. Swan River, Australia.

Ptilotis flavigula. *Ptil. capite, nuchâ, genis, corporeque inferiore nigro-griseis, hoc colore apud abdomen crissumque olivaceo tincto; plumis auricularibus argenteo-cinereis et post has guttâ flavâ; gulâ flavâ; alis, dorso, caudâque, flavescenti-olivaceis; femoribus olivaceis; rostro pedibusque nigrescentibus.*

Long. tot. 8 unc.; *rostri*, 1; *alæ*, $4\frac{1}{4}$; *caudæ*, $4\frac{1}{4}$; *tarsi*, 1.

Hab. Van Diemen's Land and New South Wales.

March 13th, 1838.

William Yarrell, Esq., in the Chair.

Mr. Ogilby read a letter from Mr. V. der Hoeven, in which the writer expresses his belief that the large Salamander preserved in a living state at Leyden ought to be regarded as a species of Harlan's genus *Menopoma*; its specific characters consisting in the absence of the branchial apertures, which are present in the species upon which Harlan founded his genus. M. V. der Hoeven thinks it probable that the branchial apertures were present in the Leyden Salamander in the young state, and he proposes to adopt the generic term *Cryptobranchus* in preference to that of *Menopoma*, and to give it the specific name of *Japonicus*. He further states that his observations upon this singular reptile will shortly be published in a Dutch Journal.

Mr. Owen observed, with reference to the opinion of M. V. der Hoeven respecting the relations of the Gigantic Salamander of Japan to the *Menopome* of the Alleghany Mountains, that the persistence of branchial apertures was a structure so likely to influence not only the habits of an amphibious reptile, but also the structural modifications of the osseous and vascular parts of the respiratory organs, as to render it highly improbable that the *Menopome* should be related generically to a species having no trace of those apertures. He thought, therefore, that the question of the *Menopome* and gigantic Japanese Salamander being different species of the same genus, could be entertained only on the supposition, that the branchial apertures were a transitional structure in the former reptile as they are in the latter. That this was the case he considered as highly improbable; for, besides the ossified state of the hyoid apparatus, there was evidence in the Hunterian Collection that both the male and female generative organs in the *Menopome* have arrived at maturity without any change having taken place in the condition of the branchial apparatus usually considered as characteristic of the *Menopome*. He therefore considered it to be undoubtedly generically distinct from the gigantic Salamander of Japan, the true affinities of which could only be determined satisfactorily after a complete anatomical investigation, especially of its sanguiferous, respiratory, and osseous systems.

Mr. Ogilby exhibited a drawing, made by Major Mitchell, of a Marsupial animal found by that officer on the banks of the river Murray, during his late journey in the interior of New South Wales. Mr. Ogilby stated his original belief that the animal in question belonged to the *Perameles*, under which impression he had proposed to name it *Per. ecaudatus*, from its entire want of tail, a cha-

racter found in no other species of the same group; but a drawing of the fore-foot, afterwards found by Major Mitchell, and likewise exhibited to the Society on the present occasion, had considerably shaken this first opinion, and induced Mr. Ogilby to suspect that the animal may eventually form the type of a new genus. According to Major Mitchell's drawing, and the notes which he took at the time of examining the specimen, it would appear that there were only two toes on the fore-feet, which were described as having been so perfectly similar to those of a pig, as to have procured for the animal the name of the pig-footed bandicoot, among the persons of the expedition.

The drawing of the foot, in fact, very closely resembles that of the genus *Sus* in form and characters; two toes only are represented, short, and of equal length; but there is a swelling at the base of the first *phalanges*, which renders it probable that there may be two smaller ones behind. The *Perameles*, on the contrary, have three middle toes on the fore feet, all of equal length, and armed with very long, powerful claws, besides a small rudimentary toe very distinctly marked on each side. The form and character of the hind feet were perfectly similar to those of the *Perameles*; as were also the teeth, as far as could be judged from the drawing, except that the canines did not appear to surpass the anterior molars in point of size. The ears were long, elliptical, and nearly naked; the head broad between the ears, and very much attenuated towards the muzzle; the body about the size of a small rabbit, and the fur very much of the same quality and colour as in that animal. Mr. Ogilby, after expressing his confidence in the fidelity of Major Mitchell's drawings, and the care with which that gentleman assured him he had made the observation in question, expressed his belief that this animal would be found to constitute a new genus of Marsupials, and proposed for it the provisional name of *Chœropus*, in allusion to the described characters of the fore feet.

The following is the notice of this animal inserted by Major Mitchell in his journal, on the occasion of first discovering it. "June 16, 1836. The most remarkable incident of this day's journey was the discovery of an animal of which I had seen only a head in a fossil state in the limestone caves of Wellington Valley, where, from its very singular form, I supposed it to belong to some extinct species. The chief peculiarity then observed was the broad head and very long, slender snout, which resembled the narrow neck of a wide bottle; but in the living animal the absence of a tail was still more remarkable. The feet, and especially the fore legs, were also singularly formed, the latter resembling those of a Pig; and the marsupial opening was downwards, and not upwards, as in the Kangaroo and others of that class of animals. This quadruped was discovered by the natives on the ground; but on being chased it took refuge in a hollow tree, from which they took it alive, all of them declaring that they had never before seen an animal of the kind. This was where the party had commenced the journey up the left bank of the Murray, immedi-

ately after crossing that river." Such, Mr. Ogilby remarked, was all the information he possessed at present with regard to this singular animal; but Mr. Gould had promised to examine the original specimen on his arrival at Sydney, in the Museum of which town it had been deposited; and Mr. Ogilby therefore hoped that, through the kindness of that gentleman, he should shortly have it in his power to communicate a more detailed description of its form and characters to the Society.

Mr. Waterhouse afterwards called the attention of the Meeting to some valuable skins of *Mammalia*, brought from Africa by Capt. Alexander, recently purchased for the Society's Museum.

March 27th, 1838.

William Yarrell, Esq., in the Chair.

A Dugong preserved in spirit having been presented to the Museum by Alexander John Kerr, Esq., of Penang, Mr. Owen communicated to the meeting some notes descriptive of the principal *viscera* in this remarkable aquatic mammal, and a statement of the relative proportions exhibited by its several parts, in comparison with the dimensions of a Dugong published by Sir Stamford Raffles in the Phil. Trans., 1820, and of two other specimens which Mr. Owen had on previous occasions examined in the Society's collection.

Mr. Owen remarks, that "The external form of the Dugong is not so well calculated for moving rapidly through the water as that of the Dolphin and other carnivorous *Cetacea*, which subsist by a perpetual pursuit of living animals. In these the snout is conical, and peculiarly elongated, and in some, as the *Delphinus Gangeticus*, the jaws are produced to an extreme length, so as to give them every advantage in seizing their swift and slippery prey; whilst, in the herbivorous Dugong, the snout is as remarkable for its obtuse, truncate character;—a form, however, which is equally advantageous to it, and well adapted to its habits of browzing upon the *algæ* and *fuci* which grow upon the submarine rocks of the Indian seas.

"As, from the fixed nature of the Dugong's food, the motions of the animal during the time of feeding must relate more immediately to the necessity of coming to the surface to respire, its tail, the principal locomotive organ of ascent and descent, is proportionally greater than in the true *Cetacea*, its breadth being rather more than one-third the length of the whole body.

"But the most important external differences are seen in the presence of the *membrana nictitans*, in the anterior position of the nostrils, and in the situation of the *mammæ*, which are pectoral, or rather axillary, being situated just behind the roots of the flippers; in the female specimen examined their base was about the size of a shilling, and they projected about half an inch from the surface.

"A considerable ridge extends along the middle of the upper surface of the posterior part of the back, which is continued upon and terminates in the tail.

"The *viscera* were detached from one another, and from their natural connexions, in the same way in Mr. Kerr's as in the other specimens transmitted to the Society, so as to disable me from ascertaining their several relative positions. It may be observed, that if this were done merely with a view to their preservation, it was unnecessary; laying open the cavity of the *abdomen*, with the addition of opening the stomach and the intestinal canal in a few places,

so as to let the spirit get into the interior of the alimentary canal, would answer every purpose.

Digestive Organs.

"The mouth and tongue corresponded with the descriptions already published of these remarkable structures. The opening of the *larynx* is chiefly defended, during the submarine mastication of the vegetable matters constituting the food of the Dugong, by the extreme contraction of the faucial aperture, which resembles that of the Capybara. It is not traversed by a pyramidal *larynx*, as in the true *Cetacea*. There are two large *parotid* glands, situated immediately behind the large ascending ramus of the lower jaw. A thick layer of simple follicular glands are developed above the membrane of the palate, and a glandular stratum is situated between the mucous and muscular coats of the lower part of the *œsophagus*; a similar but more developed glandular structure is present in the *œsophagus* of the Ray.

"The stomach of this singular animal presents, as Sir Everard Home has justly observed, some of the peculiarities met with in the Whale tribe, the Peccari and *Hippopotamus*, and the Beaver: like the first, it is divided into distinct compartments; like the second and third, it has pouches superadded to and communicating with it; and, like the last, it is provided with a remarkable glandular apparatus near the *cardia*.

"These modifications obviously harmonize with the difficult digestibility and low-organized nature of the food of the Dugong. Yet, it is a fact which would not have been, *à priori*, expected, that in the carnivorous *Cetacea* the stomach is even more complicated than in the herbivorous species, and presents a closer resemblance to the ruminant stomach; it is divided, for example, into a greater number of receptacles, and has the first cavity, like the *rumen*, lined with cuticle; while in the Dugong, on the contrary, the stomach is properly divided into two parts only (of which the second much more resembles intestine), and both are lined with a mucous membrane.

"The first or cardiac cavity is of a spheroidal or full oval shape, with the left extremity, which contains the gland, produced in an obtusely conical form towards the *diaphragm*. The length of this cavity was 9 inches, its depth $6\frac{1}{2}$; but it must be remembered that it had been opened, and the sides lay flat together. In the smaller Dugong, where the stomach had probably been more distended at the time of death, this cavity measured 12 inches in length and 7 in depth.

"The *œsophagus* is very narrow and muscular, and terminates at the middle of the lesser curvature rather nearer the right than the left extremity of the cardiac cavity.

"The muscular coat of the stomach is strongly developed, but varies in thickness at different parts of the cavity. Where it covers the gland at the left extremity it is two lines in thickness, but

quickly increases, as it spreads over the wider parts of the cavity, to the extent of 8 lines; then again gradually diminishes, as it approaches the pyloric cavity, to a thickness of $1\frac{1}{2}$ line at the greater curvature, but, at the constriction separating the two cavities, again increases to 6 lines: along the lesser curvature it never diminishes in thickness beyond 3 lines, the muscular coat at this part being, as in the human stomach, augmented with additional longitudinal fibres.

"In order to defend the *cardia* against the pressure of the contents of the stomach, when acted upon by this powerful muscular coat, the *œsophagus* enters the stomach in a valvular manner, and is surrounded at its termination by a vast accession of muscular fibres, forming a conical mass upwards of an inch in thickness all round the canal: the outermost of these fibres run longitudinally; the middle ones decussate each other obliquely; the innermost are circular, and form a sphincter around the *cardia*. The diameter of the canal so surrounded was 3 lines, the inner surface being gathered up in irregular transverse *rugæ*; the cellular coat is increased in thickness at its termination, and protrudes the inner membrane into the stomach like the *os tincæ* of the womb.

"The inner surface of the stomach was puckered around the *cardia*, and presented a few small, irregular *rugæ* along the lesser curvature and about the orifice leading to the second cavity, but the remainder was tolerably even and smooth. The inner membrane is a thin, soft membrane, with a finely reticulate surface. To the left of the *cardia* there projects into the stomach a rounded mammilloid eminence, whose base is 2 inches in diameter, and whose *apex* presents an oblique crescentic orifice about 3 lines in diameter; on drawing aside the margins of this orifice, I unexpectedly found that, instead of its being the outlet of a simple mass of follicular glands, as would appear from the figures and description in Sir Everard Home's Account of the Anatomy of the Dugong, it led to a wide, flattened, winding *sinus*, and that its circumference was formed by the termination of a membrane spirally disposed in about eight or ten turns, and increasing in breadth at each gyration, having both surfaces covered with the orifices of numerous glandular follicles, and the interspaces filled with a cream-like secretion. This structure, which adds another peculiarity to the stomach of the Dugong, and one met with in the *cæcum* only in a few other *mammalia*, viz. that of having its blind end occupied by a spiral membrane, I have found in all the specimens dissected at the Society; and in each case the gland was infested by *Ascarides*, hereafter to be described, which left impressions upon the spiral membrane.

"The orifice leading to the pyloric cavity of the stomach resembles in some respects a true *pylorus*; besides the additional muscular fibres, the greater part of which are circularly disposed, it is provided with a circular and valvular production of the inner membrane of the stomach of 3 lines in extent; diameter of the orifice 9 lines. Immediately beyond this valve are the orifices of the two cæcal appendages, situated $1\frac{1}{2}$ inch apart at the upper and

rather towards the posterior side of the cavity; these orifices were about an inch in diameter, but the inferior orifice was the larger of the two. The appendages were of the same length, viz. 5 inches; the circumference of the anterior and superior was $5\frac{1}{2}$ inches, that of the lower one $4\frac{1}{2}$ inches; but this difference in capacity depended on the different state of dilatation in the two pouches; for on laying them open, the narrower one had its inner surface thrown into numerous small *rugæ*, while very few appeared in the wider pouch in consequence of the dilatation. Small quantities of comminuted seaweeds were found in both these receptacles.

"The muscular coat of these pouches was one line and a half thick, and arranged obliquely. There were no particular glandular appearances on the mucous coat. They seem to vary in their relative dimensions in different individuals. In the small female Dugong examined by Sir Everard Home, the posterior inferior pouch was seven inches and a half in length, while the other was only three inches, but the diameter of the latter was twice that of the longer pouch. These gastric *cæca* are interesting from repeating so closely the structure which characterizes the stomach of some of the lowest animals, in which they sometimes represent the whole of the superadded glandular apparatus of the digestive system.

"The pyloric cavity of the stomach is, as I have before observed, more like an intestine, being elongated and narrow; indeed this circumstance and the resemblance of the orifice of communication to a true *pylorus* appear to have deceived the dissectors who furnished Sir Stamford Raffles with the otherwise very accurate notes on the anatomy of the Dugong, published in the 110th vol. of Phil. Trans., 1820, since they describe these appendages as opening into the stomach near the junction of the *duodenum*; but the true commencement of that intestine is twelve inches beyond the orifices of the *sacculi*. The circumference of the pyloric cavity at its commencement was nine inches; it dilated a little beyond the orifices of the *sacculi*, and then gradually diminished to the *pylorus*, which is an orifice of about half an inch diameter. The muscular coat of this compartment of the stomach varies from two to three lines in thickness, the longitudinal fibres which run along the lesser curvature of the preceding cavity are continued on the same aspect of this one, passing between the two *sacculi*, and apparently adapted so as to close their orifices by drawing towards the *cardia* the part of the stomach that is to the right of them. The inner membrane of the pyloric cavity is similar to that of the cardiac, and is thrown into a few *rugæ*.

"Beyond the *pylorus* the mucous membrane of the intestine is for a few inches slightly rugous like that of the stomach, it is then thrown into decided transverse wavy *rugæ*; at five inches distance from the *pylorus* the *duodenum* receives the biliary and pancreatic secretions on a mammillary eminence, three lines broad. Beyond this part the transverse *rugæ* are crossed by longitudinal ones, and the inner membrane puts on a reticular appearance; this disposition continues for about six

feet, when the transverse folds gradually disappear, and the longitudinal disposition predominates through the remainder of the small intestines. The whole length of this part of the canal, in the Dugong last dissected, was twenty-seven feet; the diameter of the canal uniformly about one inch. The muscular coat throughout, two and a half lines thick, the external longitudinal layer being half a line in thickness. The cellular or nervous and mucous coats together were two lines in thickness. The orifices of the intestinal glands described by Home, (*ut sup.* p. 318,) were very distinct in the first specimen dissected, arranged in a zig-zag line—thus .˙.˙.˙.˙.˙—upon the mucous membrane, along the side of the intestine next the mesentery, and occasionally crossing from one side to the other of the line of attachment; they were continued all the way to the *cæcum*.

"It would seem that this appendage was present in all the herbivorous *Cetacea*; Steller describes it as of large size, and sacculated, in the Northern Manatee (*Stellerus*). Daubenton has given a figure of the bifid *cæcum* in the Southern Manatee (*Manatus Americanus*). It is interesting to observe that a *caput-coli* is present in those of the true *Cetacea*, as the *Balænidæ*, which subsist on animal food of the lowest organized kind.

"Where the *ilium* enters the *caput-coli* in the Dugong it is surrounded by a sphincter almost as thick and strong as is that at the *cardia*. The terminal orifice is transverse and irregular.

"The *cæcum* is a conical cavity, but in neither instance was it so attenuated at the extremity as in the specimen from which Sir E. Home's representation is taken. Its length six inches; diameter at the base or entry of *ilium* four inches. The muscular coat increases rapidly in thickness towards the apex, near which it is one inch in thickness; its inner surface is smooth, and there is no appearance of glands in the mucous membrane. This circumstance, combined with its conical form, its great muscularity, and complete serous outer covering, give it a great resemblance to the left ventricle of the bullock's heart. Its capacity indeed is trifling as compared with the great development of the rest of the large intestine; and it contains no particular glandular structure; the chief peculiarity of this *cæcum* is the strength of its muscular tunic, and it might, without the simile being far-fetched, be termed, in the Dugong, the heart of the large intestines, since here its principal function is evidently to give a first powerful impulse to the motion of the long column of matter contained in the large intestines. There is no trace of a constriction at the commencement of the *colon* above the ilio-cæcal orifice; but the great intestine is continued for a little way of equal dimensions with the base of the *cæcum*, and then soon diminishes to a diameter of one inch and a half, which continues to near the termination of the canal, which becomes again wider to the *anus*. The *parietes* of the large intestines are thinner than those of the small; the muscular coat consists of a thin layer of longitudinal, and a thicker layer of circular fibres; the mucous membrane is generally smooth.

"Towards their termination the large intestines again become

wider. The inner membrane is produced into a few irregular folds, and for half an inch within the *anus* is of dark leaden colour, the *pigmentum* being apparently continued inwards for that extent.

" From the complexity of the stomach, the great extent of the alimentary canal, its vast muscular power, and glandular appendages, the digestive functions must be extremely vigorous in this animal. The vigour of the digestive functions obviously relates, in the herbivorous section of *Cetacea*, to the low organized indigestible character of their nutriment; but the complicated stomach and long intestinal canal of the carnivorous *Cetacea* must have other relations than to the kind of food. These modifications of the digestive system, for example, cannot be so explained in the *Grampus*, which preys on the highly organized *mammalia* of its own class. It is not to the nature of the food, but to the quantity of nutriment that is required to be obtained from it, that I conceive the peculiarities of the digestive system in the carnivorous *Cetacea* to relate. In no other *Carnivora* is the same quantity of blood, the same mass of fat to be eliminated from the raw material of the food: the digestive system is, therefore, perfected in these warm-blooded carnivorous *Mammalia* to meet the contingencies of their aquatic life.

" The *omentum* is continued from the great curvature both of the cardiac and pyloric divisions of the stomach; though short, it is much more distinctly developed than in the carnivorous *Cetacea*; it contains no adipose matter.

" The mesentery like the *omentum* was thin, with little fat, and a few absorbent glands of the size of French beans were scattered in it. The absorbents going to these glands were very small."

Having described various other particulars connected with the *chylopoietic viscera*, and the individual differences which they presented in the three specimens dissected, Mr. Owen proceeded to observe as follows:—

" The views taken by Cuvier of the natural affinities of the Dugong and other herbivorous *Cetacea*, as expressed in his latest classification, in which they form part of the same order as the carnivorous *Cetacea*, are undoubtedly questionable, and have been dissented from by De Blainville and other eminent authorities in zoology. If, indeed, the object of every good classification be, what Cuvier states it to be, to enable the naturalist to express in general propositions structures and attributes common to each given group, the conjunction of the Dugong with the Dolphin fails in this respect in regard to almost all the important points of internal organization.

" It is this question which may give interest to the present anatomical details, some of which are not new, and which I should not have intruded upon the notice of the Society had they previously been considered with reference to the important zoological question still at issue.

" In proceeding with our investigation of the abdominal *viscera*, we find, with respect to the biliary organs, that the Dugong deviates in a marked degree from the ordinary *Cetacea* in the presence of a

well-developed gall-bladder. Daubenton found a gall-bladder in the Manatee; but the presence of this organ is not constant in the herbivorous *Cetacea*, for in the Northern Manatee (*Stellerus borealis*, Cuv.), according to Steller*, the gall-bladder is wanting, and its absence seems to be compensated by the enormous width of the *ductus communis choledochus*, which would admit the five fingers united. The liver in the Dugong is more flattened, and more divided than in the true whales. It consists of three lobes, with a small *Spigelian lobulus* continued from the root of the left lobe. The middle of the three lobes is the smallest, and presents a quadrate figure, with its free margin projecting forwards, notched for the reception of the suspensory and round ligament, and, in one of the specimens, obtusely bifurcate; it overhangs, as it were, the gall-bladder, which is lodged in the middle of its concave or under surface. The gall-bladder was four inches in length and one inch in diameter at its *fundus*; it receives the bile in a peculiar manner; not, as in other *Mammalia*, by a junction of the cystic with the hepatic duct, with or without hepato-cystic ducts, but by two large hepato-cystic ducts exclusively, which pierce its *cervix* obliquely, just as the ureters convey the renal secretion to the urinary bladder. The orifices of the above ducts are half an inch apart, and three inches distant from the *fundus vesicæ*. The *cervix* contracts gradually into the cystic duct, which exclusively conveys the bile to the intestine. It was six inches in length, and two lines in diameter; but became dilated just before it entered the *duodenum*, and, as it passed between the coats of that gut, its lining membrane was developed into reticulate folds, presenting the only appearance of a valvular structure in the course of the duct. Three wide *venæ hepaticæ* from the left side, and one on the right side of the liver, join the inferior *cava* at the upper and posterior edge of the liver, which is not perforated by that vein.

"In the Dugong No. 2, the *pancreas*, which was situated below and behind the pyloric compartment of the stomach, was seven inches in length; thick and obtuse at the splenic or left end, where its diameter was two inches, and gradually becoming smaller towards the *duodenum*. Its secretion is carried from the component lobules by from twenty to thirty ducts, each about two lines in diameter, to a very wide common excretory canal, which terminates below, but on the same prominence, with the cystic duct; at a much greater relative distance from the *pylorus* than in the true *Cetacea*. In one of the Dugongs dissected by me I found two small accessory spleens, in addition to the larger rounded one, which measured four inches in length; but in the other specimens this alone was present.

Circulating System.

"All the three specimens presented the same remarkable extent of separation of the two ventricles of the heart which Raffles and Home have described in the individuals dissected by them, and which Rüp-

* See *Novi Commentarii Acad. Scient. Petrop. t. ii.* 1751.

pell* observed in the Dugong of the Red Sea (*Halicore tabernaculi*, R.). This condition of the heart was first noticed by Daubenton in the *fœtus* of the Manatee; and is also described by the unfortunate Steller in the genus worthily consecrated to his name, in which, however, the apical cleft of the heart extended upwards only one third of the way towards the base. In the Dugong it reaches half-way towards the base. The carnivorous *Cetacea* do not participate with the herbivorous section in this interesting structure.

"I found in each of the specimens that the *foramen ovale* was completely closed, and the *ductus arteriosus* reduced to a thick ligamentous chord, permeable for a short distance by an eye-probe from the *aorta*, where a crescentic slit still represented the original communication. In the smoothness and evenness of their exterior, and their general form, the auricles of the Dugong resemble those of the Turtle (*Chelone*): the *appendix* can hardly be said to exist in either. The right auricle is larger than the left; the *musculi pectinati* are well developed, especially in the left: they are irregularly branched, and with many of the small round *fasciculi* attached only by their two extremities to the auricular *parietes*. The free wall of the right ventricle scarcely exceeds at any part a line in thickness, and is in many places even less. The tricuspid valve is attached to three fleshy columns by *chordæ tendineæ* given off from the sides and not the extremities of the *columnæ*, both of which extremities are implanted in the walls of the ventricles. There are several other *columnæ carneæ* passing freely from one part of the ventricle to another, like the *musculi pectinati* of the auricles, and which have no connection with the tricuspid valve. The mitral valve is adjusted to its office by attachments to two short and transversely-extended *columnæ*. The thickness of the *parietes* of the left ventricle varies from half an inch to an inch. The valves at the origins of the great arteries present the usual structure. The primary branches from the arch of the *aorta* corresponded in each specimen with the description and figure by Home. There is one superior *cava* only, not two as in the elephant. The pulmonary veins terminate in the left auricle by a common trunk an inch in length.

"With respect to the vascular system of the *Cetacea*, Hunter†, speaking of the true whales, observes, "Animals of this tribe have a greater proportion of blood than any other known, and there are many arteries apparently intended as reservoirs for arterial blood;" and then he proceeds to describe the extraordinary intercostal and intravertebral plexuses in the true *Cetacea*. As no mention is made in the anatomical descriptions of the herbivorous *Cetacea*, by Daubenton, Steller, Cuvier, Raffles, and Home, respecting the existence or otherwise of similar plexuses in the several specimens examined by them, I pursued with much interest this part of the dissection of our Dugongs; but could detect no trace of this very striking modi-

* *Beschreibung des im Rothen Meere vorkommenden Dugong.* 4to. Frankfurt, 1833, p. 106.

† *Philos. Trans.* 1787, p. 415.

fication of the intercostal vessels. Here again, in enunciating a general anatomical proposition regarding Cuvier's *Cetacea*, the herbivorous species must be exceptionally cited apart.

Respiratory System.

"The peculiar form, structure, and position of the lungs have been so accurately described and figured by Raffles, Home, and Rüppel, that I have only to observe the close agreement with these accounts which the structure of the parts presented in the three Dugongs dissected by me; Daubenton* and Humboldt† describe and figure a precisely similar condition of the respiratory apparatus in the Manatee. Steller describes the same extension of the lungs along the dorsal aspect in the *Stellerus*, which he aptly compares to the position of the lungs in the bird, but without their fixation to the *parietes* of the chest, so characteristic of that class. The Chelonian reptiles, perhaps, offer a closer resemblance‡ to the herbivorous *Cetacea* in this respect; and it is worthy of remark that the air-cells of the lungs are larger in the Dugong than in any other Mammals. In the carnivorous *Cetacea* the air-cells are remarkably minute, and the lungs more compactly shaped and lodged in a shorter *thorax*.

"Existing, as both the herbivorous and carnivorous *Cetacea* do, under such peculiar circumstances,—as air-breathing animals constantly dwelling in an element the access of which to the lungs would be immediately fatal,—it might be supposed that the mechanism of the *larynx*, or entry to the air-passage, would be similarly modified in all the species, in order to meet the contingencies of their aquatic existence. But we can as little predicate a community of organization in the structure of this part as of the circulating or digestive systems in the *Cetacea* of Cuvier. The Dugong and the Dolphin present, in fact, the two extremes in the Mammiferous class, in the developement of the *epiglottis*, which is one of the chief internal characteristics of that class. In the true *Cetacea*, and the *Delphinidæ* in particular, it is remarkable for its great length, while in the Dugong it can hardly be said to exist at all. As the *larynx*, however, has only been noticed cursorily in the previous anatomical accounts of the Dugong, I beg to offer a description of this part, as it appeared in the three specimens dissected.

"The *glottis* is very small and presents the form of the letter T, the superior transverse part of the opening being, however, crescentic instead of straight, with the horns extended a little way outside of the vertical slit. This is bounded on each side by the thin convex borders of the arytenoid cartilages; the *epiglottis* makes a short obtuse pyramidal projection in front of the *glottis*; on each side of this projection there is a slightly-produced crescentic fold of the mucous

* Buffon, vol. xiii.

† Wiegmann's *Archiv fur Naturgeschichte*, 1838, pl. ii. fig. 5.

‡ This resemblance is further exemplified in the shortness of the *trachea*, the completeness of its cartilaginous rings, the length of the bronchial tubes, and the extension of their cartilaginous structure far into the substance of the lungs in the Dugong.

membrane; exterior to this fold the pharyngeal membrane is puckered up into numerous minute irregular plications, in the intervals of which are the orifices of numerous mucous follicles, which are also scattered about the immediate neighbourhood of the *glottis*.

"In the largest Dugong dissected (No. 2.), the *thyroid*, *cricoid*, and *arytenoid* cartilages presented several bony granulations, scattered irregularly through their substance: in older animals their ossification may become more complete.

"The mesial fissure, which is commonly present in other *Mammalia* at the inferior margin of the *thyroid*, is here continued through the whole of that cartilage, dividing it into two distinct lateral moieties, connected above by dense fibrous texture, and below by membrane merely and cellular and adipose tissue. Each portion presents an irregular elongated rhomboidal figure, of which one extremity forms the point of junction with its fellow above-mentioned, while the opposite angle is prolonged into the inferior *cornu*, and is similarly and closely connected by a strong ligament to a prominence on the side of the *cricoid* cartilage; the intermediate angle on the posterior margin of the *thyroid* feebly represents the superior *cornu*. Length of the *thyroid* cartilage, 2 inches 9 lines; breadth of each lobe, 1 inch 3 lines. The *cricoid* cartilage is the largest; it forms a complete ring. The broad posterior surface is not rounded, but bent so as to offer three facets, one narrow in the middle, which expands above and below, and two broad lateral ones; and the inferior margin describes three straight lines. The superior margin is very thick, and presents on each side an elliptical, convex, articular surface for the *arytenoid* cartilage. The anterior margin of the *cricoid* is rounded and convex, and slightly notched above. Longitudinal diameter of the *cricoid* posteriorly, 1 inch 9 lines; ditto anteriorly, 8 lines: circumference of *cricoid*, 6 inches. Each *arytenoid* cartilage is in form of a short irregular three-sided pyramid; the inner surface flat, the anterior and outer surface convex; the posterior and outer surface concave; the base is excavated, to fit the articular convexity of the *cricoid*, with which it is connected by a synovial and fibrous capsule; the *apex* is compressed and extended in the antero-posterior direction; it forms the convex lateral margin of the *glottis* above described. A short space, however, intervenes between the anterior part of the *arytenoid*, and the *thyroid* cartilages, which is occupied as usual by an elastic, dense, and pretty thick *chorda vocalis*, and the investing laryngeal membrane. There is a small pit between the anterior attachments of the *chordæ*, but no *sacculus* is developed from this or any other part of the *larynx*. The mucous membrane of the *larynx* is smooth for the extent of five lines after it is reflected over the apical margins of the *arytenoid cartilages*, and then begins suddenly to be disposed in numerous narrow *plicæ*, which increase in breadth as they descend into the *trachea*, and are arranged somewhat obliquely, diverging in a penniform manner from the middle line of the anterior surface of the tube. At the back part of the *larynx* and *trachea* these *rugæ* are longitudinal.

"The *epiglottis* cannot be said to exist as a distinct cartilage in the

Dugong; the small pyramidal prominence in front of the *glottis* is formed by a ligamentous or fibrous substance, the boundaries of which cannot be defined, as it passed insensibly into the cellular substance filling the posterior interspace of the divisions of the *thyroid*, of which cellular substance it seems to be a mere condensation. The usual muscle, called *hyo-epiglottideus*, is, however, continued from the anterior part of this *pseudo-epiglottis*. The distance from the insertion of the *chordæ vocales* to the *apex* of the *epiglottis* is 9 lines. The muscles of the *larynx* are powerfully developed. The *arytenoidei obliqui* and *transversi* are represented by a single pair of muscles, which derive a broad and extensive origin from the posterior and external ridges of the *arytenoid* cartilages, and converge to be inserted into a small round cartilage in the posterior interspace of the *arytenoids*. These muscles, through the advantage afforded to them by this middle fixed *fulcrum* (which ought therefore to be regarded as their point of origin), act with great power upon the *arytenoid* cartilages, drawing them together, and thus forcibly closing the narrow *glottis*. They are directly opposed by strongly developed *thyreo-arytenoidei*, which pass obliquely backwards from the internal and interior part of each division of the *thyroid* cartilages to the posterior and outer part of the *arytenoids*, which they draw apart, and thus open the *glottis*. The *crico-arytenoidei* arise from the anterior border of the *cricoid*, and are so inserted as to draw the *arytenoidei* forwards as well as outwards. The *crico-thyroidei* cover the whole of the fore part of the *cricoid* cartilage. The *sterno-thyroidei*, and *thyreo-hyoidei* are extremely powerful.

"The *thyroid* gland formed an irregular bilobed mass, the greater part of which lies in front of the conjoined bronchial divisions of the *trachea*. There are but three true tracheal rings anterior to the bifurcation of the air-tube: of these, the first of these is remarkable for its superior size, which forms an intermediate transition between the cricoid and the second tracheal ring. The tube is somewhat flattened from before backwards; its circumference is 5 inches; its antero-posterior diameter 1 inch. In the *Balænidæ* the tracheal rings are deficient at the anterior part of their circumference. The spiral disposition of the cartilages of the air-tubes, of which Home has given a figure, in the Dugong, is described with more detail by Steller in the Northern Manatee. It is a structure which best facilitates the lengthening and shortening of the lungs, whose change of bulk in respiration, owing to their peculiar form and position, probably takes place chiefly in that direction.

"Amongst the true *Cetacea* we have observed that it is those which subsist on the lowest organized animal substance, as the *Balænidæ*, which approach the nearest to the herbivorous species, in having the additional complexity of the *cæcum cæli*; and it is interesting to find that the same affinity is manifested in the structure of the *larynx*. The *epiglottis* and *arytenoid cartilages*, for example, are relatively shorter in the *Balænoptera* than in *Delphinus*; and, as Mr. Hunter has observed, they are connected together by the membranes of the *larynx* only at their base; and not wrapped together or surrounded

by that membrane as far as their *apices*, as in the Dolphins. In the *Balænoptera* also, the *apices* of these cartilages are not expanded, as in the Dolphins, but diminish to an obtuse extremity. These points of resemblance to the condition of the *larynx* in the Dugong and Manatee are carried still farther in the Mysticete Whale, at least in the *fœtus* dissected by me, and in which both the *epiglottis* and *arytenoid cartilages* were relatively much shorter, and the thyroid cartilage larger and more convex than in the Piked Whale (*Balænoptera*). The *thyroid cartilage* is, however, a single piece in both genera of *Balænidæ*, though deeply notched above and below; and the *larynx* presents several interesting individual peculiarities, which, however, the minute and accurate descriptions and illustrations of this organ in both the *Balænopteræ* and *Balænæ*, published by Prof. G. Sandifort*, preclude the necessity of further dwelling upon.

Uropoietic System.

"If we were acquainted with the structure of the urinary organs of the herbivorous *Cetacea* as it is exemplified in the Dugong alone, we should have to establish as marked a distinction in this respect between them and the true *Cetacea*, as in the preceding organic systems. Instead of the numerous and minute *lobuli* or *renules*, into which the kidney is subdivided in the Dolphins and Whales, it presents in the Dugong a simple, compact form, with an unbroken external surface; the *tubuli uriniferi* terminate upon two lateral series of eleven *Mammillæ*, which project into a single elongated cavity or *pelvis*, from which the *ureter* is continued. The accurate Steller†, however, describes the kidney in the Northern Manatee as being subdivided, like that of the Seal and Sea-Otter. John Hunter‡ also ascribes a similar lobulated structure to the Manatee, including it with the Seal and White Bear among the animals occasionally inhabiting the water. Daubenton§, however, in his anatomical description of the *Manatus Americanus*, merely observes: "Les reins (A. pl. lviii. fig. 6.) étoient oblongs et placés l'un vis-à-vis l'autre"; and his figure gives no indication of the lobulated structure. Home does not notice this interesting point in his Anatomy of the Manatee‖. This want of uniformity in the structure of the kidney in the herbivorous *Cetacea* is, however, of less moment with reference to their natural affinities; since in the Pachyderms we find some species, as the *Rhinoceros*, and, though in a less degree, the Elephant, presenting a subdivided kidney, while others, as the Tapir and Hog, have it entire.

Generative System.

"The generative organs being those which are most remotely related to the habits and food of an animal, I have always regarded as affording very clear indications of its true affinities. We are the

* *Nieuwe Verhandelingen der Koninklitk, Niederlandishe Instituut*, Deel. iii. p. 224, pl. I.—V.

† *Loc. cit.*

‡ On Whales, Phil. Trans., 1787, p. 412.

§ Buffon, xiii. p. 428.

‖ Phil. Trans., 1821.

least likely, in the modifications of these organs, to mistake a merely *adaptive* for an *essential* character. The true *Cetacea*, as is well known, have no trace of *vesiculæ seminales*; but I found these bags present and of large size in the male specimen of our Dugongs. These accessory secerning vesicles measured each four inches in length, and two inches in diameter at their *fundus*, where they were widest, and their glandular *parietes* thickest. The internal surface of the remainder of the cavity was reticulated. The *vasa deferentia* are short, and disposed in irregular convolutions. Each *crus penis* was attached to the lower expanded extremity of the *ischia*, which were anchylosed to the *ilia* on each side*. In the true *Cetacea* the *retractores penis* run along the sides to the under surface of the *penis*; while in the Dugong the corresponding muscles are inserted into the *dorsum penis*, as in the elephant: they meet and join in a strong tendon half way between the *crus* and the *glans penis*. In the true *Cetacea* the body of the *penis* consists of a single *corpus cavernosum*, grooved above for the passage of the *vena dorsalis*, and more deeply excavated below for the lodgement of the *urethra* and its surrounding vascular structure. But the Dugong presents a marked deviation from the cetaceous structure of the same part, which presents in a transverse section a division of the *corpus cavernosum* into two lateral portions, with a middle ligamentous *septum*, as in the Pachyderms; the vascular and erectile tissue also bears a greater proportion to the surrounding ligamentous structure than in the true *Cetacea*.

"In the Dugong the ducts of the *vesiculæ seminales* and *testes* communicate together before terminating in the *urethra*.

"Daubenton† has given a figure of the *vesiculæ seminales* in the Fœtal Manatee. Steller does not describe the parts of generation in the *Stellerus*.

"The *testes* are abdominal in the Dugong, as in the rest of the *Cetacea*; but they also have a similar position in the Elephant.

Osseous System.

"After the excellent and elaborate descriptions of the osteology of the Dugong, by Cuvier, Rüppel, and others, but little remains to be said on this subject. The bones are chiefly remarkable, as in the Manatee, for their dense texture, and the non-development of medullary cavities in them: this reptile-like condition of the skeleton is further exemplified in the loose connexion of the bones of the head. The bones are not loaded with oil, as in the *Cetacea*. All the specimens presented 7 cervical and 19 costal *vertebræ*, corresponding to the 19 pairs of ribs; but the number of the remaining *vertebræ* exceeded that ascribed to the Dugong by Home and Cuvier, there being at least 30, making in all 55. Rüppell assigns to

* The separate conditions of these rudimental pelvic bones in the Dugong is shown in Mr. Clift's figure of the Skeleton of the young Female Dugong. In the true *Cetacea* the parts analogous to the *ischia* are alone present: they serve a similar purpose to that in the Dugong.

† *Loc. cit.*, pl. lviii. fig. 6.

the *Halicore Tabernaculi*, 7 cervical, 19 dorsal, 3 lumbar, 3 pelvic, and 27 caudal *vertebræ*; in all 59 *vertebræ*. I found, as he also describes, that the first four pairs of ribs reached the *sternum*, through the medium of cartilages; all the others terminated freely in the mass of abdominal muscles: the 10th to the 15th are the longest, the last is the shortest. The affinity of the Dugong to the *Pachydermata* is thus again illustrated by the great number of the ribs. The lower jaw is articulated to the *cranium* by a true synovial capsule, reflected over cartilaginous surfaces, and not, as in the carnivorous *Cetacea*, by a coarse and oily ligamentous substance.

Dentition.

"My attention was particularly directed to the state of the dentition in the Dugongs of different sexes, which I have thus had the good fortune to examine; from which it would appear that, as in the Narwhal, the permanent tusks of the female are arrested in their growth, and remain throughout life concealed within the substance of the intermaxillary bones and the alveolar integument. The cavity of the tusk is in like manner filled up by the secretion of the pulp which retrogrades in the course of its absorption, and hence the tusks are solid, like the corresponding tusks in the female Narwhal, or at least present only a shallow cavity at their expanded and distorted base. The form of the tusk from this part is irregularly cylindrical, and it diminishes to an obtuse point at the opposite or lower extremity, which is perceptible only in the dry skull.

"It is remarkable that in all cases the external *parietes* of the *alveolus* of the abortive tusk is wanting opposite its base, and this occurs even in the young female Dugong, when the base of the permanent tusk is near the lower extremity of the deflected portion of the intermaxillary bone; but as the pulp and the base of the tooth ascend, (or rather appear to ascend, in consequence of the elongation of the bone and the teeth,) the vacuity also ascends, and is situated in the adult at the upper part of the external surface of the deflected portion of the intermaxillary bone*. In the male the permanent tusks project beyond the jaws, and manifest, by the deep conical cavity at their base, the persistence of the formative pulp and their continual growth and renovation. These tusks also differ from those of the female, in not being expanded at their bases, but continuing of uniform diameter from one end to the other; the projecting extremities of the tusks are bevelled off from within, outwards and downwards, and terminate in a sharp chisel-edge. Only a very small portion of the tusk projects from the jaw, (in which circumstance the Narwhal differs most widely from the Dugong,) at least seven-eighths of the tusk are imbedded in its socket, and the socket is entire throughout its whole extent, the exterior of the intermaxillary bones generally presenting an unbroken surface, which,

* The skull of the female Dugong figured by Rüppell (*loc. cit.*) exhibits this characteristic vacuity in the *parietes* of the socket of the tusk. The contained teeth were cylindrical and conical.

independently of the projecting tusks, unerringly characterizes the skull of the male Dugong.

" It has been suggested that the use of the projecting tusks in the Dugong is to detach *fuci* from the rocks to which they adhere: one can hardly, however, assign any important function in relation to nutrition to parts which are limited to the male sex; but it must be remembered that the function was assigned by a physiologist who supposed that the tusks in question were specific and not sexual characters, and that the imperfect tusks, which are peculiar to the female, were the predecessors of the projecting tusks, and, in fact, deciduous teeth. This opinion of Sir Everard Home was first called in question by Dr. Knox*, who, having detected the supposed deciduous tusks in the head of a nearly full-grown Dugong, rejected with great justice the opinion of Home, that they are deciduous teeth; and he truly observes, that no evidence had been given to prove the existence of deciduous tusks at all in the Dugong†.

" I need hardly observe that the tusks of the Dugong, being implanted in the intermaxillary bones, are to be regarded, like the tusks of the Elephant, as incisors. Now both sexes of the Dugong, as of the Elephant, do, in fact, possess deciduous or milk-tusks, but they are much smaller than the female permanent tusks or supposed deciduous teeth of Home.

" In a recent *cranium* of a male Dugong, sent to the Zoological Society in spirits, I found in the upper jaw the deciduous incisors or tusks coexisting with the permanent ones. They were loosely lodged, by one extremity, in conical sockets immediately anterior to those of the permanent tusks, and adhered by their opposite ends to the integument, which externally presented no protuberance or other indication of them. They were two inches in length, slightly curved, subcylindrical, tapering to both extremities, the fang-end being the smallest, and perforated by an aperture leading to the extremely contracted cavity in which the remnant of the exhausted *matrix* was lodged. From a comparison of the jaws of the dissected specimens, and several *crania* of different ages, it appears that not more than 20 grinders are developed in the Dugong, viz. 5 on each side of each jaw. Of these the first is shed before the last or fifth comes into use. In the dry skull I have seen the last molar projecting from its socket, before either the deciduous incisor or the first molar had been shed, but its crown presented the primitive tuberculate *apex*, and had not penetrated the gum. The *molares* increase very regularly in size from the first to the last. The fang of the first and second is soon completed and solidified by the progressive absorption of the pulp: that of the third retains for a longer period its pulp and expanded conical cavity, but it becomes at length contracted to a point, and is pushed out; the fourth and fifth *mo-*

* Edinb. Phil. Trans. xi. p. 389.

† "The milk-tusks of the Dugong have never been seen by any one; that is, I have not heard of the existence of any preparation showing the germs of the milk or permanent teeth, together or in succession."—*Dr. Knox, loc. cit.* p. 398.

lares, which may be regarded as the permanent teeth, retain through the greater period of life the wide conical cavity for their pulp, thus resembling the grinders of the *Edentata*: the pulp of the last molar becomes, in the progress of its development, extended in the antero-posterior direction, and contracted transversely in the middle, so as to give a sub-bilobed form to the mature grinder. Thus the molar teeth of the Dugong succeed each other, as in the Elephant and true *Cetacea*, in the horizontal, not in the vertical direction. The first deciduous *molares* are shed before the deciduous incisors. They are always much eaten away by the absorbents, especially about the neck.

"In the skull of a male Dugong which had *molares* $\frac{3-3}{2-3}$, the sockets of the deciduous incisors were obliterated, and the points of the permanent ones projected from their sockets.

"In only one out of seven *crania* of the Dugong which I have examined, have I found incisors in the lower jaw; they were two in number, one in the corresponding socket of each *ramus*, which sockets were much deeper than the rest. These teeth were smaller and more bent than the deciduous incisors of the upper jaw. They are obviously analogous to the rudimental teeth which have been described in the jaws of the fœtal Whale. The Dugong in which these were found was eight feet in length; the remaining six toothless *alveoli* in the anterior part of the lower jaw were also present, though much shallower than those containing the teeth. In the other recent heads examined by me, the *alveoli* in the deflected portion of the lower jaw contained ligamentous processes given off from the internal surface of the thick callous integument covering that part of the jaw: they serve the purpose of fixing more firmly to the bone this dense and almost horny plate, which is beset externally with short coarse bristles, and is doubtless used in scraping and tearing off the sea-weeds and other alimentary substances which may be fixed to the rocks.

"It is obvious that the different form and condition of the tusks thus observed in the heads of Dugongs of the same size and age, might be regarded as indicating a specific instead of a sexual difference. Dr. Knox inclines to the former opinion*; I have however adopted the latter view, not hastily or hypothetically, but as the result of a minute comparison of the forms and proportions of all the crania which have come under my observation, and of which I have embodied the principal results in the subjoined table.

* This able comparative anatomist observes, "The tusks differ as much in form in the two crania, as the tusks of the Asiatic Elephant differ from those of the African one, and therefore naturalists would say, that these animals must be specifically different." I hesitate, however, in asserting this positively, and would rather say that it amounts with other data, such as the belief, on the part of the Malays, in whose seas these animals reside, that, to a great probability, there are two distinct species of Dugong now inhabiting the Eastern Ocean.—*loc. cit.* p. 395.

	Male.* Molares $\frac{5-5}{5-4}$		Female.† Molares $\frac{2-3}{3-3}$		Male,‡ Molares $\frac{2-2}{2-2}$	
Cranium.	in.	lin.	in.	lin.	in.	lin.
Length of the *cranium*	13	11	14	8	14	6
From the occipital crest to the upper border of the nasal aperture	4	10	5	0	5	0
Length of nasal aperture	4	0	5§	0	5	0
Breadth of ditto.	2	6	2	9	3	0
From the lower border of the nasal aperture to the end of the intermaxillary bone	7	4	7	7	8	8‖
Breadth of *occiput*	5	0	5	4	5	10
Smallest interspace of the temporal ridges	2	5	2	3	2	2¶
Greatest distance between zygomatic arches	7	3	7	10	8	4
Greatest distance between postorbital processes of the frontal bone	5	7	6	0	6	4
Lower Jaw.						
From the condyle to the lower part of the *symphysis*	9	7	10	6	11	3
From the condyle to the base of the ascending *ramus*	6	0	6	6	6	6
Breadth of ascending *ramus*	2	10	2	10	3	0
Length of dental (molar) series	2	0	2	0	2**	0
Length of sloping *symphysis*	4	6	5	0	5	2
Breadth of ditto.	2	2	2	6	2	3
From outside of one condyle to that of the other	6	3	6	6	7	0
From the condyloid to the coronoid process	2	2	2	7	2	7

" The short and thick neck, fin-like fore-legs, want of hind-legs, caudal tegumentary fin, smooth, naked, and almost hairless integument, are all modifications of external form, by which the Dugongs and Manatees are adapted to play their part in the waters: but the *kind of part* which they are to play in that element depends on organic characters which mainly if not exclusively reveal their true affinities. Now we have seen that the whole of the internal structure in the herbivorous *Cetacea* differs as widely from that of the carnivorous *Cetacea*, as do their habits: that the amount of variation is as great as well could be in animals of the same class, exist-

* Deciduous and permanent tusks in place; the first molar, left side, lower jaw shed. Outer wall of sockets of permanent tusks entire.

† Deciduous tusks shed and their sockets obliterated; the points of the permanent tusks protruding from their sockets: the shallow cavity at their base exposed by the absorption of the wall of the socket at that part.

‡ Sockets of deciduous tusks obliterated, permanent ones protruded to the usual extent and worn by use: their sockets entire.

§ This dimension increases as the intermaxillary bones are lengthened in the antero-posterior direction.

‖ The increase of this dimension is due to the greater development of the lower part of the intermaxillary bones in correspondence with the sexual condition of the tusk.

¶ This dimension of course diminishes with the increased development of the temporal muscles consequent upon the fitness of the tusk for use.

** The increasing breadth of the last molar compensates for the loss of the small anterior molars.

ing in the same great deep. The junction of the Dugongs and Manatees with the true Whales cannot therefore be admitted in a distribution of animals according to their organization. With much superficial resemblance they have little real or organic resemblance to the Walrus, which exhibits an extreme modification of the amphibious carnivorous type. I conclude, therefore, that the Dugong and its congeners must either form a group apart, or be joined, as in the classification of M. De Blainville, with the Pachyderms, with which the herbivorous *Cetacea* have the nearest affinities, and to which they seem to have been more immediately linked by the now lost genus *Deinotherium*."

Admeasurements.	Raffles.		Zool. Soc. No. 1. 1831.		Zool. Soc. Female. No. 2. 1831.		Zool. Soc. Male. No. 3. 1838.	
No.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
1. Total length of the animal	8	6	6	3	7	4	6	10½
2. Greatest circumference	6	0			4	8		
3. Length of head from nostrils to occiput	1	3			1	1		
4. Length of head from nostrils to end of snout	0	3½			0	5	0	3½
5. Width of snout	0	9½			0	8		
6. Depth of snout	0	4½			0	5		
7. Length of chin	0	5			0	4		
8. Breadth of chin	0	5½			0	4½		
9. Distance from nostrils to the eyes...	0	6½			0	5½		
10. Distance from eyes to ears.	0	6½			0	5½		
11. Distance from eyes to flipper.	1	5½			0	11½	10	0
12. Length of the flippers	1	4			1	1		
13. Breadth of flippers	0	8			0	6		
14. Breadth across belly from fin to fin.	1	11			1	2		
15. Distance between the *mammæ*	1	5			1	1		
16. Breadth of tail from tip to tip	2	7			2	8	2	6
17. Circumference of root of tail.....	1	9			1	5		
18. Distance from *anus* to centre of tail	2	9			2	1		
19. Distance from *anus* to *penis*	1	2			0	11		
20. Total length of intestines	115	0	66	0	101	0		
21. Total length of small with *cæcum*...	44	0	20	6	37	0	27	6
22. Total length of large	72	0	46	0	64	8	50	0
23. Total length of large with *cæcum*...					65	2		
24. From end of snout to flipper	2	0			1	6		
25. Circumference of neck					2	9	2	7
26. Diameter of orifice of eye-lids					0	0½		

Some prepared specimens belonging to the genera *Siphunculus* and *Asterias*, collected by Mr. Harvey upon the Devonshire coast, and presented to the Society, were upon the table, to which Mr. Owen drew the attention of the Meeting. The Chairman read an extract of a letter from the former gentleman, in which he stated that a considerable number of the Red-band Fish (*Cepola rubescens*) had been picked up on the beach near Teignmouth. One of these specimens sent by Mr. Harvey was exhibited by Mr. Yarrell, who observed

that these fish are rarely captured, owing to their keeping very near the bottom, and their shape allowing them to pass through the meshes of the fishermen's nets. In severe storms, however, shoals of this *Cepola* are sometimes killed by being driven against the bottom, or dashed against the rocks, and are then thrown on shore dead. Mr. Yarrell remarked that he had heard of two or three instances of this kind recently occurring on the British coast.

April 10, 1838.

Rev. John Barlow in the Chair.

The first communication laid before the meeting was a description by Mr. Owen of the organs of deglutition in the Giraffe, being a supplementary note to his former memoir on the anatomy of that animal.

Mr. Owen observes that since the Giraffes have been at the Gardens, they have not been known to utter vocal sounds, except once, at the time of coition, when the male uttered a cry like that of the Deer; and the incapacity of the species in this respect would seem to be indicated by the structure of the *glottis*, the *rima* of which is permanently open for the space of a line, so that the chords cannot be brought into mutual apposition.

The modifications of the organs of deglutition accompanying this open condition of the fissure leading into the windpipe are very remarkable, and unlike any of the few deviations from the ordinary structures of the *fauces* and *glottis* hitherto noticed by anatomists in other animals (as in the Elephant, Camels, *Cetacea* and certain *Rodentia*, &c.).

On looking down the mouth into the *fauces* the cavity appears to be as completely closed as in the *Capibara*; but instead of narrowing in an infundibular form to a small circular depression, it is terminated by a transverse slit through which projects a soft, rounded, valvular ridge, formed by the broad superior margin of the *epiglottis*, which is folded down upon itself at that part. The surface of the *fauces* is broken by large risings and depressions, or is coarsely corrugated.

On looking at the *velum palati* from behind, it is seen to descend to the margins of the *glottis* in the interspace between the *epiglottis* and the large arytenoid cartilages; and on raising the soft palate, a small process, or rudimental *uvula*, is seen, continued from the middle of its inferior margin into the open laryngeal fissure; but it only fits into the posterior part of this open fissure; the anterior part is defended by two processes of the mucous membrane of the *larynx* which are continued from the angle between the *epiglottis* and *glottis*. These processes are thick, of a triangular form, with their *apices* turned backwards and inwards, so as to cover and close the anterior part of the *glottis*: when the soft palate is raised to bring them into view they seem like two accessory *epiglottides*; but they consist merely of a duplicature of mucous membrane.

At the posterior part of the soft palate there is an oval glandular body about one inch in long diameter.

The tonsils are well-developed glands communicating with the *fauces* by a single wide opening, or *fossa*, and thus exhibiting a

higher type of structure than they present in the human subject, where the mucous follicles terminate by several separate apertures. They are two inches in length and one in breadth.

Mr. Owen then proceeded to read the first part of a paper on the Anatomy of the *Apteryx*; the body of that bird having recently been presented to the Society's Museum by the Earl of Derby. The results of the anatomical examination, communicated to the Meeting on this occasion, embrace a detailed description of the parts connected with the digestive apparatus.

Commencing with the beak, Mr. Owen notices the general superficial resemblance which it bears to that of the Curlew and *Ibis*, though it differs essentially from this organ in the slender-billed waders, by having the perforations of the nostrils near the *apex*, and the base covered with a *cere*. The *cere* terminates anteriorly in a concave or lunated curve, resembling that of the *Rhea*. Two narrow grooves extend from the angles or cresses of the *cere* along each side of the mandible, the upper groove being continued to the truncated extremity of the mandible, the lower one leading into the external nostril, which forms, as it were, the dilated termination of the groove, and this occupies a position of which there is no other known example throughout the class of birds.

The *cere* was about an inch in length, furnished at its sides with short stiff plumes and hairs, while at its base a number of long black bristles are given off, the presence of which, in conjunction with the extension of sensitive skin upon the beak, is considered by Mr. Owen to indicate the importance of the sense of touch to the *Apteryx*, and to correspond with the account given of its nocturnal habits. The general form of the beak is adapted for insertion into crevices and holes, in search of insects, which were found to constitute in part the contents of the gizzard.

The tongue, as in all the struthious birds, was short and simple, yet presented nevertheless a greater relative development. It was of a compressed, narrow, elongated, triangular form, with the *apex* truncate and slightly notched; the lateral and posterior margins entire: 8 lines in length, 4 lines broad at the base, 1 line across the *apex*. The anterior half consisted of a simple plate of a white, semitransparent, horny substance, gently concave above; behind this the exterior covering, which is lost in, or blended with, the horny plate, gradually becomes distinct, and assumes the character of a mucous membrane: it was reflected over the posterior margin of the tongue, forming a crescentic fold, with the concavity towards the *glottis*; but here, as well as on every other part of the tongue, it was devoid of spines or *papillæ*. The lining membrane of the *pharynx*, behind the *glottis*, formed two elongate, square-shaped, smooth, thick, and apparently glandular folds or processes, the obtuse free margins of which project backwards, like lappels, into the *pharynx*; beyond which the lining membrane is produced into close-set, narrow, somewhat wavy, longitudinal folds.

The *œsophagus* at its upper extremity was half an inch in diameter,

but rapidly diminished to a breadth of three lines, of which size it continued to the commencement of the *proventriculus*; its position was to the right of the cervical *vertebræ*, and a little behind and to the right of the *trachea*, to which latter it was closely connected.

The muscular coat of the *œsophagus* was about half a line in thickness, and its fibres were arranged in two layers; in the internal layer the fibres presented a longitudinal arrangement, while in the external their disposition was circular. The length of the tube was about eight inches, and its dilatibility was indicated by the lining membrane being disposed in narrow longitudinal *rugæ*.

The *proventriculus* was one inch two lines in length and half an inch in diameter, and situated in the *axis* of the *œsophagus*, of which it formed an immediate continuation: the gastric glands were developed around its entire circumference, their orifices opening in the meshes of a reticulated surface, produced by the longitudinal *rugæ* of the œsophageal membrane, changing their character after entering the *proventriculus*, and branching, as it were, over its surface.

The stomach was small, measuring less than two inches both in its longitudinal and transverse diameters: in shape it had more the character of a membranous stomach than of a gizzard, being of a regular oval-rounded form. The muscular fibres were not arranged in the definite masses called *digastrici* and *laterales*, but radiated from two tendinous centres of about two-thirds of an inch in the longest diameter. Upon the inner surface of the gizzard were two protuberances, one at the lower and one at the upper end of the posterior part. The situation of the latter was such with respect to the cardiac and pyloric openings, that Mr. Owen conceives it would tend to close these openings during the forcible contraction of the fibres at the upper part of the gizzard, and thus probably in some measure regulate the passage of food into this cavity, by retaining a portion in the *proventriculus*, until the gizzard should have become emptied of its previous contents.

A narrow pyloric passage of about three lines in length extended from the upper extremity of the gizzard into the *duodenum*; there was no sphincter present, and no pyloric pouch, as in the Ostrich, but the cuticle was continued into the *duodenum* about three lines beyond the *pylorus*.

Upon removing the abdominal muscles, the two lobes of the liver were seen to occupy the anterior part of the cavity, extending from above the notches of the *sternum*, to midway between the *sternum* and the *cloaca*.

The stomach was entirely concealed by a large omental adipose process, continued from that of the *peritoneum*, and upon the longitudinal division of which so much of the stomach was exposed as projected between the lobes of the liver; its position was towards the left side of the *abdomen*.

The space below the stomach and liver was occupied by long and simple loops of intestine, extending obliquely and nearly parallel with each other from the upper and right to the lower and left side

of the *abdomen*. The lowest and largest superficial loop was formed by the *duodenum*, and the whole were hid by an omental covering thickly charged with fat.

The interspace of the *duodenum* was occupied by the two lobes of a narrow and elongated *pancreas*, the pointed extremity of the anterior lobe extending freely beyond the bend of the *duodenum*, and immediately beneath it appeared the end of the *rectum* and *cloaca*.

Upon dissecting away the omental processes and raising the exposed loops of intestine, the *rectum* was seen extending forwards about two inches along the mesial line, and then receiving the *ilium* and extremities of two *cæca*: the anterior half only of the *rectum* had an investment of *peritoneum*.

Upon raising the liver, and drawing aside the stomach, the duodenal loop was seen extending in a curved direction, and about four inches in length, from the right side of the gizzard as before noticed; having formed that loop, the intestine bends abruptly backwards, upon itself to the right, and then forms a second loop three and a half inches long, which is continued down the right side of the *abdomen*. Three similar but somewhat shorter loops are there formed to the left of the preceding, after which the intestine returns to near the commencement of the *duodenum* behind the stomach, and close to the root of the mesentery, whence it descends to form a fifth long loop situated at the left side of the *abdomen* behind the others, and then becoming looser terminates after a short convolution in the *rectum*.

The *cæca* were each five inches in length, and attached throughout their whole extent to different parts of the last folds of the *ilium*.

The small intestines had a general diameter of three lines, their size slightly diminishing on approaching the *rectum*. The *cæca* at their commencement rather exceeded in diameter that of the *ilium*, their capacity slightly increasing to near their blind extremities, where, having attained the diameter of about five lines, they suddenly taper to an obtuse point. The anterior half of the *rectum* was contracted and the lining membrane thrown into longitudinal folds, but these gradually subsided in the second or dilated portion. The *rectum* communicated with the urinary dilatation by a small semilunar aperture, from which several short *rugæ* radiated. This compartment of the *cloaca* was not expanded into a large receptacle as in the Ostrich, but offered the same proportional size as in the Emeu, measuring about two-thirds of an inch in length and the same in diameter. The external compartment of the *cloaca* contained a large single *penis* retracted spirally, and one inch and a half in length when extended. It was traversed by an urethral groove, the sides of which were not beset with *papillæ* as in the Gander, but simply wrinkled transversely. At the back part of the *cloaca* there was a small *bursa* half an inch in length, and communicating by a wide longitudinal aperture with the external compartment.

The gizzard contained a greenish yellow pulpy substance, and numerous filamentary bodies, amongst which a few slender legs of

insects and portions of the down of the *Apteryx* were the only recognizable organized parts; it also contained a few pebbles.

In the small intestines a little pulpy material was present, similar to that in the gizzard, but of a darker colour.

The *cæca* contained a larger quantity of similar, but more fluid matter, in which the legs of insects were again discernible.

The liver consisted of two large lobes, connected by a narrow isthmus, the right being the larger and of a subtriangular figure; the left was more quadrangular in shape.

The gall bladder, one inch and a half in length, was appended by its *cervix* to the inner margin of the right lobe of the liver, the medium of attachment being formed by the nutrient vessels of the gall-bladder, and by two short cyst-hepatic ducts, with a reflection of serous membrane upon them. A cystic duct was continued in length rather more than two inches, to half way between the lower bend of the termination of the *duodenum*.

The hepatic duct terminated a few lines below the cystic; both ducts were larger than usual.

The *pancreas* consisted as usual of two elongated subtriedral lobes, lodged chiefly in the anterior part of the duodenal interspace; one of the lobes extended upwards to the right as far as the spleen. The secretion was carried by two short and thick ducts, which terminated close to the hepatic and cystic upon a small longitudinal ridge.

The spleen presented no peculiarities; its size was about that of a hazel-nut.

With respect to the physiological relations of the apparatus just described, Mr. Owen remarks that the whole is harmoniously co-adapted to the instruments of prehension which characterize the *Apteryx*.

A beak framed to seize and transmit to the gullet small objects, is succeeded by a simple and narrow muscular canal. The food being of an animal nature, and taken in small and successive quantities, is digested as fast as it is obtained, and therefore the *œsophagus* is not required to be modified to serve as a reservoir, either by its extreme width, or a partial dilatation. The *proventriculus*, in the comparative simplicity of its glands, and the gizzard, in its small size and medium strength, more forcibly bespeak structures adapted for the bruising and chymification of animal substances presenting, as do worms and the softer orders of insects, a moderate resistance.

The length of the intestines, which somewhat exceeds that of the slender-billed insectivorous waders, and the size of the *cæca*, are considered by Mr. Owen to indicate an intention, that this bird, which is so remarkably restricted in its locomotive powers, should have every needful or practicable advantage in extracting from its low-organized animal diet, all the nutriment that it can yield.

April 24th.

R. C. Griffith, Esq., in the Chair.

Some notes by Mr. Martin were read, On the visceral anatomy of the Spotted Cavy, *Cœlogenus subniger*, taken from the examination of a male specimen which had died suddenly in the Menagerie of the Society. The length of the head and body along the spine measured about 1 foot 10 inches.

On opening the *abdomen*, the large folds of the *cæcum* presented themselves, occupying the whole of the umbilical and epigastric regions, while to the left appeared the coils of small intestine; and a portion of the stomach was seen to emerge from below the edge of the left portion of the liver. The *omentum* was of very small extent, destitute of fat, and crumpled up beneath the stomach.

The *duodenum* commenced in the form of a large pear-shaped sac, which measured in length $2\frac{3}{4}$ inches, when the intestine assumed its ordinary size, namely about half an inch in diameter. The dimension of the sac at its largest part was four inches in circumference. This pyriform commencement of the *duodenum* obtains in many Rodents, and also in some *Insectivora*; among the former may be noticed the *Coypus*, *Capromys*, and *Anæma*: in the insectivorous animal lately described (Zool. Proc. 1838, p. 17.) under the name of *Echinops Telfairi*, the same structure also is remarkable. The course of the *duodenum* was as follows: leaving the *pylorus* and loosely attached by mesentery, it described an arch over the right kidney, whence it passed over the spine to the left kidney; it then turned back to the spine, and there making several abrupt convolutions merged into the *jejunum*. In the sacculated part two *areolæ* of glandular follicles were apparent through the *parietes*. As in the Agouti, (Zool. Proc. 1834, p. 82.) the stomach had a constriction between its cardiac and pyloric portion; in which point (as does the Agouti,) it differs from the Acouchi, the dissection of which will be found in the Proc. of Com. of Sci. &c., 1831, p. 75. The length of the stomach lying on the table undistended, or but slightly, was 6 inches; the cardiac portions swelled out to the extent of nearly 2 inches beyond the entrance of the *œsophagus*, and its pyloric extremity swelled out into a process on each side, as in the Agouti. A muscular band, commencing at the entrance of the *œsophagus*, passed longitudinally along the stomach, contracting the greater curve into *sacculi*, especially at the constricted portion. The length of the *œsophagus* within the abdomen was one inch and a quarter.

The length of the small intestines was very great, the measurement being 21 feet 8 inches.

The *cæcum* was large, *irregularly*, *multitudinously*, but *not deeply* sacculated; in form it was gently conical, terminating in a subacute

apex; its length 2 feet 4 inches, its basal circumference about 7 inches. When blown up it formed a spiral turn and a half. The large intestines at their commencement were about 7 inches in circumference, the decrease being gradual. The lining membrane of the *colon* formed a series of regular longitudinal *striæ*, gradually disappearing as the intestine narrowed, until at length they finally disappeared. The *colon* in its course followed the circular sweep of the *cæcum* to which it was attached by a riband of mesentery $1\frac{1}{2}$ inch in breadth.

At about two feet from its origin the *colon* merges into a flat layer of circular folds, the intestine making four distinct gyrations; from this part to the *anus* the intestine measured 9 feet 3 inches.

The circular fold above noticed is analogous to the long loose fold observed in the same parts of the intestine in other *Rodentia*, as the *Coypus*, and *Capromys*, and which is noticed in the respective accounts of the dissection of those animals in the Zoological Proceedings.

At a little distance above these circular folds, and throughout the remainder of the intestinal canal, the *fæces* assumed a knotted character.

The liver formed a right and left portion; the *right portion* was divided into two parts, of which the innermost was the smallest; the *left portion* was divided into four nearly equal *lobuli*; between the first and second of which (reckoning from the centre) projected the gall bladder, very large, and distended with bile of a dark green colour; its shape was oval, being $2\frac{1}{2}$ inches long, but it was evidently *over-distended*. On turning up the liver a large hepatic duct was seen running from its base, for the length of an inch, to join the cystic duct, nearly 2 inches from the origin of the latter; the common duct thus formed was $1\frac{1}{4}$ inch in length, and terminated at the neck of the duodenal sac $2\frac{3}{4}$ inches from the pyloric orifice.

The spleen of a prismatic figure, $2\frac{1}{4}$ inches long, was somewhat closely adherent to the *cardium*; its colour was dark. Spreading in the mesenteric membrane below the stomach, and between this, the spleen, and the duodenal fold, lay the *pancreas*, a large foliaceous gland of an irregular figure.

The *vena portæ* was large and gorged with blood.

The kidneys were nearly in a parallel line with each other; their figure was elongated, (being 3 inches in length by one in breadth at the middle,) and at their upper *apex*, internally, lay the renal capsules, long cylindrical bodies, of an ochreous colour, and extending to the emulgent vessels.

The right kidney lay much closer to the *vena portæ* than did the left; the *vena portæ* in fact passed over the renal capsule on the right side, while the upper *apex* of the kidney was in contact with it. The length of the renal capsules was $1\frac{1}{2}$ inch, their figure vermiform.

There was no marked line of division between the cortical and medullary substances of the kidney. The urinary *tubuli* converged into three obtuse *papillæ*; the *pelvis* was very small.

The lungs consisted of three right and two left lobes. The heart was round, and firm in texture, the left ventricle being very stout; the *apex* exhibited a slight tendency to a bifid figure. The *aorta* at its arch sent off *first* an *arteria innominata*, which divided into a right subclavian, and a right and a left carotid; then *secondly*, at a quarter of an inch further, *a left subclavian*, in an undivided condition.

The thyroid glands were very small.

The tongue was $3\frac{1}{2}$ inches long, fleshy, rounded at the tip; the upper surface villose, with fine close hairy *papillæ*; at its base were numerous, large, mucous follicles.

The *pharynx* was funnel-shaped and prolonged; the œsophagial orifice being at the root of the *epiglottis*, and about large enough to admit a common black lead pencil. The *œsophagus* was longitudinally corrugated internally.

The *epiglottis* was deeply notched, and with patulous and slightly curled edges.

The arytenoid cartilages were prolonged.

The upper corner of the *os hyoides* consisted of three portions.

The sublingual glands were about the size of a nutmeg, or scarcely so large; the rings of the *trachea* (of course imperfect,) amounted to 33.

The clavicles were imperfect, $1\frac{3}{8}$ inch in length, and united to the *sternum* by a cartilaginous continuation nearly an inch long.

The generative organs agreed closely with those of the Acouchi. The *epididymis* appeared externally through the abdominal ring, enveloped in a *cremaster*, to which both the internal oblique and the transversalis muscles appeared to contribute. The *penis* was retroverted at the *pubes*, and before the skin of the body was taken off, was invisible, being completely retracted within the preputial fold. At the angle which it makes on the *pubes*, where it is retroverted, there is spread a slip of fibres from the external oblique.

The length of the *penis*, from the *pubes* to the extremity of the *glans*, was $2\frac{1}{2}$ inches; the extreme portion for $1\frac{1}{4}$ inch enclosed an osseous stylet. The *apex* of the *glans* and its subsequent portion for an inch on the under surface were covered with close-set minute horny *papillæ* directed backwards; and along the *dorsum* was a double row of retroverted sharp horny points, each point decreasing from the first to the last; the number in each row being five. Its extremity was bifid, the orifice entering into a cavity, whence anteriorly issued the *urethra*, which, posteriorly, was continued into a rugous canal of considerable depth, having at the bottom two pointed osseous spurs, which are capable of being protruded.

The length of the *penis*, from the *apex* of the *glans* to the bulb, was four inches. The length of the membranous part, two inches.

The *testes* lay within the abdominal ring; they were oval in form, and $1\frac{1}{2}$ inch long. The *epididymis*, on laying open the muscular sac, was seen to consist of an assemblage of contorted tubes, from which emerged the *vas deferens*; the length of this, to its entrance at the base of the *vesiculæ seminales*, being $5\frac{1}{2}$ inches. The *vesiculæ semi-*

nales were large, and foliated at their upper part; their length was $2\frac{3}{4}$ inches.

The morbid appearances were as follows:

The vessels of the brain gorged with blood, and deep blush occupied the whole surface. The abdominal *viscera* were adherent to each other and to the peritoneal lining of the *abdomen*. The bladder was distended with urine, so as to be as thin as fine transparent paper; it extended above the *umbilicus*, and was adherent to the *peritoneum*. The urine exuded through its *parietes*, as the moisture with which it was perpetually bedewed proved by the smell. There was bloody fluid in the *abdomen*; and the gall-bladder was distended as large as an egg.

Mr. Waterhouse exhibited a new species, from the Society's Collection, of *Gerbillus*, and a new *Herpestes*, which were accompanied with the following descriptions.

HERPESTES FUSCA. *Herp. fusca; pilis nigro flavoque annulatis, ad basin fuscescentibus; gulâ fusco-flavâ; caudâ, quoad longitudinem, corpus ferè æquante, pilis longissimis obsitâ.*

	unc.	lin.
Longitudo *capitis corporisque*	18	0
——— *caudæ*	17	0
——— *tarsi digitorumque*	3	6

Hab. India (Madras?)

"This species is about equal in size to the *Herpestes major* or *urinatrix* of the Cape, and hence is larger than any of the Indian species hitherto described. It approaches in colour nearest to *Herp. brachiurus* of Mr. Gray, but may be distinguished by its very long and bushy tail. The claws of the fore feet are remarkably large and of a brown colour; the longest claw measures upwards of three quarters of an inch; the feet are blackish. Each hair of the back is grayish brown at the base, then pale brown, and the apical half is black, generally with about three or four yellowish rings. At a little distance the animal appears to be of a deep brown colour.

"The skins from which the above description was taken were purchased at a sale of zoological subjects, the greater portion of which were from Madras. As, however, there were some from the Nilgherries, it is possible these specimens may have come from that quarter. The dimensions of a skull, accompanying one of these specimens, are as follows:—

	inch.	lin.
Total length of skull	3	6
Width of skull	2	0
Length of palate.....	1	$9\frac{1}{2}$
Width of palate between posterior molars ..	0	$7\frac{1}{2}$
Width of ditto between canines	0	$5\frac{1}{2}$
Length from incisors to hinder portion of last molar	1	$4\frac{3}{4}$

GERBILLUS CUVIERI. *Gerb. suprà colore flavescenti-cinnamomeo; gulâ, abdomine, pedibusque niveis; auribus mediocribus; caudâ longissimâ; tarsis longis.*

	unc.	lin.
Longitudo ab apice rostri ad basin caudæ	7	1
——— *caudæ*	8	0
——— ab apice rostri ad basin auris.....	1	6
——— *tarsi digitorumque*	1	$8\frac{3}{4}$
——— *auris*	0	7

Arcot Madras MS. Cat. 345.

Hab. India. (No. 473. in Catal. of the *Mammalia* in the Zoological Society's Museum.)

"General colour very bright cinnamon yellow; the hairs of the upper parts of the body gray at the base; cheeks whitish, a white spot above, and extending behind the eye; the feet and the whole of the under parts of the animal white; the hairs of the same colour at the base as at the *apex*; tail brownish above, dirty-white beneath, the apical third furnished with long blackish hairs; ears blackish, sparingly clothed with white hairs; hairs of the moustaches black, some of those nearest the mouth white.

"This species of *Gerbillus*, which I have great pleasure in naming after M. F. Cuvier, who has published so excellent a monograph on the group to which it belongs, I have reason to believe has long been confounded with the animal described by Major-General Hardwicke, in the eighth volume of the Linnean Transactions, under the name of *Dipus Indicus*. The chief character which induces me to consider it as a distinct species, consists in the comparatively great length of the *tarsus*. In a specimen of *Gerb. Indicus*, which exceeds the present animal in size, I find the *tarsus* to be only 1 inch and 6 lines in length; and in a specimen in the Paris Museum the foot was only a quarter of a line longer, this animal being likewise larger than the specimen which furnished the above description. In the same museum there is also a specimen of the present species, in which the *tarsus* measured 1 inch 9 lin.; the length of the animal being 7 inches 10 lin. In the specimen of *Gerb. Indicus*, and that of *Gerb. Cuvieri*, belonging to the Zoological Society's Museum, there is a considerable difference in the colouring, the latter being paler, and of a much brighter hue than the former; but whether this difference is constant I am not aware."

May 8, 1838.

The Earl of Sheffield in the Chair.

Mr. Waterhouse brought before the notice of the Meeting an extremely interesting series of skins of *Mammalia*, which had recently been given to the Society's Museum by George Knapp, Esq., who had received them from the Island of Fernando Po. The collection included the following seven species, which were considered by Mr. Waterhouse as hitherto undescribed; namely, two new *Colobi*, forming a most important addition to that group of *Quadrumana* of which our knowledge is so extremely limited, from the small number of skins brought to Europe; two new species of *Cercopithecus*; a new Antelope, a new Otter, and a new species of the genus *Genetta*.

These were severally named by Mr. Waterhouse, and the following descriptions and specific characters communicated to the Meeting for publication in the Society's proceedings.

Colobus Pennantii. *Col. suprà nigrescens, ad latera fulvescenti-rufus; subtùs flavescens; caudâ fusco-nigricante; genis albis.*

	unc.	lin.
Longitudo *capitis corporisque*	27	0
——— *caudæ*	29	0

Hab. Fernando Po.

"The prevailing colour is bright rusty-red; the head, back of the neck, and the central portion of the back, are black; the cheeks and throat are white or dirty white; chest, fore part of the shoulders, the under parts of body and inner side of the limbs are dirty yellow; inner side of the thighs whitish; the hairs of the tail are brownish black. The fur is long and not very glossy; that on the head and fore parts of the body being the longest. There is no soft under fur; the hairs are of an uniform colour to the base, or at least in a *very slight* degree paler at that part. The portion of the back which is described as black partakes slightly of the rusty hue which prevails over the other parts of the body; it occupies but a narrow portion of the back, and blends indistinctly into the rust colour. The lower parts of the limbs are removed, but as they are black at the knee, and also assume a deep hue below the elbow, it is probable the remaining portions are black externally; but *internally*, as far as can be seen, the limbs are yellowish or yellow white.

"There was scarcely any perceptible difference in the colouring in all the specimens examined by me, from Fernando Po, amounting to about eight in number. They invariably had white or dirty-white cheeks and throat.

"This species is the nearest yet found to the Bay Monkey of Pennant, but differs in having the throat and cheeks white, and in ha-

ving three distinct shades of colour on the body: Pennant's animal having the cheeks of a pale bay colour, and the body deep bay above, and pale bay beneath. It might be argued that by 'deep bay' Pennant meant to designate the peculiar colour described by me as black with a rusty hue: if so, he could scarcely apply the term '*very bright bay*' to the parts which I call yellow. If, however, even this were the case, there is still another distinct tint which he has not mentioned, and that is the bright rusty-red colour of the sides of the body and limbs. On the whole, therefore, I think I am right in applying a name to the animal here described, which it must be remembered is from a different locality; that of the Bay Monkey being Sierra Leone. There is another circumstance which should lead us to be cautious in pronouncing any species which differs as much as that here described, as identical with Pennant's animal, since it so happens that each red *Colobus* discovered has in its turn been referred to the Bay Monkey, or to the *Simia ferruginea* of Shaw, which is the same animal, and has had one or both of these names applied, but has been changed upon the discovery of the next species; in consequence of which much confusion has arisen. I think we had better let the *Bay Monkey* stand until we can find an animal agreeing with Pennant's description.

Colobus Satanas. *Col. niger; vellere longissimo.*

	unc.	lin.
Longitudo *capitis corporisque*	31	0
——— *caudæ*	36	0

Hab. Fernando Po.

"Of this species I have seen three skins from the same locality; one of these was very imperfect; the other two were perfect, with the exception of the hands and feet. Its uniform black colour will at once distinguish it either from *Colobus leucomeros*, or *Col. ursinus*, the former having white thighs and a white throat, and the latter having a white tail, and long grey hairs interspersed with the black on the neck. The longest hairs on the back measure ten inches. The fur is but slightly glossy, and the hairs are of an uniform colour to the base. There is no under fur.

Cercopithecus Martini. *Cerc. pilis corporis suprà nigro et flavescenti-albo annulatis; capite suprà, brachiis caudâque nigrescentibus; gulâ abdomineque grisco-fuscescentibus.*

	unc.	lin.
Longitudo *capitis corporisque*	22	0
——— *caudæ*	26	0

Hab. Fernando Po.

"Of this animal I have seen but two skins: both very nearly agree in colouring but differ slightly in size; the dimensions are from the larger specimen. The face, hands, and feet, are unfortunately wanting. It appears to be most nearly allied to *Col. nictitans*; the hairs of the upper parts of the body, however, are more distinctly annulated, and the general tint is somewhat greyish. Each hair is

grey at the base, and has the apical portion black, with, generally, three yellowish white rings. The crown of the head and the fore legs are black; the hind legs are blackish, the hairs being but obscurely annulated. The throat is dirty white, the belly and inner side of the legs at the base are of a brownish colour. The tail is black above, and somewhat grizzled at the sides. At the base of the tail beneath there are some deep reddish brown hairs. The naked callosities are small. The hairs on the fore part of the crown of the head are black, annulated with brownish white, and so are those on the side of the face immediately below the ear. The fur is tolerably long, and but loosely applied to the body.

"In the smaller specimen the under parts of the body are somewhat paler than those in the larger, being brownish-grey.

"I have named this species after my fellow curator Mr. Martin.

CERCOPITHECUS ERYTHROTIS. *Cerc. griseus; pilis corporis suprà flavo nigroque annulatis; gulâ genisque albis; brachiis nigrescentibus; caudâ splendidè rufâ, lineâ nigrescente per partem superiorem excurrente, apice nigrescente; regione anali auribusque rufis.*

	unc.	lin.
Longitudo *capitis corporisque*	17	0
——— *caudæ*	23	0

Hab. Fernando Po.

"This beautiful little species is about the same size as the Moustache Monkey (*Cerc. cephus*), and has undoubtedly a close affinity to that animal; it may, however, be distinguished by the bright rusty-red hairs which cover the ears internally, its brilliant red tail, and by the hairs in the region of the *anus* being also of a bright red.

"The hairs on the upper parts of the body are black annulated with yellow; on the hinder part of the back the yellow assumes a deep golden hue, but, unlike the Moustache Monkey, the black prevails over the yellow. On the sides of the body and the outer side of the hinder legs, the hairs are greyish; and on the belly and inner side of the limbs, they are greyish-white. The fore legs are blackish externally; a dark mark extends backwards from the eye to the ear; below this, on the cheeks, there is a tuft of white hairs, beneath which the hairs are grizzled black and yellow,—in these respects bearing a close resemblance to the Moustache Monkey. The face is imperfect, and the feet have been removed from the skin; these parts, therefore, cannot be described.

GENETTA POENSIS. *Gen. fulvescenti-fusca; dorso lineis nigris confluentibus et irregularibus notato; lateribus maculis nigris crebrè adspersis; caudâ nigrâ, annulis fulvis interruptis.*

	unc.	lin.
Longitudo *capitis corporisque*	26	0
——— *caudæ*	18	0

Hab. Fernando Po.

"This species probably approaches nearest in affinity to the *Ge-*

netta Pardina, Is. Geoff., but is distinguished from all the African species with which I am acquainted, by its deep rich yellow-brown colouring, and by the great number of dark markings and spots with which its body is adorned.

"On the back of the neck there are three or four slender longitudinal black lines, which are irregular and indistinct, especially near the head. On each side of these slender lines there is a broad, irregular black mark, which commencing behind the ear runs backwards and outwards over the shoulders; here the slender black lines appear to divide, for as many as seven can be traced; the outermost of these diverge, and are soon broken into irregular spots, which are scattered over the sides of the body. The intermediate lines are also broken into oblong spots, excepting that line which runs along the spine of the back, which is uninterrupted, and becomes broader on the middle of the back. On the hinder half of the back there are, on each side of and parallel with the spinal black mark, two lines formed by confluent spots. The sides of the neck are adorned with numerous oblong spots. The muzzle is black; there is a slender black line between the eyes, a yellow spot below the anterior angle of each eye; the tip of the muzzle is also yellow. The lips are blackish, and the eyes are encircled with black hairs; the hairs of the moustaches are brown, black and brown. The ears are black at the base externally; internally they are covered with yellowish hairs. The limbs are brownish-black. The tail is black; on the basal half there are five narrow yellowish rings, and on the apical half there are about four rings of a brownish colour, and somewhat indistinct. The fur is short, glossy, and adpressed.

Lutra Poensis. *Lut. nitidè fusca; genis mento guláque fulvescentibus.*

	unc.	lin.
Longitudo *capitis corporisque*	24	3
——— *caudæ*	13	0

Hab. Fernando Po.

"The only specimen of this Otter which I have seen is smaller than the common European species (*Lutra vulgaris*); its colour is much brighter, being of a rich yellowish brown; the sides of the face (immediately below the ears), the sides of the muzzle, and the throat, are of a rich deep golden yellow with a faint brownish hue. The ears are small, and covered with hairs of the same colour as those on the top of the head. The tip of the muzzle is bare. The moustaches and long bristly hairs on the sides of the face are brown, paler at the base, and blackish at the *apex*. The tail is about equal to half the whole length of the animal. The fur is short, and the hairs are nearly erect; the under fur is of a brownish-white colour, glossy silk-like nature, and tolerably abundant. There are no feet to the skin.

Antilope Ogilbyi. *Ant. splendidè fuscescenti-aurata, subtùs pallidior, lincâ dorsali nigrâ; collo fusco lavato; caudâ brevi et floccosâ, nigrescente, pilis albis subtùs interspersis.*

Hab. Fernando Po.

"The small bushy tail, the character of the fur, which is short and closely adpressed, and the colouring, all indicate in this species, I imagine, an affinity to the *Ant. scripta*, with which it appears to agree in size. The brown neck, deeper and richer colouring, and the absence of white markings on the body, however, will serve to distinguish it from that species. As in *Ant. scripta*, there is a black line along the spine of the back.

"The skin from which the above description is taken is without head or limbs. The length from the shoulders to the root of the tail is about two feet eight inches. The tail is about four and a half inches.

"If my conjectures regarding the affinities of this animal prove correct, it will belong to the sub-genus *Tragelaphus* of Hamilton Smith, or to the more extended group to which Mr. Ogilby has applied the name of *Calliope*.

"I have taken the liberty of naming this animal after the author last mentioned, whose careful researches in the Ruminant animals have thrown considerable light on the affinities of the species."

Mr. Waterhouse then proceeded to notice two skins which had been just brought from Sierra Leone by Major Henry Dundas Campbell, (late Governor of that Colony,) and sent by him for exhibition at the Society's evening meeting, with a promise on the part of Major Campbell to present them to the Museum, in the event of his being able to make an arrangement with a party to whom he had parted with them as an article of commerce. One of these specimens was a remarkably fine skin of a species of *Colobus*, described by Mr. Ogilby in the Society's Proceedings under the name of *Col. ursinus*; the skin, however, upon which Mr. Ogilby founded his species was imperfect, and until the opportunity afforded by the inspection of the present specimen, nothing was known of the colour of the head and face, which prove to be greyish white.

The other skin was a new species of the genus *Cercopithecus*, for which the name of *Cerc. Campbelli* was proposed, with the following character.

CERCOPITHECUS CAMPBELLI. *Cerc. vellere perlongo, subsericeo, per dorsum medium diviso; capite corporeque anteriore grisescenti-olivaceis, pilis nigro flavoque annulatis; corpore posteriore femoribusque extùs intensè cineraceis; gulâ, abdomine, artubusque internis albis; brachiis externè nigris; caudâ pilis nigris et sordidè flavis indutâ, apice nigro, pilisque longioribus instructo.*

	unc.	lin.
Longitudo *capitis corporisque*	20	0
——— *caudæ*	28	0

Hab. Sierra Leone.

"This species appears to be most closely allied to the *Cercopithecus Pogonias* of Mr. Bennett; it has not, however, the black back which serves to characterize that animal.

"The most remarkable characters in this animal are its long fur,

and the hairs being divided on the back, as in most of the species of the genus *Colobus*. The average length of the hairs of the back is about two and a half inches; on the hinder half of the back, however, they exceed three inches. These hairs are grey at the base, and the remaining portion of each hair is black, with broad yellow rings, the latter colour prevailing. On the posterior half of the body, and the outer side of the hinder legs, the hairs are of a deep slate grey, and almost of an uniform colour; some of those on the middle of the back are obscurely freckled with deep yellow, and those on the thigh are very indistinctly freckled with white. The belly, inner side of limbs, fore part of thigh, chest and throat are white. The hairs of the cheeks and sides of neck are very long, and of a greyish white colour, grizzled towards the apex with black and yellow; some whitish hairs tipped with black are observable across the fore part of the forehead. The inner side of the ears is furnished with very long hairs of a greyish white colour, obscurely annulated with grey and pale yellow; these hairs vary from three quarters to one inch in length. The fore legs are black externally, and the hairs on this part are comparatively short. The hairs on the upper side of the tail are grizzled with black and dirty yellow, and on the under side with black and brownish white. The apical portion of the tail, which is furnished with longish hairs, (as in *Cerc. Pogonias*), is black, the black hairs occupying about one third of the whole length of the tail.

"I have named this animal after the late Governor of Sierra Leone, Major Campbell, that gentleman being its discoverer."

Mr. Ogilby exhibited and described various species of Kangaroo Rats (*Hypsiprymnus*) from the Society's Collection, and read extracts relating to them from a paper which he had prepared upon the subject so long ago as the year 1832; and which, though partly read before the Linnean Society at that time, had never been made public, owing to the imperfection of the materials then in this country for the perfect illustration of the genus. Reserving the detail of his observations for an express monograph, Mr. Ogilby briefly characterized the following species:—

1. *Hyp. setosus*: described in the Proceedings for 1830–31, p. 149.

2. *Hyp. myosurus*: easily distinguished from all the other species by its much shorter tail and *tarsus*; the former organ being scaly, as in the true Rats.

3. *Hyp. melanotis*: a large species with longer ears than its congeners, and readily distinguished by the dark brown colour of the hair which covers the organs, as well as by its superior size. In the Zoological Society's Museum.

4. *Hyp. formosus*: a beautiful small species of a light russet-brown colour, the latter half of the tail white. This species has been for many years in the Collection of the Linnean Society.

5. *Hyp. Phillippi*: pale brown, with a slight shade of russet above, dirty white beneath; tail long, cylindrical, covered with short, ad-

pressed yellowish white hairs beneath, and with reddish brown woolly fur on the upper surface, terminated by a tuft of dirty yellowish brown; ears elliptical; head small and attenuated; *tarsus* long, and of a pale greyish white colour; middle upper incisors not so much longer in the lateral as in *Hyp. murinus*, and lower shorter and slenderer; the canines are nearly in contact with the lateral incisors, and of the same form and size. This is the species described in Governor Phillipp s Voyage: that figured by White appears to be *Hyp. myosurus*. Described from two specimens in the Linnean Society's Collection.

6. *Hyp. Cuniculus*: in size and colour something resembling *Hyp. Phillippi*, but of a clearer grizzled brown colour, something like that of the wild rabbit; a dark brown patch marks the nose; tail long, cylindrical, and terminated by a tuft of coffee-coloured wool; upper middle incisors very large, separated from one another and truncated; the lower of the same form, but considerably shorter than in any other species, and the canines much smaller than the contiguous lateral incisors, and separated from them by a distinct bar or vacant space; by all which characters this animal differs from *Hyp. Phillippi*, as well as by its larger and thicker head and clearer grey colour.

7. *Hyp. murinus*: of nearly the same colours as the last two species, but readily distinguished by its short, thick head, blunt, unattenuated muzzle, and very short ears bordered with red: the teeth also afford a very distinctive character; the lower incisors are twice as long as in the last species, the upper not much longer than the lateral, and the canine only half the size of the contiguous incisor, and nearly in contact with it, being separated only by the third part of a line; the tail is furnished with an erect crest of black hair for three or four inches towards the tip: this is the "Potoroo" of the French Zoologists, as Mr. Ogilby had verified by comparison with the Paris specimens. Mr. Ogilby remarked that by an oversight for which he was accountable, the Society's specimen of this animal is called *Hyp. setosus* in the recently published Catalogue of the Mammalogical part of the Collection.

Mr. Martin then brought before the notice of the Meeting three species of Chameleon from Fernando Po, forming part of Mr. Knapp's donation, and upon which he proceeded to offer the following observations.

"Among the collection of specimens from Fernando Po lately presented to the Zoological Society are three chameleons of peculiar interest. One of them is the *Cham. tricornis*, or *Oweni* of Mr. Gray; the second is the *Cham. cristatus* of Mr. Stutchbury, described and figured in the 3rd Part of the 17th Vol. of the Linn. Trans. The third appears to me to be undescribed.

"With regard to the specimen of *Cham. cristatus*, I may be permitted to point out some trifling differences between it and the figure given by Mr. Stutchbury, The crest ceases to be elevated over the loins and base of the tail, degenerating into an acute ridge, whereas in the figure it continues for a considerable distance along

the upper aspect of the tail, and is as elevated over the loins as over the chest. The tail is shorter in proportion in the present specimen; the indentations which margin the casque are less bold and decided, and the casque itself is less produced posteriorly. The dorsal crest is supported by only ten spinous processes. The colour is slate gray, with a yellow abdominal line, but without the orange and dark reticulated lines observed by Mr. Stutchbury in his specimen.

Length of head and body .... $3\frac{1}{2}$ inches.
——— tail ..... $2\frac{3}{4}$

"As the specimen described and figured by Mr. Stutchbury came from the river Gaboon, Western Equinoctial Africa, and the specimen belonging to the Zoological Society from Fernando Po, it is possible that they may be examples of permanent varieties; but I am rather inclined to attribute the difference to age or sex, or to both combined. Mr. Stutchbury's specimen is probably an adult male; that belonging to the Zoological Society is a young female. The *Cham. Oweni*, Gray (*Cham. tricornis*, Gray), differs from a specimen from Fernando Po, (collected by Lieut. Allen) in the possession of the Society, only in having the horns less developed. With respect to the species I regard as undescribed, I beg to offer the following observations :—

"At a first glance this Chameleon might be confounded with *Cham. Senegalensis*, or with *Cham. dilepas* ; the grainlike scales of the body and the general contour of the head and body being much alike in each. When, however, we come to examine more closely, we shall find sufficient reason to regard it as entirely distinct. Both in *Cham. Senegalensis* and its immediate ally (if it be truly a separate species), *Cham. dilepas*, the dorsal ridge and also the median line of the throat and abdomen are strongly denticulate. In this, however, neither the dorsal ridge, nor the abdominal or gular median line, present any such character. In *Cham. Senegalensis* the tail is remarkably stout at the base, the skin behind the knee-joint is close, and there is a sort of heel, or angular projection (at least in the specimens before me), at the posterior junction of the two portions of the hind-foot. In the Chameleon which I regard as undescribed the tail is slender at the base and long, the skin behind the knee-joint is loose and fanlike, and there is no angular projection or heel.

"The granulations of the body, it may also be observed, are much less acutely elevated (being smaller and rounder) than in *Cham. Senegalensis*.

"The casque between the eyes is comparatively narrower, being there contracted; it is broader and more rounded however posteriorly, and is less produced. The middle line or keel is a little more distinct; and between the eyes the casque is more deeply and abruptly concave; a very small flap or ear, which indeed might easily be overlooked, is produced from the posterior part of the casque, and lies on each side of the neck, as in *Cham. dilepas*; but as we have said, in this species the dorsal ridge and the median line of the throat and belly are strongly denticulate, or as Daudin said of its ally the *Cham. Senegalensis, 'dentelés en scie.'*

"Regarding then this species as hitherto undescribed, I propose for it the name of *Chamæleon Bibroni*, as a tribute of respect to M. Bibron, of the Musée d'Histoire Naturelle of Paris, the merit of whose work on Reptiles, from which I have derived so much advantage, I am anxious thus publicly to acknowledge; and to whom, during his late visit to London, I am indebted for assistance and information, while engaged with the collection of *Sauria*, in the possession of this Society.

"The characters of *Cham. Bibroni* may be summed up as follow: Casque (or upper surface of the skull) flat, with a very slight occipital keel; contracted and concave between the eyes, rounded posteriorly: superciliary ridge very little elevated, and becoming obsolete over the nostrils; a small flap on each side from the posterior edge of the casque lies on the neck; the dorsal ridge and median line, both of the throat and belly, destitute of a denticulated crest. The grains of the body and limbs small and close-set, those of the casque flat and angular.

Chamæleon Bibroni. *Galeâ planâ; vix apud occiput carinatâ; inter oculos angustâ et concavâ; posticè rotundatâ, et lobo parvulo utrinque instructâ; margine superciliari parùm elevato, et super nares obsoleto; culmine dorsali, lineâque mediâ per gulam et abdomen tendente, absque denticulis; corpore granis parvis et confertis tecto; galeâ lamellis angularibus.*

Longitudo corporis cum capite	4 unc.
——— *caudæ*	$5\frac{1}{2}$

Hab. in Insulâ Fernando Po.

"In proportion to the size of the body the head of *Cham. Bibroni* is short, and particularly the muzzle, which is very acute at the apex. Viewed from above the helmet it would present an elongated *oval*, rounded behind and acute anteriorly, were it not for its contraction between the eyes, which is not the case in *Ch. Senegalensis*. The accessory lobes at its posterior part are very small, and might easily be overlooked. Perhaps, however, they may be larger in the male, (for the present individual, it is to be observed, is a female,) but of this I have no means of judging. The length and slenderness of the tail are remarkable. The granulations of the body are small and even. The general colour is purplish black, passing on the sides of the belly, on the loins, and posterior limbs, into olive green; the inside of the limbs, and the median line of the abdomen, are pale reddish yellow."

May 22, 1838.

Richard Owen, Esq., in the Chair.

A letter was first read, dated Sierra Leone, February 19, 1838, addressed to Mr. Rees, the Assistant Secretary, from F. Strachan, Esq., Corresp. Memb.

The writer in this letter expresses the warm interest which he takes in the furtherance of the Society's scientific objects, and states, that both himself and his friends are making exertions to procure skins and living animals. Referring to the Chimpanzee, Mr. Strachan observes, that only two had been brought over to Freetown during the late rains, both of which he believes to be on their way to England; he also remarks, that there would be no great difficulty in procuring a young *Hippopotamus*, and that it might probably outlive the voyage to England if brought home in a man of war.

The Rev. F. W. Hope exhibited a piece of deal, perforated throughout by the *Limnoria terebrans*, and in which many of these destructive animals might still be detected. Mr. Hope stated that the piles of the pier at Southend, which were of oak, had been cased with deal, and then surrounded with a sheathing of iron, to protect them from the ravages of the *Limnoria*; but, instead of producing the desired effect, this plan appeared to have accelerated their destruction, as the *Limnoria* made its way from beneath between the sheathing and *the pier*, and very quickly destroyed the deal casing, as shown by the piece he exhibited. Mr. Hope believed that wood could not by any means be effectually protected from this animal if exposed to its attack; and that iron, protected from the decomposing action of the water by some varnish, although requiring a much greater outlay at first, would in the end be found the least expensive of the two.

A specimen of the Anchovy, interesting from the circumstance of its having been captured in the Thames, was exhibited by Mr. Yarrell, who remarked that although this was the first instance of the kind that had fallen under his observation, yet as the Anchovy is plentiful along parts of the Devonshire and Cornwall coast, it was not improbable that its occurrence in the above river would be occasionally detected, if the nets of the white-bait fishermen were examined.

Mr. Waterhouse then laid before the Meeting a collection of specimens received from Mr. Cuming, consisting of a considerable number of birds, with skins of *Mammalia*, &c.: among the latter were several new or rare species, including specimens of the genera *Tarsius*, *Galeopithecus*, *Sciurus*, and *Paradoxurus*.

The scientific value of the above donation was much increased by some manuscript notes made by Mr. Cuming upon several of the ani-

mals, giving their native names, and information relative to their habits. Of one of these, a species of *Galeopithecus*, Mr. Cuming remarks :—

"The *Caguang* is an inoffensive animal, inhabiting lofty trees in dark woods, and is known to feed upon the leaves of the Nanka or Jack Fruit; it suspends itself from the upper branches of the tree by all its feet, which gives it a large appearance, as it brings them all four together.

"It flies heavily for about a hundred yards on an inclined plane, but readily ascends the trees by its strong claws; it makes a weak noise similar to geese when at rest: when the calls of nature operate on the animal, it erects its tail and membrane up to the back part of the neck, which gives it a most singular appearance. They are easily taken by the natives throwing nets over them, or by cutting down the tree on which they are; and before they can clear themselves of the branches are taken hold of by the hand. I never saw one of them attempt to bite. When the female has young she is very easily taken. They appear much attached to their young, which are always hanging at the breast. Of late years great numbers of them have been taken for the sake of their skins, which meet with a ready sale at Manilla. They are found on the islands of Bohol and Mindanado."

Another of the specimens was the *Tarsius spectrum* of Geoffroy, of which Mr. Cuming's *memoranda* furnished the following interesting details :—

"The *Malmag* is a small animal living under the roots of trees, particularly the large bamboo of these islands. Its principal food is lizards, which it prefers to all other. When extremely hungry, I have known it to eat shrimps and cock-roaches, and give a great preference to those which are alive. It is very cleanly in its habits, never touches any kind of food that has been partly consumed, and never drinks a second time from the same water. It seldom makes any kind of noise, and when it does emit sound it is a sharp shrill call, and only once. On approaching it in its cage, it fixes its large full eyes upon the party for a length of time, never moving a muscle: on drawing nearer, or putting anything near it, it draws up the muscles of the face similar to a monkey, and shows its beautiful sharp regular set teeth. It laps water like a cat, but very slowly, and eats much for so small an animal. It springs nearly two feet at a time. It sleeps much by day, is easily tamed, and becomes quite familiar, licking the hands and face, and creeping about your person, and is fond of being caressed. It has an aversion to the light, always retiring to the darkest place. It sits upon its posteriors when it feeds, holding its food by its fore paws; when not hungry, it will ogle the food for a considerable time. A male and female are generally seen together: the natives of these islands make sure of taking the second having secured the first. They are extremely scarce in the island of Bohol, and only found in the woods of Jagna and the island of Mindanado.

"The calls of nature seldom operate; the *fæces* are similar to those of a dog, and large for so small an animal.

"It produces one at a time. I had the good fortune to procure a female without knowing her to be with young: one morning I was agreeably surprised to find she had brought forth. The young appeared to be rather weak, but a perfect resemblance to its parent: the eyes were open and covered with hair; it soon gathered strength, and was constantly sucking betwixt its parent's legs, and so well covered by its mother, that I seldom could see anything of it but its tail: on the second day it began to creep about the cage with apparent strength, and even climb up to the top by the rods of which the cage was composed. Upon persons wishing to see the young one when covered over by the mother, we had to disturb her, upon which the dam would take the young one in its mouth, in the same manner as a cat, and carry it about for some time; several times I saw her when not disturbed trying to get out of the cage, with the young one in her mouth as before. It continued to live and increase in size for three weeks, when unfortunately some person trod upon the tail of the old one, which was protruded through the cage, a circumstance which caused its death in a few days: the young one died a few hours after, which I put into spirits. The skin, with its tail crushed, is in the box with the other animals. I should recommend its being placed in the attitude of springing, with the body a little bent forward; ear erect and round; eyes very full of light; chestnut colour; pupil black and small; the nails or claws two in number, erect, such as they are at all times.

Jagna, Isle of Bohol, August 1837. "H. Cuming."

Among the collection sent by Mr. Cuming to the Society were specimens of two species of Saurian Reptiles, upon which, at the request of the Chairman, Mr. Martin offered some remarks.

The first species to which he adverted was the *Istiurus Amboinensis* of Cuvier: two specimens of this rare reptile, both males, were procured by Mr. Cuming in the Island of Negros. The *Istiurus Amboinensis*, from the circumstance of the male being furnished with an elevated crest or fan, supported by the spinous processes of the base of the tail, in which respect it agrees with the Basilisk, was placed by Daudin in the same genus with this latter reptile, and characterized as the *Basiliscus Amboinensis*, and in this arrangement Daudin was followed by most succeeding writers. So little allied, however, in reality, are these two reptiles (though possibly they may be the representatives of each other in different quarters of the globe), that they belong to two different sections of the *Sauria*, of which one has the Old World, the other the New World, for its range. The Basilisk (*Basiliscus mitratus*, Daud.), with all the American genera of the Iguanian group or *Eunotes* of Dumeril and Bibron, belong to the section of that group termed *Pleurodonta*, distinguished by the situation of the teeth, which rise from a furrow along the internal aspect of each jaw; whereas the *Istiurus*, with all the Old World genera of the Iguanian group, (the genus *Brachylophus*, of which there is only one species, alone excepted,) belong to the section termed *Acrodonta*, distinguished

by the teeth being firmly fixed along the very ridge of each jaw, instead of having an insertion in a lateral furrow. The first discovery of the true characters of the *Istiurus* is due to Mr. Gray, who instituted a genus for the reception of this species, and also of two others allied to it, (one of these being the *Physignathus Cocincinus* of Cuvier,) under the title of *Lophura*. In the last edition of the Règne Animal, Cuvier, though he admits the justness of Mr. Gray's views respecting the Amboina Lizard, still retains the genus *Physignathus* for the Cochin Chinese one, but he changes the term *Lophura* into *Istiurus*; his reason being that the word *Lophura* approaches too nearly the term *Lophyrus* already applied by Daudin to a different genus. MM. Dumeril and Bibron adopt the generic title proposed by Cuvier, and also receive into the genus the *Physignathus Cocincinus*, under the title *Istiurus Physignathus*; they add, moreover, a third species under the name of *Istiurus Lesueuri*, originally described by Mr. Gray as the *Lophura Lesueuri*. Mr. Martin observed, that the presence of the elevated fan at the base of the tail, which occurs only in the males of *Istiurus Amboinensis*, was a circumstance of interest, inasmuch as it involves a structural difference between the osteology of both sexes. In the common Water Newt, the male of which acquires fanlike membranes at a certain season of the year, the membrane is unsupported by an osseous frame-work, and is deciduous, or rather temporary; but in this animal, while the use of such a fan may be in all probability connected with sexual functions, it is a persistent appendage. The locality from which the specimens were derived gives them additional value.

The next species to which Mr. Martin requested the attention of the meeting was a *Varanus* from the Isle of Mindanado, which he regarded as hitherto undescribed.

This *Varanus*, he observed, appeared to be closely allied to *Varanus chlorostigma*, Dum. and Bibr., differing, nevertheless, materially in the character of the scales of the body, and in the distribution of its markings. As in *Varanus chlorostigma* and *Var. bivittatus*, the suborbital scales consist of a crescent of plates, broader than long, encircled by small plates, which latter cover the suborbital margin. The nostrils are rounded, and placed on each side of the muzzle rather nearer the apex than in *Var. chlorostigma*; the teeth are also compressed with sharp edges very minutely dentated; the head is more produced than in *Var. chlorostigma*, being, in this respect more like that of *Var. bivittatus*; and the scales are larger, coarser, and more irregular.

For this new *Varanus*, Mr. Martin proposed the name of *Varanus Cumingi*.

Varanus Cumingi. *Varan. caudâ compressâ, naribus ferè rotundatis et rostri apicem versus positis; lamellis suborbitalibus inæqualibus, septem vel octo ceteris quoad magnitudinem præstantibus latissimis, lineamque semilunarem efficientibus; dentibus compressis, acutis, et delicatè serratis; corpore suprà nigro, guttis ocellisque flavis ornato; abdomine aurantiaco.*

Hab. apud Insulam Mindanado.

The head of this *Varanus* is elongated as in *Var. bivittatus*, and the nostrils have the same situation, but are rounded, and the nasal pouches are situated as in *Var. chlorostigma*. The posterior teeth are larger than the anterior, but all are recurved, compressed, with sharp edges and point, and very minutely serrated. The upper surface of the head is covered with flat polygonal scales, arranged in a system of circles. On the superorbital region seven or eight scales, much broader than long, form a sort of crescent. The scales of the back of the neck are large, oval, convex, and distinctly encircled with small, granulous scales ; on the sides of the neck they become smaller. The *rami* of the lower jaw are covered with rather large oblong scales disposed in parallel lines; and the throat and interspace between the *rami* are furnished with scales of a similar character, but very small. On the back, the scales are oval, and slightly keeled; the largest are those down the middle of the back, whence they become gradually smaller as they approach the sides. The scales of the *axillæ* are very small, flat, and circular; those covering the outer aspect of the arms, large, pointed, and subcarinate. The thighs are covered anteriorly with large square flat scales, having indications of a keel, while the leg from the knee downwards is covered externally with pointed scales, each strongly and sharply keeled. On the inside of the thighs the scales are moderate and circular. The scales of the abdomen and tail resemble those of *Varanus bivittatus*, but the double ridge of the tail is comparatively more feeble and less elevated. The toes are long, the claws large, compressed, and hooked.

The ground colour of the upper surface is black; the *apex* of the muzzle, a transverse bar behind the nostrils, a second about an inch beyond, a smaller between the eyes, and a large space on the top of the head, are bright yellow; the edges of the upper lip are yellow, and a yellow stripe extends from the back of the eye to the ear; an irregular, but somewhat triangular mark of yellow occupies the back of the neck, whence a line of yellow spots, or, as in one specimen, a continuous line, runs between the shoulders. The back is crossed by yellow spots, or by *ocelli*, forming six or seven interrupted bars; sometimes the back is more irregularly marked, the interrupted bars being obscure, and the interspaces numerously dotted with yellow scales amidst the black: one of the three specimens is thus coloured; the limbs externally are irregularly spotted with yellow, and the tail is banded with the same. The whole of the under surface, from the chin to the base of the tail, the *axillæ*, and inside of the thighs, are orange yellow.

Length of the largest of the three specimens (each apparently adult).

	ft.	inch.
From the muzzle to the posterior margin of the ear	0	3
From the ear to the root of the tail.....	1	3
Tail	2	4

June 12, 1838.

The Rev. F. W. Hope in the Chair.

Mr. Owen communicated to the Meeting another portion of the results attending his examination of the body of the *Apteryx*, embracing a description of the parts connected with the function of respiration, and their general relations, as shown in this extraordinary bird, to that structure of the respiratory organs which is so eminently characteristic of the entire class.

Mr. Owen remarks, that the system of respiration in birds is so obviously framed with especial reference to the faculty of aërial progression, and the peculiarities in the former exhibit so marked a physiological relation to the latter, that in the *Apteryx*, where the wings are reduced to the lowest known rudimentary condition, the examination of the accompanying modifications in the respiratory apparatus presented a most interesting subject for inquiry.

Upon carefully removing the *viscera* from the abdomen, Mr. Owen was both gratified and surprised at finding no trace of air-cells in the abdominal cavity; the *diaphragm* being entire, and pierced only for the transmission of the *œsophagus* and larger blood-vessels, as in the *Mammalia*.

The position of the *diaphragm* was almost horizontal, like that of the *Dugong*, differing from it principally in relation to the heart and *pericardium*, which projected into the abdominal cavity, as through a hernial aperture, the *aponeurosis* of the *diaphragm* being continuous over the *pericardium*; an approach towards the oviparous type in the disposition of the *viscera* being thus preserved.

In the origins of the *diaphragm* Mr. Owen found the *crura* of the lesser muscle exhibiting a greater degree of development than is known to exist in any other bird; the *crura* were entirely tendinous, and arose from slight projections at the sides of the last costal *vertebræ*, their fibres expanding and being lost in the large aponeurotic centre; at the point of their expansion to join the *aponeurosis* a small proportion of muscular fibre was observed.

The abdominal surface of the *diaphragm*, as in the *Mammalia*, was principally in contact with the convex surface of the liver, but the thoracic surface of the former was separated from the lungs by a series of small but well-marked air-cells, one of which projected slightly through the anterior aperture of the thoracic-abdominal cavity at the base of the neck; the *Apteryx* thus still retains the ornithic type of structure, although presenting us with the only known instance, in the feathered race, of a species in which the receptacular portion of the lungs is not extended into the *abdomen*.

The lungs were each of an irregular sub-compressed triedral figure, broader anteriorly and contracted towards the posterior ex-

tremity; they were fixed to the posterior part of the chest in a plane nearly parallel with the axis of the trunk, and were perforated by large apertures for the passage of air from the bronchial tubes into the air-cells.

The bronchial divisions of the *trachea* entered the lungs about one-fifth of their length from the anterior end, and immediately formed four principal branches, two (a small one and the largest) supplying the respiratory portion of the lung itself, and the other two terminating by openings into the thoracic air-cells previously noticed. The course of these divisions of the *trachea* is severally described by Mr. Owen, and he also enters into details respecting the number and position, &c. of the air-cells.

In the simplicity of its structure the *trachea* resembled that of the struthious birds, but there was no trace of a dilated membranous pouch as in the Emeu. The *trachea* consisted of 120 small rings, becoming gradually smaller to the last 20, and alternately overlapping and being overlapped at the sides, during the relaxation of the tube. The upper *larynx* was not defended by any rudimental *epiglottis*, nor provided with retroverted spines or *papillæ*; a small process projected from its anterior part halfway across the laryngeal area. There was no lower *larynx*; the rings of the *bronchi*, with only a slight diminution of thickness, were continued from the last two of the *trachea*, which latter were increased in size. The *trachea* was closed below by a membrane completing the bronchial cartilages at their under part, and the half-rings of the *bronchi* were completed by a tympaniform membrane both above and below.

There were two of the so-called *sterno-tracheales* muscles arising one from the inner surface of each coracoid.

Mr. Owen remarks that the fixed condition of the lungs, and the existence of air-cells between the lungs and the *diaphragm*, clearly prove that inspiration cannot be effectually performed by the action of the *diaphragm* alone, but that it takes place in the *Apteryx* as in other birds, by the *sternum* being depressed, and the angle between the vertebral and sternal ribs being increased.

A communication was then read to the Meeting by Dr. Cantor, entitled, "A notice of the *Hamadryas*, a genus of Hooded Serpents with poisonous fangs and maxillary teeth."

Dr. Cantor commences with observing, that "since Dr. Russell embodied the results of his investigations in his unequalled work upon Indian Serpents, the attention which this branch of Indian zoology has received has been chiefly confined to occasional discoveries of *single* species; and yet from experience I have been convinced how rich this branch is, and how much still is left to be illustrated, not only with regard to species, but also with regard to the habits and the geographical distribution of this order of reptiles, the number and variety of which forms so prominent a feature in the zoology of Southern Asia.

"The venomous serpent, to which I shall here call attention, is the type of a new genus; which, from its inhabiting hollow trees and

frequenting the branches, I propose to call *Hamadryas*. Its characters induce me to assign it a place between the genera *Naja*, Laurenti, and *Bungarus*, Daudin, which two forms it will be found to connect together.

HAMADRYAS.

Caput latum, subovatum, deplanatum, *rostro* brevi obtuso, *scutis* quindecim superne tectum.
Buccæ tumidæ.
Oculi magni prominentes, *pupillâ* rotundâ.
Nares latè apertæ, duorum scutorum in confinio.
Oris rictus peramplus, subundatus.
Tela antica, pone qua dentes maxillares.
Collum dilatabile.
Corpus crassum, teres, *squamis* lævibus, per series obliquas dispositis, imbricatim tectum.
Cauda brevis, apice acuto, *scutis* et *scutellis* tecta.

HAMADRYAS OPHIOPHAGUS. *Ham. supernè olivaceo-viridis, striis sagittalibus nigris cinctus, abdomine glauco, nigro marmorato.*

Scuta abdominalia a 215 ad 245
Scuta subcaudalia a 13 ad 32
Scutella subcaudalia a 63 ad 71

Hab. Bengal.
Hindustanee name, 'Sunkr-Choar.'

"For the description and anatomical details, I beg to refer to my provisional description, published in the Asiatic Researches, vol. xx. p. 87., while I shall here confine myself to some general remarks upon the habits, the effects of the poison, and the history of this serpent.

"The *Hamadryas*, like the *Bungarus*, *Hydrus*, and *Hydrophis*, has a few maxillary teeth behind the poison-fangs, and thus like the latter connects the venomous serpents with isolated poison-fangs to the harmless, which possess a complete row of maxillary teeth.

"Of the terrestrial venomous serpents the *Bungarus* is chiefly characterized by a distribution of the teeth similar to that of the *Hamadryas*, which, also partaking of the chief characteristic of the genus *Naja*, viz. that of forming a hood or disc, constitutes an immediate link between the genera *Bungarus* and *Naja*.

"In consequence of the strong resemblance in the general appearance between the *Naja* and the *Hamadryas*, when first my attention became attracted to the latter, I thought I could refer this serpent to that genus; and it was not until I was able to examine a specimen whose poison-fangs were untouched (those of the first specimens I saw having been drawn by the natives, who are greatly afraid of this serpent), that I discovered the maxillary teeth behind the poison-fangs.

"*Hamadryas ophiophagus* differs from the *Naja tripudians*:

1. By its maxillary teeth.
2. By the strongly developed spines on the *os occipitale inferius*.

3. By the integuments covering the head.
4. By the integuments covering the abdominal surface of the tail.
5. By its colour.
6. By its size.

"According to the natives the *Hamadryas* feeds chiefly upon other serpents; in one I dissected I found remains of a good-sized *Monitor*, which fact may account for its arboreal habits, as I have in Bengal, along the banks of the rivers, observed numbers of those large lizards among the branches of trees watching for birds.

"The power of abstaining from food, generally speaking, so characteristic of the serpents, is but in comparatively small degree possessed by this species; the most protracted starvation amounts to a period of about one month, while the *Vipera elegans*, the *Naja tripudians*, and the *Bungarus annularis*, have, without inconvenience, been confined in cages without any food for more than ten months. Two specimens of the *Hamadryas* in my possession were regularly fed by giving them a serpent, no matter whether venomous or not, every fortnight. As soon as this food is brought near, the serpent begins to hiss loudly, and expanding the hood rises two or three feet, and retaining this attitude as if to take a sure aim, watching the movements of the prey, darts upon it in the same manner as the *Naja tripudians* does. When the victim is killed by poison, and by degrees swallowed, the act is followed by a lethargic state, lasting for about twelve hours. Such of the other Indian venomous serpents, the habits of which I have had opportunity to study from life, show themselves much inclined to avoid other serpents, however ready they are to attack men or animals, when provoked or driven by hunger; and I am not aware of any other of those serpents being recorded as preying upon its own kind. A short time ago, however, during my sojourn at the Cape of Good Hope, I received from high authority the following fact, which throws a light upon the habits of the *Naja* of southern Africa, one of which, when being captured, threw up the body of a *Vipera arietans* (*Vip. brachyurus*, Cuvier), which bore marks of having been submitted to the process of digestion.

"The *Hamadryas*, like the greater number of Indian serpents, evinces a great partiality to water; with the exception of the tree-serpents (*Leptophina*, Bell), they all not only drink, but also moisten the tongue, which, as this organ is not situated immediately in the cavity of the mouth, become in the serpents two different acts *. Specimens of this serpent in my possession changed the skin every third or fourth month, a process which takes place in all the Indian ser-

* M. Schlegel is of opinion that serpents never drink. (*Essay sur la Physiogn. des Serpens, Partie Generale.*) As mentioned above, I have had opportunities of ascertaining that the greater number of Indian serpents are very fond of water, a fact which I am aware has also been observed in the African serpents by the eminent naturalist Dr. A. Smith, whose valuable discoveries, which he is at present engaged in publishing, will bring to light many facts, of which we are at present in almost total ignorance concerning the habits of animals, particularly those of the Reptiles.

pents several times during the year. The *Hamadryas* is very fierce, and is always ready not only to attack but to pursue when opposed; while the *Cophias*, the *Vipera*, the *Naja*, and the *Bungarus*, merely defend themselves, which done, they always retreat, provided no further provocation is offered. The natives of India assert, that individuals are found upwards of twelve feet in length, a statement probably not exaggerated, as I have myself seen specimens from eight to ten feet in length, and from six to eight inches in circumference. I have often heard it asserted, that 'Cobras' (which name is naturally enough given to every hooded serpent,) have been met with of an enormous size, but I strongly doubt their belonging to the genus *Naja*: among a considerable number which have come under my observation, I never saw any exceeding five to six feet in length, while the common size is about four feet. Some time before I discovered the *Hamadryas*, I was favoured by J. W. Grant, Esq., of the Hon. Company's Civil Service, with an interesting description of a gigantic hooded serpent he had observed in the upper provinces, and which, he remarked, was not a *Naja*. By inspection this gentleman denied the *Hamadryas* to be identical with the above-mentioned.

"The natives describe another hooded serpent, which is said to attain a much larger size than the *Hamadryas*, and which, to conclude from the vernacular name, '*Mony Choar*', is perhaps another nearly allied species.

"The fresh poison of the *Hamadryas* is a pellucid, tasteless fluid, in consistence like a thin solution of gum arabic in water; it reddens slightly litmus paper*, which is also the case with the fresh poison of the *Cophias viridis*, *Vipera elegans*, *Naja tripudians*, *Bungarus annularis* and *Bung. cæruleus*: when kept for some time it acts much stronger upon litmus, but after being kept it loses considerably if not entirely its deleterious effects.

"From a series of experiments upon living animals, the effects of this poison come nearest to those produced by that of the *Naja tripudians*, although it appears to act less quickly. The shortest period within which this poison proved fatal to a fowl, was fourteen minutes; whilst a dog expired in two hours eighteen minutes after being bitten. It should however be observed, that the experiments were made during the cold season of the year."

A specimen of the present genus (*Hamadryas*), in the Collection of the Society, was upon the table, having been presented to the Museum by Sir Stamford Raffles, but without any facts respecting its history, or the locality in which he had procured it.

* "M. Schlegel asserts (loc. cit. p. 34,) the venom is 'ni alcalin ni acide.' The only way in which I can account for this mistake from a man who ranks among the first Erpetologists, is by supposing that M. Schlegel himself never had an opportunity of testing the poison of a living serpent; for besides the five above-mentioned genera of Indian venomous serpents, I found the fresh poison of different species of marine serpents (*Hydrus*) to possess the property of turning litmus paper red. The same fact with the *Crotalus* is noticed by Dr. Harlan, who says, 'The poison of the living *Crotalus* tested in numerous instances with litmus paper, &c. invariably displayed acid properties.' (Vide Harlan, Medical and Physical Researches, p. 501, sq.)"

Mr. Yarrell called the attention of the Meeting to some specimens of fish presented by Mr. Harvey, of Teignmouth, whom he stated to be on the point of quitting England for a residence in Australia, and to whose zealous exertions as a Corresponding Member the Society had on many occasions been largely indebted.—The following vote of thanks was proposed and carried unanimously :—

"That the thanks of the Meeting be offered to Mr. Harvey, Corresponding Member, for the services he has already rendered to the Society, and that he be assured of the cordial desire experienced by his fellow Members for his welfare and success in his new undertaking."

June 26, 1838.

William Horton Lloyd, Esq., in the Chair.

A specimen of the Peregrine Falcon was upon the table, which had been sent to the Society's office as a donation to the Menagerie, with the following letter addressed to Mr. Rees, from the donor, Capt. Charles Robertson :—

"Sir,

"I beg to present to you the accompanying Hawk, which was caught on board the ship Exmouth, on the 12th of February last, on her passage from Bengal to London, when in about latitude 12° north, and longitude 88°·30 east, which placed the ship about 300 miles from the Andaman Islands; and from observing the bird's tendency to fly away towards the east about the time of sunrise, for some days after it was caught, I am led to suppose that it must have been blown off, or followed its prey till out of sight of, those Islands. At the time that it was taken, it was in the act of devouring the remains of a sea bird on the main-topsail yard, which it had previously been seen to pounce down upon and take up from the sea.

"The injured leg was occasioned by a ring, to which it was attached when first caught, and the struggles of the bird to get away; but I have great hopes that it will regain in some measure the use of it by proper care and attention, which I was unable to give it; and it is now much improved to what it was, the two parts being more inclined to unite. I have fed it upon raw fresh meat, and young rats occasionally, but it never looks at water. When approaching the coast of England, it was very remarkable that the bird again struggled to get away in the direction of the land, although we were so far off as not to see it from the ship. I am not aware that this hawk differs from the common species, but the circumstances attending it may be interesting to a naturalist; and if it should be thought worthy of being added to your collection, I shall feel amply repaid for the trouble I have taken to preserve it.

"This is the second instance of a hawk being taken by me out of sight of land; and on the former occasion a sparrow took refuge in the cabin: we were at that time about 80 miles from Ceylon. From these circumstances it is evident that hawks traverse great spaces of the ocean, being able to feed on the wing.

"I remain, Sir, your obedient Servant,

"Charles Robertson."

18, Alfred-place, Bedford-square,
26th June, 1838.

The first part of a paper was then read by Mr. Blyth, entitled, "Outlines of a Systematic Arrangement of the class *Aves*."

July 10th, 1838.

Wm. Ogilby, Esq., in the Chair.

A letter dated Tymaen Pyle, Glamorganshire, May 14th, 1838, was read, addressed to the Secretary by J. E. Bicheno, Esq., accompanying a donation to the Museum of a skin of the Burrhal Sheep from the Himalaya Mountains. The animal being quite new to the collection had been set up by Mr. Gould, and was placed in the room for exhibition. Mr. Bicheno writes as follows:

"I found the accompanying skin in the possession of a neighbouring gentleman, who left India last year; and as I apprehend it to belong to a rare animal, and hardly known in this country, I have, with his permission, sent it to the Museum of the Zoological Society. It is not possible for me, at this distance from authorities, to make it out satisfactorily, but it seems very near to the Asiatic Argal (*Ovis Argala*), if not identical; if so, however, it varies in many particulars from the descriptions given of that species.

"It was killed, June 1st, 1836, by Thos. Smith, Esq., 15th Native Infantry; known in India as one of the most intrepid sportsmen and best shots in the country. He met with it in the Great Snowy Range close to the Barinda Pass, communicating with Chinese Tartary, near also to the famous peak called Jaurnootrie, under which rises the river Tamna. He estimates the height at which he found the animal to have been from 15,000 to 17,000 feet: Humboldt, he thinks, calls the Berinda Pass 18,000 feet high.

"The hill-men call it Burrhal, and considered this specimen to have been seven years old by the horns. The cry was that of a tame sheep. It was exceedingly shy, and no animal in Mr. Smith's opinion is so difficult of approach. During his expedition in pursuit of the Burrhal he killed also the Thaar, which he took to be a species of Goat, and the 'Serow,' an Antelope, which Mr. Hodgson has described in the Journal of the Asiatic Society, No. 45, for Sept. 1835. The Thaar is also described in the same paper, and is regarded by him to be an Antelope. Mr. Hodgson suspects the Burrhal to be his *Ovis Nahoor*, but I have no opportunity of consulting the work."

An extract, forwarded by Mr. Bicheno, copied from the journal of Lieut. Thomas Smith, was also read, in which, after describing the great difficulty he found in reaching the district frequented by the Burrhal, he proceeds:

"I was at last repaid by seeing nine of them at about 600 yards, and they saw us. I attempted to get near; but no! they are without exception the most difficult animals in the world to get near; and the air being so rarified I could hardly breathe, my Paharrees constantly falling and declaring they *would* die, and begging me to return.

"About four o'clock, as I was just giving it up in despair, I suddenly came round a peak of snow, and found the large Ram at about 300 yards looking at me: despairing of ever getting nearer, and knowing my rifle would do it if only held straight, I beat a place in the snow and laid it along, taking a steady aim, pulled, and to my delight saw him fall on his side and kick. He recovered himself and crawled into some frightful rock, and there stood showing me his horns."

The animal was not eventually captured until it had received a large number of balls. "Thus I killed," says Lieut. Smith, "the first Burrhal ever killed by European or native that I can learn."

Mr. Ogilby observed that the present animal, although extremely rare and valuable, had been for some time known to naturalists, by a specimen in the collection of the Linnean Society, and by the researches of Mr. Hodgson, who had described two species of sheep inhabiting the Himalayan range. Recently, however, Mr. Hodgson had changed his opinion with respect to the existence of two distinct species, referring them both to his *Ovis Nahoor*; but Mr. Ogilby believed that another species did inhabit the Himalaya Mountains decidedly distinct from the present, and the horns of which are so capacious, that the young Foxes are said to nestle in such as are found unattached to the animals.

A paper was then read, entitled, "Observations on Marine Serpents." By Dr. Cantor.

This communication embodies the results of Dr. Cantor's observations upon the habits and general conformation of the Marine Ophidians, a group of *Vertebrata* to which but little attention has hitherto been given, from the circumstance of the danger attending their examination in the living state, and also from their geographical distribution being entirely confined to the tropical seas. The author being stationed, in the East India Company's service, on the Delta of the Ganges, had, during a considerable period, most favourable opportunities for studying these serpents, many of which were captured in the nets employed for fishing. His observations are principally directed to the anatomical characters which distinguish the marine from the terrestrial serpents, and to the modifications of structure by which the former are adapted to the element in which they exist. With respect to their physiology, the principal point of interest he establishes is, the circumstance of all the species, without exception, being highly venomous, a fact which has been denied by Schlegel, who states that the Marine Snakes are harmless; and the same erroneous idea is very current with the natives. Dr. Cantor in proof of the contrary refers to the recent death of an officer in Her Majesty's service, within an hour or two after the bite of a Serpent which had been caught at sea, and also to numerous experiments of his own, in which fowls, fish, and other animals invariably died within a few minutes after the bite had been inflicted. Numerous sketches were exhibited to the Meeting in illustration of Dr. Cantor's observations.

July 24, 1838.

Thomas Bell, Esq., in the Chair.

A letter, addressed to the Secretary, was read, from Walter Paton, Esq., accompanying a donation to the Museum of an Indian Fowl, remarkable for having had one of its spurs engrafted upon its head. The spur, in consequence of its removal to a part in which the supply of arterial blood was greatly increased, had grown to an unnatural size, and hung down in crescentic shape, presenting a very singular appearance.

Mr. Martin brought before the Meeting a collection of Snakes procured by the Euphrates Expedition, which, at the request of the Chairman, he proceeded to notice in detail.

The first, he observed, appeared to be referable to the *Coluber Cliffordii*; it agreed in every respect with specimens of that snake from Trebizond, procured by Keith Abbott, Esq., except that its colours were more obscure. Of this species there were several specimens, young and adult.

The others he regarded as new, and described them as follows:

Coluber Chesneii. This species is allied to *Col. Hippocrepis*, but differs in the shape of the muzzle, (which is more acute,) in the figure and extent of the nasal and labial plates, and in the disposition of the markings.

The labial plates are small and numerous, and in one specimen several are divided.

The posterior frontals are small, and in one specimen are divided into two.

The anterior frontals are contracted.

The superciliary plates are convex;—the eyes are small.

The scales of the trunk are small, imbricate, and without a keel.

The head is pale yellowish brown, the plates beautifully freckled or finely marbled with dark brown: a brown band traverses the superciliary and vertical plates from eye to eye, and then descends on each side obliquely to the angle of the mouth. The labial plates are bordered with dusky brown or deep gray.

The ground colour of the body above is yellowish brown; a series of square spots of a brown, or olive brown colour, extend from the back of the neck, above the median dorsal line, to the end of the tail. On the sides of the neck begins a line of the same colour, which soon breaks into elongated narrow marks, which towards the middle of the body become confused, broken, and irregular.

The superior margins of the abdominal plates are tinged with gray or dusky brown.

The whole of the under surface of head, body, and tail, pale yellow.

Caudal plates, 69 pairs in one specimen, and 57 in another.

	ft.	in.
Length of head and body	1	11
Length of tail	0	$4\frac{3}{4}$

Coronella multicincta. Allied to the "Couleuvre à capuchon" but has the muzzle much shorter and rounder; it differs also in the distribution of the colours.

The head is broad, the eyes very small, the muzzle very short and blunt.

The head is gray, finely and closely marbled, and dotted with black; a ring of which colour encircles the neck. The ground colour of the trunk above is pale cinereous gray, barred with transverse marks of black, broadest in the middle, and having a disposition to assume the arrow-head form; they unite with the black of the abdomen alternately, so that their direction across the back is not directly transverse but obliquely so.

	ft.	in.
Length of head and body	1	$1\frac{1}{2}$
Length of tail	0	$2\frac{1}{2}$

Coronella modesta. Head small; muzzle short, but moderately pointed; eyes small. Scales of upper parts smooth and small; universal colour yellowish gray. A black band passes from eye to eye; a second crosses the *occiput*; and a third of a more decided tint encircles the back of the neck. In a specimen from Trebizond, procured by K. Abbot, Esq., the marks on the head are more obscure.

Length of head and body	9 inches,
Length of tail	$2\frac{1}{2}$

Coronella pulchra. Head long, flat, and pointed at the muzzle; eyes moderate.

Scales small and smooth.

General ground colour ashy gray; the head above beautifully marbled and mottled with black; an irregular mark crosses each superciliary plate and extends upon the vertical; and a mark of the same character traverses each occipital, and extends upon the sides of the occiput. A black mark runs below the eye to the margin of the lips, and a second to the angle of the mouth; a series of blackish spots begins on the back of the neck, and runs down the back, where they become larger, and often broken into a double alternating series; a line of smaller and deeper black spots runs along each side, and the upper margins of the abdominal plates also are irregularly mottled with black. The plates of the abdomen are minutely and obscurely freckled with dusky black.

	ft.	in.
Length of head and body	1	$1\frac{1}{2}$
Length of tail	0	$3\frac{1}{2}$

Vipera Euphratica. Allied to *Vipera elegans*, but differs in the disposition of the plates around and between the nostrils, and in the

style of its colouring. A large *fossa* indicates, as in *Vip. elegans*, the aperture of the nostrils, and within this a valve, only to be seen when the *fossa* is opened, stretches obliquely across, forming the posterior margin of the nasal canal, as it extends from the bottom of the *fossa*.

The rostral plate is large and rounded above; the muzzle is large and swollen; the eyes sunk, but are not overshadowed, as in *V. elegans*, by a single superciliary plate; the scales, however, which occupy its place, are somewhat larger than those covering the top of the skull between the eyes. A large elongated scale intervenes between the nasal cavity and the rostral plate. The scales between the nostrils are larger than those which succeed them; the labials are rather small, the fourth from the rostral being the largest—their number on each side is ten. The scales on the top of the head are small, keeled, subacute at the points; those of the trunk are large, flat, elongated, with rounded points, and narrowly keeled.

Subcaudal plates 47 pairs.

Body stout and robust, gradually tapering to the *apex* of the tail. The general colour of the upper surface is brownish gray, minutely freckled with black, the dots of which are more clustered on the sides, in some places, and at regular intervals, giving the appearance of obscure clouded *fasciæ*, or *nebulæ*. The plates of the under surface are pale yellow, obscurely mottled and dotted with dusky gray.

	ft.	in.
Length of head and body	4	5
Length of tail	0	$7\frac{1}{4}$

Two other snakes, one from India, the other from Antigua, were also described as follows:

Coluber Cantori. Eyes large; head broad; muzzle moderate; vertical plate broad, as are also the two occipital plates, and the anterior ocular on each side. Scales of body small, smooth, and closely imbricate.

Body deep, somewhat compressed and tapering.

General colour of upper surface glossy brownish black; a black spot below each eye, on the meeting edges of the 5th and 6th labial plates; a black line from the back of the eye to the angle of the mouth, and a black band from the side of each occipital plate to the sides of the neck, where it ends abruptly.

Along the sides, for the anterior half of the body, a small whitish spot occurs at regular intervals, with a broad black spot below it; these marks become fainter and fainter, and at length disappear. The central line of the back, from the neck to the middle of the body, pale brown.

Abdomen yellowish white, becoming dusky as it proceeds; the posterior portion and the under surface of the tail being a little paler than the ground colour of the upper surface.

	ft.	in.
Length of head and body	1	1
Length of tail	0	$3\frac{1}{2}$

Mr. Martin observed that Dr. Cantor, in honor of whom he named this Snake, had observed it in India; and, according to the observations of this gentleman, it did not attain much larger dimensions than those of the specimen exhibited.

Inhabits India.

The exact locality of the specimen exhibited unknown.

HERPETODRYAS PUNCTIFER. Head narrow, scarcely distinct from the body; muzzle short and pointed; eyes small; body stout and gradually tapering. Scales smooth, short, broad, and imbricate.

General colour pale brown. A dark brown line runs down the top of the head; a riband of dark brown, made up of diamond-shaped marks joined together, commences at the occiput, and runs down the middle of the back to the end of the tail, on which last it is a simple line; a brown riband, little darker than the ground colour, but narrowly margined with dark brown, begins behind each eye, but soon loses itself on the sides of the body. Every scale at its *apex* has two minute dots of chalk-white, which, if not examined through a lens, might lead to the idea of their being the indications of pores; they are, however, simply round little dots of opake white. Plates of abdomen pale yellowish white, irregularly and obscurely marked with a dusky tint.

The specific term *punctifer* is given in allusion to the two white points at the apex of each scale.

Inhabits Antigua.

August 14, 1838.

William Yarrell, Esq., in the Chair.

A series of skins, belonging to species of the genus *Sciurus*, including, with one or two exceptions, all which are known to inhabit North America, were upon the table; and the Rev. Dr. Bachman, of S. Carolina, brought them severally before the notice of the Members. Six of the species exhibited were new, and for these he proposed the specific names of *Texianus*, *lanuginosus*, *fuliginosus*, *subauratus*, *Audubonii*, and *Richardsonii*. Dr. Bachman's manuscript notes upon the habits and characters of the North American Squirrels, with descriptions of the newly characterized species, were also laid before the Meeting.

The first species noticed by Dr. Bachman is the *Sciurus capistratus* of Bosc, or Fox Squirrel; *Vulpinus* of Gmel.; *niger*, Catesby; *variegatus*, Desm.; the Black Squirrel of Bartram. Its essential characters consist in its large size, in having the tail longer than the body, the hair coarse, and the ears and nose white. The dental formula is *inc.* $\frac{2}{2}$, *can.* $\frac{0-0}{0-0}$, *mol.* $\frac{4-4}{4-4}$. In a very young individual, supposed to have quitted the nest only a day or two, Dr. Bachman found an additional anterior grinder on each side in the upper jaw, but very minute. The additional molar teeth, he concludes, are shed at a very early period, as they were not present in two other specimens subsequently examined, and which were some days older than the former one. The Fox Squirrel is the largest found in the United States, and is subject to great differences of colour, but it still exhibits such striking and uniform markings, that the species may always be distinguished. Three principal varieties are noticed; in the first, which is the gray variety and the most common, the white of the nose extends to within four or five lines of the eyes; the ears, feet, and belly, are white; forehead and cheeks, brownish black; the hairs on the back are dark, plumbeous near the roots; then a broad line of cinereous; then black, and broadly tipped with white, with an occasional black hair interspersed, especially on the neck and fore-shoulder, giving the animal a light gray appearance; the hairs in the tail are for three-fourths of their length white from the roots, then a ring of black, with the tips white. This is the variety given by Bosc and other authors as *Sc. capistratus*.

The second variety (the Black Fox Squirrel) has the nose and ears white, a few light-coloured hairs on the feet, the rest of the body and tail black; there are, occasionally, a few white hairs in the tail. This is the original black squirrel of Catesby and Bartram, (*Sc. niger*).

In the third variety, the nose, mouth, under-jaw, and ears, are

white; head, thighs, and belly, black; the back and tail, dark-gray. This is the variety alluded to by Desmarest, *Ency. Méthod. Mammalogie*, p. 333.

A fourth variety, very common in Alabama, and also occasionally seen in the upper districts of South Carolina, and which has, on several occasions, been sent to Dr. Bachman as a distinct species, has the ears and nose white, a prominent mark in all the varieties, and by which the species may be easily distinguished. The head and neck are black; back, rusty-blackish brown; neck, thighs, and belly, bright rust colour; tail annulated with black and red. This is the variety erroneously considered by the author of the notes on MacMurtius' translation of Cuvier, (Append. vol. i. p. 433.) as the *Sciurus rufiventer*.

The three first varieties noted above, Dr. Bachman describes as being common in the lower and middle districts of South Carolina; and although they are known to breed together, yet it is very rare to find any specimens indicating an intermediate variety. Where the parents are both black, the young are invariably of the same colour; the same may be said of the other varieties; where, on the other hand, there is one parent of each colour, an almost equal proportion of the young are of the colour of the male, the other of the female. On three occasions he had opportunities of examining the young produced by progenitors of different colours. The first nest contained four, two black and two gray; the second, one black and two gray; and the third, three black and two gray. The colour of the young did not, in a majority of instances, correspond with that of the parent of the same sex. Although the male parent was black, the young males were frequently gray, and *vice versâ*.

Dimensions of the Fox Squirrel.

	in.	lines.
Length of head and body	14	5
Tail (to end of vertebræ)	12	4
Tail to the tip	15	2
Palm and middle fore-claw	1	9
Sole and middle hind-claw	2	11
Length of fur on the back		8
Height of ear posteriorly		7

This species is said to exist sparingly in New Jersey: Dr. Bachman has not observed it further north than Virginia, nor could he find it in the mountainous districts of that state. In the pine forests of North Carolina it becomes more common; in the middle and maritime districts of South Carolina it is almost daily met with, although it cannot be said to be an abundant species anywhere.

Sciurus Texianus. Texian Squirrel. This name is proposed by Dr. Bachman for an apparently undescribed species which he saw in the Museum at Paris. It was said to have been received from Mexico. In the Museums of Berlin and Zurich, he also found what

he conceives to be the same species; and in the British Museum there is a specimen obtained at Texas by Mr. Douglas, agreeing with the others in almost every particular. Dr. Bachman also states that, among his notes there is a description of a specimen received by a friend from the south-western parts of Louisiana, which, on a comparison with memoranda taken from the other specimens, does not appear to differ in any important particular. Hence, he thinks it probable that this species has a tolerably extensive range extending perhaps from the south-western portions of Louisiana, through Texas, into Mexico.

The Texian Squirrel is about the size of the Fox Squirrel. On the upper surface there is a mixture of black and yellow, and on the under parts deep yellow. The under sides of the limbs, and also the parts of the body contiguous, are whitish. Fore-legs externally, and the feet, rich yellow: ears, on both surfaces, yellow, with interspersed white hairs: nose and lips, brownish white: hairs of tail, rich rusty yellow at base, with a broad black space near the extremity, and finally tipt with yellow.

Dimensions.	in.	lines.
Length of body	13	6
Tail to end of hair	15	0
Tarsus	3	0
Height of ears to end of fur	0	$6\frac{1}{2}$

The Texian Squirrel bears some resemblance to the *Sciurus capistratus*. The latter species, however, in all the varieties hitherto examined by Dr. Bachman, has uniformly the white ears and nose.

This species would appear to replace the *Capistratus* in the south-western parts of America.

Sciurus subauratus. *Sci. corpore suprà cinereo, flavo lavato, infrà austerè aureo, caudâ corpore longiore. Dentes, inc.* $\frac{2}{2}$, *mol.* $\frac{4-4}{4-4}$.

The designation "Golden-bellied Squirrel," and the specific term *subauratus*, are given by Dr. Bachman to a species, of which two dead specimens were procured in the markets of New Orleans by Mr. Audubon. Their size was between that of the Northern Gray, and the Little Carolina Squirrel. There was no trace of the small anterior upper molar generally found in the species of the genus *Sciurus*. The upper incisors are of a deep orange brown colour, and of moderate size: under incisors a little paler than the upper; the head is of moderate size; whiskers longer than the head; the ears are short and pointed, and clothed with hair on both surfaces. The body seems better formed for agility than that of the small Carolina, in this respect approaching nearer to the Northern Gray Squirrel. The tail is broad and nearly as long as that of the last-named species.

The colour of the whole upper surface is gray, with a distinct yellow tint. The hairs, which give this outward appearance, are grayish slate colour at their base, then very broadly annulated with

yellow; then black, and near the apex annulated with yellowish white. The sides of the face and neck, the whole of the inner side of the limbs, feet, and the whole of the under parts, of a deep golden yellow; on the cheeks and sides of the neck, however, the hairs are obscurely annulated with black and whitish; the ears are well clothed on both surfaces with tolerably long hairs of the same deep golden hue as the sides of the face; hairs of the feet are mostly blackish at the root, and some are obscurely tipped with black; hairs of the tail black at the roots, and the remaining portion of a bright rusty yellow; each hair three times in its length annulated with black; the under surface of the tail is chiefly bright rusty yellow; whiskers longer than the head, black.

Dimensions.	in.	lin.
Length of head and body	10	6
Tail (*vertebræ*)	9	2
Tail including fur	12	0
Palm to end of middle fore-claw	1	7
Length of heel to point of middle nail	2	6
Height of ear posteriorly	0	5
Length of fur on the back	0	7
Breadth of tail with hair extended	8	6

Weight, one pound and a quarter.

Sciurus magnicaudatus, Harlan's Fauna, p. 170. *S. macrourus*, Say. Long's Expedition, vol. i. p. 115.

Of this species Dr. Bachman remarks, that although he has seen many specimens labelled under the above name, yet the only true *S. macrourus* which has come under his own observation, is one in the Philadelphia Museum. Not being in possession of his own memoranda upon this species, he quotes the description published by Say.

Sciurus aureogaster, F. Cuv. et Geoff. Mamm. Californian Squirrel.

Dr. Bachman's acquaintance with this species rests upon the examination of some specimens in the Museum of the Zoological Society, from which he draws up the following description.

The general hue above is deep gray, grizzled with yellow: the under parts and inner side of the limbs are deep rusty red; chin, throat, and cheeks, pale gray. Limbs externally, and feet, coloured as the body above. Hairs on the toes chiefly dirty white. Tail large and very bushy. Hairs of the tail black, twice annulated with dirty yellow, and broadly tipped with white—the white very conspicuous where the hairs are in their natural position. Ears thickly clothed, chiefly with blackish hairs, the hinder basal part, externally, with long white hairs extending slightly on the neck. All the hairs of the body are gray at the base, those of the upper parts annulated first with yellow, then black, and then white. Whiskers black, the hairs very long and bristly. The under incisors almost as deep an orange colour as the upper.

Habitat Mexico and California.

Dimensions.	in.	lin.
From nose to root of tail	12	0
Tail to end of hair	10	6
Heel to end of claws	2	$5\frac{1}{2}$
Nose to ear	2	$1\frac{1}{2}$
Height of ear posteriorly	0	$7\frac{1}{2}$

A second specimen, the locality of which was not given, differed from the above in having a much richer colouring. The belly was of a very bright rust colour. The hairs on the tail were black at the roots, then broadly annulated with rusty yellow, then a considerable space occupied by black, the apical portion white, but when viewed from beneath, a bright rust colour like that of the belly was very conspicuous, occupying the basal half of the hair. The upper parts of the body were grizzled with black and white, and many of the hairs were annulated with rust colour. Over the haunches and rump, the hairs are annulated with rusty yellow and black. The hairs of the feet were chiefly black.

The original specimen on which this species was founded, is in the Museum at Paris, and Dr. Bachman quotes the following description from Mr. Waterhouse's manuscript notes.

"General colour, grizzled black and white. Throat, chest, belly, innerside of legs, nearly the whole of the fore-legs, and the forepart of the hind-legs, rusty red. Tail very broad; the hairs black; red at the base, and white at the apex; lips white; feet black, with a few white hairs intermixed; forepart of head also black, with scattered white hairs. Chin blackish in front, shading towards the throat into gray."

	in.	lin.
Nose to root of tail	11	6
Tail to end of hair	11	0
Tarsus	2	$4\frac{1}{3}$

Sciurus cinereus. Gmel. Cat Squirrel, Pen. Arct. Zool. i. 137.

A little smaller than the Fox Squirrel; larger than the Northern Gray Squirrel; body stout; legs rather short; nose and ears not white; tail longer than the body. Dental formula, *incis.* $\frac{2}{2}$, *can.* $\frac{0-0}{0-0}$, *mol.* $\frac{4-4}{4-4}$, $=20$.

Of this species Dr. Bachman remarks, "It has sometimes been confounded with the Fox Squirrel, and at other times with the Northern Gray Squirrel. It is, however, in size intermediate between the two, and has some distinctive marks by which it may always be known from either. The Northern Gray Squirrel has, as far as I have been able to ascertain from an examination of many specimens, permanently five grinders in each upper jaw, and the present species has but four. Whether at a very early age the Cat Squirrel may not, like the young Fox Squirrel, have a small deciduous tooth, I have had no means of ascertaining; all the specimens before me, having been obtained in autumn or winter and being adults, present the dental formula as given above. The Fox Squirrel is permanently marked with white ears and nose, which is not the

case with the Cat Squirrel; the former is a southern species, the latter is found in the middle and northern states.

"The head is less elongated than that of the Fox Squirrel; nose more obtuse; incisors rather narrower, shorter, and less prominent; the molars, with the exception of their being a little smaller, bear a strong resemblance to, and are arranged in a similar manner to those of the former species. The neck is short; legs short and stout; nails narrower at base than those of the Fox Squirrel; shorter and less arched; the tail also is shorter and less distichous; the body is shorter and thicker, and the whole animal has a heavy, clumsy appearance. The fur is not as soft as that of the Northern Gray Squirrel, but finer than that of the Fox Squirrel.

"This species, as well as the last, is subject to great varieties of colour. I have observed in Peale's Museum specimens of every shade of colour, from light gray to nearly black. I have also seen two in cages which were nearly white, but without the red eyes, which is a characteristic mark in the Albino. There appears, however, to be this difference between the varieties of the present species and those of the Fox Squirrel; the latter are permanent varieties, scarcely any specimens being found in intermediate colours; in the present there is every shade of colour, scarcely two being found precisely alike.

"The most common variety, however, is the Gray Cat Squirrel, which I shall describe from a specimen now before me.

"Teeth orange; nails dark brown near the base, lighter at the extremities. On the cheeks there is a slight tinge of yellowish brown, and this colour is extended to the neck; the inner surface of the ears is also of the same colour; the fur on the outer surface of the ear, which extends a little beyond the outer edge and is of a soft woolly appearance, is light cinereous, and on the edge of the ear, rusty brown. Whiskers black and white, the former colour predominating. Under the throat, the inner surface of the legs and thighs, and the whole under surface, white. On the back the hairs are dark cinereous near the roots, then light ash, then annulated with black and at the tip white, giving to the fur an iron-gray appearance. The tail, which does not present the flat distichous appearance of the majority of the other species, but is more rounded and narrower, is composed of hairs which, separately examined, are of a soiled white tint near the roots, then a narrow marking of black, then white, then a broad line of black, and finally broadly edged with white.

"Another specimen is dark gray on the back and head, and a mixture of black and cinereous on the feet, thighs, and under surface. Whiskers nearly all white. The markings on the tail are similar to those of the other specimen.

Dimensions.	in.	lin.
Length of head and body	11	3
Tail (vertebræ)	9	6
Tail to the end of the hair	12	6

Dimensions.	in.	lin.
Height of ear posteriorly	0	6
Palm and middle fore-claw	1	6
Heel and middle hind-claw	2	9
Length of fur on the back	0	7

"This has been to me a rare species. It is said to be common in the oak and hickory woods of Pennsylvania, and I have occasionally met with it near Easton and York. I also observed one in the hands of a gunner near Fredericksburg, Virginia. In the northern part of New York it is exceedingly rare, as I only saw two pair during fifteen years of close observation. In the lower part of that state, however, it appears to be more common, as I recently received several specimens procured in the county of Orange.

"This squirrel has many habits in common with other species, residing in the hollows of trees, building in summer its nest of leaves in some convenient crutch, and subsisting on the same variety of food. It is, however, the most inactive of all our known species. It mounts a tree, not with the lightness and agility of the Northern Gray Squirrel, but with the slowness and apparent reluctance of the little Striped Squirrel (*Tamias Lysteri*). After ascending, it does not mount to the top, as is the case with other species, but clings to the body of the tree on the side opposite to you, or tries to conceal itself behind the first convenient limb. I have never observed it escaping from branch to branch. When it is induced in search of food to proceed to the extremity of a limb, it moves cautiously and heavily, and returns the same way. On the ground it runs clumsily and makes slower progress than the Gray Squirrel. It is usually fat, especially in autumn, and the flesh is said to be preferable to that of any other of our species.

"The Cat Squirrel does not appear to be migratory in its habits. The same pair, if undisturbed, may be found taking up their residence in a particular vicinity for a number of years in succession, and the sexes seem mated for life."

Sciurus leucotis. Northern Gray Squirrel.

Gray Squirrel. Penn. Arct. Zool. vol. i. p. 135. Hist. Quad. No. 272.

Sci. Carolinensis. Godman non Gmel.

Sci. leucotis. Gapper, Zoological Journal, vol. v. p. 206, published in 1830.

Larger than the Carolina Gray Squirrel; tail much longer than the body; smaller than the Cat Squirrel; subject to many varieties of colour.

Dental formula, *incis.* $\frac{2}{2}$, *mol.* $\frac{5-5}{4-4}$, 22.

Dr. Bachman states, that this species, which is very common in the northern and middle states, has hitherto been improperly confounded with the Carolina Gray Squirrel. It appears to have the additional anterior *molares* permanent, in this particular agreeing

with several other American Squirrels. The fact, that many of them have only $\frac{4-4}{4-4}$, he alludes to as indicating the necessity for modifying the dental formula hitherto assigned to the genus *Sciurus*.

The incisors are strong and compressed, a little smaller than those of the Cat Squirrel, convex, and of a deep orange colour anteriorly; the upper ones have a sharp cutting edge, and are chisel-shaped; the lower are much longer and thinner. The anterior grinder, although round and small, is as long as the second; the remaining four grinders are considerably more excavated than those of the Cat Squirrel, presenting two transverse ridges of enamel. The lower grinders corresponding to those above have also elevated crowns. The hair is a little softer than that of the Cat Squirrel, and is most harsh on the forehead.

The nose is rather obtuse; forehead arched; whiskers as long as the head; ears somewhat rounded, concave; both sides of the ear covered with hair, that which clothes the outside being much the longest. In winter the fur projects upwards, about three lines beyond the margin.

Dr. Bachman observes, that although this species exists under many varieties, there appear to be two very permanent ones. These are,

1. Gray variety. The nose, cheek, around the eyes, extending to the insertion of the neck, the upper surface of the fore and hind feet, and a stripe along the sides, yellowish brown. The ears on their posterior surface are dirty white, edged with brown. On the back from the shoulder there is an obscure stripe of brown, broadest at its commencement, and running down to a point at the insertion of the tail. In a few specimens this stripe is wanting. On the neck, sides of the body, and hips, the colour is light gray; the hairs separately are for one half their length dark cinereous, then light umber, then a narrow mark of black and tipped with white; a considerable number of black hairs are interspersed, giving it above a gray colour; the hairs in the tail are light yellowish brown from the roots, with three stripes of black, the outer one being widest, and broadly tipped with white; the whole under surface is white.

"There are other specimens where the yellowish markings on the sides and feet are altogether wanting. Dr. Godman (vol. ii. p. 133.) asserts that the golden colour on the hind feet is a very permanent mark. The specimens from Pennsylvania in my possession have generally this peculiarity, but many of those from New York and New England have gray feet, without the slightest mixture of yellow."

2. Black variety. This variety, on several occasions, Dr. Bachman has seen taken from the same nest with the Gray Squirrel. It is of the size and form of the gray variety. It is dark brownish black on the whole of the upper surface, a little lighter beneath. In summer its colour is less black than in winter. The hairs of the back and sides of the body and tail are obscurely grizzled with yellow.

Dimensions of the Northern Gray Squirrel.

	in.	lin.
Length of head and body	11	9
Tail (vertebræ)	10	0
Tail to the tip	13	0
Height of ear	0	7
Height to the end of fur	0	9
Palm to end of middle claw	1	10
Heel to end of middle nail	2	6
Length of fur on the back	0	7
Breadth of tail with hairs extended	4	2

As regards its geographical distribution, the northern limit of this species is not determined; it however exists as far as Hudson's Bay; was formerly very common in the New England States, and in the less cultivated portions is still frequently met with. It is abundant in New York and the mountainous portions of Pennsylvania. Dr. Bachman has observed it on the northern mountains of Virginia; it probably extends still further south: in the lower parts of North and South Carolina, however, it is replaced by a smaller species. The black variety is more abundant in Upper Canada, in the western part of New York, and in the States of Ohio and Indiana. The Northern Gray Squirrel does not exist in Georgia, Florida, or Alabama; and among specimens of Squirrels sent from Louisiana, stated to be all the species existing in that State, he did not discover the present species.

In its habits Dr. Bachman describes the *Sc. leucotis* as one of the most active species of Squirrel existing in the United States. It rises with the sun, and continues industriously engaged in search of food during four or five hours in the morning. In the middle of the day it retires for a few hours to its nest, and then resumes its labours till sunset. In the warm weather of spring and summer it builds a temporary residence in the crutch of some tree, or in the fork of some large branch. A pair of squirrels are employed on this nest, which is formed of dry sticks and twigs, and lined with moss. In the winter months these squirrels reside together in the hollows of trees, and there the female brings forth her progeny. No instance has come under Dr. Bachman's observation of their breeding in a state of domestication.

During the rutting season the males engage in frequent contests, and often wound each other severely. The very current notion that they emasculate one another in these encounters, is supposed by Dr. Bachman to have originated in the circumstance of the *testes* diminishing in bulk at a certain period of the year, or in these organs being retracted within the *pelvis*.

The food of the Northern Gray Squirrel is like that of the species in general, nuts, seed, and grain; it gives, however, the preference to the several kinds of hickory. Its fondness for the green corn and young wheat renders it very obnoxious to the farmer, and various

inducements are consequently held out for their destruction. In Pennsylvania an ancient law existed, offering three pence a head for every one destroyed; and in this way, in the year 1749, the sum of eight thousand pounds was paid out of the treasury in premiums.

It is this species of Squirrel which occasionally migrates in such vast bodies, but instances of this nature are of much rarer occurrence now than formerly. Autumn is the season of the year at which the migration takes place, and they instinctively direct their course in an eastward direction. Dr. Bachman states that he once witnessed a body of them in the act of migrating, and saw them cross the Hudson in various places between Waterford and Saratoga. They swam deep and awkwardly, with the body and tail entirely submerged. Many were drowned in the passage, and those which reached the opposite bank were so exhausted, that the boy stationed there had no difficulty in killing them or taking them alive.

Sciurus Carolinensis, Gmel. Little Carolina Gray Squirrel.

This species is smaller than the Northern Gray Squirrel, and has the tail, which is the same length as its body, narrower than in that species. The colour above is rusty gray, beneath white, and not subject to variation.

The head is shorter, and the space between the ears proportionally broader than those of the Northern Gray Squirrel; the nose also is sharper; the small anterior molar in the upper jaw is permanent, being invariably found in all the specimens examined by Dr. Bachman; and is considerably larger than in the other species. All his specimens, which give evidence of the animals having been more than a year old, instead of having the small thread-like single tooth as in the northern species, have a distinct double tooth with a double crown; the other molars are not unlike those of the other species in form, but are shorter and smaller; the upper incisors are nearly a third shorter. The body is shorter, less elegant in shape, and has not the appearance of sprightliness and agility for which the other species is so eminently distinguished. The ears, which are nearly triangular in shape, are so slightly clothed with hair internally, that they may be said to be nearly naked; externally, they are sparely clothed with short woolly hair, which does not, however, extend beyond the margins, as in the other species; the nails are shorter and less hooked; the tail is shorter, and does not present the broad distichous appearance of the other. Teeth light orange colour; nails brown, lighter at the extremities; whiskers black; nose, cheeks, and around the eyes, with a slight tinge of rufous gray. The fur on the back is for three-fourths of its length dark plumbeous, then a slight marking of black, edged with brown in some hairs, and black in others, giving it on the whole upper surface an uniform dark ochreous colour. In a few specimens there is an obscure line of lighter brown along the sides, where the ochreous colour prevails, and a tinge of the same colour on the upper

surface of the fore-legs above the knees. The feet are light gray; the hairs of the tail are, for three-fourths of their length from the roots, yellowish brown; then black, edged with white; the throat, inner surface of the legs and the belly, white.

Dimensions.	in.	lin.
Length of head and body	9	6
Tail (vertebræ)	7	4
Tail to point of hair	9	6
Height of ear	0	6
Palm to end of middle claw	1	3
Heel to end of middle nail	2	6
Length of fur on the back	0	5
Breadth of tail with hairs extended	3	0

Dr. Bachman remarks that the present species has long been confounded with the Northern Gray Squirrel, but that any naturalist who has had an opportunity of comparing many specimens of both, and of witnessing their natural habits, cannot fail to regard them as distinct species. Specimens of the former, which he had received from North Carolina, Alabama, Florida, and Louisiana, scarcely presented a shade of difference when placed beside those of South Carolina; whilst in the Northern Gray Squirrel the great variations in colour form a prominent characteristic distinction.

As regards the geographical range of the Carolina Squirrel, Dr. Bachman states it to be abundant in South Carolina, Alabama, Mississippi, and Georgia, especially in low grounds or swampy localities; it is the only known species in the southern peninsula of East Florida, and it also occurs, though not abundantly, in Louisiana. Dr. Bachman has received it from North Carolina, and believes that he has seen the species in the southern part of New Jersey. Its habits he describes as very different from those of the Northern Gray Squirrel: its bark is less full, but much shriller and more querulous. Instead of mounting high on the trees when alarmed, it clings round the trunk on the opposite side, and hides itself under the Spanish mosses which are trailing around the trees. It is much less wild, and consequently more readily captured than the northern species. Its favourite haunts are low swampy situations, and amongst the trees which overhang the streams and borders of the rivers: its nest is composed of leaves and Spanish moss, and is generally placed in the hollow of some cypress. In one respect, it differs from all the other species of the genus, in being, to a certain extent, nocturnal in its habits. Dr. Bachman has frequently observed it by moonlight as actively engaged as the Flying Squirrel; and the traveller, after sunset, in riding through the woods, is often startled by its noise.

Sciurus Colliæi. For a description of this species, of which the original specimen is in the Collection of the Zoological Society, Dr. Bachman refers to Dr. Richardson's Appendix to Capt. Beechey's Voyage.

Sciurus nigrescens. A species described by Mr. Bennett, in the Proceedings of the Zool. Soc. for 1833, p. 41.

Sciurus niger, Linn. non Catesby. The Black Squirrel.

A little larger than the Northern Gray Squirrel; fur soft and glossy. Ears, nose, and the whole body, pure black; a few white tufts of hair interspersed. Incis. $\frac{2}{2}$, canines $\frac{0-0}{0-0}$, molars $\frac{4-4}{4-4}$, =20.

Of this species Dr. Bachman remarks, "Much confusion has existed with regard to this species. The original *Sciurus niger* of Catesby is the black variety of the Fox Squirrel. It is difficult to decide, from the descriptions of Drs. Harlan and Godman, whether they refer to specimens of the black variety of the Northern Gray Squirrel, or to the species which I am about to describe. Indeed, there is so strong a similarity, that I have admitted it as a species with some doubt and hesitation. Dr. Richardson has, under the head of *Sciurus niger,* (see Fauna Boreali-Americana, p. 191.) described a specimen from Lake Superior, of what I conceive to be the black variety of the Gray Squirrel; but at the close of the same article (p. 192.), he has described another specimen from Fort William, which answers to the description of the specimens now before me. There is great difficulty in finding suitable characters by which the majority of our species of Squirrel can be designated, but in none greater than in the present. All our naturalists seem to insist that we have a *Sciurus niger,* although they have applied the name to the black varieties of several species. As the name, however, is likely to continue on our books, and as the specimens before me, if they do not establish a true species, will show a very permanent variety, I shall describe them under the above name.

"Dr. Godman states (Nat. Hist. vol. ii. p. 133.) that the Black Squirrel has only twenty teeth; the specimens before me have no greater number, with the exception of one, evidently a young animal a few months old, which has an additional tooth on one side, so small that it appears like a white thread, the opposite and corresponding one having already been shed. If further examinations will go to establish the fact that this additional molar in the Northern Gray Squirrel is persistent, and that of the present deciduous, there can be no doubt of their being distinct species. Its head appears to be a little shorter and more arched than that of the Gray Squirrel, although it is often found that these differences exist among different individuals of the same species. The incisors are compressed, strong, and of a deep orange colour anteriorly. Ears, elliptical and slightly rounded at tip, thickly clothed with fur on both surfaces, that on the outer surfaces, in a winter specimen, extending three lines beyond the margins; there are, however, no distinct tufts. Whiskers a little longer than the head. Tail long and distichous, thickly clothed with moderately coarse hair.

"The fur is softer to the touch than that of the Northern Gray Squirrel. The whole of the upper and lower surface, as well as the tail, are bright glossy black; at the roots the hairs are a little lighter. The summer fur does not differ materially from that of the

winter, it is however not quite so intensely black. In all the specimens I have had an opportunity of examining, there are small tufts of white hairs irregularly situated on the under surface, resembling those on the body of the Mink (*Mustela vison*). There are also a few scattered white hairs on the back and tail.

Dimensions.	in.	lin.
Length of head and body	13	0
Tail (vertebræ)	9	1
Tail including the fur	13	0
Palm to end of middle fore-claw	1	7
Length of heel to the point of middle claw	2	7
Length of fur on the back.....	0	8
Breadth of tail with hair extended	5	0

"The specimens from which this description has been taken were procured, through the kindness of friends, in the counties of Rensellaer and Queens, New York. I have seen it on the borders of Lake Champlain, at Ogdensburg, and on the eastern shores of Lake Erie; also near Niagara on the Canada side. The individual described by Dr. Richardson, and which may be clearly referred to this species, was obtained by Capt. Bayfield at Fort William, on Lake Superior. Black squirrels exist through all our western wilds, and to the northward of the great lakes, but whether they are of this species, or of the black variety of the Gray Squirrel, I have not had the means of deciding."

Dr. Bachman had for several successive summers an opportunity of studying the habits of this species in the northern parts of the United States. It seems to prefer valleys and swamps to dryer and more elevated situations, and to possess all the sprightliness of the Northern Gray Squirrel. A colony of them had taken up their abode by the side of a retired rivulet, where they were closely and frequently watched by Dr. Bachman. He remarked that when drinking they did not lap, but protruded the mouth a considerable way under the surface of the water: supported upon the tail and *tarsi*, they would remain for a quarter of an hour wiping their faces with their paws; when alarmed, their favourite place of retreat was a large white pine tree, (*Pinus strobus*): their bark and general habits did not differ much from those of the Northern Gray Squirrel.

Sciurus Audubonii. Larger Louisiana Black Squirrel.

Sciurus corpore suprà nigro, subtùs fuscescente; caudâ corpus longitudine æquante.

A new species, for which Dr. Bachman is indebted to Mr. Audubon. It has the fur very harsh to the touch, and is rather less in size than the *Sciurus niger*.

Sciurus fuliginosus. Sooty Squirrel.

Sciurus corpore suprà nigro et fuscescenti-flavo irrorato, subtùs fuscescente; caudâ corpore valdè longiore: dentes inc. $\frac{2}{2}$, *mol.* $\frac{5-5}{4-4}$.

Dr. Bachman remarks of this species, " I am indebted to J. W. Audubon, Esq., for a specimen of an interesting little Squirrel obtained at New Orleans on the 24th March, 1837, which I find agreeing in most particulars with the specimen in the Philadelphia Museum, referred by American authors to *Sciurus rufiventer*.

" Dr. Harlan's description does not apply very closely to the specimen in question, but seems to be with slight variations that of Desmarest's description of *Sciurus rufiventer*.

" The following description is taken from the specimen procured by Mr. Audubon. It was that of an old female, containing several young, and I am enabled to state with certainty that it was an adult animal.

" I have given to this species the character of 22 teeth, from the circumstance of my having found that number in the specimen from which I described. The animal could not have been less than a year old. The anterior molars in the upper jaw are small; the inner surface of the upper grinders is obtuse, and the two outer points on each tooth are elevated and sharper than those of most other species. In the lower jaw the molars regularly increase in size from the first, which is the smallest, to the fourth, which is the largest. Head short and broad; nose very obtuse; ears short and rounded, slightly clothed with hair; feet and claws rather short and strong; tail short and flattened, but not broad, resembling that of the *Sc. Hudsonius*. The form of the body, like that of the little Carolina Squirrel, is more indicative of strength than of agility.

" The hairs on the upper part of the body, the limbs externally and feet, are black, obscurely grizzled with brownish yellow. On the under parts, with the exception of the chin and throat, which are grayish, the hairs are annulated with brownish orange and black, and a grayish white at the roots. The prevailing colour of the tail above is black, the hairs however are brown at base and some of them are obscurely annulated with brown, and at the apex pale brown. On the under side of the tail the hairs exhibit pale yellowish brown annulations.

Dimensions.	in.	lines.
Length of head and body	10	0
Tail (vertebræ)	6	9
Do. including fur	8	6
Fore foot to point of middle fore-claw	1	8
Hinder foot to point of longest nail	2	1
Height of ear posteriorly	0	4
Length of fur on the back	0	7

Weight without intestines, $\frac{3}{4}$ lb.

" I am under an impression that this little species is subject to some variations in colour, the present specimen and that in the Philadelphia Museum having a shade of difference, the latter appearing a little lighter. In Louisiana it is so dark in colour as to be familiarly called by the French inhabitants, ' Le petit noir.' This Little Black Squirrel is an inhabitant of low swampy situations

along the Mississippi, and is said to be abundant in its favourite localities.

"As yet I am unacquainted with any species of Squirrel fully agreeing with *Sc. rufiventer*."

Sciurus Douglasii, Gray. *Oppoce-poce*, Indian name.

A species about one-fourth larger than the Hudson's Bay Squirrel; tail shorter than the body. Colour: dark brown above, and bright buff beneath. Dental formula; *incis.* $\frac{2}{2}$, *can.* $\frac{0-0}{0-0}$, *mol.* $\frac{4-4}{4-4}$, $=20$.

The incisors are a little smaller than those of *Sc. Hudsonius*. In the upper jaw, the anterior molar, which is the smallest, has a single rounded eminence on the inner side; on the outer edge of the tooth there are two acute points, and one in front; the next two grinders, which are of equal size, have each a similar eminence on the inner side, with a pair of points externally; the posterior grinder, although larger, is not unlike the anterior one. In the lower jaw the bounding ridge of enamel in each tooth forms an anterior and posterior pair of points. The molars increase gradually in size, from the first, which is the smallest, to the posterior one, which is the largest.

This species in the form of its body is not very unlike the *Sc. Hudsonius*; its ears and tail, however, are much shorter in proportion. In other respects also, as well as in size, it differs widely.

Head considerably broader than that of *Sc. Hudsonius*; nose less elongated and blunter; body long and slender; ears rather small, nearly rounded, slightly tufted posteriorly; as usual in this genus, the third inner toe is the longest, and not the second, as in the *Spermophiles*. The whiskers, which are longer than the head, are black. The fur, which is soft and lustrous, is on the back, from the roots to near the points, plumbeous, and at the tip brownish gray; a few lighter coloured hairs interspersed, gives it a dark brown tint: when closely examined it has the appearance of being thickly sprinkled with minute points of rust colour on a black ground. The tail, which is distichous but not broad, is for three-fourths of its length of the colour of the back; in the middle the hairs are plumbeous at the roots, then irregular markings of brown and black, and tipped with soiled white, giving it a hoary appearance; on the extremity of the tail the hairs are black from the roots, tipped with light brown. The inner sides of the extremities and the outer surfaces of the feet, together with the throat and mouth, and a line above and under the eye, are bright buff.

The colours on the upper and under parts are separated by a line of black, commencing at the shoulders and running along the flanks to the thighs. It is widest in the middle, where it is about three lines in width, and the hairs, which project beyond the outer margins of the ears, and form a slight tuft, are dark brown, and in some specimens black.

Dimensions.	in.	lines.
Length from point of nose to the insertion of the tail	8	4
Tail (vertebræ)	4	6
Tail including fur	6	4

Dimensions.	in.	lines.
Height of ear posteriorly	0	6
Palm to end of middle fore-claw	1	4
Heel and middle hind-claw	1	10

Sciurus Hudsonius, (Pennant). The Chickaree Hudson's Bay Squirrel. Red Squirrel.

Common Squirrel. Foster, Phil. Trans., vol. 62, p. 378, an. 1772.

Sciurus vulgaris, var. F. Erxleben Syst., an. 1777.

Hudson's Bay Squirrel. Penn. Arct. Zool., vol. 1. p. 116.

Common Squirrel. Hearne's Journey, p. 385.

Red Barking Squirrel. Schoolcraft's Journal, p. 273.

Red Squirrel. Warden's United States, vol. i. p. 330.

Ecureuil de la Baie d'Hudson. F. Cuvier, Hist. Nat. de Mam.

Sc. Hudsonicus. Harlan. Godman.

The Hudson's Bay Squirrel, a well-known species, is a third smaller than the Northern Gray Squirrel; tail shorter than the body; ears slightly tufted. Colour, reddish above, white beneath.

Dental formula: *incis.* $\frac{2}{2}$, *can.* $\frac{0-0}{0-0}$, *mol.* $\frac{4-4}{4-4}$, = 20.

Sciurus Richardsoni. Columbia Pine Squirrel.

Small Brown Squirrel. Lewis and Clarke, vol. iii. p. 37.

Sciurus Hudsonius, var. β. Columbia Pine Squirrel. Richardson, Fauna Boreali-Americana, p. 190.

Smaller than *Sc. Hudsonius*; tail shorter than the body; rusty gray above, whitish beneath; extremity of the tail black.

This small species was first noticed by Lewis and Clarke, who deposited a specimen in the Philadelphia Museum, where it still exists. I have compared it with the specimen brought by Dr. Townsend, and find them identical. Dr. Richardson, who appears not to have seen it, supposes it to be a mere variety of the *Sciurus Hudsonius*. On the contrary, Dr. Townsend says in his Notes, "It is evidently a distinct species; its habits being very different from those of the *Sciurus Hudsonius*. It frequents the pine-trees in the high range of the rocky mountains west of the great chain, feeding upon the seeds contained in the cones. These seeds are large and white, and contain much nutriment. The Indians eat a great quantity of them, and esteem them good. The note of this squirrel is a loud jarring chatter, very different from the noise of *Sc. Hudsonius*. It is not at all shy, frequently coming down to the foot of the tree to reconnoitre the passenger, and scolding at him vociferously. It is, I think, a scarce species."

The difference between these two species can be detected at a glance by comparing the specimens. The present species, in addition to its being a fourth smaller and about the size of the *Tamias Lysteri*, has less of the reddish brown on the upper surface, and may always be distinguished from the other by the blackness of its tail at the extremity, as also by the colour of the incisors, which are nearly white, instead of the deep orange of the *Hudsonius*.

The upper incisors are small and of a light yellow colour; the

lower are very thin and slender, and nearly white. The first, or deciduous, grinder, as in all the smaller species of Pine Squirrels that I have examined, is wanting; the remaining grinders, both in the upper and lower jaw, do not differ very materially from those of Douglas' Squirrel.

"Dental formula: *incis.* $\frac{2}{2}$, *can.* $\frac{0-0}{0-0}$, *mol.* $\frac{4-4}{4-4}$, = 20.

"The body of this most diminutive of all the known species of genuine squirrel in North America, is short, and does not present that appearance of lightness and agility which distinguishes the *S. Hudsonius*. Head large, less elongated, forehead more arched, and nose a little blunter than *Sc. Hudsonius*; ears short; feet of moderate size. The third toe on the fore-feet but slightly longer than the second; the claws are compressed, hooked and acute; tail shorter than the body; the thumb-nail is broad, flat and blunt.

"The fur on the back is dark plumbeous from the roots, tipped with rusty brown and black, giving it a rusty gray appearance. It is less rufous than the *Sc. Hudsonius*, and lighter coloured than the *Sc. Douglasii*. The feet on their upper surface are rufous: on the shoulders, forehead, ears, and along the thighs, there is a slight tinge of the same colour. The whiskers, which are a little longer than the head, are black. The whole of the under surface, as well as a line around the eyes, and a small patch above the nostrils, smoke-gray. The tail for about one half its length presents on the upper surface a dark rufous appearance, many of the hairs being nearly black, pointed with light rufous: at the extremity of the tail, for about an inch and three-fourths in length, the hairs are black, a few of them slightly tipped with rufous. The hind-feet, from the heel to the palms, are thickly clothed with short adpressed light-coloured hairs; the palms are naked, The sides of the body are marked by a line of black commencing at the shoulder and terminating abruptly on the flanks: this line is about two inches in length and four lines wide.

Dimensions.	in.	lines.
Length of head and body	6	2
Tail (vertebræ)	3	6
Do. including fur	5	0
Ears posteriorly	0	3
Do. including fur	0	5
Palm and middle fore-claw	1	3
Sole and middle hind-claw	1	9

SCIURUS LANUGINOSUS. Downy Squirrel.

Sciurus corpore suprà flavescenti-griseo, lateribus argenteo-cinereis, abdomine albo: pilis mollibus et lanuginosis: auribus brevibus: palmis pilis sericeis crebrè instructis; caudâ corpore breviore.

"A singular and beautiful quadruped, to which I have conceived the above name appropriate, was sent to me with the collection of Dr. Townsend. He states in his letter, 'Of this animal I have no further knowledge than that it was killed on the North-west coast,

near Sitka, where it is said to be common: it was given to me by my friend W. F. Tolmie, Esq., surgeon of the Hon. Hudson's Bay Company. I saw three other specimens from Paget's Sound, in the possession of Capt. Brotchie, and understood him to say that it was a burrowing animal.' Sitka is, I believe, the principal settlement of the Russians on Norfolk Sound and Paget's Sound, a few degrees North of the Columbia River.

"The head is broader than that of the *Sc. Hudsonius*, and the forehead much arched. The ears, which are situated far back on the head, are short, oval, and thickly clothed with fur; they are not tufted as in the *Sc. Hudsonius* and *Sc. vulgaris* of Europe, but a quantity of longer fur, situated on the outer base of the ear, and rising two or three lines above the margins, give the ears the appearance of being somewhat tufted. In the Squirrels generally, the posterior margin of the ear doubles forward to form a valve over the auditory opening, and the anterior one curves to form a helix; in the present species the margins are less folded than those of any other species I have examined. The whiskers are longer than the head; feet and toes short; rudimental thumb armed with a broad flat nail; nails slender, compressed, arched and acute; the third on the fore-feet is a little the longest, as in the Squirrels. The tail bears some resemblance to that of the Flying Squirrel, and is thickly clothed with hair, which is a little coarser than those on the back. On the fore-feet the palms are only partially covered with hair; but on the hind feet, the under surface, from the heel even to the extremity of the nails, is thickly clothed with short soft hairs.

"The fur is softer and more downy than that of any other North American species, and the whole covering of the animal indicates it to be a native of a cold region.

"Dental formula: *incis.* $\frac{2}{2}$, *can.* $\frac{0-0}{0-0}$, *mol.* $\frac{4-4}{4-4}$, = 20.

"The upper incisors are smaller and more compressed than those of *Sc. Hudsonius*; the lower ones are a little longer and sharper than the upper: the upper grinders, on their inner surface, have each an elevated ridge of enamel; on the outer crest or edge of the tooth, there are three sharp points instead of two obtuse elevations, as in the Squirrels generally, and in this particular it approaches the *Spermophiles*. In the lower jaw, the grinders, which are quadrangular in shape, present each four sharp points.

"The incisors are of an orange colour; and the lower incisors are nearly as dark as the upper. Whiskers pale brown. Nails white. The fur on the back, from the roots to near the extremity, is whitish gray; some hairs are annulated near the tips with deep yellow, and at the tip black: on the sides of the body the hairs are annulated with cream colour. Hind-feet above, grizzled with black and cream colour. There is a broad line of white around the eyes; a spot of white on the hind-part of the head, a little in advance of the anterior portions of the ears. The nose is white, and this colour extends along the forehead and terminates above the eyes, where it is gradually blended with the colours on the back. The cheeks are white, a little grayish beneath the eyes. The whole of

the under surface is white, as are also the feet and inner surface of the legs, the hairs being uniform to the roots. The hairs of the tail are for the most part of a light ash colour at the roots; above the ash colour on each hair there is a broad but not well-defined ring of light rufous; this is followed by dark brown, and at the tips the hairs are rufous and gray. Many of the hairs of the tail, however, are white, some of them are black, and others almost uniform rusty yellow.

Dimensions..	in.	lines.
Length of head and body	7	11
Tail (vertebræ)	4	8
Tail including fur	6	0
Palm and middle fore-claw	1	0
Sole and middle hind-claw	1	9
Length of fur on the back	0	7
At the tip of tail	1	10
Height of ear, including fur, measured posteriorly	1	5

"On the back and tail there are so many white hairs interspersed, the white spot on the head being merely occasioned by a greater number of hairs nearly or wholly white, that there is great reason to believe that this species becomes much lighter, if not wholly white, during winter.

"In the shape of the head and ears, and in the pointed projections of the teeth, this species approaches the Marmots and Spermophiles; but in the shape of its body, its soft fur, its curved and acute nails, constructed more for climbing than digging in the earth, and in the third toe being longer than the second, it must be placed among the Squirrels."

Mr. Waterhouse exhibited a new species of Hare from the collection made for the Society by the late Mr. Douglas, and proposed to characterize it under the name of *Lepus Bachmani*: he thought it probable that the species had been brought from California. It was thus described:

Lepus Bachmani. *Lep. intensè fuscus, pilis fuscescenti-flavo nigroque annulatis; abdomine sordidè albo: pedibus suprà pallidis, subtùs pilis densis sordidè fuscis indutis: caudâ brevi, albâ, suprà nigricante, flavido adspersâ: auribus externè pilis brevissimis cinerescenti-fuscis, internè albidis, ad marginem externum, et ad apicem flavescentibus obsitis: nuchâ pallidè fuscescenti-flavâ.*

"Fur long and soft, of a deep gray colour at the base; each hair annulated near the apex with pale brown, and black at the points; on the belly the hairs are whitish externally; on the chest and forepart of the neck the hairs are coloured as those of the sides of the body; the visible portion is pale brown, each hair being dusky at the tip;

chin and throat gray-white. The hairs of the head coloured like those of the body; an indistinct pale longitudinal dash on the flanks just above the haunches: the anal region white. The general colour of the *tarsus* above is white; the hairs, however, are grayish-white at the base, and then annulated with very pale buff colour (almost white), and pure white at the points; the sides of the *tarsus* are brown; the long hairs which cover the under part of the *tarsus*, as well as that of the fore-feet, deep brown. The fore-feet above very pale brown, approaching to white; the hairs covering the toes principally white: the claws are slender and pointed, that of the longest toe very slender. Ears longer than the head, sparingly furnished with hair, the hairs minute and closely adpressed; externally, on the forepart, grizzled with black and yellowish white, on the hinder part grayish-white; the apical portion is obscurely margined with black; at the base the hairs are of a woolly nature, and of a very pale buff colour; the hairs on the occipital part of the head, and extending slightly on to the neck, are of the same colour and of the same woolly character; the ears internally are white, towards the posterior margin obscurely grizzled with blackish, at the margin yellowish.

Dimensions.	in.	lines.
Length	10	0
Tarsus	3	0
Tail and fur	1	3
Ear externally	2	8
Nose to ear.....	2	$5\frac{1}{2}$

Habitat S.W. coast of N. America, probably California.

"This animal may possibly not be adult; but neither in the teeth, so far as can be ascertained from a stuffed specimen, nor in the character of the fur, can I see any reason for believing it young, excepting that it is much under the ordinary size of the species of the genus to which it belongs; and although it may not be adult, it certainly is not a very young animal. Compared with *Lep. palustris*, with which species it was sent over by Mr. Douglas, it presents the following points of distinction. Although the present animal is not above one-third of the size of that species, the ears measure nearly a quarter of an inch more in length: in fact, they are here longer than the head, whereas in *Lep. palustris* they are much shorter. The next most important difference is in the feet,—which instead of having comparatively short and adpressed hairs which do not conceal the claws, are in *Lep. Bachmani* long and woolly, especially on the under part, and not only conceal the claws, but extend upwards of a quarter of an inch beyond their tips. The claws are more slender and pointed, especially those of the fore-feet. Besides these differences there are some others, which perhaps may be considered of minor importance: the fur is much softer and more dense; the longer hairs are extremely delicate, whilst in *Lep. palustris* they are harsh. As regards the colour, *Lep. palustris* has a very distinct rich yellow tint, which is not observed in the present species, the pale annulations of the hairs

which produce the yellow tint, being replaced by brownish white or pale brown."

Mr. Ogilby pointed out the characters of a new species of Muntjac Deer, which lately died at the Gardens. This species is about the same size as the common Indian Muntjac, but has a longer head and tail; has less red, and more blue in the general shade of the colouring, and is readily distinguished by the want of the white over the hoofs, which is so apparent in its congener. The specimen, a male, was brought from China by J. R. Reeves, Esq., to whom the Society is already indebted for many rare and valuable animals, and to whom Mr. Ogilby proposed to dedicate the present species by applying the name of *Cervus Reevesi*. A female specimen which accompanied that here described, is still living and has lately produced a fawn, which is interesting from exhibiting the spotted character common to the generality of the young in this extensive group.

Mr. Waterhouse then directed the attention of the Meeting to an interesting series of skins of Marsupial animals, brought from Van Diemen's Land by George Everett, Esq., and presented by that gentleman to the Society; the collection includes a specimen of the *Thylacinus*, two species of Kangaroo, and two of the genus *Perameles*, besides others of more common occurrence.

Mr. Owen concluded his memoir on the anatomy of the *Apteryx* by a description of the general structure and peculiarities of its osseous system.

The bones of the *Apteryx* are not perforated for the admission of air, nor do they exhibit the pure white colour which characterizes the skeleton in other birds; their tough and somewhat coarse texture resembles rather that of the bones of the lizard tribe.

The spinal column was found to consist of 15 cervical and 9 dorsal *vertebræ*, and 22 in the lumbar, sacral, and caudal regions. The third to the sixth, inclusive, of the dorsal *vertebræ*, are slightly anchylosed together by the contiguous edges of their spinous processes; but Mr. Owen supposes that notwithstanding this *anchylosis*, a yielding, elastic movement may still take place between these *vertebræ*. A short obtuse process is sent off obliquely forwards, from the inferior surface of the body of the first four dorsal *vertebræ*; the articulation between the bodies is by the adaptation of a surface, slightly concave in the vertical, and convex in the transverse direction, at the posterior end of one *vertebra* to opposite curves at the anterior end of the succeeding one; close to the anterior surface on each side there is a hemispherical pit for the reception of the round head of the rib; the transverse processes are broad, flat, and square-shaped, with the anterior angle obliquely cut off to receive the abutment of the tubercle of the rib; they are not connected together by extended bony splints, but are quite detached, as in struthious birds. The spinous process arises from the whole length of the arch of each *vertebra*; it is truncate above, and with the exception of the first, is of the same breadth throughout: all the dorsal spines are much compressed, the middle ones being

the thinnest, slightly expanding at their truncate extremities. The length of the dorsal region was four inches. The length of the vertebral column behind the dorsal *vertebræ*, included between the *ossa innominata*, was three inches. The first four and the ninth and tenth sacral *vertebræ*, send outwards inferior transverse processes. The *foramina* for the nerves are pierced in the base of the arches of the sacral *vertebræ*; they are double in the anterior ones, but single in the posterior compressed *vertebræ*, where they are situated close to the posterior margin. The cervical *vertebræ* present all the peculiarities of the type of Birds; the inverted bony arch for the protection of the carotid arteries, is first seen developed from the inner side of the inferior transverse processes of the twelfth cervical *vertebra*, but the two sides of the arch are not anchylosed together. The spinous process is thick and strong in the *Vertebra dentata*, but progressively diminishes to the seventh, where it is reduced to a mere tubercle; it reappears at the eleventh, and progressively increases to the dorsal *vertebræ*. The large canal on each side for the vertebral artery and sympathetic nerve, is formed by the *anchylosis* of a rudimental rib to the extremities of an upper and lower transverse process. The spinal chord is least protected by the *vertebræ* in the middle of the neck, where there is the greatest extent of motion. The length of the cervical region was seven inches.

In the first fifteen *vertebræ* the costal appendages were anchylosed; in the nine succeeding *vertebræ* the ribs appear to remain permanently moveable; the first is a slender style about an inch in length, the rest are remarkable for their breadth, which is relatively greater than in any other bird. The second, third, fourth and fifth ribs, articulate with the *sternum* through the medium of slender sternal portions. The appendages to the vertebral ribs are developed in the second to the eighth inclusive; they are articulated by a broad base to a fissure in the posterior margin of these vertebral ribs, a little below their middle; those belonging to the third, fourth, fifth and sixth ribs, are the longest, and overlap the succeeding rib; these processes were not anchylosed in the specimen described. The first four sternal ribs are transversely expanded at their sternal extremities, which severally present a concave surface lined with smooth cartilage and synovial membrane, and playing upon a corresponding smooth convexity in the costal margin of the *sternum*, which thus presents four true enarthrodial joints, with capsular ligaments on each side.

The *sternum* is reduced to its lowest grade of development in the *Apteryx*. In its small size, and in the total absence of a keel, it resembles that of the struthious birds, but differs in the presence of two subcircular perforations, situated on each side of the middle line, in the wide anterior emargination, and in the much greater extent of the two posterior fissures. The anterior margin presents no trace of a manubrial process, as in the Ostrich, the interspace between the articular cavities of the coracoid being, on the contrary, deeply concave. The articular surface for the coracoid is an open groove, externally to which the anterior angles of the *sternum*

are produced into two strong triangular processes, with the *apex* obtuse. The costal margin is thickened, and when viewed anteriorly, presents an undulating contour, from the presence of the four articular convexities for the sternal ribs and the intermediate excavations; the breadth of each lateral perforation is nearly equal to that of the intervening osseous space; in the specimen described they were not quite symmetrical in position. The extent of the posterior notches is equal to one half the entire length of the *sternum*.

The *scapula* and *coracoid* were anchylosed; a small perforation anterior to the articular surface of the *humerus* indicates the separation between the coracoid and rudimental clavicle, of which there is otherwise not the least trace. The coracoid is the strongest bone; its inferior expanded extremity presents an articular convexity adapted to the sternal groove before described. The *scapula* reaches to the third rib; it is slightly curved and expanded at both ends, but chiefly at the articulation. The humerus is a slender, cylindrical, styliform bone, slightly curved, one inch, five lines in length, slightly expanded at both extremities, most so at the proximal end, which supports a transverse, oval, articular convexity, covered with smooth cartilage, and joined by a synovial and capsular membrane to the scapulo-coracoid articulation. A small tuberosity projects beyond each end of the humeral articular surface. The distal end of the *humerus* is articulated by a true but shallow ginglymoid joint with the rudimental bones of the *antibrachium*, and both the external and internal condyles are slightly developed. The *radius* and *ulna* are straight, slender, styliform bones, each nine lines in length; a slight olecranon projects above the articular surface of the ulna; there is a minute carpal bone, two metacarpals, and a single phalanx, which supports the long, curved, obtuse alar claw; the whole length of this rudimental hand is seven lines, including the claw, which measures three lines and a half. A few strong and short quill feathers are attached by ligament to the ulna and metacarpus.

The *iliac* bones in size and shape present the character of the struthious birds. The *pubic* element is a slender bony style connected by ligament to the end of the *ischium*, but attached by bone only at its acetabular extremity. A short pointed process extends from the anterior margin of the origin of the *pubis*. The *acetabulum* is produced anteriorly into an obtuse ridge.

The *femur* is three inches, nine lines in length, slightly bent; the articular head presents a large depression for the strong and complex *ligamentum teres*. The condyles of the *femur* are separated by a wide and deep groove anteriorly, and by a triangular depression behind. The *tibia* is five inches long. Two angular and strong ridges are developed from the anterior part of the expanded head of the *tibia*: the external one affords attachment to *fascia*, and to the expanded tendon of the *rectus femoris latissimus*; the internal has affixed to it the ligament of the small cartilaginous *patella*. The *fibula*, half an inch below its head, is anchylosed to the *tibia*, the attachment continuing for about ten lines; after an interspace of nine lines it again becomes anchylosed, and gradually disappears towards the lower third of the *tibia*.

The distal end of the *tibia* presents the usual trochlear form, but the anterior concavity above the articular surface is in great part occupied by an irregular bony prominence. A small cuneiform bone is wedged into the outer and back part of the ankle joint.

The anchylosed *tarso-metatarsals* form a strong bone, two inches, three lines in length; it expands laterally as it descends and divides at its distal extremity into three parts with the articular pulleys for the three principal toes. The surface for the articulation of the fourth or small internal toe, is about half an inch above the distal end in the internal and posterior aspect of the bones; a small ossicle attached by strong ligaments to that surface gives support to a short *phalanx*, which articulates with the longer ungueal *phalanx*. The number of phalanges in the other toes follows the ordinary law.

After concluding the description of the osteology of the *Apteryx*, of which the preceding is an abstract, Prof. Owen proceeded to observe, "that so far as the natural affinities of a bird are elucidated by its skeleton, all the leading modifications of that basis of the organization of the *Apteryx* connect it closely with the struthious group. In the diminutive and keel-less *sternum* it agrees with all the known struthious species, and with these alone. The two posterior emarginations which we observe in the *sternum* of the Ostrich are present in a still greater degree in the *Apteryx*; but the feeble development of the anterior extremities, to the muscles of which the *sternum* is mainly subservient, as a basis of attachment, is the condition of a peculiarly incomplete state of the ossification of that bone of the *Apteryx*; and the two subcircular perforations which intervene between the origins of the pectoral muscle on the one side, and those of a large inferior dermo-cervical muscle on the other, form one of several unique structures in the anatomy of this bird. We have again the struthious characters repeated in the atrophy of the bones of the wing, and the absence of the clavicles, as in the Emeu and Rhea*. Like testimony is borne by the expansively developed *iliac* and *sacral* bones, by the broad *ischium* and slender *pubis*, and by the long and narrow form of the *pelvis*: we begin to observe a deviation from the struthious type in the length of the *femur*, and a tendency to the gallinaceous type in the shortness of the *metatarsal* segment; the development of the fourth or inner toe may be regarded as another deviation, but it should be remembered that in the size and position of the latter the *Apteryx* closely corresponds with the extinct struthious Dodo. The claw on the inner toe of the *Apteryx* has been erroneously compared with the spur of certain *Gallinæ*, but it scarcely differs in form from the claws of the anterior toes.

"In the broad ribs (see the Cassowary), in the general freedom of *anchylosis* in the dorsal region of the vertebral column, and the numerous *vertebræ* of the neck, we again meet with *struthious* characters; and should it be objected to the latter particular, that some

* In the Ostrich the clavicles are undoubtedly present, though anchylosed, with the *scapula* and *coracoids*, and separate from each other. In the Cassowary they exist as separate short styliform bones.

Palmipeds surpass the Ostrich in the number of cervical *vertebræ*, yet these stand out rather as exceptions in their particular order; while an excess over the average number of cervical *vertebræ* in birds is constant in the *struthious* or *Brevipennate* order. Thus in the Cassowary 19 *vertebræ* precede that which supports a rib connected with the *sternum*, and of these 19 we may fairly reckon 16 as analogous to the cervical *vertebræ* in other birds. In the Rhea there are also 16 *cervical vertebræ*, and not 14, as Cuvier states. In the Ostrich there are 18, in the Emeu 19 cervical *vertebræ*. In the *Apteryx* we should reckon 16 cervical *vertebræ* if we included that which supports the short rudimental but moveable pair of ribs. Of the 22 true grallatorial birds cited in Cuvier's Table of the Number of Vertebræ, only 9 have more than 14 cervical *vertebræ*; while the *Apteryx* with 15 cervical *vertebræ*, considered as a struthious bird, has the fewest of its order. The free bony appendages of the ribs, and the universal absence of air-cells in the skeleton, are conditions in which the *Apteryx* resembles the *Aptenodites*, but here all resemblance ceases: the position in which the *Apteryx* was originally figured* is incompatible with its organization.

"The modifications of the skull of the *Apteryx*, in conformity with the structure of the beak requisite for obtaining its appropriate food, are undoubtedly extreme; yet we perceive in the *cere* which covers the base of the bill in the entire *Apteryx* a structure which exists in all the struthious birds; and the anterior position of the nostrils in the subattenuated beak of the Cassowary is an evident approach to that very singular one which peculiarly characterizes the *Apteryx*. With regard to the digestive organs, it is interesting to remark, that the thickened muscular *parietes* of the stomach of the most strictly granivorous of the struthious birds do not exhibit that apparatus of distinct *Musculi digastrici* and *laterales* which forms the characteristic structure of the gizzard of the gallinaceous order: the *Apteryx*, in the form and structure of its stomach, adheres to the struthious type. It differs again in a marked degree from the *Gallinæ*, in the absence of a crop. With respect to the *cæcal* appendages of the intestine, though generally long in the *Gallinæ*, they are subject to great variety in both the struthious and grallatorial orders: their extreme length and complicated structure in the Ostrich and Rhea form a peculiarity only met with in these birds. In the Cassowary, on the other hand, the *cæca* are described by the French academicians as entirely absent. Cuvier† speaks of 'un cæcum unique' in the Emeu. In my dissections of these struthious birds I have always found the two normal *cæca* present, but small; in the Emeu measuring about five inches long and half an inch in diameter; in the Cassowary measuring about four inches in length. The presence of two moderately developed *cæca* in the *Apteryx* affords therefore no indication of its recession from the struthious type: these *cæca* correspond in their condition, as they do in the other struthious birds, with the nature

* Shaw's Miscellany, xxiv. pl. 1075.
† *Leçons d'Anat. Comp.* 1836. iv. p. 291.

of the nutriment of the species. It is dependent on this circumstance also, that in the grallatorial bird (*Ibis*), which the *Apteryx* most resembles in the structure of its beak, and consequently in the nature of its food, the *cæca* have nearly the same relative size; but as regards the *Grallæ*, taken as an order, no one condition of the *cæca* can be predicated as characteristic of them. In most they are very small; in many single.

"What evidence, we next ask, does the generative system afford of the affinities of the *Apteryx*? A single, well-developed, inferiorly grooved, subspiral, intromittent organ attests unequivocally its relations to the struthious group; and this structure, with the modifications of the plumage, and the peculiarities of the skeleton, lead me to the same conclusion at which I formerly arrived*, from a study of the external organization of the *Apteryx*, viz. that it must rank as a genus of the cursorial or struthious order; and that in deviating from the type of this order it manifests a tendency in one direction, as in the feet, to the gallinaceous order; and in another, as in the beak, to the *Grallæ*; but that it cannot, without violation of its natural affinities, be classed with either."

A living specimen of the *Gymnotus electricus*, from the Amazon, was exhibited by Mr. Porter.

August 28th, 1838.

No meeting took place.

* Art. *Aves*, Cycl. of Anat. and Phys., i. 1836, p. 269.

September 11th, 1838.

Lieut. Col. Sykes, in the Chair.

Some notes were read by the Chairman upon three skins of digitigrade *carnivora*, which were on the table for exhibition: one of these was a beautiful skin of the *Aguara Guazu* of Azara, (*Canis jubatus*, Desm.) and the other two, those of the *Felis Pardina*, Temm., in an adult and nonadult state. Respecting the first of these Col. Sykes offered the following observations:

"Azara in his preliminary notices of the two species of *Canis*, *C. jubatus* and *C. Azaræ*, says, I prefer for the family the Spanish names of Zorro or Fox to the Guaranese name Aguara, which also means fox; and he accordingly heads the notices with the words 'Zorros or Foxes.' The *C. jubatus*, measuring 5 feet to the tail, and the tail of which is 19 inches, is certainly a Brobdignag Fox. I mention this circumstance in illustration of the fact, that Azara, in his classification, appears to have overlooked analogies. And this remissness I hope will authorize me, without the imputation of presumption, in venturing upon the remarks I am about to make.

"The skin I put before the Society is that of Azara's *Canis jubatus*, and as it and a fellow skin in my possession are the only specimens of the kind in England (indeed I believe there are only two other specimens in Europe, one in Paris, the other in Cadiz), and as it will most probably have been seen but by few of the gentlemen present, I shall be happy to find that its exhibition is acceptable. Azara states that the *Canis jubatus* has 6 incisors in the upper jaw, then on either side of a vacant space follow 2 canines and 6 molar teeth, three of which, however, look more like incisors than molars; the lower jaw is in all respects similar to the upper, except that the interval is wanting between the canine teeth and the incisors, and there is one additional molar tooth; in other respects the form and general character of these animals are those of the Dog: they differ, however, chiefly in being *unsociable* and *nocturnal*. The tail is much *thicker* and *more bushy*, and they never raise or curl it; the *body* and *neck* are *shorter* and covered with longer fur; the *neck* is also *thicker*; the hair too is thicker; the eye is smaller, the face flatter; the *head rounder* and *more bulky* as far as the front of the eyes, where the thick part diminishes more speedily and terminates in a sharper muzzle, furnished with whiskers; the ear is broader at its origin, and thicker and stiffer, and when they are on the look out they present the hollow part forwards and approximate their ears much more than Dogs. They do not bark nor howl like Dogs, nor is their voice heard often; in fact they so cry but seldom, and submit to be killed without uttering a sound. Other discrepancies between his two 'Zorros' and Dogs are added, but it is unnecessary to specify them. I perfectly agree with Azara that he has afforded sufficient

proofs of the wide difference between the *Canis jubatus* and Dogs (the most striking part of which difference, however, he has omitted to characterize, viz. the long mane), but here my coincidence in opinion ceases, for it is evident that the animal of which the skin lies upon the table has not the slightest approximation to the character of a Fox, which Azara would make it. A question is thus opened, to what genus or subgenus of the second division of *digitigrada* does the animal belong? Unfortunately the skins in my possession do not afford the means of fixing definitively its place in the family, there being neither skull nor teeth, no toes, and no means of determining whether or not an anal pouch existed. Azara's dental characters are applicable to the genus *Canis*, but he has omitted to notice those minute points which might constitute subgeneric differences. One fact mentioned, that the canines of the *only* adult he examined were ten lines long, although they were very much worn, would apply rather to *Hyæna* than to *Canis*. The number of toes is omitted. Buffon calls the *Canis jubatus* the Red Wolf; but, were not its solitary and nocturnal habits and its predilection for certain fruits and vegetables sufficient to separate it, the remarkable mane at once prevents the alliance. Apparently, therefore, being neither fox, dog, nor wolf, it may be permitted us to look to a neighbouring genus, to see whether or not there are more characteristics common to the animal under consideration and species of that genus than we have yet met with.

"While residing with my family at Cadiz during the spring, three beautiful skins were imported from Buenos Ayres; they were quite unknown to the owner and his friends, and learning that I took an interest in natural history, I was asked to examine and give my opinion upon them. The heavy head, the large ears, the bulky body and comparatively slender hind-limbs, the short neck, the shaggy hair, but particularly the singular mane, fixed my attention; and in the absence of primary generic characters, I would have pronounced the skins to be those of a beautiful species of *Hyæna*: but the few naturalists who have examined the New World have not yet discovered the Hyæna, and it would have been rash, with the slender data before me, to have expressed a definitive opinion. Nevertheless on returning to England and deliberately examining Azara's description of the form and habits of the *Canis jubatus*, my original opinion is so much strengthened that I am induced to submit the whole question to the consideration of naturalists, in the hope that on an opportunity occurring it may be taken advantage of to determine the primary generic characters, with a view to the allocation of the animal into its exact place in the digitigrade family. But to me it is a matter of indifference whether or not the animal has the technical characters of *Canis* or *Hyæna*. Nature, in her wondrous chain of animated beings dispersed over the world, is never defective in a link (at least on the great continents), for if the identical species of one continent be wanting, in another we surely find its analogue. The Ostrich of Africa has its analogue in America in the *Rhea*, and in the *Emu* and Cassowary of Australia: the *Llama* replaces the Camel, and the *Fe-*

lis concolor, the Lion in America; but the numerous cases are familiar to all naturalists and need not be enumerated; and with respect to the Aguara Guazu (*Canis jubatus*), if it be not an *Hyæna*, it is at least the analogue of the *Hyæna*. The multitudinous reasons of Azara already quoted against his two Zorros being Dogs, may be applied almost *verbatim* in proof of *one* of them being an *Hyæna*; and in his detailed description of the Aguara Guazu he mentions many of its habits that are common to the *Hyæna vulgaris*—its walk with long paces, its absence of a predal disposition on living animals (Azara instances poultry not being touched while passing within reach of the animal he had chained up) in its wild state, not committing havock amongst herds or lesser flocks, and its indifference to a meat or vegetable diet, indeed its predilection for fruits and sugar cane. An *Hyæna* I brought from India with me, and which is now living in the Zoological Gardens, Regent's Park, London, and which is as affectionate to me as a spaniel dog would be, was fed during the whole voyage from India on boiled rice and a little ghee (liquid butter;) and these instances of a community of habits between the Hyæna and *Canis jubatus* could be greatly multiplied. If Azara's dental formula be right, the Aguara Guazu cannot technically be an *Hyæna*, and it may be desirable to constitute it a subgenus; but as I before said, it will suffice if my speculations assist in any way to rivet a link in the chain of nature."

With respect to the skin of *Felis Pardina* Col. Sykes remarked, "Although Temminck, in his *Monographie de Mammalogie*, p. 116, in a note, says the skin of this European *Felis* is well known amongst the furriers as the Lynx of Portugal, I have nowhere been able to meet with a specimen in London; and as amongst my friends scarcely any one appeared to be aware of the existence of a Spanish Lynx, I thought it might be acceptable to the members to exhibit specimens in a state of maturity and nonage. In Andalusia, whence the specimens come, it is called *Gâto clavo* (*clavo* meaning the pupil of the eye), illustrative of the spotted character of the skin. Some peasants in Andalusia make short jackets of the skins. The animal inhabits the Sierra Morena. I bought both skins at Seville for thirty reales, about 6*s*. 3*d*. Neither the British Museum nor the Zoological Society have specimens.

"Temminck describes the *Pardina* as 'Toutes les parties du corps *lustre*, à peu près de la même teinte que dans le caracal.' This is certainly not the description of my animal, the colour of the adult being reddish gray, and that of the non-adult light fawn; nevertheless there are so many other points common to both, that it would be unadvisable to consider them distinct."

A specimen of the *Alauda Calandra*, Linn., from Andalusia, was afterwards exhibited by Col. Sykes, accompanied with the following notice:

"I brought two specimens of these delightful singing-birds from Andalusia with me this spring; and on comparing them with the type of the genus, I am satisfied they approximate more closely to

the genus *Mirafra* than to that of *Alauda*. The bill is infinitely more robust than that of *Alauda*. The size of the bird is larger, and its *ensemble* rather that of *Mirafra* than *Alauda*, and the internal organization has a close resemblance to the former, in the proportional length of the intestines and the *colon*, in the form of the lobes of the liver, in the spleen, in the size of the gizzard and substance of the digastric muscles, and particularly in the form and position of the *cæca*. Mr. Yarrell very justly remarks, that the bird in departing from the type of Lark approaches to that of *Plectrophanes* of Meyer; but differs from the latter in not having a curved long hind claw, and also in its more robust character; in short, it has a station between the Larks and the Finches; it differs also slightly from *Mirafra* in its hind claws being those of a Lark, while its bill and other external and internal characters are those of *Mirafra*. On the whole, therefore, it appears desirable to divide the genus *Alauda* into subgenera, and constitute the *Londra* a new subgenus, to which the name of *Londra* may be given. The Andalusian bird would thus be the *Londra Calandra*, and an undescribed species from China, now in the gardens of the Society, appears to form a second example of this genus. The generic characters of *Londra* are as follow:

LONDRA. Genus novum.

Rostrum crassum; capitis longitudinem æquans; basi altum, subcompressum; maxilla arcuata; tomiis integerrimis.

Nares plumis anticum versus tectæ.

Alæ corpore longiores, acuminatæ; remigibus, primâ sub-abbreviatâ, tertiâ longissimâ, secundâ et quartâ ferè æqualibus; reliquis gradatim brevioribus.

Cauda cuneata.

Pedes robusti; *unguis* hallucis rectus elongatus.

Typus est, *Alauda Calandra*.

"The specific characters of *Londra Calandra* as published are sufficiently accurate.

"The following are the measurements of a male bird; and as I have seen many scores of them, I think I may say they would apply to the generality of individuals of the species.

"Length, from the tip of the bill to the rump, 5 inches; bill, $\frac{1}{10}^{8}$; tail, $2\frac{1}{2}$ inches; *tibia*, $1\ \frac{1}{10}$; *tarsi*, including nail, $1\frac{1}{10}$; hind claw, $\frac{1}{10}$ inch; liver of two lobes, one much longer than the other; gall-bladder fully developed; spleen cylindrical, $\frac{6}{10}$ inch; intestines, $9\ \frac{3}{10}$ inches; *duodenum* very wide; small intestines narrow; *cæca*, $\frac{1}{10}$, little more than oblong specks; *colon*, $\frac{1}{2}$ inch long; gizzard very small; but digastric muscle, $\frac{3}{10}$ inch thick; *testes* very large, nearly globular; *irides* black. These birds are fed upon canary seed in Andalusia, but in Lisbon they are fed upon wheat; nevertheless they are fond of raw meat, flies, and worms. They are soon accustomed to confinement, and they sing unconcernedly, although surrounded by spectators; their notes, some of which are a kind of double-tongueing in the phrase of flute players, are remarkably rich and full."

Mr. Blyth made some remarks on the plumage and progressive changes of the Crossbills, stating that, contrary to what has generally been asserted, neither the red nor saffron-tinted garb is indicative of any particular age. He had known specimens to acquire a second time the red plumage, and that much brighter than before; and he exhibited to the Meeting two individuals recently shot from a flock in the vicinity of the metropolis, which were exchanging their striated nestling feathers for the saffron-coloured dress commonly described to be never acquired before the second moulting.

He also exhibited a Linnet killed during the height of the breeding season, when the crown and breast of that species are ordinarily bright crimson, in which those parts were of the same hue as in many Crossbills; and observed that the same variations were noticeable in the genera *Corythraix* and *Erythrospiza*. Mr. Blyth called attention also to the fact, that in the genus *Linota* the females occasionally assumed the red breast, supposed to be peculiar to the other sex, and that they continue to produce eggs when in this livery; a circumstance very apt to escape attention, as most naturalists would at once conclude such specimens to be males without further examination.

September 25th, 1838.

No meeting took place.

October 9, 1838.

Rev. F. W. Hope in the Chair.

The reading of a paper by Richard Owen, Esq., on the Osteology of the *Marsupialia*, was commenced.

Mr. Martin drew the attention of the Meeting to the crania of the Sooty and White-eyelid Monkeys, *Cercopithecus fuliginosus* and *C. Æthiops*, which were placed upon the table, and upon which he proceeded to remark as follows:

"It is now some years since I stated to the late Mr. Bennett that in the skeleton of a Sooty Monkey I had discovered the presence of a distinct fifth tubercle on the last molar of the lower jaw; recently I have observed the same fact in the skull of the Collared or White-eyelid Monkey (*C. Æthiops*) circumstances of some interest, as this tubercle appears to be always absent in the *Cercopitheci*, and also in such as the Malbrouck, Grivet, and Green Monkeys, &c., which have been separated from the *Cercopitheci* under the subgeneric title *Cercocebus*, Geoff., the Sooty and the White-eyelid Monkeys being included; though, as far as we can see, on no feasible grounds, differing from the foregoing species, as they do, in physiognomy and also in style of colouring. However this may be, the Sooty and White-eyelid Monkeys approximate to their supposed congeners in a more remote degree than has hitherto been supposed. Now with regard to the genera *Semnopithecus* and *Macacus*, both of which are from India, and the African genera *Inuus* and *Cynocephalus*, this fifth tubercle is a constant character and accompanied by the presence of laryngeal sacculi; and in another African genus, viz. *Colobus*, a fifth tubercle also exists, but whether accompanied or not by laryngeal sacs is still to be determined. May not this fifth tubercle, it may here be asked, bring the Sooty and White-eyelid Monkeys within the pale of the *Macaci*? and the question will bear considering. Our reply, however, would be in the negative; for as we have ascertained by dissection, the Sooty Monkey, at least, is destitute of laryngeal sacs, (but has large cheek pouches) and we may readily infer the same of the other species, its immediate ally. The relationship, as it appears to us, between these two animals and the Indian *Macaci*, is that of representation. They have not indeed the muzzle so produced and the supra-orbital ridge so developed as in the *Macaci*; but in these points they exceed the African Guenons generally, and are also we think stouter in their proportions. They appear, indeed, to constitute a form, intermediate between the *Macaci* and *Cercopitheci*, on the one hand; as are the *Colobi* between the *Semnopitheci* and *Cercopitheci* on the other. What the *Colobi* of Africa are to the *Semnopitheci*, these two monkeys (and others have perhaps to be added) are to the *Macaci*. With respect to the genus *Cercocebus*,

I should be inclined to restrict it, excluding from it the Grivet and Green Monkeys, and modify its characters accordingly, taking the Sooty and White-eyelid Monkeys as its typical examples, a plan which, it appears to me, is preferable to the creation of a new generic title, which often leads to confusion."

Mr. Owen exhibited a preparation of the *ligamentum teres* in the Coypou, which he had received from Mr. Otley of Exeter, and read the following extract in a letter from that gentleman:—

"I have enclosed with this the thigh bone, and the *scapula*, *clavicle*, and *humerus* of a Coypou, which came into my hands after having been mangled by a stuffer of animals, and which had been preserved alive for some weeks by a gentleman of this place. I believe that not many opportunities have occurred of dissecting this animal in England; and as I found a difference between the specimen in question and that described by Mr. Martin, I thought the portions I have forwarded might be interesting to you, had it not fallen to you to dissect one of these animals. Mr. Martin states that the thigh bone had no round ligament: you will see that there exists a well-developed one in this, as there also was on the other thigh bone."

Mr. Martin observed, that on referring to his account of the dissection of this animal, it will be found, that he is so far from asserting it as a fact, positively determined, that the *ligamentum teres* is wanting, that, after giving an account of the state of the *acetabulum* and head of thigh bones as he found them, he adds, "it would be desirable that another specimen should be examined before this peculiarity (viz. the absence of a *ligamentum teres*) is insisted on as an ascertained fact." See Zool. Proc. 1835, p. 182.

October 23, 1838.

William Yarrell, Esq., in the Chair.

A letter was read from M. Julien Desjardins, Secretary of the Natural History Society of the Mauritius, stating that it was his intention to leave that island on the 1st of January next, for England, with a large collection of objects in natural history, many of which he intended for the Society. A letter from Colonel P. Campbell, Her Majesty's Consul General and Agent at Alexandria, was also read. In this letter Col. P. Campbell states that he had not yet succeeded in gaining any further information respecting the probability of procuring some White Elephants for the menagerie. A letter received from Lieut.-Colonel Doherty, Governor of Sierra Leone, stated, that he was using every exertion to procure for the Society a male and female Chimpanzee, in which attempt he fully expected to be successful; but he feared that he should not be able to obtain a living specimen of the Hippopotamus, from the superstitious dread with which the natives regard these animals.

Some specimens of Flying Lemurs (*Galeopithecus*) were upon the table, and in reference to them Mr. Waterhouse stated that his object in bringing them before the Meeting was to notice certain characters which appeared to him to indicate the existence of two species in these specimens. He remarked that in systematic works three species of the genus *Galeopithecus* are described, founded upon differences of size and colour; as regards the latter character, he had never seen two specimens which precisely agreed; and with respect to size, the dimensions given of two out of the three species are evidently taken from extremely young animals. Mr. Waterhouse then proceeded to point out the distinctive characters of the two species on the table, for which he proposed the specific names of *Temminckii* and *Phillippinensis*; of these two the first is the larger species, measuring about two feet in total length, and having a skull two inches eleven and a half lines in length. The anterior incisor of the upper jaw is broad and divided by two notches into three distinct lobes; the next incisor on each side has its anterior and posterior margins notched; and the first molar (or the tooth which occupies the situation of the canine) has its posterior edge distinctly notched. This tooth is separated by a narrow space anteriorly and posteriorly, from the second incisor in front, and the second molar behind; the temporal ridges converge towards the *occiput*, near which, however, they are separated usually by a space of about four lines.

The second species (*G. Philippinensis*) is usually about twenty inches in length, and has a skull two inches seven lines in length. It may be distinguished from *G. Temminckii* by the proportionately larger ears, and the greater length of the hands; the skull is narrower in proportion to its length; the muzzle is broader and more

obtuse; the orbit is smaller; the temporal ridges generally meet near the *occiput*, or are separated by a very narrow space; the anterior incisor of the upper jaw is narrow, and has but one notch; the next incisor on each side is considerably larger, longer, and stronger than in *G. Temminckii*, and moreover differs in having its edges even; the same remarks apply to the first false molar. The incisors and molars here form a continuous series, each tooth being in contact with that which precedes, and that which is behind it. The most important difference perhaps which exists between the two species in question consists in the much larger size of the molar teeth in the smaller skull, the five posterior molars occupying a space of ten lines in length, whereas in *G. Temminckii*, a much larger animal, the same teeth occupy only nine lines. The above are the most prominent characteristic differences in the two species, though several other minor points of distinction may be observed.

Mr. Blythe called the attention of the Meeting to the skull of a Cumberland Ox, presenting an unnatural enlargement of the facial bones, accompanied with a most remarkable development of the horns, one of which measured four feet in circumference at its base.

The reading of Professor Owen's paper "On the Osteology of the Marsupialia," was completed. After some preliminary remarks upon the importance of the study of the skeleton, in investigating the natural groups of this order and the determination of the interesting fossils of Australia, Professor Owen proceeded in the first place to point out the principal modifications in the general form of the skull as observed in the various genera of marsupial animals.

"The skull," says Professor Owen, "is remarkable in all the genera for the small proportion which is devoted to the protection of the brain, and for the great expansion of the nasal cavity immediately anterior to the cranial cavity.

"In the stronger carnivorous species the exterior of the *cranium* is characterized by bony ridges and muscular impressions; but in the smaller herbivorous species, as the Petaurists and Potoroos, the *cranium* presents a smooth rounded surface as in birds, corresponding with the smooth unconvoluted surface of the simple brain contained within.

"The breadth of the skull in relation to its length is greatest in the Wombat and Ursine Dasyure in which it equals three-fourths the length, and least in the *Perameles lagotis* in which it is less than one-half. The occipital region, which is generally plane and vertical in position, forms a right angle with the upper surface of the skull, from which it is separated by an occipital or lambdoidal *crista*. This is least developed in the Myrmecobius, Petaurists, and Kangaroo, and most so in the Opossum, in which, as also in the Koala, the crest curves slightly backwards, and thus changes the occipital plane into a concavity, well adapted for the insertion of the strong muscles from the neck and back.

"The upper surface of the skull presents great diversity of cha-

racter, which relates to the different development of the temporal muscles, and the varieties of dentition in the different genera. In the Wombat the coronal surface offers an almost flattened tract, bounded by two slightly elevated temporal ridges, which are upwards of an inch apart posteriorly, and slightly diverge as they extend forwards to the anterior part of the orbit.

"The skull of the Opossum presents the greatest contrast to that condition, for the sides of the *cranium* meet above at an acute angle, and send upwards from the line of their union a remarkably elevated sagittal crest, which, in mature skulls, is proportionally more developed than in any of the placental Carnivora, not even exempting the strong-jawed Hyæna.

"The Thylacine and Dasyures, especially the Ursine Dasyure, exhibit the sagittal crest in a somewhat less degree of development. It is again smaller, but yet well marked in the Koala and Perameles. The temporal ridges meet at the lambdoidal suture in the Phalangers and Hypsiprymni, but the size of the muscles in these does not require the development of a bony crest. In the Kangaroo the temporal ridges, which are very slightly raised, are separated by an interspace of the third of an inch. They are separated for a proportionally greater extent in the Petaurists; and in the smooth and convex upper surface of the skull of *Pet. sciureus*, *Pet. pygmæus*, and in Myrmecobius the impressions of the feeble temporal muscles almost cease to be discernible.

"The zygomatic arches are, however, complete in these as in all the other genera: they are usually, indeed, strongly developed; but their variations do not indicate the nature of the food so clearly, or correspond with the differences of animal and vegetable diet in the same degree, as in the placental Mammalia. No Marsupial animal, for example, is devoid of incisors in the upper jaw, like the ordinary Ruminants of the placental series; and the more complete dental apparatus with which the herbivorous Kangaroos, Potoroos, Phalangers, &c. are provided, and which appears to be in relation to the scantier pasturage, and the dry and rigid character of the herbage or foliage on which they browse, requires a strong apparatus of bone and muscle for the action of the jaws, and the exercise of the terminal teeth. There are, however, sufficiently marked differences in this part of the marsupial skull; and the weakest zygomatic arches are those of the Insectivorous *Perameles* and *Acrobates*, in which structure we may discern a correspondence with the edentate Ant-eaters of the placental series. Still the difference of development is greatly in favour of the Marsupial Insectivora.

"The Hypsiprymni are next in the order of development of the zygomatic arches, which again are proportionally much stronger in the true Kangaroos. The length of the zygomata in relation to the entire skull is greatest in the Koala and Wombat. In the former animal they are remarkable for their depth, longitudinal extent, and straight and parallel course. In the latter they have a considerable curve outwards, so as greatly to diminish the resemblance which otherwise exists in the form of the skull between the Wombat and

the herbivorous Rodentia of the placental series, as, e. g., the *Viscaccia*.

"In the carnivorous Marsupials the outward curve of the zygomatic arch (which is greatest in the Thylacine and Ursine Dasyure,) is also accompanied by a slight curve upwards; but this curvature is chiefly expressed by the concavity of the lower margin of the zygoma, and is by no means so well marked as in the placental Carnivora. It is remarkable that this upward curvature is greater in the slender zygomata of the Perameles than in the stronger zygomata of the Dasyures and Opossums. In the Koala and Phalangers there is also a slight tendency to the upward curvature; in the Wombat the outwardly expanded arch is perfectly horizontal. In the Kangaroo the lower margin of the zygoma describes a slightly undulating curve, the middle part of which is convex downwards.

"In many of the Marsupials, as the Kangaroo, the Koala, the Phalangers, and the Opossums, the superior margin of the zygoma begins immediately to rise above the posterior origin of the arch. In the Wombat an external ridge of bone commences at the middle of the lower margin of the zygoma, and gradually extends outwards as it advances forwards, and, being joined by the upper margin of the zygoma, forms the lower boundary of the orbit, and ultimately curves downwards in front of the ant-orbital foramen, below which it bifurcates, and is lost. This ridge results, as it were, from the flattening of the anterior part of the zygoma, which thus forms a smooth and slightly concave horizontal platform for the eye to rest upon. The same structure obtains, but in a slighter degree, in the Koala. In the Kangaroo the anterior and inferior part of the zygoma is extended downwards in the form of a conical process, which reaches below the level of the grinding teeth. A much shorter and more obtuse process is observable in the corresponding situation in the Phalangers and Opossum.

"The relative length of the facial part of the skull, anterior to the zygomatic arches, varies remarkably in the different Marsupial genera. In the Wombat it is as six to nineteen; in the Koala as five to fourteen; in the Phalangers it forms about one-third of the length of the entire skull; in the carnivorous Dasyures and Opossums it is more than one-third. In Perameles, Macropus, and *Hypsiprymnus murinus*, Ill., the length of the skull anterior to the orbit is equal to the remaining posterior part; but in a species of Hypsiprymnus from Van Diemen's Land (*Hypsiprymnus myosurus*, Ogilb.) the facial part of the skull anterior to the orbit exceeds that of the remainder; and the arboreal *Hypsiprymni* from New Guinea present a still greater length of muzzle. In most Marsupials the skull gradually converges towards the anterior extremity, but in the *Perameles lagotis* the skull is remarkable for the sudden narrowing of the face anterior to the orbits, and the prolongation of the attenuated snout, preserving the same diameter for upwards of an inch before it finally tapers to the extremity of the nose. In the Koala the corresponding part of the skull is as remarkable for its shortness as it is in the *Per. lagotis* for its length, but it is bounded laterally by parallel lines

through its whole extent. Before concluding this account of the general form of the skull, I may observe that the Kangaroo resembles the placental Ruminantia and some Rodentia, as the *Viscaccia*, in the prolongation downwards of two long processes corresponding in function to the mastoid, but developed from the exoccipital bones. The same processes are developed in an almost equal degree in the Koala, and, in the Wombat, coexist with a corresponding development of the true mastoids. The exoccipitals each send down a short obtuse process in the Potoroos, Perameles, Petaurists, Phalangers, Opossums, and Dasyures.

Of the Composition of the Cranium.—"The occipital bone is developed, as in the placental Mammalia, from four centres or elements, the basilar below, the supra-occipital above, and the ex-occipitals at the sides; but these elements remain longer separate, and in some genera do not become, at any period of life, united by continuous ossification.

"In the skull of an aged Virginian Opossum I found the supra-occipital still distinct from the ex-occipitals, and these not joined together, though anchylosed to the basilar element: in this Marsupial animal they meet above the *foramen occipitale*, and complete its boundaries, as the corresponding superior vertebral *laminæ* complete the medullary canal, in the region of the spine. I have found the same structure and condition of the occipital bone of an adult *Dasyurus Ursinus*, and it is exhibited in the plate of the *cranium* of this species given by M. Temminck*. In the skull of a *Perameles nasuta* the ex-occipitals were separated by an interspace, so that a fissure was continued from the upper part of the *foramen magnum* to the supra-occipital element. The same structure may be observed in the Kangaroo, and is very remarkable in the young skulls of this species; I found this superior notch wide and well-marked in *Macropus Bennettii*. In the Wombat the corresponding fissure is very wide, and the lower margin of the supra-occipital is notched, so that the shape of the *foramen magnum* somewhat resembles that of the trefoil leaf. In the Koala, the Phalanger, Petaurus, Hypsiprymnus, and *Dasyurus Maugei*, the elements of the occipital bone present the usual state of bony confluence.

"The temporal bone generally presents a permanent separation of the squamous, petrous, and tympanic elements. I have observed this reptile-like condition of the bone in the mature skulls of an Ursine Dasyure, a Virginian Opossum, a Perameles, in different species of Potoroo and Kangaroo, in the Wombat, and in the Koala. So loose, indeed, is the connection of the tympanic bone, that, without due care, it is very liable to be lost in preparing the skulls of the Marsupiata. In the Kangaroo and Wombat it forms a complete bony tube, about half an inch in length, with an irregular exterior, and is wedged in between the mastoid and articular processes of the temporal bone. In the Potoroo the bony circle is incomplete at the upper part; in the Perameles and Dasyures the tympanic bone forms

* *Monographie de Mammalogie*, pl. viii.

a semicircle, the posterior part being deficient, and the tympanic membrane being there attached to a descending process of the squamous element of the temporal. Here we have a near approach to the form of the tympanic bone in birds, but we have a still closer resemblance to its condition both in birds and reptiles, in its want of union with, and relations to, the petrous element of the temporal bone. In the Rodent quadruped the tympanic, petrous, and mastoid elements of the temporal bone are always anchylosed together; this condition is well shown in the skull of the Porcupine and Beaver, in which the mastoid element sends down a thick obtuse process behind the petro-tympanic portion. It is to the expansion of the petro-tympanic and not of the mastoid portion of the temporal bone that the enlargement of the tympanic cavity is due, in the Rodentia; and this expansion forms in that order, as is well known, a large *bulla ossea*, which is situated anterior and internal to the mastoid process. In many of the Marsupials, as the Dasyures, Petaurists, Perameles, Potoroos, and Koala, there is also a large *bulla ossea* for the purpose of increasing the extent of the auditory cavity; but, with one single exception, the Wombat, this *bulla* is not formed by the tympanic or any other element of the temporal bone, but by the expansion of the base of the great *ala* of the sphenoid bone. It is only in the *Perameles lagotis* that, in addition to the preceding *bulla*, I have observed an external dilatation of the petrous element of the temporal bone, which thus forms a second and smaller *bulla* on each side, behind the large *bulla ossea* formed by the sphenoid. In other Marsupiata the petrous bone is of small size, generally limited to the office of protecting the parts of the internal ear, and sometimes, as in the Koala, is barely visible at the exterior of the base of the skull. The petrous and mastoid elements are commonly anchylosed together. In the Kangaroos, Koala, and Wombat, the petro-mastoid bone is of a large size, and is visible in two situations on the outside of the skull, viz. at the usual place at the base, where the petrous portion is wedged in between the basilar bone, ex-occipital and sphenoid; and again at the side of the *cranium*, where the mastoid portion appears between the squamous, ex-occipital, and supra-occipital bones. In the Wombat it sends outwards the strong compressed process which terminates the lateral boundaries of the occipital plane of the *cranium*.

"The auditory chamber of the ear is augmented in the Phalangers, the Koala, the Kangaroo, and Potoroo, by a continuation of air-cells into the base or origin of the zygomatic process; but the extent of the bony air-chambers communicating with the tympanum is proportionally greatest in the Petaurists, or Flying Opossums, where, besides the sphenoid *bulla*, the mastoid element, and the whole of the zygomatic process of the temporal bone are expanded to form air-cells with very thin and smooth walls, thus presenting an interesting analogy in the structure of the *cranium* to the class of birds.

"The direction of the bony canal of the organ of hearing corresponds, as in the placental Mammalia, with the habits of the species. The *meatus* is directed outwards and a little forwards in the car-

nivorous Dasyures; outwards and a little backwards in the Perameles and Phalanger; outwards, backwards, and upwards in the Kangaroos; and directly outwards in the Petaurists and Wombat: but the differences of direction are but very slightly marked.

"The squamous element of the temporal bone generally reaches half-way from the root of the zygoma to the sagittal ridge or suture: it is most developed in the Wombat, in which its superior margin describes a remarkably straight line. The zygomatic process of the temporal bone is in general compressed, and much extended in the vertical direction in the Opossum, Dasyure, Phalanger, Koala, and Kangaroo. In the Wombat it curves outwards from the side of the head in the form of a compressed and almost horizontal plate; it is then suddenly twisted into the vertical position, to be received in the notch of the malar portion of the arch.

"The cavity, corresponding to the sphenoidal *bulla ossea* in other Marsupials, is in this species excavated in the lower part of the squamous element of the temporal bone at the inner side of the articular surface for the lower jaw.

"This articular surface, situated at the base of the zygomatic process, presents in the Marsupial, as in the placental Mammalia, various forms, each manifesting a physiological relation to the structure of the teeth, and adapted to the required movements of the jaws in the various genera. In the herbivorous Kangaroo the glenoid cavity forms a broad and slightly convex surface, as in the Ruminants, affording freedom of rotation to the lower jaw in every direction. In the Phalangers and Potoroos the articular surface is quite plane. In the Perameles it is slightly convex from side to side, and concave from behind forwards. In the Wombat it is formed by a convex narrow ridge considerably extended, and slightly concave, in the transverse direction. This ridge is not bounded by any descending process posteriorly, so that the jaw is left free for the movements of protraction and retraction; but this structure is widely different from that which facilitates similar movements in the Rodentia. In these there is a longitudinal groove on each side, in which the condyle of the lower jaw plays backwards and forwards, but is impeded in its lateral movements; these, on the contrary, are freely allowed to the Wombat, and the oblique disposition of the lines of enamel upon the molar teeth correspond with the various movements of which the lower jaw of the Wombat is thus susceptible. In the Koala the glenoid cavity is a transversely oblong depression, with a slight convex rising at the bottom; indicating rotatory movements of the jaw. In the carnivorous Dasyures it forms a concavity still more elongated transversely, less deep than in the placental Carnivora, but adapted, as in them, to a ginglymoid motion of the lower jaw; the joint differs in the absence of an interarticular cartilage in the Marsupial Carnivora. In all the genera, save in the Wombat, retraction of the lower jaw is opposed by a descending process of the temporal bone immediately anterior to the *meatus auditorius* and tympanic bone.

"The glenoid cavity presents a characteristic structure in the

Marsupialia. In all the species, the Petaurists excepted, the malar bone forms the outer part of the articular surface for the lower jaw; and in the *Dasyurus Maugei*, *Dasyurus Ursinus*, *Perameles*, *Hypsiprymnus* and *Macropus*, the sphenoid *ala* forms the inner boundary of the same surface; but it does not extend so far backwards in the Wombat or Koala.

"The sphenoid bone has the same general form and relative position as in the ordinary Mammalia, but presents a similarity to that in the Ovipara, in the persistence of the pterygoid processes as separate bones. It is only in the Koala that I have observed a complete obliteration of the suture joining the basilar element of the sphenoid with that of the occipital bone.

"The chief peculiarity in the sphenoid bone is the dilatation of the root of the great *ala* already alluded to; this dilatation communicates with and is filled with air from the tympanum; it forms the hemispherical *bulla ossea* on each side of the *basis cranii* in the Dasyures and Phascogales, and the large semiovate *bullæ* in the Myrmecobius: but in the Koala the *bullæ* are still more developed, and are produced downwards to an extent equal with the ex-occipital processes; they are somewhat compressed laterally, and instead of the smooth and polished surface which characterize them in the preceding genera, terminate here in a rough ridge. The dilated air-chambers or *bullæ* of the sphenoid are relatively smaller in the Phalangers and Potoroos than in the Dasyures; and they are incomplete posteriorly in the Kangaroo and Wombat. In the Brush Kangaroo the above process from the sphenoid joins the base of the large descending process of the ex-occipital. The pterygoid processes are relatively largest in the Kangaroo, Wombat, and Koala, and present in each of these species distinct hamular processes. In the Potoroo, Kangaroo, and Wombat, the sphenoid *ala* combines with the pterygoid process to form a large and deep depression opening externally. In the Kangaroo, Dasyures, Koala and Wombat, the great *alæ* of the sphenoid articulate with the parietal bones; but, by a very small portion in the two latter species; in the Perameles and Potoroos, the sphenoid *alæ* do not reach the parietals.

"There is little to notice in the parietal bones except the obliteration of the sagittal suture in those species in which a bony crista is developed in the corresponding place: they present a singularly flattened form in the Wombat, in an aged skull of which, and in a similar one in the Kangaroo, I observe a like obliteration of the sagittal suture. In the Kangaroo, Potoroo, Petaurus, Phalanger, and Myrmecobius, there is a triangular inter-parietal bone. The corresponding bone I find in three pieces in the skull of a Wombat.

"The coronal suture presents in most of the Marsupials an irregular angular course, forming a notch in the frontals on each side, which receives a corresponding triangular process of the parietal bone: this form of the suture is least pronounced in the Myrmecobius and Acrobates. A process corresponding to the posterior frontal augments the bony boundary of the orbit in the Thylacine, the Ursine Dasyure, and in a slighter degree in the Virginian Opossum. It is relatively

most developed in the skull of the *Myrmecobius fasciatus*, where the orbit is large; but the bony boundary of the orbit is not complete in any of the Marsupials. In the Myrmecobius there is a deep notch at the middle of the supra-orbital ridge. I have found the frontal suture obliterated only in the Virginian Opossum and Petaurists; but in the latter it is remarkable, that the other sutures of the head, as the lambdoidal and sagittal, continue distinct.

"The frontal bones are chiefly remarkable for their anterior expansion, and the great share which they take in the formation of the nasal cavity. In the Thylacine the part of the *cranium* occupied by the frontal sinuses exceeds in breadth the cerebral cavity, from which it is divided by a constriction.

"The lachrymal bones vary in their relative size in different Marsupiata. In the Koala they extend upon the face about a line beyond the anterior boundary of the orbit; and at this part they present a groove with one large, and two or three small perforations; in the Wombat their extent upon the face is slightly increased; it is proportionally greater in the Kangaroos, Potoroos, Phalangers, and Dasyures, in which this part of the lachrymal bone presents two perforations, but it is close to the orbit. The Thylacine, as compared with the Wolf, presents a greater extent of the facial portion of the lachrymal bone, and thus indicates its inferior type. In the Myrmecobius the lachrymal bone exhibits its greatest relative development.

"The malar bone is very strong and of great extent in all the Marsupiata: least developed in the *Perameles lagotis*, it here presents a singular form, being bifurcate at both extremities; the *processus zygomaticus maxillæ superioris* is wedged into the cleft of the anterior fork; the corresponding process of the temporal bone fills up the posterior space; the lower division of this bifurcation is the longest, and in all the Marsupiata enters into the composition of the articular surface for the lower jaw, except in the Petaurists, where it just falls short of this part. The anterior bifurcation of the malar bone is not present in the Marsupiata generally: the external malo-maxillary suture forms an oblique and almost straight line in the Wombat, Phalanger, Opossum, Dasyurus, and Kangaroo. Owing to the low development of the zygomatic process of the superior maxillary in the Wombat, the malar bone is not suspended in the zygomatic arch in this Marsupial, as in the placental Rodentia. It is of relatively much larger size, and of a prismatic form, arising from the development of the oblique external ridge above described. In the Kangaroo, Potoroo, Great Petaurus, and Phalanger, it is traversed externally by a ridge showing the extent of attachment of the masseter; in the Koala the ridge extends along the bone near the upper margin, and the surface below presents a well-marked excavation.

"The nasal bones vary in their form and relative size in the different genera; they are longest and narrowest in the Perameles, shortest and broadest in the Koala. Their most characteristic structure is the expansion of the upper and posterior extremity,

which is well marked in the Wombat, Myrmecobius, Petaurists, Phalangers, Opossums, and Dasyures. In the Potoroos the anterior extremities of the nasal bones converge to a point which projects beyond the intermaxillaries. In some Petaurists and the Perameles the corresponding points reach as far as the intermaxillaries; and in *Perameles lagotis* the bony case of the nasal passages is further increased by the presence of two small rostral bones, resulting, as in the Hog, from ossification of the nasal cartilage.

"The intermaxillary bones always contain teeth, and the ratio of their development corresponds with the bulk of the dental apparatus which they support. They are consequently largest in the Wombat, where they extend far upon the side of the face, and are articulated to a considerable proportion of the nasal bones, but do not, as in the placental Rodentia, reach the frontal, or divide the maxillary bone from the nasal. They present the next degree of inferior development in the Koala, and both in this species and in the Wombat bulge outwards, and thus remarkably increase the transverse diameter of the osseous cavity of the nose.

"Neither in *Hypsiprymnus* nor *Macropus* do I find the incisive palatal foramina entirely in the intermaxillary bones, as described by the author of the text in Pander and d'Alton's 'Skelete der Beutelthiere,' a small proportion of their bony circumference is due to the anterior extremity of the palatal process of the maxillaries, and the same structure obtains in the Wombat, Koala, and Opossums. In the *Dasyuri* and *Phalangers* a greater proportion of the posterior boundary of these foramina is formed by the maxillaries. In the Petaurists they are entirely surrounded by the maxillaries; while in the Perameles the incisive foramina are wholly surrounded by the intermaxillary bones. They always present the form of two longitudinal fissures.

"The maxillary bones in the Wombat send up a long, narrow, irregular nasal process which joins the frontal and nasal bones, separating them from the intermaxillaries; the part which projects into the temporal fossa behind the orbit presents two or three smooth tuberosities, formed by the thin plate of bone covering the pulps of the large curved posterior grinders. The corresponding part in *Perameles lagotis* is perforated by numerous minute apertures like a cribriform plate, and this structure is presented in a slighter degree in the Potoroos and Ursine Dasyure. The ant-orbital foramen does not present any marked variety of size, which is generally moderate. It is much closer to the orbit in the carnivorous Marsupiata than in the corresponding placental quadrupeds. It is relatively largest in the Ursine Dasyure, and presents the form of a nearly vertical fissure in the Wombat. I have observed it double in the Kangaroo. The chief differences in the maxillary bones, independently of the teeth and their alveoli, are presented by the palatal processes; the modifications of which I shall consider in conjunction with those presented by the palatal processes of the palatal bones. The perforations of the bony palate deserve particular attention; they are generally specific, and of

consequence in the determination both of recent and fossil species.

" In *Phalangista Cookii*, some of the Petaurists, and the great Kangaroo (*Macropus Major*), the bony palate is of great extent, and presents a smooth surface, concave in every direction towards the mouth; this is pierced by two small posterior palatine foramina, situated at the anterior external angles of the palatine bones, close to the transverse palato-maxillary sutures; behind the foramina in the Kangaroo, and pierced in the suture itself in the Petaurists, are a few small irregular perforations. The bony palate is also entire in the *Hypsiprymnus Ursinus*, Müll.

" In *Macropus Bennettii* there are four orifices at the posterior part of the bony palate: the two anterior ones are situated upon the palato-maxillary suture, of an ovate form, with the small end forwards; the two posterior foramina are of a less regular form and smaller size.

" In the Brush Kangaroo (*Macropus Brunii*, Cuv.) the posterior palatal foramina present the form of two large oval fissures placed obliquely, and converging posteriorly. They encroach upon the posterior border of the maxillary plate. Anterior to these vacancies there are two smaller foramina, and posterior to them are one or two similar foramina. In the Australian Potoroos, Wombat, and Koala, the posterior palatal openings are large and oval, and situated entirely in the palatal bones; posterior and external to these there are two small perforations. In the Phalangers (*Phal. Cookii* excepted) the palatal openings are proportionally larger; they extend into the palatal process of the maxillaries; and the thin bridge of bone which divides the openings in the Potoroo, &c. is wanting; the two perforations at the posterior external angles of the palatine bones are also present. In the Virginian Opossum the bony palate presents eight distinct perforations besides the incisive foramina; the palatal processes of the palatine bone extend as far forwards in the median line as the third molares; a long and narrow fissure extends for an equal distance (three lines) into the palatal processes, both of the palatines and maxillaries; behind these fissures, and nearer the median line, are two smaller oblong fissures; external, and a little posterior to these, are two similar fissures, situated in the palato-maxillary suture; lastly, there are two round perforations close to the posterior margin of the bony palate.

" Now there is no carnivorous quadruped in the placental series which has a bony palate characterized by perforations and vacuities of this kind. In the dog, the cat, and the weasel tribe, the bony palate is only perforated by two small oblique canals, which open in or near the palato-maxillary suture. The very great interest which is attached to the fossil jaws of the Stonesfield Marsupials, the only mammiferous remains hitherto discovered in the secondary formations, will justify the minuteness, perhaps tediousness, with which I have dwelt on characters that, inclusive of the teeth, serve to distinguish the *cranium* of the Marsupial from that of any placental quadruped. The structure of the bony palate in the Marsupiata is interesting in other respects. Since the defective condition of this part of the *cra-*

nium is one of the characteristics of the skull of the bird, it might be expected that some approximation would be made to that structure in the animals which form the transition between the placental and oviparous classes. We have already noticed the large vacuities which occur in the bony palate of nearly all the Marsupials, but this imperfectly ossified condition is most remarkable in the Acrobates and *Perameles lagotis*. In the latter the bony roof of the mouth is perforated by a wide oval space, extending from the second spurious molars to the penultimate molars, exposing to view the vomer and convolutions of the inferior spongy bones in the nasal cavity. Behind this space there are six small perforations ; two in a transverse line, midway between the great vacancy and the posterior margin of the bony palate, and four in a transverse line, close to that margin.

" In the Ursine Dasyure a large transversely oblong aperture is situated at the posterior part of the palatal processes of the maxillary bones, and encroaches a little upon the palatines ; this aperture is partly, perhaps in young skulls, wholly bisected by a narrow longitudinal osseous bridge. The large aperture in the skull of the *Dasyurus Ursinus*, figured by Temminck, is the result of accidental injury to the bony palate. — (*Monographie de Mammalogie*, Pl. viii.) In *Mauge's Dasyure* two large ovate apertures, situated in the palato-maxillary sutures, are divided by a broad plate of bone ; posterior to these are two apertures of similar size and form, which, being situated nearer the mesial line, are divided by a narrower osseous bridge ; each posterior external angle of the bony palate is also perforated by an oval aperture. In the Viverrine Dasyure the two vacancies which cross the palato-maxillary suture are in the form of longitudinal fissures, corresponding in situation with the fourth and fifth grinders ; the posterior margin of the bony palate has four small apertures on the same transverse line.

Cavity of the Cranium.—" The parietes of the cranial cavity are remarkable for their thickness in some of the marsupial genera. In the Wombat the two tables of the parietal bones are separated posteriorly for the extent of more than half an inch, the interspace being filled with a coarse cellular *diploë* ; the frontal bones are about two and a half lines thick. In the Ursine Dasyure the cranial bones have a similar texture and relative thickness. In the Koala the texture of the cranial bones is denser, and their thickness varies from two lines to half a line. In the Kangaroo the thickness varies considerably in different parts of the skull, but the parietes are generally so thin as to be diaphanous, which is the case with the smaller marsupials, as the Potoroos and Petaurists. The union of the body of the second with that of the third cranial vertebræ takes place in the marsupiata, as in the placental mammalia, at the *sella turcica*, which is overarched by the backward extension of the lesser *alæ* of the sphenoid. The optic foramina and the *fissuræ laceræ anteriores* are all blended together, so that a wide opening leads outwards from each side of the *sella*. Immediately posterior, and external to this opening, are the *foramina rotunda*, from each of which, in the Kangaroo, a remarkable groove leads to the *fossa*

gasseriana, at the commencement of the *foramen ovale*; the same groove is indicated in a slighter degree in the *Dasyuri* and Phalangers, but is almost obsolete in the Wombat and Koala. The carotid canals pierce the body of the sphenoid, as in the bird, and terminate in the skull, very close together, behind the *sella turcica*, which is not bounded by a posterior clinoid process. The petrous bone in the Kangaroo, Koala, and Phalanger, is impressed above the *meatus auditorius*, by a deep, smooth, round pit which lodges the lateral appendage of the *cerebellum*. The corresponding pit is shallower in the *Dasyuri*, and almost obsolete in the Wombat. The middle, and posterior *fissuræ laceræ* have the usual relative position, but the latter are small. The condyles are each perforated anteriorly by two *foramina*. The composition and form of the *foramen magnum* we have already spoken of. It is of great size, in relation to the capacity of the *cranium*; the aspect of its plane is backwards, and slightly downwards.

" In the Kangaroo and Phalanger a thin ridge of bone extends for the distance of one or two lines into the periphery of the tentorial process of the *dura mater*, and two sharp spines are sent down into it from the upper part of the *cranium* in the *Phalangista Vulpina*. The *tentorium* is supported by a thick ridge of bone in the Thylacine, but it is not completely ossified in any of the Marsupiata; in some species indeed, as the Dasyures, the Koala, and the Wombat, the bony ridge above described does not exist. There is no ossification of the falciform ligament, as in the Ornithorhynchus. The anterior depression, or olfactory division of the cavity of the *cranium*, as it may be termed from its large size, is separated in a well-marked manner from the proper cerebral division of the cavity. It is relatively smallest in the Koala. In all the Marsupials it is bounded anteriorly by the cribriform plate of the ethmoid bone, which is converted into an osseous reticulation by the number and size of the olfactory apertures. The cavity of the nose, from its great size and the complication of the turbinated bones, forms an important part of the skull. It is divided by a complete bony *septum* to within one-fourth of the anterior aperture; the anterior margin of the *septum* is slightly concave in the Koala, describes a slightly convex line in the Wombat, Kangaroo, and Phalanger, and a sigmoid flexure in the Dasyure. A longitudinal ridge projects downwards from the inside of each of the nasal bones, and is continued posteriorly into the superior turbinated bone; this bone extends into the dilated space anterior to the cranial cavity, which corresponds with the frontal sinuses. The convolutions of the middle spongy bone are extended chiefly in the axis of the skull; the processes of the anterior convoluted bone are arranged obliquely from below, upwards and forwards. They are extremely delicate and numerous in the Dasyures and Phalanger; they consist of thin *laminæ* of bone beautifully arranged on the convex surface of the *os turbinatum*, and placed vertically to that surface in the *Potoroo*; but the bone becomes very simple in the Kangaroo, Koala, and Wombat. The nasal cavity communicates freely with large maxillary sinuses, and,

finally, terminates by wide apertures behind the bony palate. In the skull the nasal cavity communicates with the mouth, as beforementioned, by means of the various large vacuities in the palatal processes.

" The lower jaw of the marsupiata is a part of their osseous structure which claims more than ordinary attention, in consequence of the discussions to which the fossil specimens of this bone, discovered in the oolitic strata of Stonesfield, have given rise. I have examined the two specimens in the possession of Dr. Buckland, the specimen formerly in the collection of Mr. Broderip, and that which is preserved in the Museum at York; the composition of the lower jaw, each ramus of which consists of one piece of bone, the convex condyle, and the double fangs of the molar teeth, prove the mammiferous character of these remains; the size, elevation, and form of the coronoid process of the lower jaw, the production of the angle of the jaw, with the development of the canines, and the pointed tubercular crowns of the molar teeth, indicate the carnivorous and insectivorous character of the species in question. The number of the incisors, eight in the lower jaw, and the structure and proportions of the molar teeth, approximate these small *insectivora* most nearly to the smaller species of the modern genus *Didelphis*; but the number of the molars in one of the specimens exceeds that of any insectivore, placental, or marsupial, which was known at the period when Cuvier wrote on this fossil. Recently, however, a genus of insectivorous mammal (*Myrmecobius*) has been discovered in Australia, presenting the modifications of the *cranium* which characterize the marsupiata, and having nine tuberculate molares in each ramus of the lower jaw.—(*See Mr. Waterhouse's Memoir, Zool. Trans.* ii. pl. 28. fig. 2, 5.) Besides the osteological characters above alluded to, there is a character in the lower jaw of the marsupial animals, not peculiar to the genus *Didelphis*, which serves to distinguish it from that of the placental mammalia. In the carnivorous marsupials, as the Thylacine, the lower maxillary bone very nearly resembles in general form that of the corresponding placental species, as the dog; a similar transverse condyle is placed low down, near the angle of the jaw; the strong coronoid process rises high above it, and is slightly curved backwards; there is the same well-marked depression on the exterior of the ascending ramus for the firm implantation of the temporal muscle, and the lower boundary of this depression is formed by a strong ridge extended downwards and forwards from the outside of the condyle. But in the dog and other placental digitigrade *carnivora*, a process, representing the angle of the jaw, extends directly backwards from the middle of the above ridge, which process gives fixation to the articulation of the jaw, and increases the power by which the *masseter* acts upon the jaw. Now, although the same curved ridge of bone bounds the lower part of the external depression of the ascending ramus in all the marsupiata, it does not in any of them send backwards, or in any other direction, a process corresponding to that just described in the dog. The angle of the jaw is as if it were bent in-

wards in the form of a process encroaching in various shapes and various degrees of development, in the different marsupial genera, upon the interspace of the *rami* of the lower jaw. In looking down upon the lower margin of the jaw, we see therefore, in place of the margin of a vertical plate of bone, a more or less flattened surface extended between the external ridge and the internal process or *inflected* angle. In the Opossums this internal angular process is triangular and trihedral, directed inwards, with the point slightly curved upwards. In the Dasyures it has a similar form, but the apex is extended into an obtuse process. In the Thylacine the base of the inverted angle is proportionally more extended, and a similar structure is presented by the fossil Phascolothere. In the Perameles the angle of the jaw forms a still longer process; it is of a flattened form, extended obliquely inwards and backwards, and slightly curved upwards. In the Potoroos and Phalangers the process is broad, with the apex slightly developed; it is bent inwards, and bounds the lower part of a *wide* and deep depression on the inside of the ascending *ramus*. In the great Kangaroo the internal margin of this process is curved upwards, so as to augment the depth of the internal depression abovementioned. The internal angular process arrives at its maximum of development in the Wombat, and the breadth of the base of the ascending ramus very nearly equals the height of the same; this broad base also inclines downwards and outwards from the inflected angle, and the same peculiarity occurs in the jaw of the fossil Phascolothere. In the Koala the size of the process in question is also considerable, but it is compressed, and directed backwards, with the obtuse apex only bending inwards, so that the characteristic flattening of the base of the ascending *ramus* is least marked in this species.

"There is no depression on the inner side of the *ramus* of the jaw in the Koala, but its smooth surface is simply pierced near its middle by the dental artery. There is a corresponding perforation on the external surface of the *ramus*, upon which we observe the external muscular depression bounded below by a broad angular ridge. In the Dasyure, there is no external perforation corresponding with the dental canal on the inside of the *ramus*. The *ramus* is likewise entire in the Petaurists, Phalangers, Perameles, and Opossums. In the Wombat the ascending *ramus* is directly perforated by a round aperture immediately posterior to the commencement of the dental canal: the corresponding aperture is of larger size in the Kangaroo. But in the Potoroos both the external and internal depressions of the ascending *ramus* lead to wide canals, or continuations of the depressions, which pass forwards into the substance of the horizontal *ramus*, and soon uniting into one passage, leave a vacant space in the intervening bony *septum*: this structure, if it had existed only in the jaw of a fossil marsupial, would have supported an argument for its Saurian nature, on account of a nearly similar structure in the jaw of the Crocodile. The posterior aperture of the dental canal is situated in the Potoroos and Wombat, as in the Stonesfield fossils, just behind the last molar tooth; and in the Wombat a vascular groove is continued from the foramen along the

inner side of the ramus of the jaw, as in the same fossils. In the Thylacine and Ursine Dasyure, and in their fossil congeners, the Thylacothere and Phascolothere, the condyle of the lower jaw is placed low down on a level with the molar series : it is raised a little above that level in the Opossums, and ascends in proportion to the vegetable diet of the species.

" In all those Marsupiata which have few or very small incisors, the horizontal *rami* of the jaw converge towards a point at the *symphysis*. The angle of convergence is most open in the Wombat, and the gradual diminution is most marked and direct. The internal surface of the *symphysis menti* is almost horizontal, and is convex from side to side in the interval between the molars and incisors. The suture becomes obliterated in aged skulls ; it is also wholly obliterated in the skull of a Koala now before me : in all the other Marsupial *crania* which I have examined, the *rami* of the lower jaw are disjoined at the *symphysis* ; and in the Opossum, both the *rami* of the lower jaw and all the bones of the face are remarkable for the loose nature of their connection.

" The vertebral column is divisible in all the Marsupiata into the usual classes of cervical, costal, lumbar, sacral, and caudal vertebræ.

" The cervical vertebræ invariably present the usual number, seven, and the usual character of the perforation of the transverse process, or rather the presence and union of the outer extremities of the upper and lower transverse processes. In the Dasyures, Opossums, Perameles, and Phalangers, the seventh cervical vertebra has only the upper transverse process, and consequently wants the character of the perforation, as in many of the ordinary Mammalia. In the Koala, Wombat, Potoroos, and Kangaroos, the seventh vertebra is perforated like the rest ; but in the Kangaroo both the *dentata* and atlas have the transverse processes grooved merely by the vertebral arteries ; and in the Koala and Wombat the atlas presents only the perforation on each side of the superior arch.

" In the Perameles and some other Marsupials, as the Cayopollin, an affinity to the Reptilia is manifested in the structure of the atlas, which exhibits a permanent separation of the superior laminæ from the centre or body below. In the Koala and Wombat the body of the atlas remains permanently cartilaginous ; at least, this is its condition in an adult skeleton of each of these animals in the Hunterian Museum, in which the lower part of the vertebral ring is completed by dried gristly substance. In the Petaurists, Kangaroos, and Potoroos, the atlas is completed below by an extension of ossification from the centres developed in the superior laminæ into the cartilaginous nucleus representing the body ; and the ring of the vertebræ is for a long time interrupted by a longitudinal fissure in the middle line, the breadth of which diminishes with age. This fissure is represented in figures of the atlas of a Potoroo and Kangaroo given by Pander and d'Alton (Beutelthiere, fig. *c*. pls. iii. and vii.), but in some of the skeletons of these Marsupials examined by me I find the ring completed, and the fissure obliterated. In all the Marsupiata the spine of the *dentata* is well developed both in the vertical and

longitudinal directions, but most so in the Virginian and Crab-eating Opossums, where it increases in thickness posteriorly; in these species also the third, fourth, and fifth cervical vertebræ have their spines remarkably long and thick, but progressively diminishing from the third, which equals in height and thickness, but not in longitudinal extent, the spine of the dentata. These spines are four-sided, and being closely impacted one behind another must add greatly to the strength while they diminish the mobility of this part of the spine. I know of no other Mammiferous genus which presents the same structure: in the Armadillos the corresponding spines are largely developed, but they are anchylosed together. In the Orang the cervical spines are remarkably developed, but have the ordinary slender subcylindrical rounded form. Tyson, who describes and particularly figures the above structure of the cervical vertebræ in the Opossum, conjectures that it is given to this arboreal animal in order that there might be 'no danger of its breaking its neck should it happen to fall to the ground by chance or design.' Unfortunately for this reasoning, however, the Phalangers, Koala, and other Marsupiata, whose arboreal habits render them equally liable to a fall, present the usual structure of the five posterior cervical vertebræ, the spines of which are all much less than that of the *dentata*, and in the Phalangers and Petaurists almost obsolete. I observe in the *Phalangista Cookii* that the superior flattened arches of the five last cervical vertebræ bear a ridge on each side of the spine, having the same direction and form, and nearly the same size. The structure of the transverse processes of the cervical vertebræ, in the Opossum, is adapted to the strengthening and fixation of this part of the vertebral column; they are expanded nearly in the axis of the spine, but obliquely, so that the posterior part of one transverse process overlaps the anterior part of the succeeding. This structure is exhibited in a slighter degree in the cervical vertebræ of the Dasyures, Phalangers, and Great Kangaroo. In the Petaurists, Potoroos, Wombat, and Koala, the direction and simpler form of the transverse processes allows of greater freedom of lateral motion. In the Koala and Wombat a short obtuse process is given off from the under part of the transverse process of the sixth cervical vertebra. In the Potoroos, Kangaroos, Petaurists, Phalangers, Opossums, and Dasyures, this process is remarkably expanded in the direction of the axis of the spine; in the Perameles corresponding processes are observed progressively increasing in size, on the fourth, fifth, and sixth cervical vertebræ.

"The number of the dorsal vertebræ is greatest in the Wombat, where it is fifteen, corresponding with the number of pairs of ribs; it is least in the Petaurists which have twelve dorsal vertebræ. In all the other genera there are thirteen. In the Koala the length of the spine of the first dorsal hardly exceeds that of the last cervical; but in all other Marsupials the difference is considerable, the first dorsal spine being much longer; those of the remaining dorsal vertebræ progressively diminish in length, and increase in breadth and thickness. They slope backwards towards the centre of motion. In Mauge's Dasyure this is shown to be at the ninth

dorsal vertebra, by the verticality of its spine, towards which both the preceding and succeeding spines incline. In the Perameles the centre of motion is at the eleventh dorsal vertebra; in the Potoroo and Kangaroo at the twelfth; in the Petaurists at the thirteenth vertebra. In the Phalangers, Opossum, Koala, and Wombat, the flexibility of the spine is much diminished, and the centre of motion is not defined by the convergence of the spinous process towards a single vertebra, but they all incline slightly backwards.

"The lumbar vertebræ are four in number in the Wombat, seven in the Petaurists, and six in other Marsupiata, the total number of true vertebræ being thus the same in all the genera. The anterior oblique processes, which begin to increase in length in the three posterior dorsal vertebræ, attain a great size in the lumbar vertebræ, and are locked into the interspace of the posterior oblique processes, which are double on each side, except in the Perameles, and in the last lumbar vertebræ of all the other genera. The transverse processes of the lumbar vertebræ progressively increase in length as the vertebræ approach the *sacrum*; they are most developed in the Wombat, where they are directed obliquely forwards. In the Kangaroos, Potoroos, and Perameles they are curved forwards, and obliquely downwards. The length of these and of the anterior oblique processes is relatively least in the Petaurists, Phalangers, and Opossums.

"The number of vertebræ succeeding the lumbar, which are anchylosed together in the sacral region of the spine, amount in the Wombat to seven; but if we regard those vertebræ only as sacral which join the *innominata*, then there are three. In the Phalangers there are generally two sacral vertebræ; but in a *Phal. Cookii* I have observed three sacral vertebræ, both by anchylosis and juncture with the *ossa innominata*. In the Kangaroos and Potoroos the impetus of the powerful hinder extremities is transferred to two anchylosed vertebræ. In the Perameles there is only a single sacral vertebra, the spine of which is shorter and thicker than those of the lumbar, and turned in the contrary direction, viz. backwards. In Mauge's Dasyure two sacral vertebræ are anchylosed, but it is to the expanded transverse processes of the anterior one that the *innominata* are joined. The same kind of union exists in the Viverrine Dasyure, but three vertebræ are anchylosed together. In the Phalangers and Petaurists there are two sacral vertebræ. In *Petaurus taguanoides* and *Pet. macrurus* three are anchylosed together, though two only join the *ilium*. In the Wombat the transverse processes of the numerous anchylosed vertebræ are remarkable for their length; those of the first four are directed outwards and are confluent at their extremities; the remaining ones are turned in a slight degree backwards, and very nearly reach the tuberosities of the *ischia*, behind which they gradually diminish in size, and are lost in the three last caudal vertebræ. The transition from the sacral to the caudal vertebræ is very obscure in the Wombat; if we limit the sacral to the three which join the *ilium*, then there remain twelve vertebræ for the tail. The spinal canal is com-

plete in all but the last three, which consist only of the body. There are no inferior spines; and as only the six posterior vertebræ, which progressively diminish in length, extend beyond the posterior aperture of the *pelvis*, the tail is scarcely visible in the living animal. In the Koala the tail is also very short. In one species of Perameles I find eighteen caudal vertebræ, in another twenty-three.

"In two species of Potoroo there are twenty-four caudal vertebræ, but the relative length of the tail differs in these by one-third, in consequence of the greater length of the bodies of the vertebræ. In the Great Kangaroo there are twenty-two, while in Bennett's Kangaroo there are twenty-four caudal vertebræ. In the *Phalangista vulpina* there are twenty-one caudal vertebræ. In the *Petaurus macrurus* I find twenty-eight caudal vertebræ, while in the *Pet. sciureus* there are but twenty. The bodies of the middle caudal vertebræ, in both these species, are remarkably long and slender. In the *Dasyurus Maugei* I find twenty caudal vertebræ.

"In the Virginian Opossum there are twenty-two caudal vertebræ; the spinal canal is continued along the first six, beyond these the superior spinous processes cease to be developed, and the body gives off above only the two anterior and two posterior oblique processes, which are rudimental, and no longer subservient to the mutual articulation of the vertebræ. The transverse processes are single on the first five caudal vertebræ, and are nearly the breadth of the body, but diminish in length from the second caudal, in which they are generally the longest. In the other vertebræ a short obtuse transverse process is developed at both extremities of the body on either side, so that the dilated articular surfaces of the posterior caudal vertebræ present a quadrate figure.

"In most of the Marsupials, which have a long tail, this appendage is subject to pressure on some part of the under surface. In the Kangaroo this must obviously take place to a considerable degree when the tail is used as a fifth extremity to aid in supporting or propelling the body. In the Potoroos and Perameles the tail also transmits to the ground part of the superincumbent pressure of the body by its under surface, when the animal is erect; but it is not used as a crutch in locomotion, as in the Kangaroos. In the Phalangers and Opossums the tail is prehensile, and the vessels situated at the under surface are liable to compression when the animal hangs suspended by the tail. To protect these vessels, therefore, as well as to afford additional attachment to the muscles which execute the various movements for which the tail is adapted in the above-mentioned Marsupiata, V-shaped bones, or inferior arches (*hæmapophyses*) are developed, of various forms and sizes, and are placed opposite the articulations of the vertebræ, analogous to the situation of the superior arches in the sacral region of the spine in Birds, and in the dorsal region of the spine in the Chelonian Reptiles. The two *crura* of the subvertebral arch embrace and defend the blood vessels; and the process continued from their point of union presents a variety of forms in different genera. In the Virginian Opossum and Vulpine Phalanger they are simple, about a quarter of an inch in

length where longest, directed obliquely forwards, and diminish in size as they approach the extremity of the tail. In Cook's Phalanger I find the *hæmapophyses* commence between the second and third caudal vertebræ, increase in length to the fourth, and then progressively diminish to the end of the tail: the penultimate and antepenultimate presenting a permanent separation of the lateral moieties, and an absence of the spine.

"In the Potoroos the extremity of the long anterior spines is dilated, and produced backwards and forwards; the posterior smaller ones become expanded laterally, and give off similar but shorter processes from each side, whereby the base of the support is extended.

"In the Great Kangaroo the spine of the first subvertebral arch only is simple and elongated; the extremities of the others are expanded, and in some jut out into four obtuse processes, two at the sides and two at the interior and posterior surfaces. In a carefully prepared skeleton of *Macropus Benettii*, I found these inferior spines wanting between the last nine vertebræ of the tail. In the Petaurists, Phascogales, and Dasyures, where the tail acts as a balancing pole, or serves, from the long and thick hair with which it is clothed, as a portable blanket to keep the nose and extremities warm during sleep, the subvertebral arches are also present, but less in number, and of smaller relative size. They are here principally subservient to the attachment of muscles,—their mere mechanical office of defending the caudal vessels from pressure not being required.

"The ribs consist of thirteen pairs, excepting in the Wombat and Petaurists: the first of these is the shortest, and, except in some of the Petaurists, the broadest. In the *Pet. macrurus*, the fifth, sixth, or seventh are the broadest, and the ribs generally have, both in this species and in *Pet. sciureus*, a more compressed form than in the other Marsupials; but this character does not exist in *Petaurus Taguanoides*. In the Great Kangaroo they are very slender and rounded, except at the sternal extremities, which are flattened for the attachment of the cartilages. In this species the anterior pairs of ribs articulate directly with the sternum. The cartilages of the other pairs are long and bent towards the sternum, but do not join it; nor are they confluent, but have a gliding motion one over the other. In the Opossum there are seven pairs of true ribs, and six which may be regarded as *costæ nothæ*. In the Wombat six pairs only out of the fifteen reach the sternum.

"The sternum consists of a succession of elongated bones, generally six in number, but in the Wombat four. The first bone, or *manubrium sterni*, is the largest, and presents in many species a triangular shape, from the expansion of its anterior part, and sometimes a rhomboidal figure. A strong keel or longitudinal process is given off in many species from the middle of its inferior or outer surface; the side next the cavity of the chest is smooth and slightly concave. In the Wombat, Phalangers, and others, the keel is produced anteriorly into a strong process, against the sides of which the clavicles abut: the first pair of ribs join the produced anterior

angles of the manubrium. In the Dasyures, Opossums, Phalangers, and Petaurists, the manubrium is compressed and elongated, and the clavicles are joined to a process continued from its anterior extremity. The small clavicles of the Kangaroo have a similar connection.

"The cartilages of the true ribs, (which frequently become ossified in old Marsupials) are articulated as usual to the interspaces of the sternal bones; the last of these supports a broad flat cartilage.

"The clavicles are relatively strongest and longest in the burrowing Wombat, weakest and shortest in the Great Kangaroo. In the latter they are simply curved with the convexity forwards, and measure only two inches in length. In the Wombat they are upwards of three inches in length, and have a double curvature; they are expanded and obliquely truncate at the sternal extremity, where the articular surface presents a remarkably deep notch: they become compressed as they approach the acromion, to which they are attached by an extended narrow articular surface. In the Koala the clavicles are also very strong, but more compressed than in the Wombat, bent outwards in their whole extent, and the convex margin formed, not by a continuous curve, but by three almost straight lines, with intervening angles, progressively diminishing in extent to the outermost line which forms the articular surface with the acromion. In most of the other Marsupials the clavicle is a simple compressed elongated bone, with one general outward curvature. In the genus *Perameles* there are no clavicles.

"The scapula varies in form in the different Marsupiata. In the Petaurists it forms a scalene triangle, with the glenoid cavity at the convergence of the two longest sides. In the Wombat it presents a remarkably regular oblong quadrate figure, the neck being produced from the lower half of the anterior margin, and the outer surface being traversed diagonally by the spine; which, in this species, gradually rises to a full inch above the plane of the scapula, and terminates in a long narrow compressed acromion arching over the neck to meet the clavicle. In the Koala, the superior *costa* does not run parallel with the inferior, but recedes from it as it advances forwards, and then passes down, forming an obtuse angle, and with a gentle concave curvature to the neck of the scapula; a small process extends from the middle of this curvature. In the Potoroos the upper *costa* is at first parallel with the lower; but this parallel part is much shorter; the remainder describes a sigmoid flexure as it approaches the neck of the scapula. In the Great Kangaroo, the Perameles, Phalangers, Opossums and Dasyures, the whole upper *costa* of the scapula describes a sigmoid curve, the convex posterior portion of which varies as to its degree and extent.

"The subscapular surface is remarkable in the Perameles for its flatness; but presents a shallow groove near the inferior *costa*. In most other Marsupials it is more or less convex and undulating.

"In the Great Kangaroo the *supraspinal fossa* is of less extent than the space below the spine, and the spine is inclined upwards. In the Perameles and Dasyures the proportions of the *supra* and *infra* spinal surfaces are reversed, and the whole spine is bent downwards over the *infraspinal* surface. In the Potoroos

and Phalangers the acromion is, as it were, bent downwards, so as to present a flattened surface to the observer. In the Potoroos and Opossums this appearance is produced by a true expansion of the acromion. In the Peramcles the caracoid process is merely represented by a slight production of the superior part of the glenoid cavity. In the Kangaroo and Potoroos it forms a protuberance on the upper part of the head of the scapula. In the other *Marsupiata* it assumes the character of a distinct process from the same part; and attains its greatest development in the Wombat and Koala, in the latter of which it is forcibly curved downwards and inwards.

"The *humerus* in the Dasyures and Thylacine resembles that of the dog-tribe, in the imperforate condition of the inner condyle, but differs in the more marked development of the muscular ridges, especially that which extends upwards from the outer condyle, for the origin of the great supinator. This ridge is terminated abruptly by the smooth tract for the passage of the musculo-spiral nerve. In *Phal. Cookii* the internal condyle is imperforate, and in *Petaurus Sciureus* it is deeply notched; but in other Phalangers and Petaurists, as also in all the other genera of Marsupials, the internal condyle of the *humerus* is perforated.

"The ridge above the external condyle is much developed in the *Petaurus macrurus* and *P. sciureus*, and notched at its upper part; there is the same structure in *Phal. Vulpina*, but it does not exist in *Phal. Cookii*. I find similar differences in the development of the supinator or outer ridge in the genus *Perameles*; in the *Per. lagotis* it is bounded above by a groove; in *Per. grisea* it is less developed and less defined. In the Kangaroos, Potoroos, Wombat and Koala, the outer condyloid ridge extends in the form of a hooked process above the groove of the radial nerve. In all these, and especially in the Wombat, the deltoid process of the *humerus* is strongly developed; it is continued from the external tuberosity down the upper half of the *humerus*; except in the Petaurists, where, from the greater relative length of the *humerus*, it is limited to the upper third. The interspace of the condyles is occasionally perforated, as in the *Perameles lagotis* and Wombat. The articular surfaces at both extremities of the *humerus* have the usual form; but it may be observed, that in some Marsupials, as the Koala, the external convexity at the distal articulation for the radius has a greater relative extent than usual, and the ulnar concavity is less deep.

"The bones of the fore-arm present little to detain our notice. They are always distinct and well-developed, and their adaptation to pronation and supination is complete. The prehensile faculty and unguiculate structure of the anterior extremities appear to have been indispensable to animals requiring to perform various manipulations in relation to the œconomy of the Marsupial pouch, and when such an animal is destined, like the Ruminant, to range the wilderness in quest of pasturage, the requisite powers of the anterior members are retained and secured to it by an enormous development of the hinder extremities, to which the function of locomotion is almost restricted.

"We find, therefore, that the bones of the fore arm of the Kangaroo differ little from those of the burrowing Wombat, the climbing

Koala, or the carnivorous Dasyure, save in relative size. They present the greatest proportional strength in the Wombat, and the greatest proportional length and slenderness in the Petaurists or Flying Opossums, in which the extremities are subservient to the support of a dermal parachute. They are also long and slender in the Koala. In general the radius and ulna run nearly parallel, and the interosseous space is very trifling: it is widest in the Potoroos. The olecranon is well developed in all the *Marsupiata*. In the Virginian Opossum and Petaurists, we find it more bent forwards upon the rest of the ulna, than in the other Marsupials. In the Wombat, where the acromion is the strongest, and rises an inch and a half above the articular cavity of the ulna, it is extended in the axis of the bone. The distal end of the radius in this animal is articulated to a broad bone representing the *os scaphoides* and *os lunare*. The ulna, which in the same animal converges towards a point at its distal end, has that point received in a depression formed by the cuneiform and pisiform bones; these are bound together by strong ligaments; and the latter then extends downwards and backwards for two-thirds of an inch. The second row of the *carpus* consists of five bones. The *trapezium* supports the inner digit, and has a small sesamoid bone articulated to its radial surface. The *trapezoides* is articulated to the index digit, and is wedged between the *scapholunar* bone and *os magnum*; this forms an oblique articular surface for the middle digit; but the largest of the second series of carpal bones is the cuneiform, which sends downwards an obtuse rounded process, and receives the articular surface of the fifth and the outer half of that of the fourth digit; the remainder of which abuts against the oblique proximal extremity of the middle metatarsal bone. The five metatarsal bones are all thick and short, but chiefly so the outermost.

"The innermost digit has two phalanges, the remainder three; the ungueal phalanx is conical, curved, convex above, expanded at the base, and simple at the opposite extremity. In the Perameles the ungueal phalanx of the three middle digits of the hand, and of the two outer digits of the foot, are split at the extremity by a longitudinal fissure, commencing at the upper part of the base. This structure, which characterizes the ungueal phalanges in the placental Pangolins, has not been hitherto met with in other marsupial genera. It would be interesting to examine the skeleton of the newly described genera *Myrmecobius* and *Chæropus* with reference to this structure.

"The terminal phalanges of the Koala are large, much compressed, and curved; the concave articular surface is not situated, as in the cats, on the lower part of the proximal end, but, as in the sloths, at the upper. The claws which they support are long.

"In the great Kangaroo the first row of the *carpus* is composed, as in the Wombat, of three bones; but the apex of the ulna rotates in a cavity formed exclusively by the cuneiforme. There are four bones in the second row, of which the cuneiform is by far the largest, and supports a part of the middle, as well as the two outer digits. In Potoroos I find but three bones in the distal series of the *tarsus*, the *trapezoides* being wanting, and its place in one species being

occupied by the proximal end of the second metatarsal bone, which articulates with the *os magnum*. In the Perameles there are four bones in the distal series, although the hand is less perfect in this than in any other marsupial genus, the three middle toes only being fully developed. In the Petaurists, the *carpus* is chiefly remarkable for the length of the *os pisiforme*. It would be tedious to dwell on the minor differences observable in the bony structure of the hand in other Marsupiata. I shall therefore only observe that, though the inner digit is not situated like a thumb, yet that the fingers enjoy much lateral motion; and that those at the outer can be opposed to those at the inner side, so as to grasp an object and perform in a secondary degree the function of a hand. In the Koala the two inner digits are more decidedly opposed to the three outer ones than in any other climbing Marsupial. But some of the Phalanges, as the *Ph. Cookii* and *Ph. gliriformis* of Bell, present in a slight degree the same dispositions of the fingers, by which two out of the five have the opposable properties of a thumb—a structure for which we seek in vain among the placental Mammalia, but which we have repeated in the prehensile extremities of the Chameleon.

"The pelvis in the mature Marsupial is composed of the *os sacrum*, the two *ossa innominata*, and the characteristic supplemental bones attached to the pubes, called by Tyson the *ossa marsupialia*, or *Janitores marsupii*.

"We seek in vain for any relationship between the size of the pelvis and that of the new-born young, the minuteness of which is so characteristic of the present tribe of animals. The diameters both of the area and the apertures of the pelvic canal are considerable, but more especially so in those Marsupialia which have the hinder extremities disproportionally large, as also in the Wombat, where the pelvis is remarkable for its width. The pelvis is relatively smallest in the Petaurists. The anterior bony arches formed by the *ossa pubis* and the *ischia* are always complete; and the interspace between these arches is divided, as in other Mammalia, into the two *obturator foramina*, by an osseous bridge continued from the *pubes* to the *ischium* on each side of the *symphysis*.

"In the Kangaroos, Potoroos, Phalangers, and Opossums, the *ischia* offer an elongated prismatic form. They are straight in the Opossum, but gently curved outwards in the other marsupial genera. In the Dasyures there is a longitudinal groove widening upwards in place of the angle at the middle of the exterior surface of the *ilium*.

"The *ilia* in the Petaurists are simply compressed from side to side. They are broader and flatter in the Perameles, and their plane is turned outwards. But the most remarkable form of the *ilia* is seen in the Wombat, in which they are considerably bent outwards at their anterior extremity.

"In the Kangaroos and Potoroos the eye is arrested by a strong process given off from near the middle of the ilio-pubic ridge; and this process may be observed less developed in the other Marsupiata.

"The tuberosity of the *ischia* inclines outwards in a very slight degree in the Dasyures, Opossums, Phalangers, Petaurists, and Pe-

rameles; in a greater degree in the Kangaroos and Potoroos; and gives off a distinct and strong obtuse process in the Wombat, which not only extends outwards but is curved forwards. In the Potoroos the *symphysis* of the *ischia* or the lower part of what is commonly called the *symphysis pubis*, is produced anteriorly. The length of this *symphysis*, and the straight line formed by the lower margin of the *ischia*, is a characteristic structure of the *pelvis* in most of the Marsupiata.

"The marsupial bones are elongated, flattened, and more or less curved, expanded at the proximal extremity, which sometimes, as in the Wombat, is articulated to the *pubis* by two points; they are relatively longest, straightest, and most slender in the Perameles; flattest, broadest, and most curved in the Koala. They are always so long that the cremaster muscle winds round them in its passage to the testicle or mammary gland; and the uses of these bones immediately relate to those muscles.

"With reference to the interesting question—What is the homology or essential nature of the ossa marsupialia? I have, on a previous occasion, discussed that problem before the Zoological Society, and have not found reason to change the opinion I offered in 1835*; *viz.* that they belong to the category of the trochlear ossicles, commonly called, sesamoid, and are developed in the tendon of the external oblique which forms the mesial pillar of the abdominal ring, as the patella is developed in the *rectus femoris*. They are not, however, merely subservient to add force to the action of the 'cremasteres,' but give origin to a great proportion of the so-called 'pyramidales.'

"The *osteogenesis* of the marsupial pelvis derives some extrinsic interest from the not yet forgotten speculations which have been broached regarding the analogies of the marsupial bones. These have been conjectured to exist in many of the placental Mammalia, with a certain latitude of altered place and form, disguised, e. g. as the bone of the *penis* in the Carnivora, or appearing as the supplemental ossicles of the acetabulum, which exist in the young of many of the Rodentia. In the os innominatum of the immature Potoroo, the curved prismatic *ilium* contributes to form by the outer part of its base the upper or anterior third of the acetabulum; the rest of the circumference of this cavity is completed by the *ischium* and *pubis*, excepting a small part of the under or mesial margin, which is formed by a distinct ossicle or epiphysis of the ilium, analogous to that described by Geoffroy St. Hilaire as the rudimental marsupial bone in the rabbit. Now here there is a co-existing marsupial bone: but besides the five separate bones just mentioned, there is a sixth distinct triangular ossicle, which is wedged into the posterior interspace of the ischio-pubic

* See the abstract of a Paper on the analogy of the *Dasyurus*, Proc. Zool. Soc., January 1835, in which the discussion of the question of the marsupial bone is abridged in the following words: "and Mr. Owen stated it to be his opinion, that the marsupial bones are essentially ossifications of the tendons of the external abdominal muscle which constitute the internal or mesial pillars of the abdominal rings." The same hypothesis is again advanced in the account of the anatomy of the Wombat. Pro. Zool. Soc. 1836, p. 49.

symphysis. How easy to suggest that this single symmetrical bone may be the representative of the *os penis* removed from the glans to the root of the intromittent organ! It is obviously a mere epiphysis of the ischium. The circumference of the acetabulum is always interrupted by a deep notch opposite the obturator-foramen, which is traversed by a ligamentous bridge, and gives passage to the vessels of the Harderian gland lodged in the wide and deep acetabular fossa.

"The femur is a straight or nearly straight long cylindrical bone, having a hemispherical head supported on a very short neck, especially in the Petaurists, and situated here almost in the axis of the shaft, above and between the two trochanters, which are nearly of equal size. In the Kangaroos and Potoroos the head of the thigh bone is turned more inwards, and the outer or great trochanter rises above it. In other Marsupiata the great trochanter is less developed. In all a strong ridge is continued downwards to a short distance from the trochanter; and this ridge is so produced at the lower part in the Wombat as almost to merit the name of a third trochanter.

"In the Wombat and Koala there is no depression for a *ligamentum teres* which nevertheless exists in the latter.

"The shaft of the bone presents no *lineæ asperæ*. The canal for the nutrient artery commences at the upper third and posterior part of the bone in the Koala, and extends downwards, contrarywise to that in man and most other Mammalia. At the distal extremity of the femur the external condyle is the largest, the internal rather the longest. The intermediate anterior groove for the patella is well marked in the Perameles where the patella is fully developed, but is broad and very shallow in the Phalangers and Dasyures, where the tendon of the *rectus* is merely thickened, or offers only a few irregular specks of ossification; and the corresponding surface in the Petaurists, Wombat and Koala, is almost plane from side to side. I find distinct but small bony patellæ in the *Macropus Bennettii*.

"The tibia presents the usual disposition of the articular surface for the condyles of the femur; but in some genera, as the Wombat and Koala, the outer articular surface is continuous with that for the head of the fibula. In the Kangaroos and Potoroos the anterior part of the head of the tibia is much produced; and in the young animal its ossification commences by a centre distinct from the ordinary proximal epiphysis of the bone. A strong ridge is continued down from this protuberance for about one sixth the length of the tibia. In the Koala a strong tuberosity projects from the anterior part of the tibia at the junction of the upper with the middle third. In this species, and in the Wombat, as also in the Opossums, Dasyures, Phalangers, and Petaurists, the shaft of the tibia is somewhat compressed and twisted; but in the Kangaroos, Potoroos, and Perameles, the tibia is prismatic above and subcylindrical below. The internal malleolus is very slightly produced, perhaps most so in the Wombat.

"The fibula is complete, and forms the external malleolus in all the Marsupiata. In one species of Hypsiprymnus, and in one species of Perameles, it is firmly united to the lower part of the tibia, though the

line of separation be manifest externally. In a second species of each of the above genera it is in close contact with the corresponding part of the tibia, but can be easily separated from that bone. In the great Kangaroo the fibula is also a distinct bone throughout, but it is remarkably thinned and concave at its lower half, so as to be adapted to the convexity of the tibia, with which it is in close contact. In each of these genera therefore, in which locomotion is principally performed by the hinder extremities, fixity and strength is gained by the structure of the bones of the leg. In the other genera, as *Phascolarctos*, *Phascolomys*, *Phalangista*, *Petaurus*, *Didelphis*, and *Dasyurus*, the tibia and fibula are so connected together, and with the tarsus, that the foot enjoys a movement of rotation analogous to the pronation and supination of the hand; and in the Petaurists, Phalangers, Opossums, and Koala, the inner toe is so placed and organized as to perform the office of an opposable thumb, whence these Marsupiata have been termed pedimana or foot-handed. It is to this prehensile power that the modifications of the fibula chiefly relate. In the Wombat, Koala, Petaurists, and Phalangers it expands to nearly an equal size with the tibia at the distal extremity, and takes a large share in the formation of the tarsal joint; but the articular surface is slightly convex, while that of the tibia is slightly concave. The proximal extremity of the fibula is also much enlarged, but compressed, obliquely truncated, and giving off two tuberosities from its exterior surface; to the superior of these a large sesamoid bone is articulated; we observe the same sesamoid attached to the upper end of the fibula in a *Dasyurus macrurus*. Temminck figures it in the *Phalangista ursina* and *Didelphis Philander*.

"This enlarged and elevated proximal end of the fibula, with its superimposed sesamoid, obviously represents the *olecranon* of the *ulna*, and beautifully illustrates and establishes the analogies long ago pointed out between the radius and tibia, the ulna and fibula, by my revered preceptor in anatomy, Dr. Barclay*.

"I find the following structure of the tarsus in the Wombat. The astragalus is connected as usual with the tibia, fibula, calcaneum and scaphoides. The upper articular surface for the tibia is as usual concavo-convex, the internal surface for the inner malleolus flattened, and at right angles with the preceding. But the outer articular surface presents a triangular flattened form; and instead of being bent down parallel with the inner articulate surface, slopes away at a very open angle from the upper surface, and receives the articular surface of the fibula, so as to sustain its vertical pressure. A very small proportion of the outer part of the inferior surface of

* See his admirable 'Description of the Arteries of the Human Body,' pp. 258, 259, and his 'Explanations of Mitchell's Engravings of the Bones, 4to., Edin. 1824, Expl. of Pl. xxiv.' Both Dr. Barclay's analogies of the bones of the atlantal and sacral extremities, and my hypothesis of the nature of the marsupial bones, have been reproduced in the past year as novel discoveries, by two French anatomists; the one by Dr. Flourens in an interesting and ingenious paper in the 'Annales des Sciences Nat., Oct. 1838,' the other by M. Gervais in the '*Zoologie de la Favorite*,' *Partie III. p.* 100.

the astragalus rests upon the calcaneum: a greater part of the superincumbent pressure is transmitted by a transversely extended convex anterior surface to the scaphoid and cuboid bones. This form of the astragalus is also characteristic of the Koala, Petaurists, Dasyures, and the Pedimanous Marsupials. In the Kangaroos, Potoroos, and Perameles which have the *pedes saltatorii*, the fibular articular surface of the astragalus is bent down as usual, at nearly right angles with the upper tibial surface. The calcaneum presents a ridge on the outer surface which serves to sustain the pressure of the external malleolus, which is not articulated to the side of the astragalus. The internal surface which joins the astragalus is continuous with the anterior slightly concave surface which articulates with the cuboides. The posterior part of the bone is compressed; it projects backwards for nearly an inch, and is slightly bent downwards and inwards. This part is relatively shorter in the Koala, Phalangers, Opossums, and Petaurists; but is as strongly developed in the Dasyures as in the Wombat. In the *Dasyurus macrurus*, I observe a small sesamoid bone wedged in between the astragalus, tibia, and fibula, at the back part of the joint. In the *Petaurus taguanoides*, there is a supplemental tarsal bone wedged in between the naviculare and cuboides in the plantar surface. In the Wombat the scaphoid, cuboid, and the three cuneiform bones, have the ordinary uses and relative positions.

"The analogy of the carpal and tarsal bones is very clearly illustrated in this animal. The anchylosed *naviculare* and *lunare* of the hand correspond with the astragalus and naviculare of the foot, transferring the pressure of the *focile majus* upon the three innermost bones of the second series. The long backward projecting pisiform bone of the wrist closely resembles the posterior process of the *os calcis*; the articular portion or body of the *os calcis* corresponds with the cuneiform; the large unciform represents the cuboides, and performs the same function, supporting the two outer digits: the three cuneiform bones are obviously analogous to the *trapezium*, *trapezoides*, and *os magnum*. The internal cuneiforme bone is the largest of the three in the Wombat, although it supports the smallest of the toes. It is of course more developed in the Pedimanous Marsupials, where it supports a large and opposable thumb. In the Wombat the metatarsals progressively increase in length and breadth from the innermost to the fourth; the fifth or outermost metatarsal is somewhat shorter, but twice as thick, and it sends off a strong obtuse process from the inside of its proximal end. The innermost metatarsal supports only a single phalanx; the rest are succeeded by three phalanges each, progressively increasing in thickness to the outermost; the ungueal phalanges are elongated, gently curved downwards, and gradually diminish to a point. In the Dasyures the innermost toe has two phalanges, but it is the most slender, and does not exceed in length the metatarsal bone of the second toe. In the Petaurists it is rather shorter than the other digits, but is the strongest; the toes are set wide apart in this genus. In the Opossums and Phalangers the inner metatarsal bone is directed inwards apart from the rest, and together with the first phalanx, is broad and

flat. The second phalanx in the Opossum supports a claw, but in the Phalangers is short, transverse, unarmed, and almost obsolete.

"In all the preceding genera there are two small sesamoid bones on the underside of the joints of the toes, both on the fore and hind feet.

"The commencement of a degeneration of the foot, which is peculiar to, and highly characteristic of, the Marsupial animals, may be discerned in the Petaurists, in the slender condition of the second and third toes, as compared with the other three. In the Phalangers, this diminution of size of the second and third toes, counting from the thumb, is more marked. They are also both of the same length, and have no individual motion, being united together in the same sheath of integument as far as the ungueal phalanges, whence the name of *Phalangista* applied to this genus. In the saltatorial genera of Marsupiata the degradation of the corresponding toes is extreme, but though reduced to almost filamentary slenderness, they retain the usual number of phalanges, the terminal ones being armed with claws, which appear as appendages at the inner side of the foot, for the purpose of scratching the skin and dressing the fur. In the Kangaroos and Potoroos the innermost toe is deficient, but in the *Perameles* it is retained. In *Per. lagotis* I find the metatarsal bone of this toe supports only a single rudimental phalanx, which reaches to the end of the next metatarsal bone, and the internal cuneiform bone is elongated. In *Per. grisea* the internal toe is as long as the abortive second and third toes, and has two phalanges, the last of which is divided by the longitudinal fissure characteristic of the ungueal phalanges in this genus. The power of the foot is concentrated in all these genera on the two outer toes, but especially the fourth, which in the great Kangaroo is upwards of a foot in length, including the metatarsal bone and the claw, which latter resembles an elongated hoof, but is three-sided, and sharp-pointed like a bayonet. It is with this formidable weapon that the Kangaroo stabs and rips open the abdomen of its assailant; it will hold a powerful dog firmly during the attack with the anterior extremities, and supporting itself behind upon its powerful tail, deliver its thrusts with the whole force of the hinder extremities. The cuboid bone which supports the two outer metatarsals in the Kangaroo is proportionally developed. The internal cuneiform bone is present, though the toe which is usually articulated to it is wanting. It is also the largest of the three, and assists in supporting the second metatarsal; behind it is joined with the naviculare and external cuneiform; the small middle cuneiform occupying the space between the external and internal wedge-bones and the proximal extremities of the two abortive metatarsals. The great or fourth metatarsal is straight and somewhat flattened; the external one is compressed and slightly bent outwards; the toe which this supports is armed with a claw similar to the large one, but the ungueal phalanx does not reach to the end of the second phalanx of the fourth toe, and the whole digit is proportionally weaker."

November 13, 1838.

Professor Owen, in the Chair.

A letter was read from G. Burghall Watts, Esq., Corr. Memb. Z.S., addressed to William Yarrell, Esq., stating that a collection of specimens from the neighbourhood of Turbaco, South America, was on the way to England for the Society's Museum.

A letter from Alexander Gordon, Esq. was also read, begging the Society's acceptance of the animal described by Mr. Waterhouse under the name of *Myrmecobius fasciatus*, and also the *Perameles lagotis*. Both of these animals, Mr. Gordon stated, were from Swan River and not from Van Diemen's Land as had been supposed.

A paper entitled "Observations on certain modifications observed in the dentition of the Flying Opossums (the genus *Petaurus* of authors)," was communicated by Mr. G. R. Waterhouse.

"In the '*Dents des Mammifères*' of M. F. Cuvier, the dentition of the Flying Opossums and that of the Phalangers is described under the two heads '*Petaurus*' and '*Phalangers proprement dits*.' Both the groups termed *Petaurus* and *Phalangers* by M. F. Cuvier contain certain species of Flying Opossums, and likewise species of Phalangers. Those species, however, which have the flank-membrane extended from limb to limb, enabling them to sail in the air like a parachute, are now with universal consent separated from the Phalangers (*Phalangista*), and arranged under the generic title Petaurus or Petaurista.

"In grouping the Phalangers and Petaurists as above mentioned, M. F. Cuvier was guided only by the characters offered by the dentition; that of *Petaurus Taguanoides* certainly bearing a very close resemblance to that of *Phalangista Cookii*. The teeth of *Petaurus sciureus*, however, do not bear so close a resemblance to those of *Phalangista vulpina* and *P. maculata*, although the three animals mentioned are placed in the same division by the author alluded to. Regarding the Petauri as a distinct genus from the Phalangers, I will proceed to describe their dentition as I find it in the skulls before me, which I may observe consist of two specimens of each of the following species:—*P. taguanoides*, *P. flaviventer*, *P. sciureus*, and *P. pygmæus*, and one skull of a new species hereafter described.

"In these *crania* three distinct modifications in the dentition are observable; and as they are combined with certain differences in the skulls and in the external characters of the animals to which they belong, they may be regarded as forming three subordinate sections, to which for convenience I shall apply the names, *Petaurus*, *Belideus*, and *Acrobata*. Two of these names will be found in the 'Mammologie,' by M. Desmarest. The dentition observable in the species of

the first of these sections (*Petaurus*) is as follows:—Incisors $\frac{6}{2}$; canines $\frac{1-1}{0-0}$; false molars $\frac{3-3}{1-1}$; true molars $\frac{4-4}{4-4}$. I am induced to call the two first teeth following the incisors canines, since they represent those which are *evidently* canines in the two next sections. The incisors of the upper jaw are arranged laterally, the three on either side being placed close together; the two foremost are separated from one another by a space about equal to their diameter; they are narrow at the base, and expanded and somewhat compressed above the base. The next incisor on each side is larger than the last or posterior one, and about half the height of the first, narrow at the base, and wide and truncated at the apex. The third incisor is small and but slightly wider at the tip than at the base. The canine is very small, being in size about equal to the posterior incisor; its tip is rounded, and it springs from the maxilla a little behind the intermaxillary suture; the space between it and the canine being about equal to twice its diameter or more; for there is a difference in this respect in the specimens before me. The first false molar is minute and conical, separated by a considerable space from the canine and also from the following molars. The next two molars on each side I have called false molars, because they do not possess the inner tubercles which are observed in those behind; they are broad at the base and compressed at the tip; the foremost presents an anterior larger, and a posterior small compressed tubercle; the third is divided at the tip into three compressed points. The true molars are nearly square, but rather longer than broad; the crown of each, with the exception of the last, presents four tubercles, with sharp cutting edges, and very much resemble those of a Ruminant animal. In the last molar there are but three of these tubercles, two in front and one behind. The incisors of the lower jaw are large, nearly cylindrical at the base; beyond this they are somewhat dilated, flattened, pointed, and have two sharp edges. There are no minute detached false molars in the lower jaw. The single false molar on each side is placed close to the true molars, compressed in front and expanded behind; a small anterior tubercle is separated from the body of the tooth by a slight transverse incision. The true molars resemble those of the upper jaw, excepting that they are narrower, and the last molar has four tubercles instead of three.

"The above description is taken from *P. Taguanoides*. The *cranium* differs from that of the species of the second section (*Belideus*) in being proportionately smaller, more contracted, and deeply concave between the orbits; the cranial cavity is smaller, the zygomatic arches deeper, and the bony palate is deeply emarginated posteriorly; in fact, the palatine portion of the palatine bone is wanting. The dense woolly fur on the outer side of the ears will serve to distinguish the animal externally from either of the species of the next subgenus. *P. macrourus* I suspect belongs also to this section. In M. F. Cuvier's 'Dents des Mammifères,' it is stated, that besides the false molars described by me there are two others on each side, which are small;—these I have not seen, nor are they shown in the plate of the work quoted. Perhaps they are shed at an early pe-

riod, or perhaps M. Cuvier may have described the dentition of *Phalangista Cookii* and figured that of *Petaurus Taguanoides*.

"Section 2. *Belideus*.—Dentition: Incisors, $\frac{6}{2}$; canines, $\frac{1-1}{0-0}$; false molars, $\frac{3-3}{4-4}$; true molars, $\frac{4-4}{4-4}=40$. The anterior incisors of the upper jaw are large, somewhat suddenly dilated immediately above their insertion in the intermaxillaries, and assuming a triangular form. In *P. flaviventer* they are broader than in either *P. sciureus* or the new species here described under the specific name of *breviceps*, where these incisors are proportionately shorter, and perhaps a little broader than in *P. sciureus*. The next incisor on each side is smaller than the posterior one, narrow at the base, and broad at the apex. The third incisor is broad, and has a sharp incurved cutting edge. The canine is tolerably large, and has its origin close behind the intermaxillary suture; in fact, is in the usual situation of the canine. It is separated by a small space on either side from the false molars and the incisors, compressed and pointed, and its anterior and posterior edges are sharp. The apex projects beyond the level of either of the molars. The first false molar on each side is rather large, broad, compressed and pointed, has a very faint indication of an anterior and posterior lobe, and two distinct fangs (which is not the case in the small and cylindrical corresponding tooth in *Petaurus Taguanoides*). The second false molar is small, short, and compressed, and has a minute anterior lobe. This tooth is separated by a considerable space from the first false molar, and by a narrow space from the third. The latter touches the first true molar, is narrow in front, and consists chiefly of one triangular and pointed tubercle. The first true molar on each side is considerably larger than the following molars, each of which is smaller than the preceding, so that the last is not equal in bulk to one half of the first. With the exception of the last, all the true molars possess four somewhat blunt and rounded tubercles, and in general appearance very much resemble the corresponding teeth of a Squirrel. The last molar has but three tubercles, two in front and one behind.

"The incisors of the lower jaw are long, compressed, and pointed, and have the upper and lower edges sharp; they are almost horizontal in their direction, being but slightly curved upwards. Next follows a series of four small teeth on each side, which I have called false molars, though possibly the last only is properly so called, that having two fangs, whereas the others appear to have but one. The true molars nearly resemble those of the upper jaw, though they are narrower and longer. The first has a large irregular anterior lobe, which is higher than the posterior portion of the tooth, which is divided into two tubercles. The three posterior molars have each four tubercles.

"Besides the points of distinction already alluded to between the species of the present section and the preceding, there are other characters which cannot be considered unimportant. The space occupied by the grinding teeth of the upper jaw, compared with the space between the last incisor and the first true molar in the species of

Belideus, is much less than in Petaurus. In Belideus the molars occupy a space equal to rather more than two-thirds of that between the incisors and first true molar; whereas in Petaurus, the four last molars occupy more space than that which extends from them to the incisors. There is a corresponding difference in the lower jaw. In Petaurus the molars are very nearly equal in size, whereas in Belideus they decrease considerably from the first molar to the last. In Petaurus, again, there are five molars on each side of the lower jaw opposed to six in the upper jaw, all of which are fitted for the mastication of the food; whilst in Belideus the molar corresponding to the first on either side of each jaw in Petaurus is so small, and its crown is so low, that it cannot be used in mastication. The comparatively large size of the canines, and the series of small teeth in front of the molars, will also serve to distinguish the species of the present section from the preceding, where the upper margin of the *ramus* of the lower jaw somewhat suddenly descends in front of the molars, and the coronoid process is comparatively broad.

"*Petaurus sciureus* may be regarded as the type of the section *Belideus*, which will also contain *P. flaviventer* and *P. breviceps*.

"In the third section, which is the subgenus *Acrobata* of Desmarest, the incisors are $\frac{6}{2}$; canines, $\frac{1-1}{0-0}$; false molars, $\frac{3-3}{4-4}$; true molars, $\frac{3-3}{3-3}=36$. The incisors resemble those of Belideus; the canines are well-developed, long, pointed, and recurved, placed close to the intermaxillary suture, and even encroaching slightly on the intermaxillary bone. The three false molars of the upper jaw have each two fangs, they are compressed, sharply pointed, and viewed laterally, of a triangular form. The first and second are about equal in size, and larger than the third, the apex of which projects beyond the level of the crowns of the true molars. Between the first and second false molars on each side there is a narrow space; the third is placed close to the true molars; these as well as those of the under jaw resemble the true molars of Belideus; there is however one less on each side of both jaws. The incisors of the lower jaw also resemble those in Belideus. Behind these incisors there are two minute teeth on each side, which are followed by two sharply pointed false molars, the foremost of which is the larger, and the apex of the second is raised above the plane of the true molars.

"The difference in the form of the false molar teeth pointed out, together with the reduced number of true molars, the slenderness of the zygomatic arch, and the incurved angle of the lower jaw, combined with the imperfect state of the palate, will serve to distinguish the species of the present section from the preceding. Externally, the *P. pygmæus* (which is the type of M. Desmarest's subgenus) may be distinguished by its distichous tail.

PETAURUS BREVICEPS. *P. cinerea, lineâ dorsali longitudinali membranâque laterali suprà nigrescentibus, hac ad latera albâ; corpore subtùs sordidè et pallidè cinereo: caudâ gracili, ad apicem fuliginosâ; auribus mediocribus.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	6	6
——— *caudæ*	7	0
——— *tarsi digitorumque*	1	1
——— *auris*	0	9

Habitat New South Wales.

"This species very much resembles the *P. sciureus* in colouring; the under parts, however, have a distinct grayish tint: the dark mark which extends from the tip of the nose along the back is indistinct. It is of a much smaller size than *P. sciureus*, the tail is much more slender, and occasionally has a white tip. The skull is proportionately broader and shorter than that of *P. sciureus*, as will be seen in the following dimensions."

	P. breviceps. in.	lin.		*P. sciureus.* in.	lin.
Total length of skull	1	$3\frac{1}{2}$	.....	1	10
Length of nasal bones.....	0	$5\frac{1}{3}$	.....	0	$7\frac{1}{2}$
Length of frontal.....	0	$6\frac{1}{4}$	.....	0	$8\frac{1}{2}$
Length of palate	0	8	.....	0	$11\frac{1}{3}$
Width of skull.....	1	0	.....	1	$2\frac{1}{4}$

Mr. Waterhouse then proceeded to point out some peculiarities in the skull and dentition of the American Badger (*Meles Labradoria*). Three skulls of this species, belonging to individuals of different ages, were exhibited to the Meeting. "The most striking peculiarity in the skull of the American Badger," observes Mr. Waterhouse, "consists in the great expanse of the occipital region; the width of the occiput being equal to that of the skull measured from the outer surface of the zygomatic arches. The general form of the skull is almost conical; viewed laterally, the outline of the upper surface is most elevated at, or very near the occiput; thence it runs downwards with a slightly convex curve to the nasal bones. The interorbital portion is considerably contracted, and is narrowest posteriorly. The occipital crest is well-developed, but the sagittal crest is very slightly elevated; in this respect differing from the corresponding ridge in the *Meles vulgaris*.

"The auditory *bullæ* are very large and convex. The articulating surface of the temporal bone, or glenoid cavity, like that of the Common Badger, has its anterior and posterior process; these processes, however, merely serve to prevent the protrusion or retraction of the lower jaw, and not to enclose and lock the condyle as in that animal. Comparing the lower jaw with that of the Common Badger, the most striking difference consists in the form of the coronoid process. The anterior margin of this process is less oblique than in the last-mentioned animal; its apex is somewhat pointed, whereas in the Common Badger it is rounded: the posterior margin is formed of two lines, an upper one, running backwards and downwards from the apex of the coronoid process, and a lower one, which is perpendicular, and forms an obtuse angle with the first. In this form of the coronoid

process we perceive a similarity between the American Badger and the Otter.

Dentition.—" In the number of the teeth the present animal agrees with the Common Badger, excepting that in the skulls now before me, and which belong to animals of different ages, I do not find the molar corresponding to the small first false molar of the lower jaw of that animal. In the relative size and form of the teeth there is much difference. The incisors of the upper jaw are arranged in an arch, but form together a segment of a larger circle than those of *Meles vulgaris*; they are proportionately smaller and shorter. In the canines there is but little difference; the posterior cutting edge observed in the Badger is here almost obliterated. The false molars likewise scarcely differ. In the '*carnassière*' and true molar, however, there is much difference, the former being of great size and equal to the last molar. It is nearly in the form of a right-angled triangle, the cutting edge is much raised, and there is a large tubercle on the inner lobe of this tooth, which has no analogue in the Badger. The true molar is also nearly triangular; the tubercles with which it is furnished are but slightly raised, and are much less developed than in the corresponding grinding molar of the Badger. The principal differences observable in the teeth of the lower jaw, consist in the smaller size of the incisors, the larger size of the last false molar, and its being furnished with two distinct tubercles at its apex; that of the Common Badger being simply pointed: the smaller size of the '*carnassière*,' which is not distinctly dilated posteriorly, as in the Badger, and the cutting edge being higher; the true molar is smaller.

" The '*carnassière*' of the lower jaw may be divided into two portions, that which is opposed to the '*carnassière*' of the upper jaw, and which is the cutting portion, having high sharp cusps; and that which is opposed to the true molar, which is the grinding portion. Now in the Common Badger (*Meles vulgaris*) the latter portion decidedly exceeds the former in bulk, whereas in the American Badger the reverse is the case, arising from the comparatively large size of the '*carnassière*' of the upper jaw, and smaller size of the true molar."

Mr. Waterhouse also pointed out other distinctions between the American Badger and the European species. Independent of the differences observable in the colouring and markings, the former may be distinguished by its muzzle being hairy at the tip, the fore limbs stouter, and the claws larger and stronger.

The peculiar form of the skull in the present animal, and the modifications in the dentition are such, as, in Mr. Waterhouse's opinion, would indicate a subgeneric rather than a specific distinction; and should his views be borne out by the discovery of other species agreeing essentially with the above animal, he suggested that the name *Taxidea* might be an appropriate title for the group.

Professor Owen exhibited to the Meeting two skulls of the full-grown Koala (*Lipurus cinereus*, Goldf., *Phascolarctos*, Bl.), and two of immature specimens of the same species, and demonstrated the

peculiarities of the *cranium*, and especially the condition of the *dental* system.

In both the adult *crania* the *dental formula* was as follows:

$$Incis.\ \frac{3-3}{1-1},\ canin.\ \frac{1-1}{0-0},\ præmol.\ \frac{1-1}{1-1},\ mol.\ \frac{4-4}{4-4} = 30:$$

it thus corresponds numerically with the formula of the genus *Hypsiprymnus*, and differs only in the absence of a few minute, inconstant, and functionless teeth from the dentition of many of the *Petaurists* and *Phalangers*. The true *molares* in the *Koala* are, however, relatively larger and stronger than in the *Potoroos* and *Phalangers*, yet present the same general structure; each molar is beset with four three-sided pyramids, the sharp apices of which soon become blunted by trituration, and the outer series in the upper grinders are the first to be worn down; the posterior grinder is a little smaller than the rest in the upper jaw; the true *molares* of the lower jaw are equal amongst themselves, but narrower than those of the upper jaw. The crowns of the *præmolares*, or false grinders, are subtriangular, broadest behind, compressed, and terminate in a cutting edge; those of the upper jaw have a ridge extended along the inner side of their base; they do not exceed in antero-posterior extent the crowns of the true grinders. The true *molares* of the upper jaw have four fangs; those of the lower jaw, and the *præmolares* in both jaws, have two fangs. The *canines* are situated close to the *maxillo-incisive* suture, distant from the *præmolares* half an inch; they are very small, and do not extend beyond the alveolar margin further than two lines; they terminate in an oblique cutting edge, and their simple fang is closed at its extremity. Two lines anterior to the *canines* begin the series of *incisors*, of which the four posterior ones are of the same size as the *canines*; the pair immediately behind the large anterior *incisors* have their crowns worn flat by the appulse of the two large *incisors* below. The two anterior *incisors*, upper jaw, are twice as long, and as broad and thick as the posterior ones; their crown is conical, slightly curved, subcompressed, beveled off obliquely to an anterior cutting edge, and having a partial coating of enamel, but differing from true *dentes scalprarii* in having the extremity of the fang contracted and closed. The two *incisors* of the lower jaw are longer, straighter, and more compressed than the corresponding pair above; the enamel is confined to the anterior and lateral surfaces of the crown; but this, though beveled off from behind forwards, terminates in a blunt apex by attrition against the small middle *incisors* of the upper jaw; the posterior surface of the crown is impressed with a narrow longitudinal groove. These *incisors*, like those above, are developed by a temporary pulp, and have the fang contracted and solidified. In this respect the *Koala* resembles the *Phalangers*, and differs from the *Potoroos*, which have the fang of the large anterior *incisors* open for the reception of a persistent pulp. In the compressed and sectorial structure of the *præmolares* of the *Koala*, we perceive, however, an evident transition to the characteristic form of these teeth in *Hypsiprymnus*; but in this genus the *præmolares* are still more compressed, and are remark-

able for their antero-posterior extent, which dimension becomes excessive in the arboreal *Potoroos* of New Guinea.

So far, therefore, as the affinities of a Marsupial quadruped are indicated by its teeth, the position assigned to the *Koala* by Latreille*, viz. next to the *Phalangers*, must be regarded as more natural than that which it occupies in the 'Règne Animal' of Cuvier, viz. between the *Kangaroos* and *Wombat*. From the *Kangaroos* the *Koala* differs in the presence of *canines* in the upper jaw; and still more so from the *Wombat*, which has neither *canines* nor posterior *incisors*; whereas the *Koala* not only closely resembles the *Phalangers* and *Petaurists* in the correspondence as to number, kind, and conformation of its teeth, as compared with the functionally developed teeth of those genera, but also agrees with them in the conformation of its digestive organs, having a simple stomach, and a very long cæcum. In the *Wombat*, on the contrary, the cæcum is short and wide, and has a vermiform appendage. Both the *Potoroos* and *Kangaroos* differ from the *Koala* and *Phalangers* in their large sacculated stomach and relatively shorter cæcum; but the *Potoroos*, in the comparative simplicity of this organ, as well as in the presence of superior canine teeth, have clearly the nearer affinity to the *Koala*. Since, moreover, the *Petaurists* have canines in both jaws like the *Phalangers*, while the *Koala* possesses them only in the upper jaw, the place of the *Petaurists* should be between the *Phalangers* and *Koala*, and not, as in Latreille's system, between the *Kangaroos* and *Potoroos*; and Professor Owen proposed to include the *Koala* with the *Phalangers* and *Petaurists* in one subdivision, and to join the *Potoroos* with the *Kangaroos* to form another and distinct primary group of Marsupialia.

* Familles Nat. du Règne Anim. p. 53.

November 27, 1838.

Lieut.-Colonel W. H. Sykes in the Chair.

Dr. Horsfield laid before the Meeting a series of Mammalia and Birds collected in India by John M^c^Clelland, Esq., Assistant Surgeon E.I.C.S., and proceeded to point out the characters of some which were undescribed.

A paper on the Fishes of the Deccan, illustrated with numerous coloured drawings, was read by Colonel Sykes.

"In submitting to the Society an account of the fishes of Dukhun," observes Colonel Sykes, "it will scarcely excite surprise, that out of 46 species described no less than 42 are new to science, since they are from a hitherto untrodden field, and from peculiar localities, on the great plateau of the Dukhun (Deccan), none of them coming from a less elevation than 1500 feet above the sea; many from near 2000 feet, and others from yet higher situations. The chief features in the collection are the paucity of orders to which the collection belongs, and the remarkable prevalence of the members of the families of *Siluridæ* and *Cyprinidæ*. There is but one apodal *Malacopterygian*, but 4 *Acanthopterygii*, and the whole of the rest of the fish belong to the order Abdominal Malacopterygians. Of the families there are only eight: *Percidæ*, *Scombridæ*, '*Pharyngiens Labyrinthiformes*,' *Gobiadæ*, *Siluridæ*, *Cyprinidæ*, *Esocidæ*, and *Murænidæ*, comprising 15 genera and 9 subgenera, including one subgenus, which I have been compelled to add to the *Cyprinidæ*. An attempt has been made to methodize and distinguish the multitudinous members of the families of *Siluridæ* and *Cyprinidæ*. The fact is, the continued inosculation in the character of the teeth, of the *cirri*, of the spines (serrated or not) of the fins, the armature of the head, and the position of the fins in the *Siluridæ*; and the number of *cirri*, and form and position of the fins in the *Cyprinidæ*, together with the character of the mouth, produce such approximations in species to each other, and in individuals of one genus to another, that not only is there infinite difficulty in determining the genera of the fishes of these families, but their identity as species is occasionally not less difficult. Some of my *Siluridæ* do not exactly correspond with the generic characters of the genera of this family as now constituted, and I might have added to the number of genera; but to this I have an objection, unless as an evidently necessary measure. In the *Cyprinidæ*, however, I was obliged to set aside my repugnance, for three species were not referrible to any one even, of the numerous subgenera which Buchanan Hamilton wished to establish. It only remains to state that the whole of my fishes were drawn from absolute measurement, and have a scale of size attached to each figure; they were caught in the various rivers on whose banks I encamped, as individuals were required; so that my draftsman, who worked constantly under my own eye, never had to finish his drawings from shriveled and

discoloured specimens. I have to a great extent adopted the names by which the fishes are called by the Mahrattas as specific names, so that naturalists who travel the country can always obtain them.

Ord. Acanthopterygii.

Fam. Percidæ.

Ambassis, Agass.

Amb. Barlovi, Sykes. An *Ambassis* with the two back fins united, with the first ray indented on the edge, and containing 7 spines, and the second 14 spines; all the spines longer than the membrane, with 18 rays longer than the membrane in the anal fin, and with a short vertically compressed diaphanous body.

Closely allied to *Changa Ranga* of Hamilton. 'Fishes of the Ganges.' This fish is dedicated to our Secretary.

Fam. Scombridæ.

Mastacembelus, Gron.

Mast. armatus, Sykes. A *Mastacembelus* with the fins of the tail, back, and vent united, with thirty-nine to forty short sharp bony spines along the back, and two behind the vent.

This fish has not the exact generic characters of *Macrognathus*, *Mastacembelus*, or *Notacanthus*, and might probably constitute a genus between the two last.

Fam. 'Pharyngiens Labyrinthiformes,' Cuv.

Ophicephalus, Bloch.

Oph. leucopunctatus, Sykes. An *Ophicephalus* with from 51 to 53 rays in the dorsal, and 6 in each ventral fin, and with the rays of the dorsal and anal fins undivided; the pectoral fins ending in a central point, and the fish covered with white dots.

I have never known this remarkably fine fish crawl on shore or in the grass, as some species of the genus are said to do. It is excellent eating.

Fam. Gobiadæ.

Gobius, Linn.

Gob. Kurpah, Sykes. A *Gobius* with 7 rays in the first dorsal fin, 11 in the second, which is of similar size with the anal fin; 19 in the pectoral, and 10 in the anal fin.

In different individuals of this species I have found the number of rays in the fins slightly differ. Of a sweet flavour.

Ord. Malacopterygii Abdominales.

Fam. Cyprinidæ.

Cyprinus, Linn.

Cyp. Abramioides, Sykes. A *Cyprinus* with 20 rays in the dorsal, 8 in the anal, and 18 in the pectoral fins, without tendrils, with tuberculated nose, red edged fins, and with a red lunule on each scale.

This very fine fish is called Tambra by the natives, from the

general prevalence of a copper colour over it. Attains the length of 21 inches and more; height 7 inches. Is excellent eating.

Cyp. Potail, Sykes.

A *Cyprinus* proper, deep and fleshy, slightly compressed, without tendrils, with the dorsal fin of 13 rays, pectoral of 14, and anal of 9. Scales large and silvery; length 10 or more inches; height $3\frac{1}{4}$ inches.

Cyp. Nukta, Sykes.

A *Cyprinus* with two tendrils on the under jaw, and with two short horns or bosses on the space between the eyes, which together with the deflected upper lip are tuberculated; large scales.

In the judgement of my friend Mr. Yarrell, to which I subscribe, this very singular fish is considered a monstrosity of *Cyp. auratus*. Dr. Rüppell, who did me the favour to look over my drawings, expresses the same opinion. Found very abundantly in the Inderanee river 18 miles north of Poona. It is called Nukta (or nob) by the Mahratta fishermen.

Varicorhinus, Rüppell.

Var. Bobree, Sykes. A *Varicorhinus* with tuberculated nose, without tendrils; with 17 rays in the dorsal, and 8 in the anal fin; with the form of a tench.

It may be a question whether this is not a real Labeo of Cuvier, with long dorsal, no spines or cirri, and thick fleshy lips frequently crenated; size 6 inches by $1\frac{6}{10}$ high.

Barbus, Cuv.

Barb. Mussullah, Sykes. A *Barbus* with 12 rays in the dorsal, 8 in the anal, and 16 in the pectoral fins, with the mouth furnished with 4 very short *cirri*, and tuberculated nose; sometimes 3 feet and more long, and a foot high, and weighing 42 pounds.

Found in the Goreh river.

Barb. Khudree, Sykes. A *Barbus* with 4 *cirri*, blood-stained fins, large hexagonal scales, elongated body, and with 14 rays in the dorsal, 14 in the pectoral, and 7 in the anal fins.

Found in the Mota Mola river, 8 miles east of Poona.

Barb. Kolus, Sykes. A *Barbus* with 13 rays in the dorsal fin, 8 in the anal, and 10 in the ventral; with moderate-sized scales; with callous tubercles on the head, and a short *cirrus* at each corner of the mouth.

This fish shows the difficulty of drawing up generic characters to embrace all the species of a genus. Having only 2 *cirri*, it should not be a Barbel; but having *cirri* at all, it does not belong to the next genus *Gobio*;—moreover, it has a spine in the dorsal.

Chondrostoma, Agassiz, the first division of the genus *Leuciscus* of Klein. Dorsal fin in the centre of the back.

Chond. Kawrus, Sykes. A *Chondrostoma*, without lateral line, tubercles, or *cirri*, with 12 rays in the dorsal, 8 in the anal, and 16 in the pectoral fins.

A sub-cylindrical fish found in the Beema river; grows to a foot in length, but is usually smaller. Proportion of length to height in one specimen, 6 inches by $1\frac{4}{10}$ inch.

Chond. Fulungee, Sykes. A *Chondrostoma*, with dorsal fin of 10 rays, anal 6, and pectoral of 10; of an elongated, not much compressed shape. Length about a foot; height 4 inches.

Chond. Boggut, Sykes. A *Chondrostoma*, without tendrils or tubercles on the nose, with 12 rays in the dorsal, 15 in the pectoral, and 8 in the anal fin; body of an elongated form. Length from 7 to 11 inches; height $1\frac{1}{4}$ to 2 inches.

Chond. Mullya, Sykes. A *Chondrostoma*, with a short, obtuse head, without tubercles or tendrils; sub-cylindrical body, with 11 rays in the dorsal, 14 to 16 in the pectoral, and 8 in the anal fins; a red process or protuberance on the snout between the nostrils. Length 5 to 6 inches; $1\frac{1}{4}$ to 2 in diameter.

Chond. Wattanah, Sykes. A *Chondrostoma* of an elongated form, without tubercles or tendrils, with the dorsal fin high, and having 11 rays: and 9 or 10 in the ventral, and 8 in the anal fin; subcylindrical form. Length $4\frac{1}{4}$ inches, height $\frac{3}{4}$ of an inch.

Found in the Beema river.

Chela, Buchanan Hamilton. A sub-genus of *Leuciscus*, with the dorsal fin very far behind over the anal; straight back, and nose on the level of the line of the back.

Chel. Balookee, Sykes. A *Chela* of the size of a minnow; back straight; body elongated; dorsal fin situated far back, and having 8 rays, 14 rays in the anal, and 12 in the pectoral fins. Length 3 inches.

Very sweet eating, the bones as well as other parts. Common in all the rivers.

Chel. Oweni, Sykes. A *Chela*, with straight back, elongated and vertically compressed body; dorsal fin situated far back, with 11 rays, 12 in the pectoral, and 19 in the anal fins, with scales so minute as to be scarcely discoverable. Length 5 inches; greatest size 7 inches.

Found in most of the rivers. The *Cyprinus Cultratus* of Bloch would appear to be the type of the sub-genus.

I have dedicated this fish to my friend Mr. Owen, the distinguished naturalist.

Chel. Jorah, Sykes. A *Chela*, with straight back, convex belly, dorsal fin far behind; size of a large minnow; with 10 rays

in the dorsal, 12 in the pectoral, and 8 rays in the anal fin. Length about 4 inches, height $\frac{8}{10}$ths of an inch.

Excellent eating. Found abundantly in the Beema river near Pairgaon.

Chel. Teekanee, Sykes. A small *Chela*, with nearly straight back; snout on the continuation of the line of the back; belly arched; with 10 rays in the dorsal, 12 in the pectoral, and 14 in the anal fins. Length $2\frac{1}{4}$ inches, height $\frac{3}{4}$ inch.

Found in the Beema.

Chel. Alkootee, Sykes. An elongated, silver-white, slightly compressed, minute *Chela*, with the dorsal fin of about 8 rays, very far back; ventral of about 7, and anal of about 10 rays, with burnished silver gill covers and black orbits; rarely more than an inch long, and not much thicker than a good-sized crow quill.

This very beautiful fish has a sweet flavour.

Leuciscus, Klein. First division. The dorsal situated a little behind the centre of the back, above the space between the ventral and anal fins.

Leuc. Morar, Cyprinus Morar, Buchanan Hamilton. A *Leuciscus* allied to *Chela*, but with the dorsal fin a little behind the centre of the back, with 8 rays in each ventral fin, 12 in the anal, and 10 in the dorsal, and with the edge of the belly smooth. Length $4\frac{3}{4}$ inches; height $\frac{1}{10}$.

Differs slightly from Buchanan Hamilton's *L. Morar*.

Leuc. Sandkhol, Sykes. A *Leuciscus*, with nearly cylindrical body; dorsal fin of 12 rays, pectoral of 14, and ventral of 10 rays; gibbous head; 8 to 10 inches long by $1\frac{1}{2}$ to 2 inches high; eyes with whitish narrow irides. The dorsal in this fish is situated a little *before* the centre of the back.

Found in the Goreh river at Kullumb.

Leuc. Chitul, Sykes. A *Leuciscus*, with 14 rays in the dorsal, 14 in the pectoral, and 8 in the anal fins; of a reddish grey colour, and rounded head. Sub-cylindrical. Length about 5 inches, height $1\frac{1}{2}$ inch.

Found in the Inderanee river near Chakun.

It being found impracticable to arrange, in any of the sub-genera described, the following fishes of the Carp family, it is proposed to place them in a new sub-genus, which I will call by the native Mahratta name of Rohtee.

ROHTEE, nov. genus.

Carps with a lozenge-shaped body, rather long dorsal and anal fins, the former seated on the angle of the back, with the first complete ray serrated posteriorly; scales minute.

Rohtee Ogilbii, Sykes. A *Rohtee*, with 12 rays in the dorsal, 9 in the ventral, and 17 in the anal fins; the body very compressed, and very high, with the back sloping to each

end from the centre; head sharpish; pectoral fins, narrow acuminated. First complete dorsal ray, a strong bone, serrated behind. Length, 4½ inches, height 1½ inch. A bony fish.

Found in the Beema river near Pairgaon. This fish is dedicated to my friend Mr. Ogilby, a distinguished member of the Society.

Roht. Vigorsii, Sykes. A *Rohtee*, with armed dorsal fin of 11 rays, ventral of 10, and anal of 28 rays; compressed body; high in the middle, and sloping to each end; head slightly recurved; eyes very large. Length, 6 inches; height, $1\frac{3}{10}$ inches; greatest length, 8 inches.

Found abundantly in the Beema river at Pairgaon. I have dedicated this fish to my friend Mr. Vigors.

Roht. Pangut, Sykes. A *Rohtee*, compressed, deep, angular-backed, with 12 rays in the dorsal, 14 or 15 in the pectoral, and 8 in the anal fins, and with the first 3 or 4 rays of the dorsal fin black at their tips; scales larger than in the preceding species. Length, 5 inches; height, 1¼ inch.

Found in the Baum and Beema rivers.

Roht. Ticto; *Cyprinus Ticto* of Buchanan Hamilton. A *Rohtee*, 1½ inch long, with 4 to 6 black spots on the body; the 2nd ray of the dorsal toothed behind with sharp incurved teeth; with 10 rays in the dorsal, 8 in the anal, and 8 in the ventral fins; pectoral fins narrow, acuminate.

Found in the Mota Mola at Poona. This fish differs slightly from Dr. Buchanan Hamilton's *Cyprinus Ticto*.

Cobitis, Lin.

Cob. Rupelli, Sykes. A nearly cylindrical scaleless *Cobitis*, not much thicker than a large goose-quill; from 2 to 3 inches long, with 6 *cirri*; the lateral line marked with short brown bars, and the rays of the dorsal and anal fins similarly barred; dorsal fin of 13 rays, pectoral of 12, and ventral of 8 rays.

This fish is much esteemed for food. Found in the Beema river at Taimbournee and Mota Mola near Poona. I have dedicated this beautiful little fish to Rüppell, who did me the favour to look over my drawings, and at the same time gave me his opinion respecting the genera of the fishes.

Cob. Mooreh, Sykes. Differs from the preceding only in being of a smaller size, in having 12 rays in the dorsal, and 7 in the anal fin; the head is more obtusely pointed, and there are more dark blotches on it; the bars on the lateral line are differently arranged.

Cob. Maya, Sykes. Differs from the first species in having a spine under each eye, and in having a blunter head; 9 rays in the dorsal, 7 in the ventral fins.

Fam. *Esocidæ.*

Belone, Cuv.

Bel. Graii, Sykes. A *Belone* with the fin of the tail rounded and emarginate, with both jaws elongated into a quadrangular beak; with very minute scales; dorsal of 16 rays and anal of 16 rays: closely allied to the *Esox Cancila* of Buchanan Hamilton.

I have dedicated this fish to a gentleman well known for his contributions in natural history.

Fam. *Siluridæ.*

Schilbe, Cuv.

Sch. Pabo; *Silurus Pabo*, Buchanan Hamilton. A *Schilbe*, with the tail divided into 2 unequal lobes, both pointing downwards; with 4 *cirri*, 2 shorter than the head, and with from 68 to 70 rays in the anal fin. Length from 12 to 15 inches, height 2½ to 3 inches.

Found in most of the rivers. Differs slightly from Buchanan Hamilton's *Silurus Pabo*. No second dorsal.

Sch. Boalis, *Silurus Boalis*, Buchanan Hamilton. A *Schilbe*, with the fin of the tail divided into 2 unequal lobes; with 4 *cirri*, of which 2 extend to the middle of the fish; all the fins unarmed; dorsal of 5 rays, pectoral of 15; ventral fins very small, of 9 rays; anal fin of 84 rays. Attains the length of 3 feet, and the weight of 8 lbs.

Found in the Mota Mola at Poona. Differs slightly from the *Silurus Boalis* of Buchanan Hamilton. No second dorsal.

Hypophthalmus, Spix.

Hyp. Goongwaree, Sykes. An *Hypophthalmus*, with 8 *cirri*, all longer than the head, but not extending to the middle of the fish; with 7 rays in the dorsal, and 52 in the anal fin, with an extremely minute second dorsal; first ray in the pectoral, and first in the dorsal, spinose and serrated behind. Greatest length, 28 inches: body vertically compressed.

Found in the Mota Mola near Poona.

Hyp. Taakree, Sykes. An *Hypophthalmus*, with 8 *cirri*, 2 of which reach to the ventral fins, 2 very minute near the nostrils, and 4 on the chin, nearly as long as the head; with the first dorsal and pectoral rays serrated on the posterior edge, with 8 rays in the dorsal and 50 in the anal fin. Length, 9 inches; height, 2 inches.

Bagrus, Cuvier.

Bagr. Yarrelli, Sykes. A *Bagrus*, with the first rays of the pectoral and dorsal fins terminating in long fleshy tendrils and serrated behind; with 8 *cirri*, two of which are as long as the head, thick, fleshy, and being lateral elongations of the upper lip; other *cirri* very short; head broad, covered with a granulated bony plate; the fish olive brown, marked

with black blotches like a Dalmatian dog; 2nd dorsal fleshy, triangular. Length, 18 inches, but attains to a very great size; body not vertically compressed.

Found in the Mota Mola at Poona.

Bagr. Lonah, Sykes. A *Bagrus*, with 8 small *cirri*; flat, granulated head; first dorsal fin of 7 rays, and pectoral of 10 rays, the first ray of which is furnished on the posterior edge with long sharp teeth; anal fin of 10 rays; 2nd dorsal of a triangular form and fleshy: something resembling the preceding in colour.

Platystoma, Agassiz.

Plat. Seenghala, Sykes. A *Platystoma*, with the tail fin crescent-shaped, lobes unequal; with 8 *cirri*, two of which only are longer than the head, reaching to two-thirds of the length of the fish; the first ray of the pectoral and ventral fins serrated behind; head long, flat, spatulate, covered with a granulated bony plate. Dorsal fin of 8 rays; high, ventral fins, very far back, of 6 rays. Grows to a great size; flesh heating and soft.

Phractocephalus, Agassiz. *Pirarara* of Spix.

Phract. Kuturnee, Sykes. A *Phractocephalus*, with 6 *cirri*, 2 of which only are longer than the head; the first pectoral spine serrated on both edges; the 1st dorsal spine on the posterior edge only; these two spines terminating in a filament: the shoulder-bone elongated into a point behind. Greatest length, 6 inches; dorsal fin of 7 rays; pectoral of 9 rays; ventral fin small, of 7 rays; second dorsal replaced by a small adipose fin.

Phract. Itchkeea, Sykes. A *Phractocephalus*, with 8 *cirri*, 2 of which from the upper lip, extend to the end of the pectoral fins; the other 2 very minute, with the 4 on the chin nearly as long as the head; with the 1st ray in the pectoral fins only serrated; with 8 rays in the dorsal, and 12 in the anal fins; with a sharp prolongation of the scapula. Fish handsomely marked on the back with dark colours. Length, 2 inches.

This fish presents some slight deviations from the generic characters.

Phract. Gogra, Sykes. A *Phractocephalus*, with 4 shortish *cirri*; the plates of the shoulder elongated into acute, angular, broad spines, with a dorsal fin of 8 rays; first ray a bone serrated behind; pectoral fins of 10 rays, the first ray a broad compressed bone serrated on both edges; head flat and broad; second dorsal small, fleshy. Size 6 inches, but grows larger.

Pimelodus, La Cepede.

Pimelodus Seengtee, Sykes. A *Pimelodus*, with the caudal fin divided into 2 unequal sharpish lobes, and having 8 *cirri*, 2

of which reach to the tail fin, and 4 to the end of the head, and 2 are shorter than the head; the dorsal fin high and without spine, of 9 rays; 12 rays in the anal fin; the second dorsal adipose, and extending from the termination of the first dorsal to near the tail. Length of fish, 6 inches.

Ageneiosus, La Cepede.

Ageneiosus Childreni, Sykes. An *Ageneiosus*, without *cirri*, with the first ray of the dorsal and pectoral fins serrated on the *anterior* edge only; with 8 rays in the dorsal, and 42 in the anal fin; with two sharp lobes to the tail, the upper being somewhat the smallest. Length of fish, 18 inches; height, $4\frac{1}{2}$ inches, but grows to a larger size. Second dorsal adipose, minute.

Fam. *Clupeidæ*.

Mystus, Buchanan Hamilton; *Notopterus*, La Cepede.

Mystus Badgee, Sykes. A *Mystus*, with not less than 105 rays in the anal fin, 7 or 8 in the dorsal, and in the pectoral from 13 to 16, all unarmed; without apparent ventral fins, and with a single small dorsal; the anal and caudal fins uniting, and terminating in a point at the end of the body; posterior edge of the last gill plate crenated; scales minute. This remarkable fish belongs to the genus *Mystus* of Buchanan Hamilton, but not to the genus *Mystus* of Cuvier. Fish vertically compressed. Length, 11 inches; height, 3 inches.

Ord. Apodes.

Fam. *Murænidæ*.

Anguilla, Cuv.

Ang. Elphinstonei, Sykes. An *Anguilla*, with the lower jaw the longest; with the back, tail, and anal fins united, and with a broadish, flat head; body dark green, blotched with black; with 2 short tubular processes, one on each side of the upper jaw. Attains the length of 3 feet, and diameter of 3 inches.

I have dedicated this fine fish to the Honourable Mountstewart Elphinstone.

In concluding my characters of the fishes of Dukhun (Deccan), I may be allowed to state, that I have found the number of *cirri*, whether in the *Siluridæ* or *Cyprinidæ*, insufficient as a *generic* character; different species of the same genus varying in the number of their *cirri*."

December 11, 1838.

Dr. Bostock in the Chair.

An extensive collection of Fossil Tertiary Shells, from Italy, was laid on the table, and a letter was read from Dr. Michellotti of Turin, begging the Society's acceptance of them.

A Wasp's Nest, of very large size, was also exhibited to the Members present. This nest was sent from Ceylon by the Governor of that island, and was accompanied by the following letter from Lieut. W. Williams, R.A.

Colombo, 27th May, 1838.

"The specimen of the Social Wasp's nest, now on board the barque 'Morning Star,' was found by me in a talipot tree near Colombo in Ceylon: its apex was secured at the junction of two of the smallest leaves of this magnificent tree, and the bottom of the nest was about seventy feet from the ground, at which elevation the leaves began to shoot.

"It had been abandoned by the wasps, and its exterior walls were much injured by the monsoon rains and storms, which left the terraces unprotected and unsupported, except by their interior pillars: and the natives were in consequence unable to lower it from such a height without destroying some of the lower terraces.

"I shall not attempt to enter further on this subject, a structure so well known to naturalists. The appearance of the nest, as it hung upwards of seventy feet from the ground, the shaft to it perfectly bare; and the larger leaves (used by the natives as umbrellas and tents) waving over it, presented a very singular appearance: and I hope its remains may reach England in a state of preservation sufficient to satisfy the inspection of the curious.

"W. Williams, Lieut. R. Artillery."

A letter was read from Dr. Philip Poey, Corr. Memb. Z.S. dated Havanna, September 28, 1838, accompanying two specimens of *Capromys Fournieri*, which he begged to present to the Society for the Menagerie.

The reading of Mr. M'Clelland's list of new additions to the Fauna of India was resumed by Dr. Horsfield, and some drawings of the new species were exhibited.

INDEX.

The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of Species respecting which Anatomical Observations are made, in CAPITALS.

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PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY

OF LONDON.

PART VII.

1839.

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LIST

OF

CONTRIBUTORS,

With References to the several Articles contributed by each.

CORRIGENDA.

P. 99. Line 3 of description of *Labrus laticlavius*, *for* inque pinnâ productis, *read* inque pinnâ caudæ productis.

P. 108. In the dimensions of *Phlœomys Cumingi*, *for* Longitudo cranii ossei, 2″ 4‴ *read* Longitudo cranii ossei, 3″ 4‴.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 8th, 1839.

Professor Owen in the Chair.

Dr. Harlan read a paper entitled, "Description of a new species of *Meriones* inhabiting the United States of North America."

"A male and female specimen of the species which it is now proposed to add to the Fauna of the United States, were taken some time during 1836, on the farm of Mr. Beck, in Philadelphia County, a few miles north-east of the city. The female at the moment of her capture carried several young, which adhered to the teats firmly, notwithstanding the violent efforts and leaps of the parent.

"In the descriptive details which follow, the usual allowance must be made when such are drawn from impaled skins."

MERIONES MICROCEPHALUS. *Mer. supernè nigro flavoque mixtis, flavo apud latera prævalente ornatus; corpore subtùs albescente, flavido lavato; auribus mediocribus, pilis flavis et nigris intermixtis, intùs atque extùs instructis.*

"Male. Length of the body, three inches; of the tail, four inches; total length of the hind leg, one inch four-eighths; of the thigh, three-eighths; of the leg, five eighths; of the foot, four-eighths. Five toes behind; four before; with a rudimentary nailed thumb; all the toes sparsely hairy, and terminating in strong, sharp claws.

"Colour above, plumbeous, interspersed with reddish fawn; below, white, similarly interspersed in a less degree, a lateral longitudinal band of reddish fawn colour separating the sides from the abdomen; tail, sparsely hairy, dark coloured above, white beneath, with a pencil of hairs at the extremity; this member being proportionably longer, and the head much smaller and more elongated than in *G. Canadensis*. The last-named species has been figured by the late Professor B. T. Barton, in the Transactions of the American Philosophical Society, also in the Encyclopédie Méthodique, but was for the first time adequately described from living specimens in the 'Fauna Americana,' p. 156, when specimens were deposited in the cabinet of the Academy of Natural Science of Philadelphia.

"The subjects of the present memoir were placed in my hands for description by Mr. Chaloner, a Member of the Academy. The female is larger than the male, and of purer white beneath."

The specimens of *Gerbillus microcephalus* above referred to, were presented by Dr. Harlan to the Society; and also a species of *Spermophilus*, which Dr. Harlan exhibited to the Meeting. The last-mentioned animal very closely resembles the *S. Franklinii*; but being of a much smaller size, Dr. Harlan was anxious that it should be submitted to examination, and should be carefully compared with that animal upon some future occasion.

Several specimens of the Bean Goose (*Anser segetum*), the Gray-Lag Goose (*Anser cinereus*), the White-fronted Goose, (*Anser albifrons*), and of another species allied to these, were exhibited by Mr. A. D. Bartlett, in order to illustrate a paper which he communicated to the Meeting, "On a new British species of the genus *Anser*, with remarks on the nearly-allied species."

"It may be necessary, before describing the new species," says Mr. Bartlett, "to notice the three birds most nearly allied, in order more clearly to point out the distinctions existing between them; I do this in consequence of the imperfect descriptions given by authors, from which it is almost impossible to distinguish the species. I shall commence with that which is the most common.

"*Anser segetum*, Meyer. Bean Goose. Entire length, 33 inches; extent, 64; from the carpal joint to the end of wing, 19 inches. The head and neck are brown, tinged with grey: back and scapulars, darker brown, slightly tinged with grey, each feather being margined with greyish white; primaries, dark brown, tinged with grey; shoulders of wings and secondary quill-feathers, greyish brown; rump, blackish brown; upper tail-coverts, white; tail, dark brown, deeply edged with greyish white; breast and belly, dirty white; abdomen and under tail-coverts, pure white; bill, $2\frac{1}{4}$ inches long, rather slender, flattened and narrow towards the tip; the base, sides and nail, black; immediately above the nail commences a yellowish orange mark, extending a little beyond the anterior margin of the nostrils in front, and passing under and beyond the termination of them at the sides, but seldom reaching the corner of the mouth, except in very old individuals, in which this mark extends under and behind the nostrils, crosses the base of the bill next the forehead, leaving only the central part of the bill (between the nostrils) and the nail black; which latter part is sometimes, though rarely, white; legs and feet, reddish orange; wings, when closed, reaching 2 inches beyond the tail. The young of this species are darker, and the markings less distinct; the bill is shorter, the mark upon it narrower, and of a deep red colour; the legs and feet, pale orange.

"*Anser cinereus*, Meyer. Grey Lag Goose. Entire length, 35 inches; extent, 64; from the carpal joint to end of wing, $17\frac{1}{2}$ inches. The plumage more cinereous than in the last-described species; the shoulders and rump, light grey; breast and belly, white, sometimes spotted with black; the bill, $2\frac{1}{2}$ inches long; more robust, deeper, broader, and the laminæ much more developed than in the Bean Goose, and of a dull yellow, inclining to flesh colour towards the nail, which is white; in summer the bill assumes a redder tint; legs

and feet, pale flesh colour; wings, when closed, even with the end of the tail. The young of this species are darker than the adults, but the grey upon the shoulders and rump, the form of the bill, and colour of the legs and feet, will always distinguish them from the young of any of the other species.

"*Anser albifrons*, Bechstein. White-fronted Goose. Entire length, 26 inches; extent, 52; from the carpal joint to end of wing, $16\frac{1}{2}$ inches. The adult of this species may be distinguished from others of the genus by the conspicuous white mark upon the forehead and sides of the bill, and the irregular patches of black and white upon the breast and belly; the bill, $1\frac{3}{4}$ of an inch long, of a reddish flesh colour; the nail, white; legs and feet, bright orange; wings, when closed, reaching $1\frac{1}{2}$ inch beyond the tail. The young of this species are much darker than the adult; the forehead and sides of the bill, nearly black; the breast and belly, dirty white, spotted with brown; bill, brown, inclining to flesh colour; nail, dark brown; legs and feet, pale orange.

"*Anser phœnicopus*, Bartlett. Pink-footed Goose. Entire length, 28 inches; extent, 60; from carpal joint to end of wing, $17\frac{1}{2}$ inches. Top of the head and back of the neck, dark brown; sides of the face, forepart of the neck, and upper part of the breast, light brown; back and scapulars, dark brown, tinged with grey; each feather deeply margined with greyish white; shoulders of wings and rump, greyish ash; primaries, brown, tinged with grey; tail, brownish ash, deeply edged with white; lower part of belly, upper and under tail-coverts, pure white; legs and feet, of a reddish flesh colour or pink; the hind toe closely united by the membrane that runs along the edge of the inner toe; the feet, remarkably thick and fleshy; bill, $1\frac{5}{16}$ of an inch, long, narrow, and much contracted towards the tip; the base, sides and nail, black; the space between the nail and the nostrils, reddish flesh colour or pink; wings, when closed, reaching $1\frac{1}{2}$ inch beyond the tail.

"Having thus noticed the three nearly-allied species, and described the new one, I will endeavour to point out more particularly the distinctions between this new species and the Bean Goose, to which it bears the nearest resemblance. First, the great difference in the size; the average size of the Bean Goose is 33 inches in length, and 64 inches in extent; while the average size of the new species is 28 inches in length, and 60 inches in extent. Secondly, the bill is much smaller, shorter, more contracted towards the tip, and of a different colour. Thirdly, the difference in colour and in form of the legs and feet, and in the fleshy character of the foot, and the hind toe being more closely united by its membrane, has consequently, less freedom of motion. Fourthly, the plumage on the rump and shoulders being more inclined to grey. And lastly, in the form of the sternum, which differs from that of the Bean Goose in shape and bears a more close resemblance to that of the White-fronted Goose. In conclusion, I may remark that I have examined, in all, twelve specimens of this new species, four of which were alive; one of them is now living in the garden of the Zoological Society, where

it has been, I am told, eight years, without exhibiting any perceptible alteration in its plumage, or in the colour of its legs and feet.

"The Grey Lag Goose is by far the most rare of the four species here referred to."

Professor Owen commenced the reading of a paper, "On the Classification and Affinities of the Marsupial Animals."

January 22, 1839.

The Rev. F. W. Hope in the chair.

At the request of the chairman, Mr. Garnett exhibited a living Jerboa (apparently the *Dipus Ægyptiacus*), which had been sent to him from the Cape of Good Hope, but Mr. Garnett stated that he was not aware whether it had been captured in that part of Africa.

Professor Owen concluded his paper entitled, "Outlines of a Classification of the Marsupialia." "The rich stores of the Menagerie and Museum of the Zoological Society," observes Mr. Owen, "having afforded me frequent opportunities of examining the anatomy of various and rare species of the Marsupial order; the endeavour to express in general propositions the more important facts relative to their organization; to state in which particulars so many agreed or differed; has naturally compelled me to acquire certain ideas respecting their Zoological distribution."

In the first part of the paper, Professor Owen defines the general characters of the *Marsupialia*; he then proceeds to consider their mutual affinities; and, as closely connected with this subject, commences with some observations on their size, their geographical distribution, and their habits.

The carnivorous Marsupial animals belonging to the genera *Thylacinus* and *Dasyurus* are compared to the *Carnivora* in the placental series; and the Bandicoots (*Perameles*), and Myrmecobians are represented as typifying, or playing corresponding parts with those allotted to the placental *Insectivora*. Those Marsupials which have an omnivorous diet, live in trees, are provided with a prehensile tail, and have a thumb on the hinder extremities, are said to typify the *Quadrumana*, and the tailless Koala is compared to the arboreal Sun-Bears of the Indian Archipelago.

"Another genus of *Marsupialia*, the Wombat," says Mr. Owen, "presents the dentition which characterizes the placental *Rodentia*; and the Petaurists, like the Flying Squirrels, have a parachute formed by broad duplications of the skin extending laterally between the fore and hind legs.

"The Kangaroos are the true herbivorous *Marsupialia*, and many interesting physiological conditions present themselves to the mind in contemplating the singular construction and proportions of these animals. It would appear that the peculiarities of their gestation rendered indispensably necessary the possession of a certain prehensile faculty of the anterior extremities, with a free movement of the digits and a rotatory power of the fore-arm, in relation to the manipulations of the pouch and of the embryo developed therein. At the same time a herbivorous quadruped must possess great powers of locomotion in order to pass from pasture to pasture and to avoid

its enemies by flight. These powers, as is well known, are secured to the herbivorous species of the placental *Mammalia*, by an ungulate structure of four pretty equally developed members. Such a structure, however, would have been incompatible with the procreative œconomy of the Kangaroo. It is therefore organized for rapid locomotion by an excessive development of the hinder extremities; and these alone serve as the instruments of flight, which is performed by a succession of extensive bounds. The tail also is of great power and length, and in the stationary position, the body is supported erect on the tripod formed by the tail and hind legs; while in easy progression the tail serves as a crutch upon which and the fore feet the body is sustained while the hind legs are swung forwards.

"As the Australasian continent, the great metropolis of the Marsupial quadrupeds, still remains but very partially explored; and as new species and even genera of Marsupials continue at each expedition to reward the researches of the scientific traveller; and as moreover the recovery of two lost but distinct genera from the ruins of a former world makes it reasonable to suppose that other types of Marsupials remain still hidden in the crust of the earth; it can hardly be expected that the zoologist should be able to arrange in a natural series, with easy transitions according to the order of their affinities, the few and diversified forms of this implacental subclass which are at present known. The greatest number of correspondencies, as it appears to me, will be expressed by taking the modifications of the digestive system as the guide to the formation of the primary groups of the *Marsupialia*.

"The continent, however, in which the Marsupials 'most do congregate' is characterized by the paucity of organized matter upon its surface, and few of them, consequently, are nourished by a very well-defined diet. No large carnivorous quadruped could in fact have existed in the wilds of Australia prior to the introduction of civilized man and his attendant herds: and we find, in fact, that the native genera which are the most decidedly carnivorous, do not include species larger than the dog: we can only reckon among these strictly carnivorous species the Thylacines and the Dasyures; and, on the other hand, not more than two or three Marsupial genera feed exclusively on vegetable substances. The rest of them derive a promiscuous nutriment from dead or decayed animal and vegetable matter, crustacea, and the refuse of the sea-shore, insects in their perfect and larva states, live birds, young and succulent sprouts, leaves, fruits, &c. The terms, therefore, which will be given to the different primary subdivisions in the present classification of the *Marsupialia* must not be understood to indicate strictly or exclusively the nature of the food of the species severally included in these groups, but rather their general tendency to select for their support the substances implied by those designations."

Tribe I. *SARCOPHAGA.*

The genera in this tribe are the most decidedly carnivorous of all

the *Marsupialia*, and are characterized by an important anatomical condition, viz. the absence of an *intestinum cæcum*.

Genus 1. *Thylacinus*.

Incisors $\frac{4-4}{3-3}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{4-4}{4-4}$: = 46.

The incisors are of equal length, and regularly arranged in the segment of a circle with an interspace in the middle of the series of both jaws. The external incisor on each side is the strongest.

The laniary or canine teeth are long, strong, curved, and pointed, like those of the dog tribe.

The spurious molares are of a simple, blunt, conical form, each with two roots; the last with a small additional posterior cusp. The true molares in the upper jaw are unequally triangular with three tubercles. Those in the lower jaw are compressed, tricuspidate, the middle cusp being the longest, especially in the two last molares, which resemble closely the sectorial teeth (*dens carnassiers*) of the Dog and Cat. The fore feet are 5-digitate, the hind feet 4-digitate.

On the fore foot the middle digit is the longest, the internal one or *pollex* the shortest, but the difference is slight. On the hind foot the two middle toes are of nearly equal length and longer than the two lateral toes, which are equal. All the toes are armed with strong, blunt, and almost straight claws. The only known species of this genus, the Thylacine (*Thylacinus Harrisii*, *Didelphys Cynocephalus*, Harris), is a native of Van Diemen's Land, and is called by the colonists the 'Hyæna.'

Genus *Dasyurus*.

Incisors $\frac{4-4}{3-3}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{2-2}{2-2}$; molares $\frac{4-4}{4-4}$: = 42.

The eight incisors of the upper jaw are of the same length and simple structure, and are arranged in a regular semicircle without any middle interval. The six incisors of the lower jaw are similarly arranged but have thicker crowns than the upper ones; the canines present the same or even a greater relative development than in the Thylacine. In an extinct species of *Dasyurus* they present the same form and relative properties as in the Leopard. The spurious molares have two fangs and a pointed compressed triangular crown with a rudimental tubercle at the anterior and posterior part of its base. The grinding surface of the true molares in the upper jaw is triangular; the first presents four sharp cusps, the second and third each five, the fourth, which is the smallest, only three. In the lower jaw the last molar is nearly of equal size with the penultimate one, and is bristled with four cusps, the external one being the longest; the second and third molares have five cusps, three on the inner and two on the outer side; the first molar has four cusps: these are all sharply pointed in the young animal, in which the tubercle of the posterior molar of the lower jaw is divided into two small cusps.

The carnivorous character of the previous dentition is most

strongly marked in the Ursine Dasyure, or Devil of the Tasmanian colonists, the largest existing species of the genus, and a most pestilent animal in the poultry yard or larder.

Genus *Phascogale.*

Incisors $\frac{4-4}{3-3}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{4-4}{4-4}$: = 46.

In the present dental formula may be discerned a step in the transition from the Dasyures to the Opossums, not only in the increased number of spurious molares, but also in shape and proportions of the incisors. In the upper jaw the two middle incisors are longer than the rest, and separated from them by a brief interval; they are more curved and project more forward. The three lateral incisors diminish in size to the outermost. The middle incisors of the lower jaw also exceed the lateral ones in size, and project beyond them but not in the same degree, nor are they separated from them by an interval as in the upper jaw. The canines are relatively smaller than in the Dasyures. The spurious molares present a similar form, but the third is much smaller and simpler than the two preceding ones. The true molares resemble in their structure those of the Dasyures. The general character of the dentition of these small Marsupials approximates to the insectivorous type in the Shrew, Hedgehog, &c., among the placental *Mammalia*; and corresponds with the food and habits of the species which thus lead from the Zoophagous to the Entomophagous tribe.

Other links which once bound these tribes more closely together are now lost, and are indicated only by the few fossil remains which have rendered the Stonesfield oolite so celebrated. One of these extinct genera, which I have called *Phascolotherium*, presents the same numerical formula, apparently, as in the *Thylacinus* and *Phascogale;* but, if another incisor existed in each ramus of the lower jaw, as seems to be indicated by the fossil, then the dentition will agree with that of the genus *Didelphis*.

Incisors $\frac{?-?}{3-3}$ or $\frac{?-?}{4-4}$; canines $\frac{?-?}{1-1}$; præmolares $\frac{?-?}{3-3}$; molares $\frac{?-?}{4-4}$.

The incisors and canines are separated by vacant interspaces, and occupy a large proportion of the dental series: the true molares resemble those of *Thylacinus*.

Tribe II. *ENTOMOPHAGA.*

This is the most extensive and varied of the primary groups of the Marsupial order. In the system of Cuvier, the species of this tribe are united with those of the preceding to form a single group characterized by the presence of long canines and small incisors in both jaws; but in most of the Entomophagous genera of the present classification, the canines present a marked inferiority of development, and the species are consequently unable to cope with animals of their own size and grade of organization, but prey upon the smaller and weaker classes of invertebrate animals. Their intestinal

canal is complicated by a moderately long and large cæcum; and, while in the *Sarcophaga*, the feet are organized, as in the ordinary placental *Digitigrades*, they present in the present tribe a variety of well-marked modifications, according to which the species may be arranged into ambulatory, saltatory, and scansorial groups.

Ambulatoria.

The only known existing representative of this family is the animal described by Mr. Waterhouse, which constitutes the type of his genus *Myrmecobius*, of which the following is the remarkable dental formula:

Incisors $\frac{4-4}{3-3}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{5-5}{6-6}$: = 52.

From which it will be seen, that the number of molares, sixteen in the upper and eighteen in the lower jaw, exceeds that of any other known existing Marsupial, and approaches that which characterizes some of the insectivorous armadilloes. The resemblance to *Dasypus* is further carried out in the small size of the molares, their separation from each other by slight interspaces, and their implantation in sockets which are not formed by a well-developed alveolar ridge. The molares, however, present a distinct tuberculate structure; and both the true and false ones possess two separate fangs as in their Marsupial congeners: they are, however, the least produced of any Marsupials; only the triturating tubercles appearing above the gum.

The false molares present the usual compressed triangular form, with the apex slightly recurved, and the base more or less obscurely notched before and behind. The canines are very little longer than the false molares; the incisors are minute, slightly compressed and pointed; they are separated from each other and the canines by wide intervals.

The Myrmecobians are insectivorous, and shelter themselves in the hollows of trees, frequenting most, it is said, those situations where the Port Jackson Willow abounds. In the structure and proportions of the hinder feet, *Myrmecobius* resembles the Dasyurine family; and in the slightly developed canines, the smooth external surface of the skull, the breadth between the zygomata, and the absence of the interparietal ridges, as well as in the general external form and bushy tail, it offers an especial approximation to the genus *Phascogale*.

Intermediate however to *Myrmecobius* and *Phascogale* would seem to be the station held by the interesting extinct genera above alluded to. In *Phascolotherium* the affinity is manifested in the simple form, small size, and straggling disposition of the incisors and canines: in the other genus, *Thylacotherium*, it is displayed in the size and number of its molares.

This, one of the most ancient mammiferous genera hitherto discovered, presents eleven molares on each side of the lower jaw, which resemble in structure and close arrangement those of *Phascogale* and *Didelphis*, while they are intermediate in their proportional

size to these and *Myrmecobius*. The exact condition of the incisors and canines of the *Thylacotherium* has not yet been displayed in the fossil jaws which have been discovered.

Saltatoria.

Genus *Perameles* (Bandicoots).

Incisors $\frac{5-5}{3-3}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{4-4}{4-4}$: = 48.

This dental formula characterizes a number of Rat-like *Insectivora* commonly known in Australia by the name of Bandicoots; the hind legs are longer and stronger than the fore, and exhibit in a well-marked manner the feeble and slender condition of the second and third digits counting from the inside, and the sudden increase in length and strength of the third and fourth digits, which are chiefly subservient to locomotion: the mode of progression in the Bandicoots is by bounds; the hind and fore feet being moved alternately as in the Hare and Rabbit; and the crupper raised higher than the fore quarter. The teeth which offer the greatest range of variation in the present genus are the external or posterior incisors and the canines: the molares, also, which originally are quinque-cuspidate, have their points worn away, and present a smooth and oblique grinding surface in some species sooner than in others.

The Bandicoots which approach nearest to the *Myrmecobius* in the condition of the incisive and canine teeth are the *Perameles obesula* and *P. radiata*. There is a slight interval between the first and second incisor, and the outer or fifth incisor of the upper jaw is separated from the rest by an interspace equal to twice its own breadth, and moreover presents the triangular, pointed, canine-like crown which characterizes all the incisors of *Myrmecobius*; but the four anterior incisors are closely arranged together and have compressed, quadrate, true incisive crowns. From these incisors the canine is very remote, the interspace being equally divided by the fifth pointed incisor, which the canine very slightly exceeds in size. In *Peram. nasuta* the incisor presents the same general condition, but the canines are relatively larger.

The marsupial pouch in the Bandicoots, at least in the full-grown females of *Per. nasuta*, *Per. obesula*, and *Per. lagotis*, has its orifice directed downwards or towards the cloaca, contrariwise to its ordinary disposition in the Marsupials: this direction evidently relates to the position of the trunk when supported on the short fore and long hind legs. In the stomach and intestines of a *Perameles obesula*, I found only the remains of insects; and in the examination of the alimentary canal of a *Per. nasuta*, Dr. Grant obtained the same results.

Genus *Chæropus*.

The singular animal on which this genus is founded is briefly noticed and figured in Major Mitchell's Australia, (vol. ii. pl. 38. p. 131.) and the individual described is preserved in the Colonial Museum, at Sydney, N. S. Wales, (No. 35. of Mr. George Bennett's

Catalogue). It would appear that the two outer toes of the fore-foot, which are always very small in the true Bandicoots, are entirely deficient in the *Chœropus*, unless some rudiments should exist beneath the skin; at all events only two toes are apparent externally, but they are so armed and developed as to be serviceable for burrowing or progression. The inner toe is wanting on the hind foot. Dental formula:

Incisors $\frac{4-4}{3-3}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{4-4}{4-4}$: = 46.

All the teeth are of small size; the canines resemble the spurious molares in size and shape, and these are separated at intervals as in *Myrmecobius*. The marsupium opens downwards in the *Chœropus*, as in the true Bandicoots. The species described has no tail. The genus would seem by its dentition to rank between *Myrmecobius* and *Perameles*. Its digital characters are anomalous and unique among the *Marsupialia*.

SCANSORIA.

Didelphidæ, Opossums.

These Marsupials are now exclusively confined to the American Continents, although the fossil remains of a small species attest the former existence of the genus *Didelphis* in Europe contemporaneously with the Palæothere, Anoplothere, and other extinct Pachyderms whose fossil remains characterize the Eocene strata of the Paris Basin. The dental formula of the genus *Didelphis* is,

Incisors $\frac{5-5}{4-4}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{4-4}{4-4}$: = 50.

The Opossums resemble in their dentition the Bandicoots more than the Dasyures, except in the structure of the molares.

The two middle incisors of the upper jaw are more produced than the others, from which they are separated by a short interspace. The canines are well developed, the upper being always stronger than the lower. The false molares are simply conical; the true ones beset with sharp points, which wear down into tubercles as the animal advances in age.

In the type of the subgenus *Cheironectes*, besides being web-footed, the anterior extremities present an unusual development of the pisiform bone, which supports a fold of the skin, like a sixth digit; it has indeed been described, as such, by M. Temminck; this process has not of course any nail. The dentition of the Yapock resembles that of the ordinary *Didelphis*. All the Opossums have the inner digit of the hind foot converted by its position and development into a thumb, but without a claw. The hinder hand is associated in almost all the species with a scaly prehensile tail.

In some of the smaller Opossums the subabdominal tegumentary folds merely serve to conceal the nipples, and are not developed into a pouch; the young in these adhere to the mother by entwining their little prehensile tails around hers, and cling to the fur of the back; hence the term *dorsigera* applied to one of these Opossums*.

* Few facts would be more interesting in the present branch of zoology than the condition of the new-born young, and their degree and mode of

Tribe III. *CARPOPHAGA.*

Stomach simple; cæcum very long.

In this family, the teeth, especially those at the anterior part of the mouth, present considerable deviations from the previously described formulæ; the chief of which is a predominating size of the two anterior incisors, both in the upper and lower jaw. Hitherto we have seen that the dentition in every genus has participated more or less of a carnivorous character; henceforth it will manifest a tendency to the Rodent type.

The Phalangers, so called from the phalanges of the second and third digits of the hinder extremities being inclosed in a common sheath of integument, have the innermost digit modified, to answer the purposes of a thumb; and the hinder hand being associated in many of the species with a prehensile tail, they evidently, of all *Frugivora*, come nearest the arboreal species of the preceding section. In a system framed on locomotive characters they would rank in the same section with the Opossums. We have seen, however, that they differ from those Entomophagous Marsupials greatly in the condition of the intestinal tube. Let us examine to what extent the dental characters deviate from those of the Opossums.

In the skull of a *Phalangista Cookii*, now before me, there are both in the upper and lower jaw four true molares on each side, each beset with four three-sided pyramidal sharp-pointed cusps; thus these essential and most constant teeth correspond in number with those of the Opossum: but in the upper jaw they differ in the absence of the internal cusp, which gives a triangular figure to the grinding surface of the molares in the Opossum; and the anterior single cusp is wanting in the true molares of the lower jaw.

Anterior to the grinders in the Phalanger, there are two spurious molares, of similar shape and proportions to those in the Opossum; then a third spurious molar, too small to be of any functional importance, separated also, like the corresponding anterior false molar in the Opossum, by a short interval from those behind.

The canine tooth but slightly exceeds in size the above false molar, and consequently here occurs the first great difference between the Phalangers and Opossums; it is however, only a difference in degree of development; and in the Ursine and other Phalangers, as well as in the Petaurists, the corresponding tooth presents more of the proportions and form of a true canine.

The incisors, which we have seen to be most variable in number in the carnivorous section, are here three instead of five on each side, in the upper jaw, but their size, especially that of the first, compensates for their fewness.

In the lower jaw, there is the same number of true molares and of functional false molares, which form a continuous and tolerably equable series, as in the Opossums, on each side; then two very minute and

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uterine development in these Opossums. Since the marsupial bones serve not, as is usually described, to support a pouch, but to aid in the function of the mammary glands and testes, they of course are present in the skeleton of these small pouchless Opossums, as in the more typical Marsupials.

rudimental teeth on each side represent the small spurious molar, and small canine of the upper jaw; and anterior to these, there is one very small and one very large and procumbent incisor on each side.

The constant teeth in this group are the $\frac{4-4}{4-4}$ true molares, and the $\frac{3-3}{1-1}$ incisors. The canines $\frac{1-1}{1-1}$ are constant in regard to their presence, but variable in size; they are always minute in the lower jaw. With respect to the spurious molares, $\frac{1-1}{1-1}$, they are always in contact with the true grinders, and their crowns reach to the same grinding level; sometimes a second spurious molar is similarly developed as in the *Phal. Cookii*, and as in all the flying Phalangers, or Petaurists, but it is commonly absent or replaced by a very minute tooth, shaped like a canine: so that between the posterior spurious grinder and the incisors we may find three teeth, of which the posterior is the largest, as in *Phal. Cookii*, or the smallest, as in *Phal. cavifrons*; or there may be only two teeth, as in *Phal. ursina* and *Phal. vulpina*, and the species, whatever that may be, which Fr. Cuvier has selected as the type of the dentition of this Genus.

In the lower jaw similar varieties occur in these small and unimportant teeth; *e. g.* there may be between the procumbent incisors and the posterior false molar, either four teeth, as in *Phal. Cookii*; or three, as in *Phal. cavifrons*; or two, as in *Phal. ursina*, *Phal. maculata*, *Phal. chrysorrhoos*; or lastly, one, as in *Phal. vulpina*, and *Phal. fuliginosa*.

The most important modification is presented by the little *Phal. gliriformis* of Bell, which has only three true molares on each side of each jaw.

Genus *Petaurus*.

There are many species of Marsupials limited to Australia, and closely resembling or identical with the true Phalangers in their dental characters and the structure of the feet. I allude to the Petaurists or Flying Opossums; these, however, present an external character so easily recognizable, and influencing so materially the locomotive faculties, as to claim for it more consideration than the modifications of the digits or spurious molares, which we have just been considering in the *Phalangista*. A fold of the skin is extended on each side of the body between the fore and hind legs, which, when outstretched, forms a lateral wing or parachute, but which, when the legs are in the position for ordinary support or progression, is drawn close to the side of the animal by the elasticity of the subcutaneous cellular membrane, and then forms a mere tegumentary ridge. These delicate and beautiful Marsupials have been separated generically from the other Marsupials under the name of *Petaurus**: they further differ from the Phalangers in wanting the prehensile character of the tail, which in some species of *Petaurus* has a general clothing of long and soft hairs, whilst in others the hairs are arranged in two lateral series.

Now in the Petaurists there is as little constancy in the exact

* First by Dr. Shaw in the *Naturalist's Miscellany*.

formula of the dentition as among the Phalangers. The largest species of *Petaurus*, *Pet. Taguanoides*, *e. g.*, is almost identical in this respect with the *Phalangista Cookii*, which M. Fr. Cuvier has therefore classed with the *Petauri*. Those teeth of *Pet. Taguanoides*, which are sufficiently developed, and so equal in length, as to exercise the function of grinders, or in other words, the functional series of molares, include six teeth on each side of the upper jaw, and five teeth on each side of the lower jaw. The four posterior molares in each row are true, and bear four pyramidal cusps, excepting the last tooth in the upper jaw, which, as in *Phal. Cookii*, has only three cusps. In the upper jaw, the space between the functional false molares and the incisors is occupied by two simple rudimentary teeth, the anterior representing the canine, but being relatively smaller than in *Phal. Cookii*. The crowns of the two anterior incisors are relatively larger. In the lower jaw the sloping alveolar surface between the functional molares and large procumbent incisors is occupied, according to M. Fr. Cuvier, by two rudimentary minute teeth: I have not found any trace of these in the two skulls of *Pet. Taguanoides* examined by me. In *Phal. Cookii* there are three minute teeth in the corresponding space, but these differences would not be sufficient ground to separate generically the two species if they were unaccompanied by modifications of other parts of the body. In *Petaurus sciureus* and *Petaurus flaviventer* the dentition more nearly resembles that of *Phalangista vulpina*. In the upper jaw the functional molar series consists of five teeth on each side, the four hinder ones being, as in *Pet. Taguanoides*, true tuberculate molares, but diminishing more rapidly in size, as they are placed further back in the jaw: the hinder tooth has three tubercles, the rest four; their apices seem to be naturally blunter than in *Pet. Taguanoides*. Between the functional false molar and the incisors there are three teeth, of which the representative of the canine is relatively much larger than in the *Pet. Taguanoides*; the first false molar is also larger, and has two roots; the second, which is functional in *Pet. Taguanoides*, is here very small; the first incisor is relatively larger and is more produced. In the lower jaw the functional series of grinders consists of the four true tuberculate molares only, of which the last is relatively smaller, and the first of a more triangular form than in *Pet. Taguanoides*. The space between the tuberculate molares and the procumbent incisor is occupied by four small teeth, of which the one immediately anterior to the molares has two roots, the remaining three are rudimentary and have a single fang. Among the species exhibiting this dental formula, viz., incisors $\frac{3-3}{1-1}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{4-4}{4-4}$: $=40$: are *Pet. sciureus*, *Pet. flaviventer*, and *Pet. macrurus*.

The Pigmy Petaurist differs from the preceding and larger species in having the hairs of the tail distichous or arranged in two lateral series like the barbs of a feather; and in having the spurious molares large and sharply pointed; and the true molares bristled each with four acute cusps. This tendency in the dentition to the insectivorous

character, with the modification of the tail, induced M. Desmarest to separate the Pigmy Petaurist from the rest of the species, and constitute a new subgenus under the name of *Acrobata*.

In four adult specimens, and two of which had young in the pouch, I find the following dental formula to be constant;—incisors $\frac{3-3}{1-1}$; canines $\frac{1-1}{1-1}$; præmolares $\frac{3-3}{3-3}$; molares $\frac{3-3}{3-3}$: =36.

The three quadricuspidate grinders of the upper jaw are preceded by three large spurious molares, each of which has two fangs, and a compressed, triangular, sharp-pointed crown, slightly but progressively increasing in length, as they are placed forwards. An interspace occurs between these and the canine, which is long, slender, sharp-pointed, and recurved. The first incisor is longer than the two behind, but is much shorter than the canine. In the lower jaw the true molares are preceded by two functional false ones, similar in size and shape to the three above; the anterior false molar and the canine are represented by minute, rudimental, simple teeth; the single incisor is long and procumbent, as in the other Petaurists.

Genus *Phascolarctus*.

The absence of anomalous spurious molares and of inferior canines appears to be constant in the only known species of this genus. The dental formula in three of this species, (*Phasc. fuscus* Desm.,) is: Incisors $\frac{3-3}{1-1}$; canines $\frac{1-1}{0-0}$; præmolares $\frac{1-1}{1-1}$; molares $\frac{4-4}{4-4}$: =30.

The true molares are larger in proportion than in the Phalangers; each is beset with four three-sided pyramids, the cusps of which wear down in age; the outer series in the upper teeth being the first to give way; those of the lower jaw are narrower than those of the upper. The spurious molares are compressed, and terminate in a cutting edge; in those of the upper jaw there is a small parallel ridge along the inner side of the base. The canines slightly exceed in size the posterior incisors; they terminate in an oblique cutting edge rather than a point, their fang is closed at the extremity; they are situated as in the Phalangers close to the intermaxillary suture. The lateral incisors of the upper jaw are small and obtuse, the two middle incisors are of twice the size, conical, subcompressed, beveled off obliquely to an anterior cutting edge, but differing essentially from the *dentes scalprarii* of the *Rodentia*, in being closed at the extremity of the fang. The two incisors of the lower jaw resemble those of the upper, but are longer and more compressed: they are also formed by a temporary pulp, and its absorption is accompanied by a closure of the aperture of the pulp cavity, as in the upper incisors. The Koala therefore, in regard to the number, kind, and conformation of its teeth, closely resembles the Phalangers, with which it agrees in its long cæcum, but the stomach has a cardiac gland as in the Wombat. The extremities of the Koala are organized for prehension; each is terminated by five digits; the hind feet are provided with a large thumb, and have the two contiguous digits enveloped in the same tegumentary fold; the anterior digits are divided into two groups, the thumb and index being opposed to the other

three fingers. The fore-paws have a similar structure in some of the small Phalangers; it is very conspicuous in some of the Petaurists. The Koala, however, differs from the Phalangers and Petaurists in the extreme shortness of its tail and in its more compact and heavy general form. It is known to feed on the buds and leaves of the trees in which it habitually resides.

Tribe IV. *POEPHAGA.*

The present tribe includes the most strictly vegetable feeders; all the species have a complex sacculated stomach and a long simple cæcum.

Guided by the modifications of the teeth we pass from the Koala to the Kangaroo family (*Macropodidæ*),—animals of widely different general form. The Potoroos, however, in this group, present absolutely the same dentition as the Koala, some slight modifications in the form of certain teeth excepted. The spurious molares, in their longitudinal extent, compressed form, and cutting edge, would chiefly distinguish the dentition of the Potoroo, but the Koala evidently offers the transitional structure between the Phalangers and Potoroos in the condition of these teeth, of which one only is retained on each side of each jaw, in both *Phascolarctus* and *Hypsiprymnus*.

The dental formula of the genus *Hypsiprymnus* is: incisors $\frac{3-3}{1-1}$; canines $\frac{1-1}{0-0}$; præmolares $\frac{1-1}{1-1}$; mol. $\frac{4-4}{4-4}$: =30.

The two anterior incisors are longer and more curved, the lateral incisors relatively smaller than in the Koala. The pulps of the anterior incisors are persistent.

The canines are larger than in the Koala; they always project from the line of the intermaxillary suture; and while the fang is lodged in the maxillary bone, the crown projects almost wholly from the intermaxillary. In the large *Hypsiprymnus ursinus* the canines are relatively smaller than in the other Potoroos, a structure which indicates the transition from the Potoroo to the Kangaroo genus. In the skeleton of this species in the Leyden Museum the canines present a longitudinal groove on the outer side.

The characteristic form of the trenchant spurious molar has just been alluded to; its maximum of development is attained in the arboreal Potoroos of New Guinea (*Hypsiprymnus ursinus*, and *Hyps. dorsocephalus*); in the latter of which its antero-posterior extent nearly equals that of the three succeeding molar teeth.

In all the Potoroos the trenchant spurious molar is sculptured, especially on the outer side, and in young teeth by many small vertical grooves. The true molares each present four three-sided pyramidal cusps, but the internal angles of the two opposite cusps are continued into each other across the tooth, forming two concave transverse ridges. In the old animal these cusps and ridges disappear, and the grinding surface is worn quite flat.

In the genus *Macropus* the normal condition of the permanent teeth may be expressed as follows:—incisors $\frac{3-3}{1-1}$; canines $\frac{0-0}{0-0}$; præmolares $\frac{1-1}{1-1}$; molares $\frac{4-4}{4-4}$: =28.

The main difference, as compared with *Hypsiprymnus*, lies in the absence of the upper canines; yet I have seen them present, but of very small size, and concealed by the gum, in a small species of Kangaroo (*Macropus rufiventer*, Ogilby.). This, however, is a rare exception; while the constant presence and conspicuous size of the canines will always serve to distinguish the Potoroo from the Kangaroo. But besides this, there are other differences in the form and proportions of certain teeth.

The upper incisors of the *Macropi* have their cutting margins on the same line, the anterior ones not being produced beyond that line as in the *Hypsiprymni*; the third or external incisor is also broader in the Kangaroos, and is grooved and complicated by one or two folds of the enamel continued from the outer side of the tooth obliquely forwards and inwards, into the substance of the tooth. In most species the anterior fold is represented by a simple groove; the relative size of the outer incisor, the extent and position of the posterior fold of enamel, and consequently the proportions of the part of the tooth in front or behind it, vary more or less in every species of *Macropus*: there are two folds of enamel near the anterior part of the tooth in *Macr. major*; the posterior portion is of the greatest extent, and the entire crown of the tooth is relatively broadest in this species. The middle incisor is here also complicated with a posterior notch and an external groove. These modifications of the external incisors have been pointed out in detail by M. Jourdan; and subgeneric distinctions have been subsequently based upon them; but they possess neither sufficient constancy nor physiological consequence, to justify such an application. M. Fr. Cuvier has proposed a binary division of the Kangaroos founded on the absence of permanent spurious molares and a supposed difference in the mode of succession of the permanent molares in the Kangaroos, combined with modifications of the muzzle or upper lip, and of the tail.

The dental formula which I have assigned to the genus *Macropus* is restricted by that naturalist in its application to some small species of Kangaroo, grouped together under the term *Halmaturus*, originally applied by Illiger to the Kangaroos generally. The rest of the Kangaroos, under the generic term *Macropus*, are characterized by the following dental formula:—incisors $\frac{6}{2}$; mol. $\frac{4-4}{4-4}$: $=24$.

The truth, however, is, that both the *Halmaturi* and *Macropi* of Fr. Cuvier, have their teeth developed in precisely the same number and manner; they only differ in the length of time during which certain of them are retained. In the great Kangaroo, for example, the permanent spurious molar which succeeds the corresponding deciduous one in the vertical direction, is pushed out of place and shed by the time the last true molar has cut the gum: the succeeding true molar is soon afterwards extruded; and I have seen a skull of an old *Macropus major* in the Museum at Leyden, in which the grinders were reduced to two on each side of each jaw by this yielding of the anterior ones to the vis a tergo of their successors.

Tribe V. *RHIZOPHAGA.*

The characters of this tribe are taken from the stomach, which is simple in outward form, but complicated within by a large cardiac gland; and from the cæcum, which is short and wide, with a vermiform appendage.

Genus *Phascolomys.*

In its heavy shapeless proportions, large trunk, and short equably developed legs, the Wombat offers as great a contrast to the Kangaroos as does the Koala, which it most nearly resembles in its general outward form and want of tail. But in the more important characters afforded by the teeth and intestinal canal the Wombat differs more from the Koala than this does from either the Phalangers or Kangaroos. The dental system presents the extreme degree of that degradation of the teeth intermediate between the front incisors and true molares which we have been tracing from the Opossum to the Kangaroos: not only have the functionless spurious molares and canines now totally disappeared, but also the posterior incisors of the upper jaw, which we have seen in the Potoroos to exhibit a feeble degree of development as compared with the anterior pair; these in fact are alone retained in the dentition of the present group, which possesses the fewest teeth of any Marsupial animal. The dental formula of the Wombat is thus reduced both in number and kind to that of the true *Rodentia*:

Incisors $\frac{2}{2}$; canines $\frac{0}{0}$; præmolares $\frac{1-1}{1-1}$; molares $\frac{4-4}{4-4}$: = 24.

The incisors, moreover, are true *dentes scalprarii*, with persistent pulps, but are inferior, especially in the lower jaw, in their relative length, and curvature, to those of the placental *Glires*: they present a subtrihedral figure, and are traversed by a shallow groove on their inner surfaces.

The spurious molares present no trace of that compressed structure which characterizes them in the Koala and Kangaroos: but have a wide, oval, transverse section: those of the upper jaw being traversed on the inner side with a slight longitudinal groove. The true molares have double the size of the spurious ones: the superior ones are also traversed by an internal longitudinal groove, but this is so deep and wide, that it divides the whole tooth into two prismatic portions, with one of the angles directed inwards. The inferior molares are in like manner divided into two trihedral portions, but the intervening groove is here external, and one of the faces of each prism is turned inwards. All the grinders are curved, and describe about a quarter of a circle; in the upper jaw the concavity of the curve is directed outwards, in the lower jaw inwards. The false and true molares like the incisors have persistent pulps, and are consequently devoid of true fangs: in which respect the Wombat differs from all other Marsupials, and resembles the extinct *Toxodon*, the dentigerous *Bruta*, and herbivorous *Rodentia*.

Although none of the *Marsupialia* possess teeth composed of an intermixture of layers of ivory, cement and enamel through the body

of the crown; yet the layer of cement which covers the enameled crown is thickest in the vegetable-feeding Marsupials, and is remarkably distinct in the Wombat.

I may add that the Wombat deviates from the other Marsupials in the number of its ribs: as these are very constant in the rest of the order, the difference in the Wombat, which has 15 pairs, instead of 13 or 12, is the more deserving of notice. The Koala, like the Phalangers and Kangaroos, has 13 pairs of ribs.

Professor Owen next proceeds to compare the classification of the *Marsupialia* here proposed with that of Cuvier, given in the second edition of the *Règne Animal*, and states the reasons which have led him to devise a new arrangement.

The following is a tabular view of Professor Owen's classification.

CLASSIFICATION OF THE MARSUPIALIA.

Tribes.	Families.	Genera.	Subgenera.
SARCOPHAGA.			
Three kinds of teeth; canines long in both jaws; a simple stomach; no *intestinum cæcum*.	*Dasyuridæ*.	Thylacinus.	
		Dasyurus.	
		Phascogale.	
Extinct transitional forms		Phascolotherium.	Fossil.
		Thylacotherium.	
ENTOMOPHAGA.			
Three kinds of teeth in both jaws; a simple stomach; a moderately long *intestinum cæcum*.	*Ambulatoria*.	Myrmecobius.	
	Saltatoria.	Chæropus.	
		Perameles.	
	Scansoria.	Didelphis.	Cheironectes.
CARPOPHAGA.			
Anterior incisors large and long in both jaws; canines inconstant; a simple stomach; a very long *intestinum cæcum*.	*Phalangistidæ*.	Phalangista.	Cuscus.
			Pseudocheirus.
			Tapoa.
			Acrobata.
		Petaurus.	
	Phascolarctidæ.	Phascolarctus.	
POEPHAGA.			
Anterior incisors large and long in both jaws; canines present in the upper jaw only, or wanting. A complex stomach; a long *intestinum cæcum*.	*Macropodidæ*.	Hypsiprymnus.	Halmaturus.
		Macropus.	Macropus.
RHIZOPHAGA.			
Two scalpriform incisors in both jaws; no canines. Stomach with a special gland; cæcum short, wide, with a vermiform appendage.	*Phascolomyidæ*.	Phascolomys.	Fossil.
		Diprotodon.	

February 12, 1839.

Thomas Bell, Esq., V.P., in the Chair.

A paper from Dr. Schomburgk, entitled "Remarks on the Greater Ant-bear (*Myrmecophaga jubata*)," was read. This paper commences with some general observations on the *Edentata* and *Monotremata*: the author then proceeds to give a detailed description of the animal under consideration. The following is an abstract of the remaining portion of the paper, or that which relates to the habits of the animal.

Dr. Schomburgk observes, that at a distance the Ant-bear appears to be a much taller animal than it really is, owing to the elongated and nearly erect hair of the mane, and also the erect manner in which it carries its large bushy tail. When walking, the outer portion of the fore foot is applied to the ground, and the long claws are then doubled inwards. It runs with a peculiar trot, and is not, as has been represented, slow in its movements and easily overtaken; for when chased it will keep a horse in canter, and does not tire readily. White Ants or Termites constitute its chief food. When the Ant-bear meets with one of the tumuli constructed by the White Ants, it immediately pulls the fabric down by means of its large strong claws, and when the Ants are thus exposed its long slender tongue is thrust out to collect them. The movements of the tongue, alternately being protruded and retracted, are so rapid, says Dr. Schomburgk, that it is no longer surprising how so large an animal can satiate its appetite with such minute insects. The Ant-bear is, however, an economist, and does not destroy more than he wants. When he finds that the Termites diminish on the surface, and every one seeks to escape in the numerous galleries of the ruined edifice, he uses his left foot to hold some large lumps of the nest, whilst with the right he leisurely pulls them to pieces.

With the Termites he swallows a considerable quantity of the material of which the Ants' nest is constructed. Of this fact Dr. Schomburgk assured himself by dissection, and he is of opinion that the substance of the nest serves as a corrector.

"It has been generally thought," says Dr. Schomburgk, "that the Ant-bear lives exclusively on Ants; this, however, is not the case. In one which I dissected a year ago, a species of *Julus* was found; and the avidity with which an adult one now in my possession swallowed fresh meat, which was hashed up for it, makes me believe that even in the wild state it does not satisfy itself exclusively with Ants, and, provided the food is of such a size that it can take it up with its moveable upper lip, it does not despise it.

"The Ant-bear makes neither nest nor burrow, its ample tail serving it as sole protection against the inclemency of the weather. One of its favourite positions when at rest, is to tuck up its feet under its belly, and to unite the two extremities almost close together; in which

position the tail covers the whole animal: at other times it cowers itself up like a dog when asleep, and the tail covers only the snout and part of the body. The female Ant-bear possesses two pectoral teats, and produces only one young at a time; and as soon as this has received sufficient strength the mother carries it with her on her back, where it keeps itself firmly attached. The young animal remains with its mother for the space of a year, and as this is the period when she brings forth again, it is then obliged to shift for itself.

"If the mother be attacked, she defends herself valiantly: raising herself upon her haunches, she strikes with her sharp claws at the enemy; this is chiefly done with the right foot, while the left rests on the ground; but she quickly changes their respective positions when the attack is carried to the other side: the young one remains all the while clinging to her. If the danger increase, she throws herself upon her back, and strikes with both claws at her enemy*.

"I have been assured by a highly-credible person, that the Jaguar finds it difficult to conquer the Ant-bear, and the fight which ensues was described to me as characteristic. It happens frequently that both combatants remain dead upon the spot, or that one does not survive the other many hours. The force which the Ant-bear possesses in its fore feet is astonishing, and I have no doubt that it is well able to rip open the belly of its assailant; nevertheless, I should scarcely have supposed that the Ant-bear proved formidable to the fiercest of American animals.

"A young one, estimated about four weeks old, was presented to me by Dom Pedro Ayres. While riding on horseback over the Savannahs, he discovered the parent with the young, and immediately gave chase. After she had kept the horse in full canter for half an hour, she found herself so closely pressed that she put herself in defence: my friend was ready with the lasso, and having thrown it dexterously over her, she was secured. To the last moment the young one had clung to the mother. There being only one person to assist him, he found it impossible to lead her to the fort, she was therefore secured to a tree on the Savannahs. Dom Pedro Ayres, however, carried the young one off, and brought it to me. We despatched a sufficient number of men in quest of the mother, but she had found means to get rid of the ropes, and had escaped.

"The young one measured over the forehead along the back, from the tip of the nose to the insertion of the tail, twenty-two and a half inches; the tail was twelve and a half inches, and it stood nine and three quarter inches high. In lieu of the yellowish white of the legs, and the bands of the same colour, which give such a remarkable appearance to the adult, there were in the young animal gray hairs, tinged with white: in all other respects it resembled its mother in colouring.

* "If the Ant-bear should succeed in throwing its arms round its enemy, and in fixing its claws in the flesh, nothing can disengage it from its embrace; the muscles grow stiff, and I have been told, without being able to vouch for its veracity, that in this situation both animals die."

"The young Ant-bear was quite wild at first, and sought for some dark corner in the room in which it was confined, in order to hide itself. When we approached it, it put itself immediately in defence like the adult ones, and struck out with its right paw, emitting at the same time a growl like that of an incensed puppy. After a few days, however, it became accustomed to its situation, and an Indian woman took upon her to feed it with milk and Cassada, and sometimes with White Ants. It soon showed great attachment to her, and followed her like a dog

"It appeared to be of a very cold nature; not only the extremities, but the whole body felt cold to the touch, although we kept it wrapped up in a blanket. It preferred, however, to be nestled, and to be taken up, and on putting it down it emitted a whining but not unpleasant sound; when it did not succeed in attracting attention, and was not taken up again, the whining sound was raised to a harsh and grating noise. In following a person, it directed its course more by the smell than by sight, and carried its snout close to the ground. If it found itself at fault, it wheeled round at right angles upon the hind legs, and snuffed the air in all directions, until it found the right scent again. Of the dimness of its sight we had various proofs; it hurt itself frequently against objects that stood in its way, not observing them until it came in contact with them. Its power of smelling was exquisite, and it could discover its nurse, or any person to whom it had taken a liking, at a considerable distance. Upon these occasions it would immediately commence the whining sound so peculiar to this animal. It was an expert climber; it happened that I was one of its favourites, and whilst writing on my table it used to come softly behind me, and as soon as it was sure it had found me out, it climbed up my legs with great dexterity. Out of amusement we would frequently hold up its blanket, and it climbed up its whole length.

"When the Indian woman was not present, or was otherwise occupied, and did not pet the young Ant-bear, she used to throw some of the clothes she had worn, or her own blanket before it, in which it wrapped itself, and was pacified. This effect could not be produced by any other person's clothes. It showed its attachment by licking, and was very gentle and even sportive; we all prized it highly. It slept a great deal. We had it for nearly two months, and as it began to feed itself we had great hopes of rearing it; unfortunately we were unable to procure milk, and whether in consequence of the change of food, or some other cause, it gradually declined. I found it sometimes as cold as ice, and stiff, and although I recovered it repeatedly, it died one day during my absence.

"Its place had been meanwhile restored by an adult specimen, likewise a female. I shall never forget the interesting sight which this individual presented. Some of the Indians belonging to my party, whom I had despatched in quest of game, met it on the Savannahs, and wisely attempted to drive it towards San Joaquim without wounding it. My attention was first attracted by an immense hue and cry from the persons about the fort, and upon step-

ping out the first object which struck me was the Ant-bear, running in a kind of dog gallop towards the houses, and flanked on both sides by the red-skinned Indians, who were furnished with bows and arrows, which they were ready to discharge, should the animal break through their lines. Having arrived at the walls of the fort, it retreated in one of the corners which a bastion formed, and attempted to climb up by thrusting its nails into some of the larger interstices between the freestone of which the walls are built; it did not, however, succeed, and we managed to throw a lasso over it. The animal defended itself valiantly, and as the surrounding persons appeared to be afraid of it, it ran a fair chance of slipping the noose; some of the men more courageous than the rest threw it, however, on the ground, and another noose being fixed to one of its legs, it was secured, and safely lodged in the yard attached to our lodgings. In its endeavours to get rid of the rope, which passed round the rump, it chafed itself considerably, and we found it necessary to make a roomy pen, to which it was conveyed. It began to feed on the third day: we gave it Ants and farina; the latter, a preparation of Cassada root, it never refused. The Ants' nests in the neighbourhood of the fort were soon exhausted, and more in way of experiment than out of persuasion that the animal would eat it, some small pieces of fresh beef were placed before it; to our greatest astonishment it ate the meat with avidity, and has since been chiefly fed on fresh beef and fish. We observed that in the course of three weeks it evacuated only twice, and then very copiously; this was likewise the case with the young one; and before I noticed the same circumstance with the adult, I thought its death was partly caused by constipation.

"By kind treatment it soon became domesticated, and fed out of our hands. When not asleep, (in which state it used the same position as already related,) it rested entirely on its haunches, and stretching its long snout through the palings of its pen, it surveyed the surrounding objects, and snuffed the air.

"It even raised itself frequently, and without difficulty, to nearly an erect posture, and remained thus for some minutes; sometimes it sat with its fore feet crossed. In feeding, it kneeled as sheep and goats do. It attempted frequently to take up objects with its paws; in this manœuvre its long claws assisted wonderfully. In rising from its resting posture it used first to get upon its knees.

"When some meat was thrown before it, it expanded the lateral apertures of the nostrils, and seemed, by moving its flexible upper lip, as if it intended to seek out the most delicate morsels. It climbed up the palings of its pen with great agility, never using both of its arms at a time, but first one and then the other; and if it had taken hold sufficiently with its claws, it raised the whole body, and brought up the hinder feet. We may conclude from this feat upon the strength of the muscles of its fore feet. The great muscle of the arm, of one which we dissected, was two inches wide, and three eighths of an inch thick.

"I have already remarked how fond the young one was of climb-

ing, and this, coupled with what I have just now related, makes me not doubt that, if circumstances should require it, they climb trees in their wild state with the same agility.

"It secretes a liquid substance, transparent like water, which drops down almost constantly out of its nostrils and mouth; this is the more remarkable, as it used very little water. The Llama, without using much water, possesses likewise a superabundant quantity of saliva. I recollect, before the pen was finished, when lying in the sun, it perspired so profusely that its hair could not have been more wet had the animal been in the water. It is remarkable that the four individuals, and the young one which we secured at Fort San Joaquim, were all females; in no instance have we observed a male. What, then, is the natural question, becomes of the males? I can give no other answer than that the males are unproportioned to the number of females, and are, no doubt, much more shy. Those which we secured were caught during day; it issues, perhaps, from the dense forests only by night. A similar instance offers itself in the genus *Auchenia*, of which the males do not quit their pastures in quest of the females, and herds exclusively of females and males are met with; it is only during the rutting season that they mix, when the males combat for the females.

"If it could be substantiated that the number of males is considerably smaller than that of the females, in that circumstance would rest an additional ground for supposing that the extinction of its species, like those of the *Edentata* in general, is determined upon.

"The flesh of the Ant-bear is eaten by many of the native tribes, and also by the negroes, who consider its skin a great delicacy.

"The trivial name of the Brazilians for the *Myrmecophaga jubata* is *Tamandua Bandeira*; in the Lingua Geral, *Tamandu Assu*; the Wapeshana Indians call it *Barshema*; the Macusis, *Warisi-rima*; the Arowaaks, *Barem*; the Warows, *Hohitia*.

"Finally, I subjoin some detailed measurements which were taken from a female Ant-bear, immediately after her death.

	Feet.	Inches.
Height from the highest part of the back	3	0
Height from the smallest part of the back to the sole of the hind foot	2	10
Length from the back of the skull to the insertion of the tail	3	7
Length of tail	3	6
Breadth of the tail (when its hairs are standing erect) across the middle	2	3
Ditto ditto near the root	1	8
Length from the point of the shoulder to the *malleolus* of the fore foot	1	8½
Girth of the fore leg below the point of the shoulder	1	4½
Girth of fore feet immediately below the knee	0	8½
Length from the knee-joint to the *malleolus*	0	5
Length of sole of hind-feet	0	5½
Breadth of ditto	0	3¾

	Feet.	Inches.
Girth of the middle of the belly	3	0
Girth of body near the shoulder	2	6
Length from the tip of the snout to the posterior extremity of the skull	1	3
Space between the base of the ears	0	3
Length of the ears	0	2¼
——— from the eye to the nostril	0	11½"

February 26, 1839.

The Rev. F. W. Hope in the chair.

A communication from the Bishop of Down and Connor was read.

In this communication (which was forwarded to the Society through W. Thomson, Esq., Vice-President of the Belfast Natural History Society) his Lordship gives an interesting account of a Philantomba Antelope (*Antilope Philantomba*, Ogilby) which his Lordship had had in his possession for a considerable time. The animal was brought from Sierra Leone by Frederick Wood Mant, Esq., who has lately presented it to the Society.

The animal presented to the Society, says his Lordship, "is said to be a native of a part of the country one or two hundred miles further inland. He is considered to be very rare even in that part of the world, so that little could be learned about him from the inhabitants, by whom, however, he appears to be known by the name of *Phillantombo* or Phillytombo; whence his late master has been in the habit of calling him Philly, and the animal has appeared sensible of the name being designed for him.

"He was landed in England in May 1837, and was thence brought to Down and Connor House, Belfast, Ireland, where he has lived till this present November 1838. He was probably full grown at the time of his arrival in Europe, for no alteration is perceptible in his size or height; he has been in perfect health the whole of that time, and, with the precautions taken for his warmth and safety, has not appeared to suffer even during the winter from a climate so different from that of his native country. The chief change noticed in him has been the loss of his teeth, which took place about Midsummer 1837, and again in 1838, somewhat later in the season; but neither time did he seem to suffer any inconvenience, except for about a fortnight, when he appeared to require softer food than beans and biscuit. He also lost the rough sheath, which covered his horns, by rubbing them against trees and posts, of which exercise he is very fond; as he is also of rubbing his cheeks against anything that will assist in removing the glutinous substance which exudes from the orifices under his eyes: for this purpose he is pleased with having his face rubbed by the hand, and he also seems to be gratified by a similar application between his horns. It should be added, that the points of his horns are extremely sharp, as has been experienced by those who have been standing near him when he has been in a playful mood, or who have had occasion to catch him in order to remove him to his night quarters; for although extremely gentle, and free from vice, he is at times too frolicksome to submit willingly to confinement, and is impatient of being taken up in the arms, when he utters a cry like a petted child. It has been remarked, in the case

of any wound being inflicted by his horns, that it has never been followed by inflammation, and has soon healed.

"It is a curious circumstance, to which it may be worth while to draw attention, that frequently when he has been sleeping, and even snoring, no one has been able to perceive that his eyes have ever been closed.

"His food has been various; slices of raw potatoes at first, when he came, was his favourite food; but since he has been tried with wheat, and *rick* beans, and with green branches of any tree, or withered leaves of any kind, he has not eaten of the potatoes at all. Every fruit he readily devours as well as flowers, such as china roses and tulips, or any other gay ornament of the parterre, which made it necessary to confine him to a portion of the garden where he could not help himself quite so freely to its best produce. He has been sometimes observed to dibble in the earth with his sharp hoof, and eat voraciously of the mould; and once, having got access to a plum tree, he swallowed so much of the fruit, stones and all, as to occasion considerable alarm for his safety, till he coughed up the stones quite clean, to the number perhaps of twenty or thirty. He is very fond of hard biscuit, and drinks often of fresh water. In short, a bit of biscuit and an apple have generally been given him as a treat every evening, but wheat and beans are his constant food.

"His evacuations are regularly three times in the twenty-four hours, never between seven at night and seven in the morning. The water only is offensive, or he might be the inmate of a lady's drawing-room, he is so perfectly tame and cleanly."

An account of the habits of the Chimpanzee was communicated by Lieut. Henry K. Sayers. "Bamboo, the Chimpanzee, now in the Zoological Society's Gardens, Regent's Park, and the subject of this sketch," says Lieut. Sayers, "was purchased, about eight months since, from a Mandingo, at Sierra Leone, who related that he had captured him in the Bullom country, having first shot the mother, on which occasions the young ones never fail to remain by their wounded parents. On becoming mine, he was delivered over to a black boy, my servant, and in a few days became so attached to him as to be exceedingly troublesome, screaming and throwing himself into the most violent passion if he attempted to leave him for a moment. He evinced also a most strange affection for clothes, never omitting an opportunity of possessing himself of the first garment he came across, whenever he had the means of entering my apartment, which he carried immediately to the Piazza, where invariably he seated himself on it with a self-satisfied grunt, nor would he resign it without a hard fight, and, on being worsted, exhibited every symptom of the greatest anger. Observing this strange fancy I procured him a piece of cotton cloth, which, much to the amusement of all who saw him, he was never without, carrying it with him wherever he went, nor could any temptation induce him to resign it even for a moment. Totally unacquainted with their mode of living in the wild state, I adopted the following method of feeding him, which

has appeared to succeed admirably. — In the morning, at eight o'clock, he received a piece of bread about the size of a halfpenny loaf, steeped in water or milk and water; about two, a couple of bananas or plantains; and before he retired for the night, a banana, orange, or slice of pine apple. The banana appeared to be his favourite fruit; for it he would forsake all other viands, and if not gratified, would exhibit the utmost petulance. On one occasion I deemed it necessary to refuse him one, considering that he had already eaten a sufficiency, upon which he threw himself into the most violent passion, and uttering a piercing cry, knocked his head with such violence against the wall as to throw him on his back, then ascending a chest which was near, wildly threw his arms into the air and precipitated himself from it. These actions so alarmed me for his safety that I gave up the contest, and on doing so he evinced the greatest satisfaction at his victory, uttering, for several minutes, the most expressive grunts and cries; in short, he exhibited on all occasions where his will was opposed, the impatient temper of a spoilt child; but even in the height of passion I never observed any disposition to bite or otherwise ill treat his keeper or myself.

"Although he would never object to be caressed or nursed by even a stranger, yet I never saw him evince the slightest disposition to make the acquaintance of any other animal. At the time he came into my possession I had two Patas Monkeys, and thinking they might become acquainted, I placed Mr. Bamboo in the same apartment, where he resided for five months, yet I never saw the least desire on his part to become even friendly; on the contrary, he showed evident anger and dislike at their approach. This strange attachment to the human race and manifest dislike to all others, I have always considered one of the most extraordinary features of this genus. His cunning was also remarkable. On all occasions where he thought he was unobserved, he would not fail to steal everything within his reach, for no other apparent purpose than to gratify a propensity for thieving: did he, however, even think you were looking at him, he would wait his opportunity with the greatest patience before he commenced depredations. In his habits, unlike the monkey tribe, he was exceedingly cleanly, never soiling his bed or any place near it; and even on board ship (during the warm weather) he never failed to seek the deck, unassisted, whenever the calls of nature required it. On being left by himself in his piazza he would invariably seat himself on the window-sill, which was the highest point he could attain, and commanded a view of the barrack yard as well as the interior of my bed-room; but at sun-set he would descend, enter a washing-tub, which he had of his own accord chosen as a sleeping-place, and remain there all night: as soon, however, as the sun rose, he would never fail to occupy his favourite position on the window-ledge. From this I should say, that trees are ascended by the Chimpanzees merely for observation or food, and that they live principally on the ground. Bamboo, at the time of purchase, appeared to be about fourteen months old, and from what I could learn from the natives, they do not reach their full growth till

between nine and ten years of age, which, if true, brings them extremely near the human species, as the boy or girl of West Africa, at thirteen or fourteen years old, is quite as much a man or woman as those of nineteen or twenty in our more northern clime. Their height, when full grown, is said to be between four and five feet: indeed I was credibly informed, that a male Chimpanzee, which had been shot in the neighbourhood and brought into Free Town, measured four feet five inches in length, and was so heavy as to form a very fair load for two men, who carried him on a pole between them. The natives say that in their wild state their strength is enormous, and that they have seen them snap boughs off the trees with the greatest apparent ease, which the united strength of two men could scarcely bend. The Chimpanzee is, without doubt, to be found in all the countries from the banks of the Gambia in the north, to the kingdom of Congo in the south, as the natives of all the intermediate parts seem to be perfectly acquainted with them. From my own experience I can state that the low shores of the Bullom country, situated on the northern shores of the river Sierra Leone, are infested by them in numbers quite equal to the commonest species of monkey. I consider these animals to be gregarious, for when visiting the rice farms of the Chief Dalla Mohammadoo, on the Bullom shore, their cries plainly indicated the vicinity of a *troop*, as the noise heard could not have been produced by less than eight or ten of them. The *natives* also affirmed, that they always travel in strong bodies, armed with sticks, which they use with much dexterity. They are exceedingly watchful, and the first one who discovers the approach of a stranger utters a protracted cry, much resembling that of a human being in the greatest distress. The first time I heard it I was much startled; the animal was apparently not more than thirty paces distant, but had it been but *five* I could not have seen it from the tangled nature of the jungle, and I certainly conceived that such sounds could only have proceeded from a human being who hoped to gain assistance by his cries from some terrible and instant death. The native who was with me laid his hand upon my shoulder, and pointing suspiciously to the bush, said, 'Massa, Baboo live there,' and in a few minutes the wood appeared alive with them, their cries resembling the barking of dogs. My guide informed me that the cry first heard was to inform the troop of my approach, and that they would all immediately leave the trees or any exalted situation that might expose them to view and seek the bush; he also showed evident fear, and entreated me not to proceed any further in that direction. The plantations of bananas, pampaws, and plantains, which the natives usually intermix with their rice, constituting the favourite food of the Chimpanzees, accounts for their being so frequent in the neighbourhood of rice fields. The difficulty of procuring live specimens of this genus arises principally, I should say, from the superstitions of the natives concerning them, who believe they possess the power of 'witching.'

"There are authors who have, I believe, affirmed that some of the natives on the western coast term these animals in their language

'Pongos;' but I beg leave to differ with them as to 'Pongos' being a *native* term. The Portuguese formerly monopolized the trade of the coast, and had large possessions there as well as in the East Indies, most of the capes, rivers, &c. bearing the names they gave them to this day. Now 'Pongos' I look upon to be a *Portuguese East Indian* term for a tailless monkey, and in consequence of their discovering a river in Africa, the banks of which were inhabited by vast numbers of this species, they called it 'Rio Pongos,' a name which it bears still. This *I* conceive to be the origin of the term, whilst on the coast I observed that all the natives in the neighbourhood of Sierra Leone, when speaking of this animal, invariably called him 'Baboo,' a corruption, I should suppose, of our term Baboon."

At the request of the Chairman, Mr. Ogilby proceeded to make some observations upon a new species of Monkey, now living at the Society's Menagerie, which he characterized as follows:—

Papio Melanotus. *P. cinereo-brunneus; capite, dorso, lumbisque sub-nigris; caudâ brevissimâ, nudâ; facie, auriculisque pallidis.*

The specimen from which this description is taken is a young male, said to have been brought from Madras. It has at first sight a considerable resemblance to the common Barbary species (*Papio sylvanus*) both in general colour and in physiognomy, but differs materially in the blackish brown shade which covers all the upper parts of the head, neck, shoulders, and back. The face and ears are of a pale flesh colour, not unlike the shade which distinguishes extreme age in the human species; the naked part of the paws is dirty brown, and the temples are slightly tinged with a shade of scarlet, which the keeper informs me spreads and deepens when the animal is feeding. The tail is about an inch long, very slender, and perfectly *naked*; but whether the last circumstance be not accidental I shall not take on me to say; it *appears*, however, to be the natural condition of the organ. The general colour of the sides, under parts of the body, and extremities, is that pale olive brown so common among other species of this genus, such as the Bhunder (*P. Rhesus*), the Maimon (*P. Nemestrinus*), &c., and the hairs are equally without annulations. The individual has all the liveliness, good-nature, and grimace of the young Magot (*P. Inuus* and *Sylvanus*); but, like that species, it will probably become morose and saturnine as it advances in age and physical development; qualities which, indeed, are common to all the Papios, and pre-eminently distinguish them from the Cercopithecs, Colobs, and Semnopithecs.

A paper, entitled "Spicilegium Serpentium Indicorum," was communicated by Dr. Theodore Cantor. This paper contains the following descriptions of

A. Venomous Serpents*.

Genus Trigonocephalus, Oppel.

Trigonocephalus erythrurus. *Tri. supra lætè viridis, squamis*

* Dr. Cantor's original specimens, drawings, and descriptions are in the possession of the Radcliffe Library, Oxford.

ovatis carinatis subimbricatis, caudâ cinnamomeâ, squamis lævibus rhomboidalibus tectâ; abdomine flavo-viridescenti lineâ nigrâ serratâ utrinque incluso.

Scuta abdominalia 167.

Scutella subcaudalia 68.

Habitat. Delta Gangeticum.

Bright green above, with ovate keeled slightly imbricate scales; the tail cinnamon-red, with smooth rhomboidal scales; the abdominal surface greenish-yellow, inclosed on both sides by a black serrated line.

TRIGONOCEPHALUS MUCROSQUAMATUS. *Tri. supernè griseo-brunnescens, annulis nigris albo marginatis, squamis ovalibus, semicarinatis mucronatis, imbricatim tectus; subtus albidus, nigro punctatus.*

Scuta abdominalia 218.

Scutella subcaudalia 91.

Habitat. Naga Hills, Assam.

Brownish grey above, with black white-edged rings, covered with oval, half-keeled, pointed, imbricate scales; whitish beneath, dotted with black.

Genus BUNGARUS, Daudin.

BUNGARUS LIVIDUS. *Bung. supernè lividus, subtus albo-flavescens.*

Scuta abdominalia 221.

Scuta subcaudalia 56.

Habitat. Asám.

Blackish-blue above, yellowish-white beneath.

Genus HAMADRYAS,* Cantor.

HAMADRYAS OPHIOPHAGUS. *Ham. supernè olivaceo-viridis, striis sagittalibus nigris cinctus, abdomine glauco nigro marmorato.*

Scuta abdominalia a 215 *ad* 245.

Scuta subcaudalia a 13 *ad* 32.

Scutella subcaudalia a 63 *ad* 71.

Habitat. Bengal.

Hindustanee name: Sunkr-Choar.

Olive-green above, with arrow-shaped black stripes; beneath, glaucous marbled with black.

Genus NAJA, Laurenti.

NAJA LARVATA. *Na. supra brunnea, striis subflavis transversalibus variegata; disco annulo albo, larvæ haud impari, ornato, pone quem (a tribus ad quinque) annuli albi;—inferioris superficiei pars anterior annulis albis, nigro-cœrulescentibus alternis circumdata, pars posterior glauco iridescens.*

Habitat. Bombay, Calcutta, Asám.

Bengalee name: Doollah-Kewtiah Nág.

* Vide Proceedings of the Zoological Society, No. lxvi. p. 73.

Brownish, with numerous faint yellow transverse stripes; the hood marked with a white ring, not unlike the form of a mask, behind which there are from three to five white rings;—the anterior part of the lower surface with alternate white and bluish-black rings; the posterior part iridescent-glaucous.

A young specimen of this serpent lives at present in the Society's Gardens in Regent's Park. The artificial temperature, 62° Fahr., in which it is kept appears to agree very well with the serpent, which in one respect offers a striking difference from the habits of this genus when kept in captivity in India, for the keeper informs me that it feeds occasionally upon living frogs and earth-worms, and that it drinks milk; while those in Dr. Russell's and in my own possession in India, when deprived of liberty invariably refused to take any kind of food.

Genus Elaps, Schneider.

Elaps bungaroides*. *El. supernè lividus, striis sagittalibus albis cinctus; infra albus alternè lividus.*

Scuta abdominalia 237.

Scutella subcaudalia 46.

Habitat. Chirra Punji.

Black-blue above, with white arrow-shaped stripes; beneath, alternately white and black-blue.

Elaps flaviceps. *El. capite flavo, dorso nigro vittâ serratâ albâ cœruleo pallide nitente utrinque circumdato, caudâ flavâ lineâ nigrâ mediâ divisâ;—abdomine flavo lineâ nigrâ utrinque incluso.*

Scuta abdominalia 275.

Scutella subcaudalia 45.

Habitat. Malacca.

The head yellow, the back with a serrate band on each side, shining with a pale sky-blue colour; the tail yellow, divided in the middle by a black dorsal line; the abdominal surface yellow, inclosed on each side by a black line.

On my late visit to Copenhagen, Professor Reinhard pointed out an undescribed species of Bungarus from Java, preserved in the Royal Museum of Natural History (MSS. Cat., No. 128), which exhibits the same distribution of colours as the *Elaps flaviceps*, viz. the head and tail of a light yellow, the back bluish-black, the abdominal surface light yellow, the scuta marked with a short black transverse band or check on each side.

Elaps nigromaculatus. *El. supernè pallidè brunneo-rubescens, maculis nigris albo-marginatis, lineis nigris junctis;—caudâ fasciis duabus nigris albo-marginatis cinctâ; abdomine flavo albescenti, alterne livido, lineâ nigrâ serratâ utrinque incluso.*

Scuta abdominalia 238.

Scuta subcaudalia 24.

Habitat. Sincapore.

* From its resemblance to *Bungarus cœruleus*, Daudin.

Pale reddish brown above, with black white-edged spots, united by black lines; on the tail two black bands with white margins;—the abdominal surface whitish yellow, alternately blue-black, inclosed on both sides by a black serrated line.

Elaps furcatus*, Schneider, Var. *El. supernè pallidè brunneo-rubescens, lineâ dorsali subflavâ nigro serratim marginatâ, caudâ fasciis tribus nigris cinctâ, abdomine flavo albescenti, lineâ nigrâ utrinque incluso.*

Scuta abdominalia 238.

Scutella subcaudalia 24.

Habitat. Sincapore.

Pale reddish brown, above with a light yellow dorsal line, with black serrated margins; on the tail three black bands; the abdominal surface whitish yellow, inclosed on each side by a black line.

Mr. Fraser exhibited a new species of *Corythaix*, which he proceeded to characterize as follows:

Corythaix macrorhynchus. *Cor. rostro prægrandi aurantiaco, ad basin sanguineo; capite, cristâ, collo pectoreque viridibus; cristâ ad apicem albâ, et purpureo notatâ; lineâ albâ infra oculos excurrente; dorso alisque metallicè purpureis; primariis sanguineis nigro marginatis; caudâ supernè metallicè viridi; femoribus caudâque subtùs nigris; tarsis nigris.*

Long. tot. 14 poll.; *rostri*, $1\frac{1}{4}$; *alæ*, 6; *caudæ*, 6; *tarsi*, $1\frac{1}{4}$.

Hab. ——?

This species of Corythaix lived for some time in the Society's Menagerie, having been purchased from a dealer who was unacquainted with its locality.

Compared with the known species of the genus, it approaches most nearly to the *Corythaix Persa* of authors, but from this it may readily be distinguished by its smaller size; and the form, comparatively large size, and colouring of the beak. The colouring of the plumage also differs in some respects: like *C. Persa*, the head, neck, and breast are green, but the feathers on these parts are of a deeper hue than in that species; the feathers of the crest, instead of being simply tipped with white, having a white transverse line near the apex, but *at* the apex they are purple-black. Minute black feathers encircle the eye, and a white stripe extends from beneath the eye on to the ear. The beak is much arched above, and somewhat inflated at the base; the nostrils are very large, and not hidden, as in *C. Persa*, by the decumbent feathers, these extending only to the posterior angle of the nostril. The upper mandible is of a bright yellow colour, excepting all that portion which lies below and behind the nostrils, which is of a brilliant red colour; the lower mandible is of the same red tint, but tipped with yellow. Both mandibles present simple sharp-cutting edges, in this respect exhibiting a different structure from that observable in the allied species, *C. Persa* and *C. Buffonii*, in which the mandibles have their cutting edges

* Russell, II., No. xix.

serrated. The back and upper surface of the wings are of a deep purple-blue tint, exhibiting in certain parts greenish reflections. The primaries (with the exception of the first quill) and the secondaries (with the exception of the three or four innermost quills) are red, margined with black; the shafts of these feathers are also black. The outer primary is black, and the two or three following feathers are broadly margined externally with the same colour. All the wing feathers are black at the base; on the outermost feathers the black colouring occupies but little space, but in each successive feather it increases in extent. The feathers of the tail are of a very dark green colour above, inclining to black; beneath they are black, but exhibit indistinct purple reflections. The rump, upper and under tail coverts, thighs, and vent are black, obscurely tinted with purple or green in parts. The tarsi are black. The eyes are hazel, and the naked, or almost naked space around the eye, is of a crimson colour; not carunculated, as in *C. Buffonii* and *C. leucotis*.

A highly-interesting and valuable series of specimens of the Paper Nautilus (*Argonauta Argo*), consisting of the animals and their shells of various sizes, of ova in various stages of development, and of fractured shells in different stages of reparation, were exhibited and commented on by Professor Owen, to whom they had been transmitted for that purpose by Madame Jeanette Power. Mr. Owen stated that these specimens formed part of a large collection, illustrative of the natural history of the Argonaut, and bearing especially on the long-debated question of the right of the Cephalopod inhabiting the Argonaut shell to be considered as the true fabricator of that shell.

This collection was formed by Madame Power in Sicily in the year 1838, during which period she was engaged in repeating her experiments and observations on the Argonaut, having then full cognizance of the nature of the little parasite (*Hectocotylus*, Cuv.), which had misled her in regard to the development of the Argonaut in a previous suite of experiments described by her in the Transactions of the Giænian Academy for 1836.

As this mistake had been somewhat illogically dwelt on, to depreciate the value of other observations detailed in Madame Power's Memoir, Mr. Owen observed, that it was highly satisfactory to find that the most important of the statements in that memoir had been subsequently repeated and confirmed by an able French malacologist, M. Sander Rang. Mr. Owen then proceeded to recapitulate these points.

First, with reference to the relative position of the Cephalopod to the shell, Madame Power, in her memoir of 1836, describes the siphon as being applied to the part of the shell opposite to the involuted spire. M. Sander Rang, who made his observations on the Argonaut in the port of Algiers, after having had cognizance of Madame Power's experiments, states, in his memoir published in Guerins's '*Magazin de Zoologie*' (1837), that in all the Argonauts observed by him, the siphon and ventral surface of the Cephalopod

were invariably placed against the outer wall or keel of the shell, and the opposite, or dorsal surface of the body next the involuted spire.

Secondly, with reference to the relative position of the arms of the Cephalopod to the shell, and the uses of the dorsal pair of arms, usually called the "sails," Madame Power had described these velated arms as being placed next the involuted spire of the shell, over which they were bent, and expanded forwards so as to cover and conceal the whole of the shell, and from which they were occasionally retracted in the living Argonaut: she further made the important discovery that these expanded membranes were the organs of the original formation and subsequent reparation of the shell, and ingeniously and justly compared them, in her memoir of 1836, to the two lobes of the mantle of the Cowry. These facts are described as the result of actual observation; but Madame Power, entertaining the common belief of the action and use of the velated arms in the sailing of the Cephalopod, enters into considerations respecting their proportional strength in relation to that hypothetical office. The subsequent observations of M. Rang have fully confirmed the accuracy of Madame Power's description of the relative position of the so-called sails of the Argonaut to the shell; and he has published some beautiful figures illustrative of this fact.

Thirdly, M. Rang confirms the discovery of Madame Power as to the faculty possessed by the Cephalopod of reproducing its shell, but he was unable to preserve his captive Argonaut sufficiently long to witness the complete deposition of calcareous matter in the new substance by which the Argonaut had repaired the fracture purposely made in its shell.

There are other observations in the original memoir of Madame Power; as, *e. g.* with respect to the flexibility and elasticity of the living shell of the Argonaut; the great extensibility and pump-like action of the siphon in locomotion; the use of the velated arms in retaining the shell firmly upon the Cephalopod; the great voracity of the Argonaut; the constantly fatal results of depriving it of its shell: all of which statements are of great interest and novelty in the history of this problematical mollusc, and some of which likewise receive confirmation in the memoir of M. Sander Rang.

Notwithstanding, however, that so many additional facts had been thus brought to bear on the relations subsisting between the Argonaut-shell and its occupant, Mr. Owen observed that the leading Malacologists who advocated the parasitic theory, had reiterated their conviction of its truth; and even M. Rang, though evidently biassed by what he had observed in favour of the opposite view, yields so much to the authority of M. de Blainville, as to declare himself in a state of the most complete uncertainty on the subject:— "Nous nous trouvons en ce moment dans la plus complète incertitude." *Loc. cit.*

In this state of the question, a collection of specimens of the Argonauts, such as Madame Power had submitted to the examination of the Zoological Society, was of the greatest importance, if

impartially and logically considered with reference to the points at issue, and Mr. Owen stated that, having studied this collection with much care, he should, in the first place, restrict himself to such observations and arguments as would naturally flow from an examination of the specimens themselves, apart from any history or statement with which they had been accompanied when first placed in his hands by Madame Power.

The collection of Argonauts,—Cephalopods and shells,—preserved in spirits, included twenty specimens, at different periods of growth, the smallest having a shell weighing not more than one grain and a half, the remainder increasing, by small gradations, to the common-sized mature individual.

Mr. Owen's first attention was directed to the relative position of the Cephalopod to its shell. In every case it corresponded to that which obtains in the Pearly Nautilus, *the siphon and ventral surface of the Cephalopod being placed next the broad keel forming the external wall of the shell, the dorsal surface of the body next the involuted spire or internal wall.* In most of these specimens the velated arms, which are nearest the involuted spire, were retracted; but in some of the larger examples they had been admirably preserved in a fully-expanded and flexible state, and in their natural position as envelopes of the shell.

A second fact, of considerable weight in the debated point of the parasitism of the Argonaut, was afforded by this collection, viz. that in ten of the younger specimens there were no ova in the shell, but *the body of the Cephalopod occupied the whole of the cavity of the shell, to which it accurately corresponded in form.* It was scarcely possible, Mr. Owen observed, to contemplate these specimens without deriving a conviction that the body had served as the mould upon which the shelly matter had been deposited; and with reference to the expanded membranes of the dorsal arms, to which the office of calcification was assigned by Madame Power and M. Rang, these, it should be remembered, were, in fact, essentially productions of the mantle and possessed the same structure. It was only in the smaller specimens, however, that the body filled the shell; when the ovarium begins to enlarge, the body is drawn from the apex of the shell, and the deserted place is occupied chiefly by the mucous secretion of the animal until the ova are deposited therein.

Mr. Owen then reminded the members present, that in former discussions on the nature of the Argonaut, he had opposed to the parasitic theory an observation made by himself on a series of young Argonauts, of a different species from the *Arg. Argo*, all captured at the same time, and exhibiting different sizes and degrees of growth, viz. *the exact correspondence between the size of the shells and that of their inhabitants, every trifling difference in the bulk of the latter being accompanied with proportional differences in the size of the shells which they occupied**. Madame Power's collection of young Argonauts afforded the means of pursuing this comparison to a much

* Zool. Trans., ii. pt. ii. p. 115.

further extent, and Mr. Owen had not only done so in reference to their relative size, but had also weighed the shell and its inhabitant separately of each specimen, from the smallest up to that in which the ova were fully developed in the ovarium. The following tabular view was given of the weights and measurements of ten of the alternate specimens in this series.

	A	B	C	D	E	F	G	H	I	K
	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.	grs.
Weight of the Shell	1½	3½†	3¾	4⅝	7¾	16¼	17½	18	19	46
Weight of the Inhabitant*	18	21	24	41‡	62	82½	165§	179	214	384
	lines.	lines.	lines.	lines.	lines.	lines.	lines.	lines.	lines.	lines.
Length of the Shell‖	8	11	12	12¾	15	22½	23	24½	27	37

Mr. Owen stated, that the correspondence in the progressive increase of inhabitant and shell, though not strictly conformable, was so close, as to present, in his opinion, an insurmountable objection to the parasitic theory. In every instance the inhabitant of a larger shell weighed more than that of a smaller one, even where the difference in the weight of the shell was but half a grain; while the few irregularities observed in the progressive increase of the two could in each case be accounted for, either by the enlargement of the ovarium, which added to the weight, without a proportional increase to the superficies of the individual; or, on the other hand, to a more rapid increase in the thickness of the shell at the earlier periods of its growth, or to a greater development of the angular processes of the mouth of the shell, as an individual peculiarity. In a collection of young parasitic Hermit-crabs (*Paguri*) the smaller specimens are commonly seen in shells of various species, and frequently very disproportionate bulk; the contrary is the case in the young of the Argonaut. "Now these young Cephalopods (Mr. Owen observed) grow, like the rest of the class, with great rapidity; the differences in the size of many of the young Argonauts in question corresponded with differences of age of a few days at the ut-

* In each case the Cephalopod was removed from the shell, and both were placed on blotting-paper, to absorb the superfluous liquor; due care was taken to weigh each specimen under conditions as precisely similar as possible.

† The disproportionate ratio in the increase of the shell B arises from the additional portion of the shell being thicker and heavier in proportion to the previously-formed part, than in the subsequent periods of growth, so that the increase of weight is in a greater ratio than the increase of size.

‡ Clusters of ovisacs were conspicuous in D to the naked eye in the ovarium, which had already begun to expand under the sexual stimulus.

§ The ovarium has now begun rapidly to enlarge.

‖ This admeasurement was taken in a straight line, traversing the longest diameter of the shell; it was found impracticable to give any constant admeasurement of the Cephalopod, in consequence of the varying state of contraction and form of its soft and changeable body.

most"; so that, if the accuracy of the above observations made by Mr. Owen on two series of two distinct species of Argonaut, be admitted, * "a Naturalist entertaining the parasitic theory, must be compelled to suppose that the young Ocythoë, or Cephalopod, is engaged in a perpetual warfare with the hypothetical Nucleo-branchiate constructor of the Argonaut shell, which shell, to produce the correspondences above described, the young Ocythoë must change two or three times a week, if not every day. And nevertheless, although each prolific Cephalopod of the Argonaut sends into the world hundreds of little ones that must be so accommodated, and although, on the parasitic hypothesis, hundreds of the hypothetical Nucleo-branchiate constructors of the Argonaut shell ought to swarm about the port of Messina, where Madame Power obtained the specimens with which she stocked her molluscous vivarium, and notwithstanding that M. de Blainville has called the special attention of Naturalist-collectors to the hypothetical true constructor of the Argonaut-shell, as a chief desideratum in Malacology; and lastly, notwithstanding this hypothetical Nucleo-branchiate mollusk ought, on M. de Blainville's theory, to be nearly allied to the *Atlanta* and *Carinaria*, and therefore a floating Pelagic species, generally to be met with on the surface of the ocean;—yet had it still evaded the observation of the numerous active collectors engaged in exploring the zoological riches of the Mediterranean in different parts of its coasts."

"It is in vain to repeat, with reference to the non-discovery of any other inhabitant of the Argonaut than the Cephalopod, 'Ce que ne peut être rangé au nombre des argumens, parceque ce qui n'a pas eu lieu jusqu'à un moment déterminé, peut se montrer le moment suivant;' that, 'what is a fact at the present moment, viz. the non-discovery of the hypothetical true constructor of the Argonaut, may be no longer a fact at the moment after.' Such an observation could only possess argumentative force in the absence of other facts showing the high degree of improbability that a floating Pteropod, or Heteropod, sufficiently abundant to have supplied all the Argonauts of the Mediterranean with their shells, could have escaped observation."

Mr. Owen then proceeded to state that he had dissected every specimen of Argonaut in the present collection in which the absence of ova in the shell left the sex doubtful, and that they all proved to be females; this fact rendered it allowable to conjecture that the calcifying brachial membranes, and consequently the shell, might be sexual characters and peculiar to the female. But, he argued, "the known paucity of males as compared with females in other species of Cephalopods, rendered the conjecture to a certain degree problematical. Should it, however, be hereafter proved that the

* They accord with the statement of Poli, and with the observations of M. Prevost, founded on a suite of specimens of the Argonaut from the size of one and two inches to three or four inches. These are quoted by M. de Blainville in his memoir of 1837 (p. 10), but without the deductions which I have drawn from the same facts.

male Argonaut possessed neither a shell nor the organs for secreting it, this fact would not render the hypothesis of the parasitism of the female, which does possess the calcifying membranes, at all the less tenable."

With respect to the shell of the Argonaut, Professor Owen observed, that "any argument founded on observations on the dried shells in cabinets, could tend only to mislead the observer. Madame Power's specimens having been recently collected, and preserved in alcohol of not too great strength, manifested much of the original transparency and elasticity of the living shell. It was obvious, therefore, that light would act in developing the coloured spots on the contained body of the Argonaut; and this fact is important in reference to the seventh argument in M. de Blainville's memoir of 1837, p. 4., in which he asserts that 'those parts of mollusks which are covered with a shell are constantly white or colourless, but the mantle investing the body of the Argonaut is highly coloured.' Now, if M. de Blainville's object had been to prove that the Ocythoë did not inhabit a shell at all, the force or purport of this observation would have been intelligible; but the question is not whether the body of the Ocythoë is or is not covered with a shell, but whether it makes or steals that shell. But perhaps the argument, founded on the supposed opacity of the Argonaut shell, was brought forward merely to prove, that up to a certain period of its existence the Ocythoë was naked, and that the Argonaut-shell was taken possession of only for some temporary purpose, as for oviposition. The observations, however, which I published in 1836 (Cyclop. of Anat., Art. Cephalopoda, p. 544), proved that the young Cephalopod of the Argonaut was provided with a shell prior to the period of oviposition, and that the body entirely filled the shell at that period. The present collection still more satisfactorily establishes the fact, that the Argonaut-shell is not assumed by the Cephalopod for a temporary purpose: for the shell which protects the young would be wholly inadequate as a nidus for the ova of the mature animal; and for what purpose, then, on the parasitic theory, is the shell assumed by the Cephalopod before its ovarium has received the stimulus of sexual development?"

In Madame Power's recently-collected specimens, the shell, after a few hours' soaking in water, regained so much of its original flexibility as to demonstrate its power of varying its form with the varying bulk arising from the respiratory and locomotive actions of the inhabitant*.

The inductions, therefore, which the present collection of Argonauts of different ages and sizes legitimately sustained, were in exact

* In M. de Blainville's Letter on the Parasitism of the Argonaut (1837), the following assertion is offered as the tenth argument: "La mode de locomotion et de respiration de ces animaux par la contraction et la dilatation alternatives du sac, ne permet pas d'admettre qu'il y ait adhérence de la peau avec la coquille, à moins que de supposer que celle-ci soit flexible et élastique, et suive tous les mouvemens de celle-la, ce qui est bien loin de la vérité."

accordance with Madame Power's belief that the Cephalopod was the true constructor of the shell, while no contradictory inference had been, or could be, deduced from an examination of the specimens themselves.

With reference to the second suite of specimens, viz. the ova of the Argonaut in different stages of development, Mr. Owen entered into a detailed account of the new and interesting facts which they revealed. In the ova most advanced, the distinction of head and body was established; the pigment of the eyes, the ink in the ink-bladder, the pigmental spots on the skin, were distinctly developed; the siphon, the beak,—which was colourless and almost transparent,—and the arms were also discernible by a low microscopic power; the arms were short and simple; the secreting membranes of the shell were not developed, and of the shell itself there was no trace.

In the second memoir of 1838, published by Madame Power, it is stated that the young Argonaut is excluded from the egg, as such, but naked, twenty-five days after oviposition, and that in ten or twelve days more, she discovered that they had formed their little shell. Mr. Owen regretted that there were no specimens in the present collection exhibiting the commencing formation of the shell; these were still a desideratum: but he proceeded to say, that the observations on the development of the ova of the Mollusca in general, which science possessed, would be greatly overstated, if one per cent. of the known species of Mollusca were allowed to have been subjected to such examination; he could not, therefore, admit, or indeed understand, the philosophy of regarding the period of the development of a mere dermal production, like the shell, as being subject to so precise a law, that its non-appearance in an embryo-mollusk, prior to its exclusion from the egg-covering, was to be considered proof positive that such mollusk should never thereafter have the power of secreting a shell. Now it was evident, from the observation of Madame Power's specimens, independently of any statements respecting them, that the expanded membranes of the dorsal pair of arms are not formed until the development of the embryo has far advanced: if, therefore, these membranous arms be, as Madame Power states, the organs of the secretion of the shell, that shell may not be formed until after the exclusion of the young Argonaut.

The proof that the velated arms possess, like the expansions of the mantle of the Cypræa, a calcifying power, was afforded by the third series of specimens on the table of the Society. These consisted of six shells of the Argonaut, from which Madame Power had removed pieces of shell while the Argonauts were in life and vigour, in her marine vivarium. One of the shells had been removed from the animal ten minutes after the fracture; another Argonaut had lived in the cage two months after being subjected to the experiments: the remaining specimens exhibited intervening periods between the removal of a portion of the shell and its reparation. The fractured shell first described had the breach repaired by a thin transparent membranous film: the piece removed was taken from the middle of the keel. In a second specimen calcareous matter

had been deposited at the margins of the membrane, where it was attached to the old shell. In a third specimen, in which a portion of the shell had been removed from the keel, about two inches from the mouth of the shell, the whole breach had been repaired by a calcareous layer, differing only in its greater opacity and irregularity of form from the original shell. In the specimen longest retained after the fracture, a portion had been removed from the margin of the shell: here the new material next the broken edge presented the opacity characteristic of the repairing substance, but the transition of this substance into the material of the shell, subsequently added in the ordinary progress of growth, was so gradual, in the resumption in the repairing material of the ordinary clearness and striated structure of the shell, that it was impossible to doubt but that the reparation as well as the subsequent growth had been effects of the same agent. The repaired parts of the shell reacted precisely like the ordinary shell with nitric acid.

Mr. Owen then observed, that the specimens submitted to the meeting by Madame Power possessed in themselves the means of confirming or refuting her theory of the formative organs of the shell of the Argonaut: for if the shell were secreted, as in gastropods, &c., by the edge of the mantle covering the body, the new material by which the breaches of the shell had been repaired, should have been deposited on the inside of the fractured edge; but, on the contrary, it was clearly obvious in two of the specimens, that the new material had been laid on upon the outside of the fractured part—as it must have been, supposing the vela or membranous arms to be the calcifying organs.

Mr. Owen then recapitulated as follows, the evidence, which, independently of any preconceived theory or statement, could be deduced from the admirable collection of *Argonauta Argo* due to the labours of the accomplished lady who had contributed so materially to the elucidation of a problem which had divided the zoological world from the time of Aristotle.

1st. The Cephalopod of the Argonaut constantly maintains the same relative position in its shell.

2nd. The young Cephalopod manifests the same concordance between the form of its body and that of the shell, and the same perfect adaptation of the one to the other, as do the young of other testaceous Mollusks.

3rd. The young Cephalopod entirely fills the cavity of its shell: the fundus of the sac begins to be withdrawn from the apex of the shell only when the ovarium begins to enlarge under the sexual stimulus.

4th. The shell of the Argonaut corresponds in size with that of its inhabitant, whatever be the differences in the latter in that respect. ("The observations of Poli, of Prevost, and myself, on a series of *Argonauta rufa*, before cited, are to the same effect.")

5th. The shell of the Argonaut possesses all the requisite flexibility and elasticity which the mechanism of respiration and locomotion in the inhabitant requires: it is also permeable to light.

6th. The Cephalopod inhabiting the Argonaut repairs the frac-

tures of its shell with a material having the same chemical composition as the original shell, and differing in mechanical properties only in being a little more opake.

7th. The repairing material is laid on from without the shell, as it should be according to the theory of the function of the membranous arms as calcifying organs.

8th. When the embryo of the Argonaut has reached an advanced stage of development *in ovo*, neither the membranous arms nor shell are developed.

9th. The shell of the Argonaut does not present any distinctly defined nucleus.

Mr. Owen finally proceeded to consider the validity of the best and latest arguments advanced in favour of the parasitism of the Cephalopod of the Argonaut, and commenced with those published in the Proceedings of the Zool. Society for 1836, p. 122.

"Mr. Gray states, 1st. 'The animal has none of those peculiarities of organization for the deposition, formation, and growth of the shell, nor even the muscles for attaching it to the shell, which are found in all other shell-bearing Mollusks; instead of which, it agrees in form, colour, and structure with the naked Mollusks, especially the naked Cephalopods.'

"To this statement it need only be replied, that the Cephalopod of the Argonaut possesses two membranous expansions, having the same structure as the calcifying processes of the mantle in the testaceous Mollusks, and which Madame Power and M. Sander Rang compare to the lobes of the mantle of *Cypræa*; and that the Cephalopod in question, instead of agreeing in structure with the naked Cephalopods, differs from them precisely in the presence of conspicuous and largely-developed organs, which present the closest correspondence in form and structure with the calcifying membranes of the Cowries and other testaceous Mollusks.

"2ndly. Mr. Gray asserts, 'that the shell of the Argonaut is evidently not moulded on the body of the animal usually found in it, as other shells are.'

"This assertion, like the preceding, is directly opposed to the fact. But at the time when it was recorded in our Proceedings, Mr. Gray had probably not examined the young Argonaut. . Yet the analogy of other testacea might have indicated to him that it was essential to see the young Mollusk before the degree of correspondence between the animal and its shell could be definitively pronounced upon. Most shell-bearing Gastropods, like the Nautilus and Argonaut, withdraw their bodies in the progress of growth from the contracted apex by which their shell commenced, and differ accordingly in form from that of the original cavity of their shell. The mode in which the vacated part of the shell is dealt with in different Mollusks is extremely various, and reducible to no common law; in the genus *Magilus*, *e. g.* it is solidified: in some species of *Helix*, *Bulinus*, and *Cerithium*, the deserted part of the shell, after being partitioned off, is decollated: in the Nautilus, &c., it is camerated. Was it at all improbable that in the Argonaut some other condition of the vacated

spire of the shell should be manifested? Why should it not be made subservient to the generative economy of the species? Yet, because it is neither solidified, decollated, nor camerated, it is argued in the third place, that the Argonaut shell must have been secreted by some other Mollusk than the Cephalopod usually found in it.

"4thly. Mr. Gray observes, 'the young shell of the just-hatched animal, which forms the *apex* of the shell at all periods of its growth, is much larger (ten times) than the eggs contained in the upper part of the cavity of the Argonaut.' The argument here founded on a comparison of the size of the supposed nucleus of the Argonaut shell with that of the ovum of the Ocythoë, has been quoted with approbation by M. de Blainville; but granting that the shell of a testaceous Mollusk is always formed before the embryo is excluded from the ovum, (which, as I have already shown, is a postulate, and not an established law) the force of an argument for the parasitic theory, based on this postulate, wholly depends upon another assumption, viz. that the ovum of a Mollusk never enlarges after it has quitted the parent. Now, the first observation which the promulgator of this argument had the opportunity of making on one of our commonest littoral Testacea—the Whelk, proved to him that the molluscous ovum in that species does enlarge after exclusion, and Mr. Gray was subsequently compelled to admit 'that the size of the nucleus would not offer any difficulty with respect to the Ocythoë being the maker of the shell which it inhabits*.'

"Whether the other arguments founded by Mr. Gray upon the form of the body, and the want of perfect adaptation or adhesion of the body to the shell, &c., are unanswerable, as that experienced Conchologist states that he considers them to be, must depend upon the degree of weight which the objections above advanced are allowed to carry.

"With respect to the conclusions as to the parasitism of the Ocythoë, drawn from observing the relation of the Cephalopod to its shell, their insufficiency depends upon the circumstance that in forming them the condition of the mature Argonaut has been considered as applicable to every period of its life, and the arguments Nos. 1 and 2 being founded upon that supposition, thereby fall to the ground. In the argument for the parasitic theory deduced from the development of the Argonaut shell, a general rule, applicable to an extensive primary division of the animal kingdom, is assumed from the result of extremely scanty observations, which are altogether inadequate to its establishment.

"In the Proceedings of the Zoological Society for 1837, Mr. Charlesworth proposed an argument in favour of the parasitism of the Ocythoë, which has the merit—not possessed by those above discussed—of being founded on the observation of a new fact in the natural history of the Argonaut, viz., that breaches in the shell were repaired by a substance agreeing in every respect with the original shell. Mr. Charlesworth has, however, since admitted that this fact is not

* Magazine of Natural History, New Series, 1837, p. 248.

valid as evidence of the parasitism of the Cephalopod; and it is now proved that the transparent film observed by M. Rang to be deposited by the Ocythoë over the fracture of the Argonaut shell would have been converted into a true shelly material if the subject of his experiment had survived for a longer period.

"M. d'Orbigny*, on the other hand, derived from his observations of the *Argonauta hians* made during his voyage to South America, a belief in the fallacy of the parasitic theory; the principal argument of novelty which he adduces is founded on the integrity of the delicate and flexible margins of the shell in which the supposed parasite was lodged. M. de Blainville has refused his assent to the validity of this argument on the grounds that the rightful owner of the Argonaut shell might have been very recently expelled from the specimens described by M. d'Orbigny. As I have elsewhere† considered this objection, I shall not dwell further upon it, but merely observe that the experiments of Poli and Ranzani adduced by M. d'Orbigny in evidence of the formation of the shell *in ovo* are more than suspicious, and are inadequate to enforce a conviction of the truth of the non-parasitic theory.

"The more recent arguments of M. de Blainville‡ in favour of the parasitism of the Argonaut repose partly on statements which are not based on facts, and partly on the interpretation of actual facts. The false facts are the following: 1st. That the same species of Cephalopod is not always found in the same species of shell. 2nd. That the natural position of the animal in the shell varies, the back of the animal being sometimes next the outer wall of the shell, sometimes next the involuted spire. 3rd. That the animal does not occupy the posterior part of its shell—(this being true of the more mature animal only). 4th. That the form of the animal and of its parts offers no concordance or analogy with the shell. 5th. That the shell is too opake to have permitted the influence of light in the development of the coloured pigment in the mantle of the Cephalopod of the Argonaut. 6th. That it is very far from being true that the Argonaut shell possesses the flexibility and elasticity requisite to harmonize with the locomotive and respiratory movements of the animal. 7th. That the animal suffers no appearance of inconvenience when deprived of its shell. 8th. That a Cephalopod has been discovered in the Sicilian seas like that which inhabits the Argonaut, but without a shell.

"With respect to the first six of these statements, it need only to be observed that they are abundantly disproved by the series of specimens now on the table.

"As to the seventh statement, its value will be manifest, when the account given by Mr. Cranch, on which it is founded, is carefully analysed and considered. Mr. Cranch's observations, as quoted by Dr. Leech, amount simply to this: 'When the Cephalopod (*Argo-*

* *Voyage dans l'Amérique Méridionale, Mollusques*, p. 10.
† Zool. Trans., vol. ii. p. 114.
‡ *Annales d'Anatomie et de Physiologie*, Mai, 1837.

nauta hians, Solander, or *Ocythoë Cranchii*, Leech) was adhering, with the *vela* retracted, to the side of the vessel of sea-water in which it was placed, the shell could be removed': in other words, there was no muscular adhesion. 'In this state of captivity some of the Cephalopods lost the power of retaining hold of the shell; one which had thus left its shell lived several hours, and showed no desire to return.'

"Now had the Ocythoë been a parasite;—supposing that it had ever before obtained its shell by placing its body in one ready-made;—and had it been in the habit of repeating this act during its whole period of growth, as it must have done to produce the concordance in size which the observations of Poli, Prevost, Madame Power, and myself establish as a general fact;—then the probability would have been greater that the Cephalopod would have returned to, and so manœuvred as to regain possession of, its shell: the observation of such a fact would have told as strongly for the parasitic theory as the phænomena witnessed by Mr. Cranch testify in my opinion against it. I have repeated Mr. Cranch's experiment with a true parasite,—the common Hermit-crab of our coasts; and I would invite any naturalist to remove a parasitic Pagurus from its shell, and place it with the empty shell in a basin of sea-water, and see whether the parasite will manifest no desire to return his body into its accustomed hiding-place. In my experiments the Pagurus lost no time in regaining possession of its shell. As Mr. Cranch's Argonaut survived four hours without showing the least disposition to return to its shell, instead of concluding therefrom that it had stolen it, I infer that such a mode of acquiring a shell was totally foreign to its instincts and œconomy.

"Mad. Power states that the constant result of depriving the Argonaut of its shell is a gradual loss of vital power and ultimate death within a few hours at furthest. The experiment of M. Sander Rang was followed by the same result.

"With respect to the eighth statement, I must say that the weakness of the side of the question advocated by M. de Blainville is clearly betrayed by the dubious notice of the Ocythoë by M. Rafinesque having been pressed into the service of the parasitic theory in the disguise of an established fact. M. Rang* informs us that the entire description of the much talked-of Ocythoë, as given by its discoverer, is as follows: 'Appendices tentaculaires au nombre de huit, les deux supérieures ailes intérieurement, à suçoirs intérieurs, pedonculés, réunis par l'aile latérale, sans aucune membrane à leur base'; and amongst other just observations on the inadequacy of this meagre indication, to the support of the theory that the Cephalopod of the Argonaut naturally existed without its shell, and was identical with the Ocythoë of Rafinesque, M. Rang adds that the description of the Ocythoë above cited is equally applicable to any of the species of Octopus, to which M. Férussac had applied the term '*Vélifères*.'

* Guerin's Magazine, p. 31.

" I now come to the consideration of the arguments for the parasitism of the Cephalopod of the Argonaut, founded by M. de Blainville on undoubted or admissible facts. The first of these arguments reposes on the often-repeated statement of the absence of any organ for muscular adhesion in the Cephalopod of the Argonaut. I confess, that when I discovered the Cephalopod of the Nautilus to be fixed to its shell by two strong muscles, and that the corresponding muscles in the Argonaut were very feebly developed, and lost in the mantle, the absence of analogy between the two Cephalopods inclined me, in 1832, to consider as probable the parasitic theory; subsequently, however, the consideration of the absence of muscular adhesion in the Carinaria, and of any adhesion at all in the Annelides which secrete shells, deprived this argument of much of its force.

" Secondly, M. de Blainville observes that 'the muscular integument of the body of the Cephalopod is not thinner than that of the naked species, contrary to that which exists in all conchyliferous Mollusks.' But what Mollusk, we may ask, has its whole body covered with a shell so delicate, so transparent, so flexible and elastic, as is the shell of the living Argonaut*?

" The dorsal border of the mantle is not free," observes M. de Blainville. Granted: and this would be undoubtedly strong proof that the Cephalopod of the Argonaut did not secrete its shell, if it were not provided with other organs for the purpose. In the Pearly Nautilus, on the other hand, which has no veliferous arms, the dorsal border of the mantle is so produced that it can be extended from the involuted spire, which it habitually covers, over the whole exterior of the shell, just as the Argonaut invests its shell with the transparent films of the dorsal pair of arms: the analogy between these two testaceous Cephalopods is perfect as regards their relative position to the shell, but does not extend to their organs of secreting or of adhering to the shell†.

" The animal does not occupy the posterior part of its shell. This I have ranged in the category of false facts, because the statement is only applicable to the young animal. But granting it were true, as well might we argue the *Helix decollata* to be a parasite, because it does not, like *Magilus*, retain and fill with shelly secretion the deserted spire of its shells; or that *Magilus* was a parasite because it did

* M. d'Orbigny truly states, " Les coquilles de l'Argonaute n'ont pas la contexture vitreuse des Carinaires et des Atlantes; elles sont, au contraire, demi-cornées, flexibles; et nous n'en trouvons l'analogue dans aucun autre des Mollusques." Loc. cit. p. 11.

† Messrs. de Blainville and Gray conceive me to be in error in the position I have assigned to the Pearly Nautilus in its shell, but their arguments on this point are based on the same hasty generalization that has led to the hypothesis of the parasitism of the Argonaut. Judging from the analogies which have been cited in support of their views, it would have been equally reasonable to have called in question the accuracy of the relative position which I have assigned to the soft parts of *Terebratula* and *Orbicula*, viz. with the ventral surface applied to one valve, and the dorsal surface to the other, because in the Lamellibranchiate bivalves one valve corresponds to the right, and the other to the left side of the animal.

not secrete *septa* at regular distances, like the Nautilus, or, *vice versâ*, as argue the Argonaut to be a parasite because it fills its vacated spire with mucus and with eggs."

Finally, Mr. Owen proceeded to state in detail the points which still remained to be elucidated in the natural history of this most interesting Mollusk. Among other experiments he suggested that the young Argonaut should be deprived of one of the velated arms, and preserved in a marine vivarium, with the view to determine the influence which such mutilation might have on the future growth of the shell: but in proposing further experiments, and while admitting that the period of the first formation of the shell yet remained to be determined, Mr. Owen stated that he regarded the facts already ascertained to be decisive in proof that the Cephalopod of the Argonaut was the true fabricator of its shell.

March 12, 1839.

William Yarrell, Esq., in the Chair.

Mr. Ogilby communicated a portion of a letter which he had received from M. Temminck. It related to two species of Monkeys, *Colobus fuliginosus* and *Papio speciosus*; the former M. Temminck considers identical with the Bay-Monkey of Pennant, and he states that this opinion is founded upon its agreement with a coloured drawing now in his possession; this drawing having been taken by Sydenham Edwards from the specimen of the Bay-Monkey formerly in the Leverian Museum, and which is the original of Pennant's description.

The *Macacus speciosus* of M. F. Cuvier is stated by M. Temminck to be founded upon an immature specimen of a species of *Macacus* which inhabits Japan; the habitat of Molucca Islands given by M. F. Cuvier being founded upon error. The specimen was originally taken from Japan to Java, where it died; the skin was preserved, and M. Diard having obtained possession of it, sent it to the Paris Museum; and as there was no label attached, M. F. Cuvier imagined it to be a native of the place whence M. Diard had sent it.

Mr. Fox exhibited several birds, which he stated had formed part of an extensive collection made in Iceland by the Curator of the Durham Museum.

The second part of Dr. Theodore Cantor's paper, entitled "*Spicilegium Serpentium Indicorum*," was read. In this paper numerous new species of Indian serpents are thus characterized:—

B. *Innocuous Serpents.*

Genus Calamaria, Linné.

Calamaria sagittaria. *Cal. partim cinerea, partim ferruginea, serie dorsali punctorum nigrorum, nuchâ capiteque albicantibus, imagine sagittæ nigræ ornatis; corpore squamis lævibus imbricatim tecto; abdomine citrino, punctis lateralibus nigris, vittâ lividâ utrinque incluso.*

Scuta abdominalia 224.

Scutella subcaudalia 69.

Habitat. Bengal, Tirhoot.

Partly ash-coloured, partly rusty-brown, with a series of black dots along the back; the head and neck whitish, with an arrow-shaped black mark; covered with smooth rhomboidal imbricate scales; the stomach of a citrine colour, with lateral black dots, and a blue black band on either side.

Vernacular name, Dóblee.

Calamaria monticola. *Cal. olivaceo-fusca, collari lætè flavo, lineâ dorsali albicante, abdomine citrino.*

Scuta abdominalia 125.

Scutella subcaudalia 44.

Habitat. Naga Hills in Asám.

Dark olive-brown, with a bright yellow collar and a whitish dorsal line; beneath of a citrine colour.

Genus Coronella, Boie.

Coronella albocincta. *Cor. viridè-canescens, fasciis transversalibus albis nigro marginatis, quorum intervalla nigro punctata; scutis abdominalibus albo-flavescentibus, alternè fuscis.*

Scuta abdominalia 181.

Scutella subcaudalia 65.

Habitat. Chirra Púnji, Asám.

Greyish-green, with white transverse bands, edged with black, the intervals dotted with black; the abdominal scuta alternately yellowish-white and deep brown.

Asámese name, Patdei-hee.

Coronella violacea. *Cor. violaceo-rubescens, squamis albo-marginatis, subtus margaritaceis.*

Scuta abdominalia 196.

Scutella subcaudalia 38.

Habitat. Rungpore.

Reddish violet; the scales edged with white; beneath pearl-coloured.

Coronella cyclura. *Cor. viridè-canescens striis nigris obliquis interruptis, abdomine margaritaceo, vittâ tristè cinereâ utrinque incluso.*

Scuta abdominalia 179.

Scutella subcaudalia 43.

Greyish-green, with black oblique interrupted stripes; the abdominal surface pearl-coloured, with a deep ashy-grey band on either side.

Vernacular name, Tukkr-Bora.

Genus Lycodon, Boie.

Lycodon atro-purpureus. *Ly. atro-purpureus albo nigroque marmoratus, abdomine margaritaceo.*

Scuta abdominalia 257.

Scutella subcaudalia 91.

Habitat. Mergui, Tenasserim.

Deep purple, marbled with white and black; beneath pearl-coloured.

Lycodon subfuscus. *Ly. subfuscus, abdomine albo flavescenti.*

Scuta abdominalia 245.
Scutella subcaudalia 78.
Habitat. Bengal.
Light brown; yellowish white beneath.
Vernacular name, Chittee.

Genus Coluber, Boie.

Coluber Dhumna. *Col. olivaceo-viridis, squamis nigro-marginatis, abdomine margaritaceo, scutis scutellisque nigro-clavatis.*
Scuta abdominalia 187.
Scutella subcaudalia 119.
Habitat. Carnatic, Orissa, Bengal, Nepal, Asám, Arracan, Tenasserim.
Olive-green; the scales edged with black; the stomach pearl-coloured, edged with black.
Vernacular name, Dhumna or Dhameen.

Coluber porphyraceus. *Col. lætè porphyraceus, lineis nigris transversalibus albo-marginatis, pone quas lineæ duæ nigræ dorsales, æquidistantes; subtus lætè flavus.*
Scuta abdominalia 213.
Scutella subcaudalia 64.
Habitat. Míshmee Hills, Asám.
Bright porphyry-red, with black transverse lines edged with white, the posterior portion of the body with two black parallel dorsal lines; beneath light yellow.

Coluber quadrifasciatus. *Col. supernè lætè brunneo-virescens fasciis dorsalibus* iv. *nigris, albo interruptis; infra flavus.*
Scuta abdominalia 248.
Scutella subcaudalia 82.
Habitat. Asám.
Above light greenish-brown, with 4 black dorsal bands interrupted with white; beneath yellow.

Coluber curvirostris. *Col. supra partim lætè olivaceo-viridis, punctis et lineis obliquis albis nigrisque, partim æneus; abdomine subfusco.*
Scuta abdominalia 220.
Scutella subcaudalia 85.
Habitat. Bengal.
Above bright olive-green, with white and black dots, and oblique bronze-coloured lines; beneath light yellow.
Vernacular name, Tukkr-Bora.

Coluber reticularis. *Col. supernè brunneo-nigrescens, annulis albidis reticulatis, contiguis et lineis ejusdem coloris transversalibus ornatus, caudâ brunneâ nigrescenti, alternè griseo-flavescenti; infra griseo-flavescens nigro-maculatus.*

Scuta abdominalia 229.
Scutella subcaudalia 75.

Habitat. Chirra Púnji.

Blackish-brown, with whitish confluent netted rings and transverse lines of the same colour; the tail alternately blackish-brown and yellowish-grey; beneath yellowish-grey spotted with black.

COLUBER BIPUNCTATUS. *Col. supra tristè vinoso-purpureus squamis albo bipunctatis, subtus albo-cœrulescens.*
Scuta abdominalia 181.
Scutella subcaudalia 52.

Habitat. Bengal, Asám.

Deep claret-purple above; each scale with two white dots; beneath bluish-white.

COLUBER MONTICOLUS. Hodgson. *Col. supernè luteo-rubescens fasciis transversalibus nigris, scutis abdominalibus albo-flavescentibus nigro marginatis.*

Habitat. Nepâl.

Reddish dun-coloured above, with black transverse bands; the abdominal scuta yellowish-white, with black margins.

Subgen. HURRIAH, Daudin.

HURRIAH SANGUIVENTER, (COLUBER SANGUIVENTER, Hodgson.) *Hur. supernè vinoso-purpureus æneo nitens, abdomine sanguineo.*
Scuta abdominalia 207.
Scuta subcaudalia 14.
Scutella subcaudalia 85.

Habitat. Nepâl.

Above claret-purple, with metallic lustre; beneath blood-coloured.

Genus HERPETODRYAS, Boie.

HERPETODRYAS PRIONOTUS. *Her. supra fusco flavescens, nigro-punctatus, fasciáque dorsali serratá nigricante; abdomine flavo, fasciá serratá nigricante utrinque incluso.*
Scuta abdominalia 153.
Scutella subcaudalia 65.

Habitat. Malacca.

Above yellowish-brown, dotted with black, and with a serrated blackish dorsal band; the abdominal surface yellow, with a blackish serrated band on either side.

Genus PSAMMOPHIS, Boie.

PSAMMOPHIS CERASOGASTER. *Psam. fulvus aureo pallidè nitens, squamis hexagonis rhomboidalibus summis carinatis, cæteris*

lævibus tectus; abdomine ceriseo, lineâ læte flavâ utrinque incluso.

Scuta abdominalia 149.

Scutella subcaudalia 60.

Habitat. Bengal, Asám.

Yellowish-brown, shining with a pale gold colour, with hexagonal rhomboidal scales, the uppermost of which are keeled, the rest smooth; the abdominal surface cherry-coloured, with a bright yellow line on either side.

Vernacular name, Lál Mitállee.

Psammophis nigrofasciatus. *Psam. supernè subflavo-rubescens fasciis latis transversalibus nigris, lineisque duabus barbatis dorsalibus ejusdem coloris, interstitium quarum nigro partim punctatum; abdomine albido.*

Scuta abdominalia 245.

Scutella subcaudalia 75.

Habitat. Sincapore.

Light reddish-yellow above, with broad transversal black bands, and with two barbed dorsal lines of the same colour; the interval between these dorsal lines dotted with black; the abdominal surface whitish.

Genus Dendrophis, Boie.

Dendrophis Boii.* *Den. supernè nigro-brunnescens, vittâ dorsali subfuscâ, abdomine albo-flavescenti vittâ ejusdem coloris utrinque incluso, rostro subobtuso.*

Scuta abdominalia 186.

Scutella subcaudalia 129.

Habitat. Bengal, Ceylon.

Brownish black, with a light brown dorsal band; the abdominal surface yellowish white, with a band of the same colour on either side; the rostrum subobtuse.

Vernacular name, Kálla Lawrýnca or Nawdúnga.

Genus Dipsas, Boie.

Dipsas Ferruginea. *Dip. supra ferrugineo-brunnea, nigro alboque rarè maculata; abdomine ferrugineo-flavo, albo nigroque maculato.*

Scuta abdominalia 171.

Scutella subcaudalia 57.

Habitat. Asám.

Rusty-brown, with a few black and white spots; the abdominal surface rusty-yellow, dotted with white and black.

Dipsas monticola. *Dip. supernè tristè fusca, striis aliquot nigris obliquis; infra flavo-brunnescens.*

* Chrysopelea Boii, Dr. Andrew Smith.

Scuta abdominalia 193.
Scutella subcaudalia 82.

Habitat. Naga Hills (Asám).

Dull dark brown above, with a few black oblique stripes; beneath brownish-yellow.

Genus Tropidonotus, Kuhl.

Tropidonotus Quinque. *Tro. supernè griseo-brunnescens, nuchá numero Quinque* (v.) *nigro inscriptá, fasciisque duabus nigris dorsalibus, albo punctatis; abdomine flavo-albescenti, fasciá nigrá utrinque incluso.*
Scuta abdominalia 259.
Scutella subcaudalia 97.

Habitat. Mergui.

Brownish-grey above, with the cypher V in black on the neck, and with two dorsal black bands dotted with white; the abdominal surface whitish-yellow, with a black band on either side.

Tropidonotus mœstus. *Tro. supernè tristè olivaceo-nigricans, subtus flavus.*
Scuta abdominalia 138.
Scutella subcaudalia 77.

Habitat. Bengal.

Dull blackish olive-colour above; yellow beneath.

Vernacular name, Kalla Mittállee.

Tropidonotus surgens. *Tro. lætè olivaceo-viridis, abdomine flavo lineá nigrá serratá utrinque incluso.*
Scuta abdominalia 148.
Scutella subcaudalia 23.

Habitat. Bengal.

Bright greenish-olive; the abdominal surface with a black serrated line on either side.

Vernacular name, Bahr.

Tropidonotus plumbicolor. *Tro. supra plumbeus, fasciá sagittatá occipitali nigrá et albá fasciisque nigris serratis transversalibus, squamis altè carinatis tectus, mento albo, abdomine plumbeo.*
Scuta abdominalia 162.
Scutella subcaudalia 51.

Habitat. Malwa (Saugor).

Lead-coloured above, with an occipital arrow-shaped black and white band, and with black serrated transversal bands, covered with sharply-keeled scales; the chin white; the abdominal surface lead-coloured.

Genus Cerberus, Cuvier.

Cerberus cinereus. *Cerb. supernè cinereus fasciis nigris transversalibus, subtus albicans fasciá nigrá undulatá.*

Scuta abdominalia 143.
Scutella subcaudalia 59.

Habitat. Bengal.

Ash-coloured above, with black transverse bands; beneath whitish, with a black undulated band.

Vernacular name, Jál Ginthéa.

Genus Homalopsis, Kuhl.

Homalopsis olivaceus. *Hom. supernè olivaceus lineis nigris inter squamas variegatus, abdomine albicante, lineâ mediâ nigrâ diviso, vittâ albo-virescenti utrinque incluso.*

Scuta abdominalia 167.
Scutella subcaudalia 71.

Habitat. Bengal.

Olive-coloured above, variegated with black lines between the scales; the abdominal surface whitish, divided in the middle by a black line, and with a greenish-white band on either side.

Vernacular name, Metíllee.

"The descriptions and figures of these serpents were made in India in 1835, 1836, and 1837. For the specimens from Asám I am indebted to the kindness of the eminent botanist Mr. William Griffith; for those from Chirra Punji, to the friendship of Mr. J. W. Grant, of Calcutta. I have also to acknowledge the liberality of Mr. Hodgson, the Hon. Company's Resident at the court of Nepâl, who allowed me to publish the undescribed specimens in his collection of Nepâlese serpents."

March 26, 1839.

William Ogilby, Esq., in the Chair.

Some specimens of Fishes, Crustacea, &c., which had recently been presented to the Society by the Rev. R. T. Lowe, Corresponding Member, were exhibited, and a letter from that gentleman, containing the names and some other particulars relating to the specimens, was read.

A letter from the Rev. Edward Law, dated St. Petersburgh, February 28th, 1839, was read. In this letter Mr. Law stated, that he would endeavour to procure for the Society a live Russian Elk.

A letter from Hanmer Warrington, Esq., Her Majesty's Consul-General at Tripoli, was also read. In this Mr. Warrington states, that he has procured many specimens of animals for the Society's Museum, and that he had in his possession two living Ostriches, which he would send to the Society as soon as he knew by what means they could be transferred.

April 9, 1839.

The Rev. F. W. Hope, in the Chair.

A letter was read, from P. L. Strachan, Esq., dated Sierra Leone, February 19th, 1839. It stated that he had sent two African Woodcocks for the Society's Menagerie, and that having only just arrived at Sierra Leone, he had not yet had time to procure other zoological specimens for the Society.

A letter from C. B. Bidwell, Esq., dated Sierra Leone. January 14th, 1839, was read. In this letter Mr. Bidwell states that he had forwarded the skull of an Hippopotamus for the Society's Museum.

In a letter from J. Frembly, Esq., dated Gibraltar, January 30th, 1839, that gentleman states that he had forwarded for the Society the body of a species of Cat, from South America, which he thought would be acceptable for the purpose of dissection.

A letter from the Board of Management of the Saffron Walden Museum was also read. This letter begged the Society's acceptance of two specimens (a male and female) of the *Antilope Isabellina*, a specimen of the *Antilope grimmea*, and a skin of the *Bernicla cana*.

A collection of beautifully finished drawings of Tasmanian Fishes was exhibited to the Members present, these drawings having been sent to the Society by Dr. Lhotsky for that purpose. In a letter accompanying these drawings, Dr. Lhotsky stated that they had all been executed, under his own superintendence, from fresh specimens.

A new species of Hamster was exhibited by Mr. Waterhouse, and characterized as follows:

Cricetus auratus. *Cri. aureo-fuscescens, subtùs albidus: pilis mollissimis, suprà ad basin plumbeis, subtùs ad basin cinereis: auribus mediocribus, rotundis: caudâ brevissimâ pilis albis obsitâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin ..	7	6
——— *caudæ*	0	5
——— ab apice rostri ad basin auris	1	6
——— *tarsi digitorumque*.....	0	10
——— *auris*.....	0	7

Hab. Aleppo.

"This species is less than the common Hamster (*Cricetus vulgaris*), and is remarkable for its deep golden yellow colouring. The

fur is moderately long and very soft, and has a silk-like gloss: the deep golden yellow colouring extends over the upper parts and sides of the head and body, and also over the outer side of the limbs: on the back, the hairs are brownish at the tip, hence in this part the fur assumes a deeper hue than on the sides of the body: the sides of the muzzle, throat, and under parts of the body are white, but faintly tinted with yellow: on the back, and sides of the body, all the hairs are of a deep gray or lead colour at the base; and on the under parts of the body, the hairs are indistinctly tinted with gray at the base. The feet and tail are white. The ears are of moderate size, furnished externally with deep golden-coloured hairs, and internally with whitish hairs. The moustaches consist of black and white hairs intermixed.

"The skull, when compared with that of *Cricetus vulgaris*, differs in not having the anterior root of the zygomatic arch produced anteriorly in the form of a thin plate, which in that animal, as in the Rats, serves to protect an opening which is connected with the nasal cavity: the facial portion of the skull is proportionately longer and narrower: in size there is much difference, the skull of *Cricetus auratus* being one inch and six lines in length, and ten lines in breadth, measuring from the outer side of the zygomatic arches."

April 23, 1839.

William H. Lloyd, Esq., in the Chair.

A letter was read from Dr. Weissenborn, dated Weimar, February 19, 1839. It accompanied a female specimen of the Hamster (*Cricetus vulgaris*), which he begged to present to the Society, and related to some longitudinal, naked (or nearly naked) marks which are observable on the hips of that animal.

These marks, Dr. Weissenborn states, are found in every Hamster, though usually hidden by the long fur which surrounds them, and the common opinion of the furriers (who have to cut them out and to repiece the skin) is, that they arise from friction. Being situated over the hip-bones, and therefore more exposed than other parts, the hair is worn whilst the animal is moving in its burrow. This is the opinion also of the earlier authors, but "is, however, erroneous, as remarked already by Dr. Sulzer, in his valuable monograph on this species, published at Gotha in 1774. These spots are visible the very moment the hair begins to grow, in the naked young, and they are the very places where the growth of the hair becomes first apparent. At this early stage of the animal's life, they appear on the inner side of the skin, when viewed by transmitted or reflected light, as two dark spots. When all the hair is developed the case is reversed, and these spots appear paler than the rest of the skin. Dr. Sulzer confesses himself to be quite ignorant of the part which these peculiar spots act in the œconomy of the animal, and no subsequent author has explained the subject. I imagine no person, after Sulzer, has turned his attention seriously to it, but it is to be wondered that he was not more successful, being an accurate and clever observer. The reason why the Hamster is furnished with these spots appears to me very far from being mysterious, and had the cause not been mistaken for the effect, I think anybody might have hit upon the idea, that nature had made the short, stiff, and closely adpressed hairs, to grow upon these spots of the Hamster's body, *which are most exposed to friction*, and at the same time contiguous to bone, that the hair and the skin might be competent to stand the wear and tear to which they necessarily are subjected in the narrow burrow of an animal, which is very brisk in its movements; and no doubt the skin, which gives rise to a different kind of hair, is of a different structure from the rest; and as this hair is more stiff, the skin which it covers is probably more callous.

"In the present state of the science of physiology, it may be impossible to state with sufficient precision the conditions on which the peculiar structure of the skin and hair, in these particular spots, depends. The relation in which the latter stand to the hip-bones by peculiar tissues may perhaps help to explain the circumstance, as

the neighbourhood of, and connexion with, bony structures, have an evident influence on the nature of the skin and its productions."

Mr. Waterhouse remarked, that the description which Dr. Weissenborn had given of the peculiar spots on the hips of the Hamster, caused him to suspect that they were glands, analogous to those observable in the Shrews, and might help the animals to distinguish each other in their dark burrows.

Mr. Charlesworth exhibited the nest, eggs, and young of the Cross-bill (*Loxia curvirostra*), from the neighbourhood of Farnham in Surrey, and read some notes, relative to their discovery, which had been communicated to him by H. L. Long, Esq.

The nest, it was stated, was lodged close to the central stem of a Scotch fir, about thirty inches below its highest point, at the base of the shoots of the year 1837 : it was supported beneath by five or six ascending lateral branches of the tree, which so completely concealed it, that it can scarcely have been perceptible from the ground, and it was the occasional visits of the parent birds which betrayed their retreat. Mr. Yarrell remarked, that the eggs very nearly resemble those of the Green-finch, but are larger and have a smaller portion of red colouring, and this not confined to the larger end of the egg. In the young birds the beak is straight, the under mandible shuts within the upper and does not cross it as in the adult.

Mr. Charlesworth also exhibited a bone of great size and curious structure, which he stated was in all probability a ray of the dorsal fin of a species of shark.

Mr. Waterhouse exhibited two specimens of a species of Lark from China, which had recently died in the Society's Menagerie, having been presented to the Society by J. R. Reeves, Esq. It was characterized as follows :

Alauda sinensis. *Al. suprà rufo-fusca, subtùs alba, fasciâ latâ pectorali nigrâ ; lineâ sordidè albâ ab oculis, ad occiput extensâ ; fronte, nuchâ, et humeris castaneis ; remigibus primariis nigris, marginibus externis angustè fuscescenti-albis, remige primo illo externè marginato ; caudâ nigrâ, rectrice utrinque externâ albâ, ad basin nigro lavatâ, proximâ utrinque albo-marginatâ ; rectricibus intermediis duabus fuscescentibus.*

Long. tot. 8 *unc.* ; *rostri*, $\frac{3}{4}$; *alæ*, 5 ; *caudæ*, $3\frac{1}{4}$; *tarsi*, 10 lin.

Hab. apud Sinam.

The Chinese Lark very much resembles, and is nearly allied to, the *Alauda Calandra* of authors, but differs in the following particulars. The beak is more compressed, and the upper mandible has two longitudinal grooves on each side, the upper one of which gives a keel-like edge to the culmen ; the tail is proportionately longer, the tarsi are shorter ; the feet are smaller, and the hinder claws, instead of being bent downwards, are slightly recurved*. In the co-

* "This difference in the form of the claw cannot be depended on, as the birds have been for some time in confinement; they *may* originally have been straight, but I think they never could have been curved downwards."

louring there are also points of distinction: in lieu of the dull brown tint on the top of the head and back, the present species possesses rich rufous brown feathers. In one specimen the body is yellowish white beneath, but in the other it is pure white.

Mr. Waterhouse then proceeded to make some observations upon a series of skulls of Rodents which were upon the table. These skulls belonged chiefly to species of the various genera contained in the families *Chinchillidæ* (consisting of the genera *Chinchilla*, *Lagotis*, and *Lagostomus*), and *Caviidæ*—composed of the genera *Cavia*, *Kerodon*, *Dolichotis*, and *Hydrochœrus*. Numerous points of resemblance between these two families were dwelt upon, more particularly in the structure of the teeth, the form of the palate, the contracted glenoid cavity, the form of the lower jaw, and direction of the lower pair of incisors. The *Caviidæ*, however, possess certain characters, independent of those observable in the form of the teeth, which renders it easy to distinguish them from the *Chinchillidæ*. He alluded especially to the shortness of the condyloid process of the lower jaw, the forward position of the coronoid process, the peculiar projecting ridge on the outer side of the horizontal ramus, and the form of the descending ramus or angle of the jaw; this projects considerably beyond the line of the coronoid process, whereas in the *Chinchillidæ* it terminates in a line with the posterior portion of the coronoid process, or projects but slightly beyond that line.

Among the *Chinchillidæ*, the *Lagostomus trichodactylus*, observes Mr. Waterhouse, approaches most nearly to the Cavies, the angle of the lower jaw being less acute and the coronoid process more forward than in the other species.

In the imperfect state of the palate, the narrowness of the anterior and posterior sphenoids, the form of the occipital condyles, the form of the articular portion of the lower jaw, and the almost horizontal direction of the incisors of the lower jaw of the Chinchillas and Cavies, Mr. Waterhouse stated he had found characters which induced him to place those animals next before the *Leporidæ*.

May 14, 1839.

Sir John P. Boileau, Bart., in the Chair.

A letter from Dr. Cantor was read. In this letter Dr. Cantor begs the Society's acceptance of a collection of Reptiles and Fishes from India, and states that this collection consists of about sixty specimens of Reptiles, and upwards of one hundred and fifty specimens of Fishes, a great portion of which are new species, and have been described by himself.

A letter from Allan Cunningham, Esq., dated Sydney, New South Wales, 26th November, 1838, was read. This letter accompanied the skin of an Apteryx, and also the body, preserved for dissection, which Mr. Cunningham had procured during a visit to New Zealand, and which he presented to the Society.

A paper communicated by Mr. Cunningham, and entitled "Rough notes collected from the New Zealanders (by aid of the missionaries), on the habits of the *Apteryx Australis*, a bird of New Zealand, closely allied to the *Struthionidæ*, and named by the native inhabitants *Kiwi*," was also read. "This most remarkable bird," says Mr. Cunningham, "inhabits the densest and darkest forests. In those near the Kerikeri and Waimate missionary stations, a few miles from the shores of the Bay of Islands, it was formerly frequently observed and taken, as it is still to be found in the woods of the Hokianga river. It is however by no means confined to any particular district, for it is to be met with in all the wooded parts of the northern island. In these humid forests it reposes during the day, either beneath the tufts of long sedgy grass, a species of *Carex* everywhere abounding in the woods, or it hides itself, shunning the light, in the hollows at the base of the "*Rata*" tree, (*Metrosideros robusta* A. C.—N. S.) In these situations it constructs a very simple nest, laying, as all agree, but a solitary egg, which is about the size of a duck's, or as some natives assert, nearly as large as that of a goose, with which bird they are now familiar, the missionaries and other Europeans having some time since introduced it to their poultry-yards. Its period of incubation could not be ascertained from the natives. No sooner are its native woods darkened by the presence of night, than it ranges about in quest of food, which (as all accounts inform us) is exclusively *worms*, procured by burrowing with its feet, and perforating slightly the soft humid subsoil with its attenuated bill; and doubtless it is directed in the night by powerful instinct to the spots where these abound, for its eyes are very small, and its upper mandible, with the nasal orifices at its extremity or tip, possesses doubtless an acute sense of smelling.

"It is not gregarious, and but very seldom indeed to be seen in small numbers: generally they are in pairs (a male and female);

and in the larger forests, less frequented by the natives, these pairs may be met with at distances of about a quarter of a mile.

"The cry of the *Kiwi* at night is similar to the whistling made by boys by the help of the fingers placed in the mouth,—a whistle with a hiss; and it is by imitating this sound that the natives decoy them, and either catch them by the help of dogs, or having induced the bird to approach near to them by the whistle, they suddenly surprise it by the glare of a lighted torch, which they have with them, concealed under their mats, when they seize it by the neck, and thus capture it alive.

"In this manner the bird, the skin and body of which are now sent to England, was taken and brought to me alive. It may here be observed, that the natives, when they proceed to the forest to capture these birds, choose the darkest night: and as the Kiwies usually wander about in pairs, the New Zealander readily distinguishing, by some difference of voice, the sexes, endeavours to secure the female first, since the male will always linger about the spot to protect its mate, and will thus give the natives a fair opportunity to capture it also.

"When alarmed in the forest, the *Kiwi* retires precipitately into its darker recesses, running with considerable swiftness; although its *legs* appear, from their shortness and strength, more fitted for burrowing than fleet movements.

"The legs afford the bird a means of formidable defence, for when hunted and overtaken by the small dogs and the natives, it uses its feet effectively: and it is said the dogs unskilled in the mode of seizing their prey have been greatly injured by its kick.

"Formerly, when the natives, wearing solely their loose, airy, mat-dresses, were altogether more hardy than they are in the present day, in which every man is rolled up in a thick, heavy double-blanket of our introduction among them, and has thus become, comparatively speaking, effeminate and inert;—formerly the natives were skilful "*Kiwi hunters*," delighting in the pursuit, and many a group would they form to go and pass a dark tempestuous night in the forest to decoy and catch these birds, the flesh of which, although said to be hard and sinewy, they greatly esteem. The feathers also were in request for making or decorating mats, by sewing them upon a groundwork of their native flax. Thus by their frequent night-prowlings in the woods, the natives have extirpated the *Kiwi* in some districts where it once abounded: and although it is still an inhabitant of timbered regions less disturbed by the natives, it is rarely to be obtained, because these people have become less energetic and enterprizing, and certainly less hardy by their adoption of the habits of civilized man than formerly, and therefore cannot often be induced, by a promise of reward however considerable, to spend a gloomy night in the forest, in search of the bird; and without the aid of the New Zealander it cannot be obtained.

"The skin now sent home, the natives said, was of a male bird, and certain it is that whilst living it had a very strong and highly offensive smell. Some natives of the country at East Cape, on the

coast, south of the Bay of Islands, who are residing with the Church missionaries at Paihia, on its southern shore, observed that the *Kiwies* of their forests are much larger and more powerful birds than my specimen taken on the Hokianga river. Might not those southern birds be of a distinct species?"

Mr. G. Smith exhibited several birds, which had been preserved, with all the parts entire, by a peculiar fluid, which was injected soon after the death of the animal. For this antiseptic fluid Mr. Smith has taken out a patent.

The Rev. F. W. Hope exhibited a portion of his collection of insects, in order to illustrate a paper entitled "A Monograph on Mr. William Sharp MacLeay's Coleopterous Genus *Euchlora*."

Genus Euchlora, MacLeay.

Melolontha, Linn., Fab. & Olivier.

Antennæ articulis novem, basilari conico elongato, 2do, 3tio, 4to, 5to et 6to brevibus subglobosis; capitulo ovato, triphyllo, elongato, antennarum longitudinis totius haud dimidium æquante.

Labrum prominulum, clypeo fere absconditum, margine antico lineari, ciliato, emarginato, lateribus rotundatis.

Mandibulæ latitantes, subtrigonæ supra planæ, latere externo rotundato, interno ciliato, ad apicem 3-dentato.

Maxillæ caule subtrigono-triquetro, ad apicem inflexæ 6-dentatæ.

Palpi maxillares articulo terminali cylindrico ovato.

Labiales articulis 2do et ultimo longitudine æqualibus hoc subulato.

Mentum subquadratum, margine antico emarginato angulis truncatis rotundatis ac lateribus sinuatis, postice valde convexis.

Caput subquadratum clypeo lateribus rotundatis margine reflexo.

Corpus ovatum convexum postice elytris haud opertum. *Thorax* subquadratus ad basin duplo longior quam latior, latere postico sinuato vix lobato.

Scutellum parvum cordato-truncatum. *Sternum* haud productum.

Pedes validiusculi tibiis anticis 3-dentatis. *Tarsorum* ungues posticorum indivisi reliquorum ex unguibus unus bifidus, alter indivisus.

"It is in the warm and tropical regions of the world that we find vastness one of the leading characteristics of animal life. It is in the same regions also, amongst the class of insects, that we find a corresponding magnitude attended with a wonderful increase of species, many examples of which might here be mentioned. It is sufficient for our purpose at present to note only a few of them, such as the *Sternocera*, among the *Buprestidæ*; *Lamia*, belonging to the Longicorn beetles, and *Melolontha* and *Euchlora*, well-known genera pertaining to the Lamellicorns. With regard to vegetation, there will also be found an equal magnitude of stature and a luxuriance

of foliage quite in proportion to what occurs even in the animal world. If we look to the tropical regions of Asia, Africa, and America, we shall find a similarity of character generally predominating: but it is in the tropical jungle chiefly, and on the banks and estuaries of mighty rivers, that insects will be found, not only formidable by their size, but remarkably numerous in species and individuals. The genus *Euchlora* of Mr. MacLeay, to which at present I wish to draw your attention, is not very distinguished for its size, although larger than all the allied genera belonging to the family. The predominating colour is green, and the abundance of individuals belonging to some of the species is incalculable. I may mention, *en passant*, that the thousands which have annually been imported into Europe, appear from inquiry not in the least to have thinned their numbers. On one occasion I received forty Chinese boxes, and in each of them (I speak greatly within bounds) there were at least twenty specimens of *Euchlora viridis*. These boxes are imported into England, and other parts of Europe, in great quantities, and there is scarcely a museum at home or abroad, however insignificant it may be, but what it exhibits its Atlas Moths, its purple-coloured Sagra, and less attractive Euchlora, in tolerable profusion. I have stated above that the prevailing colour of the species is green, but there are some exceptions. The under side of some of them is usually a bronze, or a rose-coloured copper; some of them green above and beneath; others green above and yellow beneath; while some again are blue on the same side, with the play of light appearing of a violet colour. With regard to the colour of insects, greens, as far as my observations go, naturally on one side merge into blues and violets, and on the other into orange and yellows. Instead of occupying the time of the meeting with a question at present (as far as regards insects) comparatively little studied or understood, I proceed to remark on the geographical distribution of the family *Euchloridæ*. Had some of the Continental entomologists been better acquainted with Mr. MacLeay's Horæ Entomologicæ, they certainly never would have considered *Euchlora* as an European genus. In a late work, published in Paris, the "Histoire Naturelle des Animaux Articulées" (at page 135), we find under the generic name *Euchlora*, not only *Mimela* and *Aprosterna* included, but also *Anomala*, &c. It is singular that the same appellation is given to twenty-two species therein specified, a short analysis of which I now place before you, and shall then allude more particularly to the genera composing the family, the range over which it extends, and mention the countries and localities in which they severally occur.

"Of the above twenty-two species, five of them appear to be true *Euchloræ*, two others belong to *Mimela*, Kirby, another to *Rhombonyx*, Kirby, and the remaining fourteen to *Anomala* of Megerle, as it now stands. Before I conclude these remarks on the species of the genus before us, it is necessary to state that I have elevated *Euchlora* to the rank of a family, the following genera properly belonging to it.

EUCHLORIDÆ, Hope.

Genera.	Country.	Species known.
1. Euchlora, *MacLeay* . .	Asia	30
2. Aprosterna, *Hope* . . .	Asia and Africa. . .	5
3. Mimela, *Kirby* . . .	Asia.	22
4. Rhombonyx, *Kirby* . . .	Siberia and China. .	2
5. Anomala, *Megerle* . .	Old and New World .	120
		179

Genus 1. EUCHLORA.

"The family of *Euchloridæ*, from the above table, consists of five genera, and nearly two hundred species, which have fallen under my notice. True *Euchlora*, I state, belongs exclusively to Asia and its isles. It occurs as far south as Manilla, appears at Singapore, and runs from thence through the continent of India up to the Himalaya; the extreme eastern point appears to be Japan, while its western range does not reach Bombay, probably from the intervention of some physical barrier. Captain Ezra Downes has taken it at Neemuch. The Entomology of that district essentially agrees in character with that of Calcutta and Madras, at the latter of which places *Euchlora* is taken.

Genus 2. APROSTERNA.

"This genus is not peculiar to Asia, as some of the species are found in New Guinea.

Genus 3. MIMELA.

"This elegant genus, rivalling in colour and splendour the *Buprestidæ*, is confined to Asia; it ranges wherever *Euchlora* is found.

Genus 4. RHOMBONYX.

"This genus is probably peculiar to Asia. One species is found in China, and the other, I have reason to think, is only found in Asiatic Siberia.

Genus 5. ANOMALA.

"Anomala is common to the four quarters of the globe, and may properly be divided into three if not four subgenera, which task I willingly leave to other entomologists.

"In concluding these observations on *Euchlora*, I have only to add, that it may excite some surprise that this genus extends far into the Himalayan regions; it may be explained however, satisfactorily, by the influence of local causes. It is an ascertained fact, that tropical vegetation often extends into high latitudes, and why, then, may we not expect to find insects which feed upon it, and are intended probably to keep it within due bounds?

"From information given to me by my friend Professor Royle, I state that the tropic-girt base of the Himalayas is characterized by a vigorous and luxurious vegetation.

"In the same regions there is also an uniformity or great equality of temperature, well adapted for animal as well as vegetable life. The exuberance of the latter adds to the humidity of the atmosphere, as well by the exhalation of the foliage as by preventing free evaporation from the soil. In the boundless forest and interminable jungle there will generally be found a great equality of temperature, brought about in consequence of the umbrageous shelter impeding the absorption of heat by day, as it checks the free radiation of it at night. It is then, owing to the presence of tropical vegetation, united with moisture, that there arises considerable uniformity of temperature; in a word, it is from local causes that we are enabled to explain the reasons why we meet with the representatives of tropical genera of plants and insects extending into higher latitudes than at first might naturally be expected."

Sp. 1. *Euchlora viridis*, Fabricius.
Long. lin. 12; Lat. lin. 7.
E. glabra, punctata, suprà viridis nitens subtùs cupreo-aurata, pedibus cupreis. Sternum haud porrectum.
Vide Oliv. Mel. Tab. 9. fig. 21[b].
Hab. in China.
Varietas *E. Elytris cupreo-marginatis, corpore suprà æneo marginato, antennisque piceis.*
This species is found also at Singapore, Assam, in Bengal, and in the island of Ceylon. On the under side it is of a rose-coloured copper, appearing about the sternum and the lower rings of the abdomen of a brassy vivid green.

Sp. 2. *Euchlora Jurinii*, MacLeay.
Long. lin. 11; Lat. lin. 6.
E. nitidissima, glabro-punctata, suprà viridi-olivacea, subtùs viridi-cuprea, thorace utrinque punctis duobus impressis, pedibus viridibus, nitidis.
Antennæ piceæ 7mo articulo virescente. Totum corpus supra viride, aureo-opalino colore tinctum, infra viridi-æneum, pedibus supra et infra viridibus.
Hab. in Java, Mus. Dom., MacLeay.
"I have received this species from Java; it varies in size, and may at once be distinguished from *E. viridis* by its smooth upper surface, which is of an opalescent bright green; its under side is also more brilliant, and of a golden-coloured bronze; the tibiæ and tarsi are invariably green. The *E. MacLeaii* of Mr. Kirby's MSS. is only a large variety of this species."

Sp. 3. CUPRIPES.
Long. lin. 12; Lat. lin. $6\frac{1}{2}$.
Affinis Euchl. viridi, MacLeay, *at major. Corpus ovatum; suprà viride glabrum, subtùs roseo-cupreum, pedibus cupreis.*
"This insect is closely allied to *E. viridis*, MacLeay; it is, however, distinct. *Viridis* in form is oval. *Cupripes*, ovate: the under

side is of a rich rose-coloured copper, without any æneous tinge. I have received one specimen from Java, and a second from the Tenasserim coast."

Hab. in India Orientali. Mus. Dom., Hope.

Sp. 4. E. GRANDIS.

Long. lin. 14; Lat. lin. 8.

E. glabra, punctata suprà viridis, nitens, subtùs viridi-cuprea, thorace utrinque puncto laterali medio leviter impresso, pedibusque viridibus.

Hab. in Calcutta? Mus. Dom., Hope.

"I obtained this species from Calcutta; I am doubtful, however, if that be its real habitat. It is stuck with a needle, like most of the Chinese insects, and may have been imported into Calcutta. It is at present the largest species of *Euchlora* I am acquainted with."

Sp. 5. EUC. MACLEAYANA, Vigors.

Long. lin. $1\frac{5}{20}$; Lat. $\frac{9}{10}$.

E. pallidè virescens, capite thoraceque punctis aureis confertis splendentibus; elytris punctatis flavo-marginatis; corpore subtùs pedibusque aureo-cupreis.

Antennæ aureo-cupreæ. *Corpus subtus pedesque aureo-cuprei, albide pilosi. Clypeus aureus. Scutellum nitidum, parce punctatum.*

Hab. in Orientali. In Mus. Dom. Vigors.

"It is difficult to convey, either by description or representation, a just idea of the beauty of this superb insect, which was obtained from Madras. It was named by Mr. Vigors in honour of Mr. William Sharp MacLeay."

Sp. 6. E. SMARAGDINA, Eschcholtz.

Long. lin. $11\frac{1}{2}$; lat. lin. $5\frac{1}{2}$.

E. supra viridi-orichalcea; subtùs, femoribus, thoracis pygidiique marginibus externis fusco-auratis, capite thoraceque dense punctulatis, elytris vage punctulatis seriebusque punctorum plurimis.

Hab. in Insulâ Luzonum, Manilla.

"The above insect I received from Dr. Eschcholtz*."

Sp. 7. E. SIEBOLDII.

Long. lin. $10\frac{1}{2}$; lat. lin. $6\frac{1}{2}$.

Affinis præcedenti; glabra punctata, supra viridis; thoracis lateralibus marginibus fusco-auratis. Pygidium viridi-cupreum. Corpus infra roseo-cupreum, et nitidum. Pectus subargentea sericie obsitum. Pedes suprà virides, subtùs cupreo-aurati; femoribus cupreis et nitidis.

Hab. in Madagascar. Captus celeberrimo Macklotio.

This species is allied to *E. smaragdina* of Eschcholtz, but may at

* It has been reported that the above entomologist died of cholera: it appears however that he died of a bilious fever.

once be distinguished by the different colour of the *pygidium*, that of *smaragdina* being of a brilliant gold-colour.

Sp. 8. Euchlora albopilosa, Siebold.
Long. lin. 10; lat. lin. 5.
E. glabra punctata suprà viridis subtùs roseo-cuprea et nitida albopilosa, femoribus tibiis tarsisque concoloribus. Caput viride antennis fusco-piceis: margines thoracis aurato-virides. Scutellum postice cupreum. Elytra lineis longitudinalibus impressa, sutura læte viridis, marginibus e medio elytrorum ad apicem fusco-membranaceis. Corpus infra roseo-cupreum, albo-pilosum. Pygidium viride et tomentosum. Pedes cuprei.
Hab. in Japonia.
"This singular insect was sent to me by my friend De Haan, of Leyden. It is remarkable for a dilated margin to the elytra, which appears to be membranous. The pubescence also of this species is singular."

Sp. 9. Euchlora Martinii, Kirby's MSS.
Long. lin. 10; lat. lin. $5\frac{1}{2}$.
E. viridis, capite marginibus thoracis auratis, elytris lineis duabus longitudinalibus fortiter impressis. Pygidium viridi-cupreum. Corpus infra roseo-cupreum, femoribus nitidis.
Hab. in China?
This insect is evidently distinct from any species yet described; it is in a very mutilated state, no tibiæ and tarsi remaining. It is described from the Rev. William Kirby's collection, liberally given to the Entomological Society by that talented naturalist.

Sp. 10. *Euchlora bicolor*, Fab.
Long. lin. 9; lat. lin. 5.
Caput viride, margine clypei rufescente antennis rubro-fuscis, glabra suprà viridis, subtùs testacea, pedibus apice aureis. Statura Euchloræ viridis at duplo minor: suprà tota viridis, glabra, obscura, immaculata: subtùs obscurior, testacea, æneo colore tincta: femora pallidiora tibiæ et tarsi aurei, (Fab). *pygidio obscurè viridi. Variat colore supra viridi nitido, subtus aureo, et elytris interdum apice rufis.*
Hab. in Java.

"Fabricius described this insect from Sir Joseph Banks's cabinet, as a species from the Cape of Good Hope. Olivier copied the error, and figured one specimen, as obtained from the island of Bourbon. Both writers are in error as to locality, as the insect is peculiar to Java and the East Indian continent. Mr. Kirby has named the above species in his collection *E. Brightwellii*, which I regard only as a synonym of *E. bicolor*."

Sp. 11. Euchlora perplexa.
Long. lin. 8; lat. lin. $4\frac{1}{2}$.

E. glabra, suprà viridis, subtùs pallidé testacea tibiis tarsisque roseo-cupreis. Affinis præcedenti at minor. Caput viride margine antico subrufo, antennis testaceis. Corpus supra viride, glabrum subtùs testaceum femoribus concoloribus, tibiis tarsisque roseo-cupreis, pygidio viridi, postice flavescente.

Hab. in agro Nepalensi.

"This species I received from my late lamented friend General Hardwicke, and for a long time I regarded it as the true *bicolor* of Fabricius. Professor De Haan of Leyden has lately sent me *E. bicolor*, Fab., from the island of Java; I have therefore been obliged to name an insect which I regarded as previously described. The species are closely allied, and might have puzzled any individual. The concise descriptions of Fabricius necessarily lead to error. It is of the highest importance, then, to obtain authentic specimens from sources which may be relied on, and I feel satisfied, that with regard to insects, unless the few authentic cabinets known are carefully inspected, little reliance can be placed on specimens, without they are named from comparison."

Sp. 12. Euchlora femoralis.

Long. lin. 7; lat. lin. 4.

E. glabra suprà viridis, subtus rufo-testacea, femoribus flavis. Affinis E. bicolori *at minor. Clypeus æneo-flavescens. Antennæ testaceæ. Thorax marginibus lateralibus concoloribus. Elytra suprà viridia, opalino, seu aureo colore tincta, apice bituberculato. Corpus subtus testaceum. Pectus sericie flavo obsitum. Femora flava; tibiis, tarsis, chelisque roseo-cupreis.*

Hab. in Javâ.

"This species, by the kindness of Dr. Horsfield, I have described from the rich collection at the India House. It approaches in form the genus *Mimela*, Kirby. It is remarkable for its opaline play of colour, differing in that respect from all the species of my acquaintance."

Sp. 13. Euchlora De Haani.

Long. lin. 11½; lat. lin. 6.

E. viridis, suprà glaberrima nitida, subtùs æneo viridis, nitido splendore conspicua. Caput viride, in medio aureo colore tinctum. Elytra glaberrima, sub lente vix subpunctata. Corpus infra smaragdino colore ornatum, lateribus pectoris argenteis pilis obsitis, segmentis abdominis utrinque pilosis et punctatis. Femora nitida, tibiis fortiter variolosis, tarsis chelisque viridibus.

Hab. in Assam.

"I have named this species in honour of my friend Professor De Haan, of Leyden, to whom European entomologists are greatly indebted for the additions made to many of their cabinets."

In Mus. Dom., Hope.

Sp. 14. Euchlora dimidiata.

Long. lin. 11; Lat. lin. 6½.

E. suprà tota viridis punctata, subtùs cyanea. Vide Gray's Zoological Miscellany, page 23, sp. 8, under *Euchlora dimidiata.*

Clypeus rotundatus, antennis, palpisque piceis. Thorax subtilissime punctatus. Elytra viridia opalino colore tincta, glabra nitida, striato-punctata striis parum distinctis. Corpus infra cyaneum, violaceo colore mixtum. Pectus pilis flavescentibus obsitum. Pedes cyanei.

Hab. in agro Nepalensi.

"This species was originally described by me among other *Coleoptera* belonging to General Hardwicke's superb collection, which has passed since his death to the British Museum."

Sp. 15. Euchlora sulcata.

Long. lin. 10; Lat. lin. 6.

E. suprà viridis, punctata, elytris lineis fortiter sulcatis; corpore infra cyaneo.

Caput viride. Antennæ piceæ. Thorax utrinque in medio puncto impresso. Elytra binis lineis longitudinalibus fortiter impressa, seu sulcata, tertia fere humerali ante medium disci interrupta. Corpus subtus cyaneum pedibus concoloribus. Pectus ferrugineis capillis sparsim obsitum; annulis abdominis, pedibusque punctatis.

Hab. in agro Nepalensi.

"I received this insect from my lamented friend, General Hardwicke, and described it concisely some years back in Gray's Zoological Miscellany."

Sp. 16. Euchlora subcærulea.

Long. lin. 10; Lat. lin. 5.

Totum corpus supra et infra subcyaneum. Antennæ fusco-piceæ. Caput subquadratum. Oculi nigri iride pallenti. Thorax punctatissimus. Elytra substriato-punctata apice tuberculato. Corpus infra concolor. Pectus cum femoribus flavis capillis obsitum. Tarsi chelæque picei.

Hab. in Javâ.

"This singular species I am enabled to describe through the kindness of Dr. Horsfield, of the India House, who has liberally allowed me to describe some of the nondescripts of the Company's collection."

Sp. 17. E. Cuprea Sieboldii.

Long. lin. $11\frac{1}{2}$; Lat. lin. $5\frac{1}{2}$.

Caput clypeo subreflexo oculis nigris. Totum corpus supra æreum subtus roseo cupreum, nitidum. Caput et thorax punctulata. Elytra fovea impressa, obsolete striata, punctulata lineis vix distinctis, tuberculis apice conspicuis. Pygidium deflexum pilisque aspersum. Corpus infra roseo-cupreum nitidum capellis subflavis obsitum.

Hab. in Japonica.

"This insect I received from Professor De Haan, of Leyden, with Siebold's name of *Cuprea* attached to it, which I have consequently adopted."

Sp. 18. Euchlora Cantori.

Lon. lin. 10; Lat. lin. $5\frac{1}{2}$.

Affinis præcedenti at minor. Caput antice rotundatum antennis piceis, oculisque albis. Totum corpus supra æreum, subtus roseo cupreum, coloreque virescenti tinctum. Caput et thorax subtilissime punctulata. Elytra ærea, obsolete striata crebrissime punctulata. Corpus infra roseo-cupreum femoribus anticis piceo-rubris, colore nitidis, tibiis tarsis chelisque cupreis.

"This species inhabits Assam; it was given to me by Dr. Cantor, in whose honour I have named it*."

Sp. 19. Euchlora costata, De Haan.

Long. lin. $8\frac{1}{2}$; Lat. lin. $4\frac{1}{2}$.

E. ærea, thorace viridi, elytris costatis, corpore subtus roseo cupreo. Caput viridi-auratum antennis flavis oculisque albis. Thorax auratus viridique colore tinctus, longitudinali linea media fortiter impressa, crebre punctulatus. Elytra roseo-cuprea, sutura elevata, lineisque quatuor in singulo elevatis, interstitiis punctulatis. Pygidium flavum, in medio roseo-cupreum, æneo subpunctatum. Corpus infra concolor, marginibus thoracis utrinque flavis.

Hab. in Japonia.

"This species was sent to me by Professor De Haan, of Leyden; it verges from the typical Euchloræ, and appears intermediate between *Euchlora* and *Anomala*. There is a variety of the above species which has the margins of the thorax yellow, and the elytra testaceous, as well as its under side and feet yellow. It is probably only an immature specimen."

Sp. 20. Euchlora aureola.

Long. lin. 8; Lat. lin. $4\frac{1}{2}$.

E. aurato-viridis glabra nitida: corpus subtus subtestaceum femoribus flavis, tibiis tarsisque roseo-cupreis.

Caput viride, antennis testaceis, oculisque fuscis. Thorax et elytra subtilissime punctulata virescentia auratoque splendore nitentia, marginibus posticis abdominis membranaceis. Corpus infra testaceum viridi æneo colore tinctum. Femora pallidiora tibiis tarsis chelisque roseo-cupreis. Pygidium obscure viride et punctulatum.

Hab. in India Orientali.

This beautiful species came from the Burmese territories; it appears to be unique.

Mus. Dom., Hope.

Species Dubiæ.

Sp. 21. *Euchlora ærea*, Perty.

Long. lin. 6; Lat. lin $4\frac{3}{4}$.

E. brunneo-ænea, thorace subtilissime punctulato elytrisque obsolete striatis rugulosis.

* "The superb collection of drawings of *Reptilia*, made by Dr. Cantor whilst in India, is now deposited in the Radcliff Library at Oxford: it is to be hoped the University will publish them."

Statura et magnitudine fere E. Frischii, *aliquantulum angustior. Tota brunnea æneo-micans. Caput et thorax subtilissime punctulata. Scutellum disco impresso. Elytra irregulariter punctato-striata, rugulosa.*

Hab. in Java.

I am in doubt if this insect can be considered as an *Euchlora*, being compared with *Anomala Frischii*; it may probably belong to that genus.

Sp. 22. *Euchlora cicatricosa*, Perty.

Long. 7‴; Lat. lin. $3\frac{1}{4}$.

E. ænea elytris castaneis, cicatricoso-punctatis. Caput cupreo-æneum, punctulatum. Thorax æneus dense punctulatus, stria media lævi impressa. Scutellum viridi-æneum, punctulatum. Elytra castanea, marginulo extremo æneo, substriato-punctata, punctis confluentibus cicatricosis. Antennæ et trophi picei: subtus cum pedibus ænea.

Hab. in Brasilia Australi. Prov. S. Pauli.

I am totally unacquainted with the above insect; I have given the description from the Delectus Animalium Articulatorum, the entomology of which was written by Professor Perty. I feel no hesitation in referring the above species to another genus, as I do not believe a true *Euchlora* is ever found in the New World.

Sp. 23. *Euchlora irrorella*, De Haan.

Long. lin. 7; Lat. lin. 4.

Punctuée, d'un brun-jaune clair, avec deux bandes longitudinales sur la tête, plusieurs autres mêlées sur le corselet, et une foule de petites taches transversales sur les elytres, noires; dessous du corps et pattes tachetés de noir. Java.

From the above description it appears probable that *Irrorella* belongs to the genus *Euchlora*.

Sp. 24. *Euchlora? strigata*, Castelneau.

Long. lin. $7\frac{1}{3}$; Lat. lin. 5.

D'un beau vert métallique, cuivreux, très brillant; bords latéraux du corselet d'un brun-jaunâtre métallique, avec un point vert au milieu; élytres avec des stries de points enfoncés, serrés, d'un brun-jaune clair, à reflets verts métalliques, avec plusieurs taches de cette couleur à la base, sur le milieu et à l'extremité; plaque anale jaunâtre, avec deux grandes taches d'un vert métallique sur les côtés.

Hab. Coromandel.

This and the foregoing species are described from a French work now in the course of publication, by the Count de Castelneau.

Sp. 25. *Euchlora trivittata*, Perty.

Long. lin. 5; Lat. lin. $2\frac{1}{4}$.

Subtus testaceo-metallica, thorace viridi, margine striaque media flavis, elytris testaceo-viridibus.

Statura omnino E. Frischii, *sed satis minor. Subtus testacea, metal-*

lico-nitida, abdomine obscuriore. Caput æneum, subtilissime punctulatum, clypeo reflexo. Thorax viridi-æneus, nitidus, margine laterali lato, vittaque media flavis. Scutellum viridi-æneum, politum. Elytra longitudinaliter punctulata, testaceo-viridia. Antennæ brunneæ. Pedes metallico-testacei.

Hab. in Java.

In Museo Dom., Perty.

Sp. 26. *Euchlora splendens.* Schonherr.

Supra glabra, viridi-orichalcea, nitidissima, thorace elytrorumque dorso subtiliter parce punctulatis clypeo, reflexo integerrimo.

Hab. in China.

In Museo Dom., Schonherr.

It is probable that the above species is a *Mimela*. It is considered by Professor Perty to be an *Euchlora*. I have added Schonherr's short Latin description; for more ample details consult the Appendix to Schonherr's 'Synonymia Insectorum,' tom. i, part 3, page 110.

Besides the above twenty-six species of *Euchlora*, there are several other insects which have been comprehended under that name; for instance, *E. Dalmanni* of Schonherr, and *Chrysea* of Kollar, both of which are true *Mimelæ*, and allied to *M. fastuosa*, Fab.; and to these may be added various species of *Anomala*, recorded by Fabricius, De Jean, and others. The latter writer, in his last catalogue of 1837, mentions the names of *E. piligera, Japonica, chalcites*: as he, however, confounds *Mimela* with *Euchlora*, little reliance can be placed on his authority; they are, moreover, manuscript names, and no names ought to be adopted without published descriptions. I may add, that in the Dutch and other collections, about six others have fallen under my notice, making in all about thirty species; which number no doubt will be considerably increased the more we become acquainted with the Entomology of Oriental India.

Mr. Waterhouse called the attention of the members present to some specimens of Quadrupeds presented to the Society by John Wray, Esq. These quadrupeds were procured at Minas Geraes, about three hundred miles from Rio Janeiro, and consist of two specimens of a species of Opossum, closely allied to *Didelphis Azaraæ*, a curious pale variety of *Gulo barbatus*, and a specimen of *Galictis vittata*, together with a Cavy and a Fox, which Mr. Waterhouse stated he believed were undescribed.

May 28, 1839.

William Ogilby, Esq., in the Chair.

A letter from C. B. Bidwell, Esq., dated Sierra Leone, February 22, 1839, was read. It stated that Mr. Bidwell had forwarded for the Society's museum the skull of a Hippopotamus, and skins of four species of monkey. "The Hippopotamus," says Mr. Bidwell, "is not found in the Sierra Leone River, but is very abundant in the Scarcies, which is about fifty miles distant."

A paper from the Rev. R. T. Lowe, entitled "A Supplement to a synopsis of the Fishes of Madeira*," was read.

Fam. Percidæ.

Genus Callanthias.

Gen. char.—Head scaly, except the short muzzle before the eyes; teeth as in *Anthias*, Bl.; preopercle perfectly entire; opercle with two flat adpressed spines; lateral line high up, near the back, and ending at the end of the dorsal fin, which is even or continuous; branchiostegous membrane with six rays.

Callanthias paradisæus. A most elegant little fish; in general habit and colouring resembling *Anthias sacer*, Bl., but without the produced third spine of the dorsal fin. Its analogies are singularly complicated, but its affinities are truly Percidous. By Bloch it might have been arranged either in *Bodianus* or *Cephalopholis*, Bl., but it is really inadmissible into any well-defined or constituted modern genus. It is almost as rare as beautiful.

Fam. Berycidæ.

Genus Beryx, Cuv.

Beryx decadactylus, Cuv. *B. corpore ovali, lato, profundo, altitudine longitudinem capitis superante; dorso elevato, arcuato, gibbo; ventre prominente: basi pinnæ dorsalis elongato, pinnis pectoralibus haud breviore: oculis maximis: operculi angusti carina obscura: osse humerali angusto, margine posteriore recto, verticali.*

D. 4 + 18 — 20; Vs. 1 + 10; &c.

B. decadactylus, Cuv. and Val., Hist. III. 222.

B. splendens, nob. quoad icon. Tab. III. in Cam. Phil. Trans., Vol. VI. Part 1; haud textus.

When I published *B. splendens* as a new species in the Cambridge Transactions, I was unacquainted with the present fish, though it is scarcely perhaps less common than the former. I consequently did

* See Transactions of the Zoological Society, vol. ii. p. 173.

not discover till long after, that the figure intended for my *B. splendens* had been inadvertently taken by Miss Young from an individual of *B. decadactylus*, Cuv., of which it offers the more obvious peculiarities. The true *B. splendens*, therefore, yet remains unfigured, and till an opportunity presents of supplying this deficiency in the "Fishes of Madeira," I subjoin its true specific characters, contrasted with those of *B. decadactylus*.

B. SPLENDENS. *B. corpore oblongo, altitudine longitudinem capitis haud æquante : dorso recto : basi pinnæ dorsalis brevi, pinnis pectoralibus breviore : oculis magnis ; operculi lati carina prominente : osse humerali dilatato, margine posteriore arcuato, obliquo.*

D. 4 + 13 — 15 ; V. 1 + 10 — 13 (1 + 11 fere) ; &c.

B. splendens, nob. Proceed. Zool. Soc. 1833. 1. 142. Cam. Phil. Trans. VI. 1. 197 ; excl. icon.—Syn. Mad. Fishes in Trans. Zool. Soc. Vol. ii. p. 174.

Trachichthys pretiosus, nob.

Hoplostethus mediterraneus, Cuv. and Val. IV. 496. t. 97. bis. Rariss.

This fish is unquestionably congeneric, if it is not even still more closely allied with *Trachichthys australis* of Shaw. Hence the above adoption of the older generic appellation, affording opportunity for the substitution of a less restrictive specific title ; better suited to a fish : proved by the occurrence of two individuals in these Atlantic seas not to be peculiarly Mediterranean.

To the Sub-Percidous family *Berycidæ* belongs also *Polymixia* ; nob. Cam. Phil. Trans. IV. 1. 198. t. IV.—Syn. Mad. Fish. pp. 178, 179.

Fam. TRIGLIDÆ.

Trigla lineata, L. Cuv. and Val. Hist. IV. 34. ; Yarrell, Brit. Fish. 1. 46. Rariss.

A single individual only has occurred.

Fam. SPARIDÆ.

Pagellus rostratus, nob.—Syn. Mad. Fish. 177.

Reference to the excellently characteristic figures of Rondelet and Salviani has satisfied me that this is merely *Pagellus erythrinus*, Cuv. and Val.

Fam. CHŒTODONTIDÆ.

Pimelepterus Boscii, Lac.—"*Cheiroco*" or "*Xarroco.*"—Cuv. and Val. VII. 258 t. 187. Rariss.

Fam. SCOMBRIDÆ.

Thynnus Albacora.—"Atum Albacora."—T. corpore elongato, postice attenuato : pinna anali secundaque dorsali antice longe falcato-productis : pectoralibus ad medium secundæ dorsalis attingentibus : ore oculisque parvis.

Tunny, Penn. Brit. Zool. Ed. 1. iii. 266. No. 133. t. 52. excl. syn. An L'Auxide de Sloane, Scomber Sloanei, Cuv. and Val. Hist. VIII.

148; i. e. Albacore, Sloane, Hist. of Jam. 1. t. 1. f. p. 28? Sat. vulg.

The length of the narrow produced fore-part of the second dorsal fin varies from one-sixth to one-fourth part of the whole length of the fish; that of the pectoral fins is from one-fifth to one-fourth part of the same, and their tips reach to the middle of the second dorsal fin. Thus, in this latter point it is intermediate between the common Tunny (*T. vulgaris*, L.) and the following new species (*T. obesus*, nob.); approaching most the latter.

Pennant's figure is at least a tolerable representation of this very distinct species, agreeing with it in its main points of difference from the true *T. vulgaris*, L. It may be hoped that the attention of British Naturalists will be directed to this point. The proper season for the Albacora in Madeira is September and October.

THYNNUS OBESUS.—"*Atum Patudo.*"—*T. corpore abbreviato: obeso: pinnis acutis; pectoralibus ad finem secundæ dorsalis attingentibus: oculis magnis.*

Vulgaris.

This fish is constantly distinguished by the fishermen from the common Tunny or "*Atum Rabilha*" (*T. vulgaris*, L.) by the larger eye, and shorter thickset figure. The pectoral fins vary from one-fourth to nearly one-sixth part of the whole length, their points reaching to the end of the second dorsal fin. In *T. vulgaris*, L. the tips of the pectoral fins reach only to the end of the first, or to the beginning of the second dorsal fin.

T. obesus is in greatest abundance earlier in the summer than *T. Albacora*. In size it ranges next below *T. vulgaris*, L., not however attaining above half the extreme size of that species; nor much exceeding the full size of *T. Albacora*.

Thynnus Alalonga, Cuv. and Val.—"*Atum Avoador.*"—Cuv. and Val. Hist. VIII. 120. t. 215.

Orcynus Alalonga, Risso, iii. 419. Vulgaris.

No difficulty can occur in the recognition of this species, from the great length of the pectoral fins, which are one-third part of the whole length, and reach to the end of the anal fin, or to the first spurious finlet behind it. Its proper season is said to be January.

Thyrsites acanthoderma.—"*Escolar.*"

Aplurus simplex, Syn. Mad. Fish. 180.

This is the fish called in my Synopsis *Aplurus simplex*. It is a true *Thyrsites*, Cuv. in every respect, except the structure of the skin, a peculiarity which seems insufficient, in the absence of all other characters, to warrant its generic separation.*

Prometheus atlanticus, nob.—"*Coelho.*"

This also is again here mentioned only for the sake of remarking, that further observations have gone far to prove the Maderan fish to

* By an error in the punctuation, some descriptive observations at the bottom of page 180 of my synopsis (Trans. Zool. Soc., vol. ii.), relating to this fish, have been converted into a specific character.

be specifically distinct from both *Gempylus Prometheus* and *G. Solandri* of MM. Cuvier and Valenciennes, whose synonyms should therefore be expunged.

Gen. Aphanopus, nob.

Gen. Char.—Form as in *Lepidopus*, elongate, much compressed, like a sword-blade, naked, but with a short keel on each side, towards the tail.

Muzzle and teeth as in *Lepidopus* (Gouan), but the palatines unarmed.

Dorsal fins two, nearly equal. Anal fin as in *Lepidopus*, but with a strong sharp spine instead of a scale before it, a little behind the vent. No trace or rudiment of ventral fins.

Aphanopus carbo.—"*Espada preta.*" Rariss.

Of this most curious new genus a single individual only has yet occurred. The whole fish is of a dark coffee colour, approaching to black, and has in form so close a general resemblance to *Lepidopus argyreus*, Cuv., that it might well be taken hastily for a mere variety of that fish.

Tetragonurus atlanticus, nob.

Differs from *T. Cuvieri*, Cuv. and Val., XI. 172. *t.* 318. chiefly in the longer head, much larger eye (nearly twice as large in proportion to the whole length), greater width between the eyes, teeth twice as numerous, in the upper jaw; thicker body, longer pectoral fins, higher (twice as high) first dorsal fin, and inequality of its spines. Having, however, seen only a single individual, I forbear to characterize it more distinctly; especially since of *T. Cuvieri* so few examples have as yet occurred; and that even MM. Cuvier and Valenciennes appear to have taken their figure from one which was imperfect in the caudal fin at least. The first dorsal fin is described by MM. Cuvier and Valenciennes as having fifteen spines; but twenty-one are figured in the plate.

The following is the fin-formula of *T. Cuvieri*, according to Risso; and MM. Cuv. and Val.:

"1st. D. 18; 2nd. D. 1, 12; A. 1, 11; P. 16; V. 1, 5; C. 36."—Risso Hist.

"1st. D. $\left\{\begin{matrix}15 \text{ in text,}\\21 \text{ in fig.}\end{matrix}\right\}$ 2nd. D. 1 + 13; A. 12; P?; V?; C?; B. M. 5."—Cuv. and Val. Hist.

That of *T. atlanticus*, nob. is

1st D. 15; 2nd. D. 11; A. 11.; P. 16; V. 1 + 5; C. $\frac{7+\text{VIII.}}{7+\text{VII.}}$; B. M. 5.

The true affinities of this fish are certainly rather to be sought among the Mackerels (*e. g. Thyrsites*) than the Mullets. Its relation to the *Mugilidæ* is, indeed, one merely of a faint analogy.

Xiphias gladius, L.—"*Peixe Agulha.*"

The ordinary Sword-fish of Madeira is truly the common *Xiphias gladius*, L.

I have heard, however, of "another sort, with a bayonet or spit-like beak," called "Peto," which may perhaps have been a *Histiophorus* or *Tetrapturus*.

SERIOLA DUBIA. Rariss.

A single individual only has occurred, which I am unable to identify with any of the species enumerated by MM. Cuv. and Val. The second dorsal fin is produced in front into a point; five eighths the depth of the body beneath. The sides of the tail are sufficiently distinctly keeled; and there is no temporal band. In the first of these characters it comes nearest *S. Rivoliana* or *S. falcata* Cuv. and Val.; differing, however, from both, principally in the points in which they are said to agree with *S. Dumerilii*, Cuv. and Val. With *S. Lalandi*, Cuv. and Val., it agrees in the two latter points above-mentioned; but differs in the produced second dorsal and anal fins; *S. Lalandi* appearing from MM. Cuvier and Valenciennes' description not to disagree in this respect with *S. Dumerilii*, Cuv. and Val. The individual described measured two feet and a half long.

Lampris lauta. For "Vertebris 69" and "Vert. 49," in the specific character and following formula of the *Lampris lauta*, p. 183. Of the Synopsis of Fish Mad. (vol. ii. Trans. Zool. Soc.), read, Vertebris 45; and in the seventh line of the next page, for "six vertebræ more," read "two vertebræ more."

Fam. CORYPHÆNIDÆ.

Coryphæna hippurus, Cuv. and Val.? "*Dourado macho*."—Syn. Fish Mad. 183.

This fish agrees with *C. hippuroïdes*, Raf., according to the brief account transcribed by MM. Cuv. and Val., in having a row of larger dusky spots along the ridge of the back on each side at the base of the dorsal fin, which is itself immaculate, whilst the anal fin is also somewhat high and pointed in front. In these three points it is at variance with MM. Cuvier and Valenciennes' elaborate description of their *C. hippurus*, L. The individual described, however, by these consummate Ichthyologists was a male; whilst the only three which I have been able to examine closely, proved on dissection to be females, though commonly supposed by the Maderan fisherman to be the male of *C. equisetis*, L. Hence the Maderan fish, whether identical or not with the obscure and doubtful *C. hippuroïdes, Raf.*, is for the present better referred to *C. hippurus*, L. Sufficient ground appears for the suspicion that the above differences may be only sexual. But were it otherwise, they would alone scarcely warrant its specific discrimination.

CORYPHÆNA NORTONIANA.—"*Delfim*."

This is a deeper fish than the preceding, in proportion to its length; with the front much steeper and bluffer; indeed, nearly vertical; the Dorsal fin beginning also somewhat forwarder. In the fin-formulæ, and number of the vertebræ (31), the two agree; and I have seen too few individuals at present to decide whether they really

are distinct, or only so in sex. But for its spotted body, I should be greatly tempted to refer it to the imperfectly known *C. imperialis, Raf.* (See Cuv. and Val., Hist. 9, 286.) In this uncertainty as to both rank and synonyms, less ultimate confusion will result from a distinct specific name, applied provisionally, than from a doubtful reference. It is therefore called after the Honourable C. E. C. Norton, to whose able pencil I was first indebted for a knowledge of the fish. Two other supposed individuals have since occurred, of which, however, one was unfortunately neglected, and the other had been two much injured by a blow, beating in the interparietal crest, to be fully satisfactory. This last individual, taken November 22nd 1838, was apparently a male; but I could not satisfy myself completely even on this point, and infer it only from my inability to discover any trace of the ovaria.

Coryphæna equisetis, L. 1, 447.—"Dourada," "*D. femea*," or "*D. amarella*."—*C. equisetis*, Cuv. and Val., 9, 297, *t.* 267.

This may at once be distinguished from the foregoing species by its unspotted body, marked only by a few scattered, clear, but extremely minute black specks, very different from the diffused, pale, dusky, larger, spots of the preceding. The pectoral fins are also very short, the dorsal fin with fewer rays (53—55), the number of vertebræ greater (33), the form deeper and less elongated than even in the first species here recorded. It also is a smaller fish. Being our commonest species, I have seen numerous examples, but none exceeding two feet in length. The average length is very uniformly from twenty to twenty-two or twenty-three inches.

This fish, which is the commonest of the "Dourados" of Madeira, differs from *C. equisetis*, L., as described by MM. Cuv. and Val., under the name of *C. equisetis*, only in the head being rather longer than high, instead of higher than long, in the dorsal fin being lower in its highest part, and also lower *before* than *at* its hinder end; and lastly in the profile being oblique from the beginning, whilst in *C. equisetis*, Cuv. and Val., "il monte d'abord verticalement sur le tiers à peu près de son contour." The first three discrepancies might well be merely due to slightly different modes of measurement. The latter is less easily accountable; for in this Maderan fish at least, of which I am well acquainted with both sexes, I find nothing to confirm M. Dussumier's observation, that a greater height of the interparietal crest is characteristic of the male in *Coryphæna*. See Cuv. and Val. 12, Pref. p. vii.

Pompilus Rondeletii, Will. 215, *t.* O. 1, *f.* 6.
Centrolophus pompilus, Yarr. 1, 158.
———— *pompilus*, Cuv. and Val. 9, 334, *t.* 269.
———— *morio* (Lacep.) Ib. 342. Rariss.

Two examples have occurred during the writing of this paper; the first was uniformly blackish, without spots or marks, thus answering to *Centrolophus Morio* of Lacepède: the second individual was smaller, and was marked precisely as in MM. Cuvier and Valenciennes' figure (t. 269) of *C. pompilus*.

I have no hesitation in uniting both these fishes, with their re-

spective synonyms, under the name long since applied by Willoughby to designate the species; although by him employed especially in reference to the second state or variety abovementioned, which also was the variety originally described by Rondeletius.

Pompilus Bennettii.

Leirus Bennettii, nob. in Cam. Trans. VI. 1, 199, *t.* V.—Syn. Mad. Fish, p. 179.

Centrolophus ovalis, Cuv. and Val. IX. 346.

———— *crassus.* Ib. 348.

The genus *Leirus* proves identical with *Centrolophus*, Lac., which in its turn, if not intolerable in itself (see Cuv. and Val. IX. 331.), must yield precedence to the prior claims of *Pompilus*, Rond. The species described by the Ichthyologist of Montpellier, (*Centrolophus pompilus*, Auct.) ought, on the other hand, as long ago by Willoughby, to be called *Pompilus Rondeletii.*

Brama Raii, Bl. "*Freira.*"—Syn. Mad. Fish, p. 179.

The true affinities of this fish are most assuredly Scombridal, or to speak more strictly, Coryphænidal.

It was in reconsidering those of *Brama*, and in reaching this conclusion, that I was first led to detect the true affinities and synonyms of *Leirus*. It was not till convinced of the necessity of placing *Brama* next to *Pompilus* (*Centrolophus*, Lac.), that I discovered *Leirus Bennettii* to be a genuine species of this last-named genus.

So valuable are these studies of affinities; and thus do even errors often lead to valuable truth. I was not wrong, however, in associating *Leirus Bennettii* with *Brama*; but in not referring sooner it, or rather both, to the neighbourhood of *Pompilus*.

Fam. Zenidæ.

Zeus Faber.

Fam. Mugilidæ.

Mugil maderensis. "*Tainha de moda.*"

This is the fish published, in the former part of this list, under the name and with the synonyms of *M. Chelo*, Cuv. Comparing it, however, more closely with the description of *M. Chelo* in the eleventh volume of MM. Cuvier and Valenciennes' Histoire, I find the following principal discrepancies in the Maderan fish:

1. The produced scaly appendages at the base of the first dorsal fin extend considerably beyond the base of the fourth spine.

2. The maxillary is but very slightly S-like.

3. The upper lip is by no means peculiarly thick and fleshy, but rather the contrary.

4. It is a shallower, less deep fish in proportion to its length.

5. The tongue is altogether smooth, without any "asperités" whatever, at the edges or anterior end of the "arête," which cannot be called "très-aigue."

6. The palate also is entirely smooth, not papillose near the vomer.

7. A conspicuous bright metallic brassy spot on the opercula, as in *M. auratus*, Cuv. and Val.

It differs, however, essentially from this last-named species, and

from *M. breviceps*, Cuv. and Val., in the exposure of the ends of the maxillary.

Fam. Gobidæ.

Having considerably extended my list of species, as well as rectified some errors in the nomenclature of others, I subjoin a complete enumeration of the Maderan species of this family hitherto discovered.

Blennius gattorugine, Will. Cuv. and Val. IX. 200. Will. Ichth. 132. t. H. 2. f. 2.—Yarr. 1, 226. Rariss.

A single individual only has occurred.

Blennius palmicornis, Cuv. and Val. XI. 214. t. 320. Syn. Mad. Fish 185. Vulgaris.

Blennius Artedii, Cuv. and Val. XI. 231. —— *inæqualis* nob. Synops. Mad. Fish 185. haud Cuv. and Val. Rarior.

This is the little fish which, being formerly known to me only by a sketch, I had erroneously supposed to be referrible to *B. inæqualis*, Cuv. and Val. On better acquaintance it however proves their *B. Artedii*; and is indeed a most distinct and well-marked little species, scarcely exceeding two inches in length, and at once characterized by its active lively habits, its light tawny brown or yellowish olive colour, sprinkled all over with numerous minute white specks or dots, and the hollow, triangle-shaped, ciliate, occipital crest.

Blennius parvicornis, Cuv. and Val. XI. 257. Syn. Mad. Fish 185. Rariss.

Of this, as formerly of *B. Artedii*, I have no means of judging, except from some notes and a drawing taken by Miss Young, July 10th, 1835, during my absence from the island. My friend Mr. Yarrell has, however, examined the individual from which these were taken; and on his accuracy I rely entirely for the correctness of the above name or reference. I had before supposed it to be undescribed, calling it *B. strigatus*.

Pholis lævis, Flem. Cuv. and Val. XI. 269. Yarr. 1, 230. Syn. Mad. Fish 185. Rarior.

I cannot help suspecting that MM. Cuvier and Valenciennes' Maderan specimen at least, discovered by my friend Henry Richardson, Esq., of Aber Hirnant, North Wales, of *Blennius trigloides*, Cuv. and Val. XI. 228, is really nothing but this state or variety of *Pholis lævis*, which differs from the ordinary European fish only in having five or six distinct dark blotches or "demi-bands" along the back. I have hitherto met with no other fish beside the present answering at all to their description of *B. trigloides*; whilst this state of *Pholis lævis*, although somewhat rare, is by no means so uncommon as to have been likely to escape Mr. Richardson's unwearied assiduity.

Salarias atlanticus, Cuv. and Val. XI. 321. Syn. Mad. Fish 185. Vulgaris.

Tripterygion nasus, Riss. Cuv. and Val. XI. 409. Syn. Mad. Fish 185. Rariss.

Gobius niger, β. nob.

————, L. Syn. Mad. Fish 185.

Gobius Maderensis, Cuv. and Val. XII. 55. Rarior.

I believe this to be a mere variety or state of the common European *G. niger*, Cuv. and Val., analogous to the above-mentioned Maderan state of *Pholis lævis*, Flem.

Gobius ephippiatus, *G. fuscus, maculatus et punctatus : capite nuchaque nudis, hac sulcata : pinnarum pectoralium dorsaliumque radiis haud productis : squamis magnis.*

D. 1ma. 6; D. 2da. 12; A. 11; P. 19; V. 5; C. $\frac{5 \text{ v. } 6}{5 \text{ v. } 6} + \text{XV}$; B. M. 5. Rariss.

Of a nearly uniform brown colour, a little paler on the belly, with a row of darker rich brown patches along the sides, and above these numerous scattered smaller spots. Head spotted. The spots on the head and fore part of the body are ocellate, or surrounded by a ferruginous or yellow ring. The eyes are scarcely a semidiameter apart. The ventral fins are united, but by a very low membrane in front. Length of the only individual which has hitherto occurred, five inches. It appears sufficiently distinct from all the described European species by its naked head and nape.

Fam. Lophidæ.

Cheironectes bicornis. *C. hispidus, setis furcatis, nudus sex-appendiculatus, pallide ruber, punctulis fuscis conspurcatus : fronte super oculos bicorni ; cornu anteriore distincto, recurvo ; posteriore gibboso-cristiformi ; filamento intermedio inconspicuo : brachiis pectoralibus ventralibusque exsertis.*

D. 12; A. 7; P. 10; V. 5; C. $\frac{1+\text{I}}{1+\text{I}} + \text{V}$.

A single individual only has occurred of this pretty little species, which in the foregoing characters appears distinct enough from all enumerated by MM. Cuv. and Val.; approaching, perhaps, nearest to *Ch. furcipilis, pardalis*, or *coccineus*. It was only one and three-fourths of an inch long, and seven-eighths of an inch deep. The whole fish is strongly scabrous to the touch.

Fam. Labridæ.

Crenilabrus caninus, nob. Synops. 186.

A most remarkable variety of this fish has the preopercle perfectly entire; invalidating thus completely the generic character. This state of the species appears permanent, and independent of age or size; whilst it is wholly unaccompanied by other marks of difference or indications of disease. It is rare comparatively with the normal form.

Crenilabrus luscus, nob. in Syn. Mad. Fish 187; nec Yarrellii nec Linnæi.

This also proves distinct from Mr. Couch's Scale-rayed Wrasse (*Acantholabrus Couchii*, Cuv. and Val. 13. 248), to which, as figured by Yarrell for the *Labrus luscus*, L. (a true *Labrus*, according to Valenciennes,) I had formerly referred it. A still nearer ally appears, however, to be *Acantholabrus Palloni*, Cuv. and Val. 13. 243

(*Crenilabrus exoletus*, Risso, haud *Labrus exoletus*, L.). From this it differs in the extension up between each of the spines of the dorsal and anal fins of generally four of the large scales into a curious distinct and moveable imbricated appendage; in the large dark spot or patch on the hinder end of the spiny portion of the dorsal fin; in having two dark spots on each side at the base of the caudal fin, one on the dorsal, and another fainter on the ventral line: and lastly in the general colour. In the first and last of these four points, it agrees better with *Acantholabrus Couchii*, Val. (*Crenilabrus luscus*, Yarr., Brit. Fish. 1. 300); but it differs in the other two, is only half the size, and whilst the dorsal and the anal fins have severally one spine less, the dorsal has one soft ray more.

Labrus reticulatus.

This fish cannot be at present safely referred to the Ballan Wrasse of British Authors (*Labrus maculatus*, Bl.), Yarr. 1. 275; although in size and form of body, no less than in the peculiar lowness of the spiny portion of the dorsal fin, and abrupt production of the soft part of the same, and of the anal fin, as well as in the number of the rays of all the fins, there is a strong agreement. It will, I think, however, ultimately prove merely a dark variety of that species. The colour is peculiarly sombre; being a dark brown, approaching on the back almost to black; the whole beautifully reticulated with dark chesnut-brown lines, forming a border to each scale, and leaving the centre pale. The præoperculum was scaly. A single individual occurred in March 1838, and measured sixteen inches in length. Its fin-formula was,

D. 19 + 11; A. 3 + 9; P. 14; V. 1 + 5; C. $\frac{4 + \overline{\text{I} + \text{VI.}}}{3 + \overline{\text{I} + \text{V.}}}$; B. M. 5.

This individual has been deposited in the Society's collection.

Julis melanura. *J. oblongus, postice nigrescens: capite superne dorsoque olivaceo-fuscis: lateribus perpendiculate strigatis; strigis posterioribus nigricantibus: pinnæ dorsalis antice altiores rudiis tribus primordialibus longioribus, operculique angulo lato truncato, basique primarum pectoralium cæruleo-nigrescente notatis: pinna dorsali analique fasciatis, basi nudis; caudali rotundato nigricante: squamis parvis: dente solitario majore ad canthum oris utrinque, antrorsum porrecto.*

D. 9 + 12; A. 3 + 12; P. 14 v. 15; V. 1 + 5; C. $\frac{4 + \text{VI.}}{4 + \text{VI.}}$; M. B. 6; Vert^{æ}. 25.

Julis speciosa, nob. in Syn. Mad. Fish 186; haud Rissoi.

————, Cuv. and Val., Hist. 13. 375; quoad tantum exempla *Canariensa*, et forsan quidem *Maderensia*.

On re-examination and a close comparison of this fish with MM. Cuvier and Valenciennes' description of the true Mediterranean *J. speciosa*, of Risso, I find that it is properly distinct; although a Canarian individual at least of it has been referred by Valenciennes, as

the Maderan fish was formerly by me, to Risso's species. It differs chiefly in the elevation of the three first rays of the dorsal fin, the spot on which is small, not large; in the deep blackness of the caudal fin and hinder part of the tail or body; and, lastly, in being of considerably larger size (8–10 inches in length) than the true Mediterrancan *J. speciosa*, Riss. Not having met at present with any other fishes in Madeira which agree so nearly as *J. melanura* with that species, I cannot help suspecting that in M. Valenciennes' Maderan specimens of his *J. speciosa* may exist the principal peculiarities which he has expressly noted in Mr. Webb's Canarian example, and which are precisely those of *Julis melanura*.

Acantholabrus imbricatus. *A. pinna dorsali analique basi squamosis; squamis subquaternis, bractearum modo imbricatis, inter spinas assurgentibus: dorsalis parte spinosa postice unimaculato: cauda utrinque bimaculata: squamis magnis.*

D. 20 + 9; A. 5 + 8; P. 15; V. 1 + 5; C. $\frac{3\text{ v. }4}{3\text{ v. }4}$ + III; M. B. 5.

Fam. Fistularidæ.

Centriscus gracilis. *C. corpore gracili, angusto, elliptico-oblongo, supra fusco, lateribus argenteis: rostro producto, elongato: pinnæ primæ dorsalis, inter oculos pinnamque caudalem mediæ, spina secunda mediocri, breviore, pinnam caudalem nequaquam attingente.*

1ma D. 4 v. 5; 2da D. 11; A. 17; V. 1 + 4; P. 15; C. $\frac{7 + \text{IV}}{7 + \text{V}}$.

Rarior.

In its shape and colour this is very obviously different from the common red Snipefish (*C. Scolopax*, L.). But I have not been able to assure myself that the above differences are not sexual. They are not certainly dependent upon size. The depth averages from one-fifth to one-sixth and a half of the whole length, instead of one-fourth of the same. In two individuals of the same length within one quarter of an inch, the depth of the larger (*C. Scolopax*, L.) was very nearly double that of the smaller (*C. gracilis*, nob.) and the 2nd spine of the 1st dorsal fin was respectively in each one-fourth and one-seventh of the whole length of the fish.

Fam. Esocidæ.

Belone gracilis, nob.—"*Catuta.*"

Early in March last year (1838) a fisherman brought alive in sea-water two fishes, which, in their slenderness, and the upper jaw being only half the length of the lower, differed obviously from the common *B. vulgaris*. Measuring, however, seven or eight inches only in length, it seemed questionable, in the absence of equal-sized individuals of *B. vulgaris* for comparison, whether they might not be the young of that species. My friends, however, the Rev. L. Jenyns and Mr. Yarrell, have examined these two individuals, and the latter warrants me in stating, on their joint authority, that these two fishes

are "not, in their opinion, *B. vulgaris*," being "much more slender for the same or equal length."

Scomberesox Saurus, Cuv.

The Portuguese name "*Delphine*" (rectius "*Delfim*",) is erroneously appended to this fish. Another individual has been lately brought to me with the name of "*Almeirão*," but the species is far too rare to have obtained any permanent and genuine appellation in Madeira.

Fam. Salmonidæ.

Scopelus maderensis.

A small dark mulberry-coloured fish, which might easily be taken for the fry or young of *Pomatomus telescopus*, Risso. The dark vinous-coloured ground is concealed by very large deciduous platina-like scales. The only individual which has yet occurred was three inches long. It approaches very near to *Sc. Humboldti*, Risso, Hist. iii. 467. (supposed to be identical with Pennant's *Argentine*, Yar. 11. 94.), and has the row of longer silver dots, or pits, extending forwards from the root of the caudal fin along the ventral line: but it disagrees remarkably with the generic characters assigned to *Scopelus* by Cuvier, R. An. 2nd Ed. ii. 314, in having both the palatines and tongue aculeate with teeth.

The fin-formula in the Madeiran fish was

1st, D. 3 + 10; 2nd, D. 1 club- or feather-shaped;

A. 2 + 12; P. 13; V. 1 + 7; C. $\frac{7 + \overline{\text{I} + \text{IX}}}{6 + \overline{\text{I} + \text{VIII}}}$.

Gen. Alysia.

Corpus subelongatum, compressum; dorso postice ventreque spinoso-serratis. *Rostrum* brevissimum, ore rictuque magnis, hoc pone oculos diducto. *Dentes* minuti, tenues; in maxilla inferiore, Vomere, et Palatinis scobinati. *Lingua* postice lateribus subaculeolatâ.

Squamæ magnæ, haud deciduæ, scabræ; squamis lineæ lateralis latissimis, maximis, scutellatis, s. per totam longitudinem loricato-imbricatis.

Pinnæ ventrales sub apice pinnarum pectoralium sitæ. *Dorsales* duæ; prima inter Ventrales et Analem posita; 2da ad finem analis, rudimentali. *Pinna caudalis* minima, furcata.

Alysia loricata.

The spinoso-serrate ventral and hinder part of the dorsal lines, together with the peculiar scales of the lateral line, appear to forbid the blending of this interesting little fish with the Cuvierian genus *Aulopus*, as defined in the R. Anim., Ed. 2. ii. 315, though they have many characters in common. The Maderan fish is no less rare than elegant. It scarcely exceeds two inches in length. The back is a deep blue; the sides bright silvery or platina; and a row of dead-silver dots or pits extends along the ventral line, as in the *Scopelus* above described. The fin-formula is

1st, D. 2 + 10; 2nd, D. rudimentary; A. 2 + 21 (+ 8 detached depressed points or spines); P. 15 or 16; V. 1 + 5; C. $\frac{4+\overline{I+IX}}{3+\overline{I+VIII}}$.

Fam. Gadidæ.

Macrourus atlanticus.—"*Praga*" or "*Lagartixa do mar.*"—*M. fusco-cinereus, dorso vinoso, gatturis umbilico pinnisque ventralibus atris: squamis areolato-scaberrimis, echinalatis, ecarinatis, inermibus: oculis maximis.*

M. rupestris, nob. in Synops. Mad. Fish, p. 190, nec Bl. nec Cuv. et omiss. syn. *Lepidoleprus cœlorhynchus*, Risso.

On further examination, this most singular fish appears to be quite distinct from *M. rupestris*, Bl. t. 177; and therefore, according to Cuvier (R. Anim. 2nd Ed. ii. 337, note,) from *Lepidoleprus cœlorhynchus*, Risso, through which indeed alone I had referred it to the northern fish described by Bloch. But besides the points included in the specific character, the first ray of the first dorsal fin is neither serrate nor stronger than the rest. The diameter of the eye is one twelfth or one thirteenth part of the whole length, which scarcely exceeds one foot.

Fam. Pleuronectidæ.

Rhombus cristatus. *R. corpore oblongo-elliptico: oculis approximatis: dentibus tenuibus pectinatis; in maxilla superiore uniseriatis; in inferiore anguste scobinatis: pinnæ dorsalis dimidii anterioris radiis apice liberis; primordialibus* (2^{do} 6^{m}.) *productis, elongatis: latere* (*sinistro*) *fusco, immaculato: squamis* (*haud deciduis*) *magnis, margine scabris.*

D. 92; A. 75; V. 6; P. 1 + 9; C. $\frac{3+VI}{3+V}$. Rariss.

The Whiff of British authors (*R. megastoma*, Yarr. 2. 251) appears the nearest ally of this apparently new species. Indeed, except for Mr. Yarrell's more detailed account, I should have scarcely perhaps scrupled referring it to "La Cardine ou Calimande" of Cuvier's R. Anim. 2. 341, of which he says, "ses premiers rayons sont libres"; of course meaning of the dorsal fin. Nothing is, however, discernible of this in either Mr. Yarrell's figure or description of "The Whiff"; nor even, if correct, does it express sufficiently the peculiarity of this part in the Maderan fish. The only individual which has yet occurred was five and a quarter inches long.

Fam. Cyclopteridæ.

43. Lepadogaster zebrinus.—"*Chupa sangue.*" *L. fusco-nigrescens, lateribus postice strigis obliquis, nuchaque fasciis divergentibus saturatioribus maculisque binis cæruleis pyriformibus pictis: naribus biciliatis: pinnis dorsalibus analibusque caudali adnatis.*

D. 17 v. 16; A. 10 v. 9; P. 15 v. 16; V^{s}. 4; C $\frac{7}{7}$ + X. Haud rara.

In the double nasal cilia, and connexion of the caudal with the dorsal and anal fins, this little fish agrees with *L. cornubicus* (Flem.), Yarr. 2. 264. The structure of the sucking disk is also similar to the representation of the same part in that species, and not to that of the "*bimaculated Sucker,*" at p. 268. In this particular it perfectly agrees also with the former species indicated in my Synopsis, p. 190; which is, however, perfectly distinct specifically, having neither a nasal cilium nor the caudal fin united with the dorsal and anal fins. Of this last-mentioned species no second example has yet occurred. The present (*L. zebrinus*) is not by any means uncommon. It varies considerably in intensity of colour, and in the distinctness of the darker stripes upon the nape and flanks. The nasal ciliæ are of the general dark brown or blackish tint.

Fam. Echeneidæ.

SS. *Cauda lunata.*

Echeneis Remora, L. Syst. Ed. 12.—"*Pegador.*" *E. tota cinereo-fuliginosa, nigrescens: laminis disci* xvii. *v.* xviii.*; pinnis pectoralibus brevibus, ovatis, integris, apice rotundatis: lingua lævi.*

D. 23; A. 23; P. 26; V. 1 + 5; C. $\frac{3\,v.\,4 + VIII}{3\,v.\,4 + VII}$; M. B. 9. Rarior.

Echeneis pallida. *E. tota pallide cinerea, fuligineo hinc et hinc subnebulata: laminis* xix.*; pinnis pectoralibus brevibus, latis, apice rotundatis, subtruncatis, tenuiter crenulatis: lingua medio scobinata.*

D. 24; A. 22; P. 27; V. 1 + 5; C. $\frac{3\,v.\,4 + VIII}{3\,v.\,4 + VII}$; M. B. 9. Rariss.

SS. Cauda integra, S. truncata.

Echeneis jacobæa.—*E. tota cinereo-fuliginosa, nigrescens: laminis* xix.*: pinnis pectoralibus brevibus, latis, pectinato-rotundatis crenatis: ventre sulcato: lingua scabra.*

D. 24; A. 24; P. 21; V. 1 + 5; C. $\frac{3 + VII}{3 + VIII}$; M. B. 8. Rariss.

Echeneis vittata.—*E. purpureo-nigrescens, pallido variegata, fasciaque nigra longitudinali laterali, antice utrinque albo marginata: pinnis pectoralibus ovatis, acutiusculis, integris; pinnæ dorsalis analisque antice caudalisque marginibus albis: laminis* xxiv.*: lingua scabra: oculis magnis: corpore elongato, postice valde attenuato, gracili.*

D. 39; A. 39; P. 22; V. 1 + 5; C. $\frac{1 + VIII}{1 + VII}$. Rariss.

The nearest ally of this very distinct species appears to be *E. lunata*. Bancr. in Zool. Journ. V. 413. t. 18. But this, besides other differences, has a lunate tail.

Echeneis brachyptera. (Echeneis ——— ? Syn. p. 191.) *E. cinereo-fuliginosa, nigrescens; pinnis dorsalibus analibusque antice*

albo submarginatis : laminis xvi. *: pinnis pectoralibus brevibus, latis, truncatis, integris : lingua medio scobinata.*

D. 28; A. 24; P. 26; V. 1 + 5; C. $\frac{3\text{ v. }4 + \text{VII}}{3\text{ v. }4 + \text{VII}}$; M. B. 8

This is the first of the two species indicated by me in the former part of this List or Synopsis. Of the second sort, there mentioned as having been seen by Miss Young, and which I have there doubtfully referred to *E. naucrates*, L., no fresh example has occurred. I should now be much inclined to consider it identical with *E. vittata ;* but Miss Young affirms that it was " certainly plain-coloured."

Fam. Muræniдæ.

Sphagebranchus serpens.

S. serpa, Risso, Hist. Nat. iii. 195. No. 81.

A single individual only has occurred, precisely answering to the description above referred to. It measured eleven inches in length. I could not detect the slightest rudiment of pectoral fins.

Fam. Gymnodontidæ.

Tetrodon capistratus. *T. pusillus, oblongiusculus lævissimus ; dorso illiisque inermibus, nudis ; ventre adpresso-spinelloso : dorso fusco ; lateribus ochraceo-fulvis, fusco longitudinaliter bifasciatis, capiteque utrinque cæruleo punctatis, illiis oblique lituratis, rostroque subproducto gulave semi-capistrato : pinna caudali utrinque nigro-limbata.*

D. 9; A. 8; P. 16; C. $\frac{2}{2\text{ v. }3}$ + VIII. Rariss.

A most elegantly-coloured little species, which I cannot refer with certainty to any already described. Only two individuals have hitherto occurred. The first was little more than two inches long : the second nearly twice as large.

The *Orthagoriscus* of Madeira, called by the fishermen, " *Peixe Porco*," or " Bouto," I forbear at present to designate further, not having seen a sufficient number of individuals to determine its characters. The caudal fin is produced into a short point in the middle, not truncate, as in all the figures to which I have access of the European Sun-fishes.

Fam. Squalidæ.

Carcharius falcipinnis. " *Faqueita.*" *C. corpore supra griseo-cinereo, subabbreviato, medio crassiore s. altiore, utrinque attenuato : rostro brevi, lato, depresso, apice obtuso : oculis rotundatis : pinna dorsali prima alta, triangulari, subantica s. supra medium pinnarum pectoralium posita : pinnis pectoralibus falcatis, angustis, elongatis, apice obtusis : pinna dorsali secunda analique oppositis : ventralibusque parvis.* Rariss.

An *Squalus ustus*, Dum.

It is perhaps only for want of better materials for comparison that I have been unable to refer this Shark precisely to the above-indicated or to some other described species. It is about three feet long,

and the female differs in nothing from the male. The teeth are precisely similar to those of the "*Tintureira*" (*C. glaucus*, Cuv.)

The "*Marraxo*" proves to be, as I suspected, *Lamna cornubica*, Cuv., adult, or of large size.

Gen. Acanthidium.

Corpus gracile, elongatum. *Spiracula* magna. *Pinnæ dorsales* duæ, antice spiniferæ; secunda majore postica, caudæ approximata. *Pinna analis* nulla. *Pinnæ ventrales*, subposticæ s. secunda dorsalis subanteriores.

Dentes utriusque maxillæ dispares, parvi: superioris laniarii, plano-triangulares, tenues, acuminati; acumine recto; basi utrinque denticulo aucto; antice triseriati, lateribus biseriati: inferioris incisorii, acumine utrinque a medio oblique deflexo, uni- vel bi-seriati. *Cauda* oblique oblonga, apice truncata.

This new genus appears exactly intermediate between the established genera of Cuvier, *Spinax* and *Centrina*: agreeing with the former in its elongated form, and with the latter in the teeth.

The ventral fins are placed more backward than in *Spinax*, but rather forwarder than in *Centrina*, i. e. neither halfway between the two dorsal fins, nor opposite the second dorsal fin, but just before the second dorsal fin, which begins exactly opposite the termination of their base. The tail or caudal fin resembles that of *Spinax*, rather than of *Centrina*, and the spines of *both* the dorsal fins are reflexed as in *Spinax*, forming the fore-edge of each fin. The pectoral fins are abruptly truncate. The second dorsal fin is greatly larger than the first; in which it differs equally from *Spinax* and *Centrina*. The teeth are not arranged quincuncially, but behind each other in rows.

Two species have occurred, both of which have hitherto been confounded with *Centrina*.

Acanthidium pusillum. "*Gata negra.*" *A. totum atrum, pusillum: rostro crassiusculo: dentibus inferioribus uniseriatis: spiraculis oculo remotiusculis.*

Centrina? nigra, nob. olim in Proceed. Zool. Soc. 1833, p. 144*. Syn. Mad. Fish in Trans. Zool. Soc. p. 194. Rariss.

Four individuals of this curious little shark have now occurred, agreeing equally in the foregoing characters and in their dimensions, varying in length only from eleven to twelve inches. The second dorsal fin is somewhat forwarder or more distant from the origin of the tail than in the next species.

The condition of the teeth, and constancy of size, both indicate an adult fish; and a comparison of the present species with the

* A serious erratum has been caused here by the transposition of a sentence. The paragraph referred to should stand thus: "It (*Centrina? nigra*) is intermediate in characters between *Centrina*, Cuv., and *Acanthias*, Risso, having the teeth of the former genus as well as the backward position of the second dorsal (*rectius* ventral) fin, and the form of body of the latter."

fœtal and adult state of the following, in these two points alone demonstrates *Acanthidium pusillum* to be no stage of *A. calceus*.

ACANTHIDIUM CALCEUS. "*Sapata.*" *A. purpureo-fuscum, subtus pallidius: rostro plano-depresso: dentibus inferioribus biseriatis: spiraculis oculo, pinnaque dorsali secunda caudæ approximatis.*

Centrina Salviani, Syn. Mad. Fish in Trans. Zool. Soc. p. 194: nec aliorum. Rarior.

This shark very much resembles in its general aspect *Scymnus nicæensis*, Risso, the "*Gata*" of Madeira: but is at once distinguished by the spines in front of the two dorsal fins, which, as in *A. pusillum*, are both recurved, and ought, had I attended to the excellent figures copied by Willoughby from Salviana of *Centrina nigra*, Cuv., instead of allowing myself to be deceived by a miserable figure of Lacepède's, alone to have preserved me from the blunder of referring to that species for the present shark, the usual size of which exceeds by a few inches only three feet.

Fam. RAIIDÆ.

Raia oxyrhyncus, Will., Ichth. p. 71.—"*Raia.*"

Sharp-nosed Ray, Penn., Ed. 1. iii. 83. No. 31. Yarr., Brit. Fish. ii. 424.

Two male individuals only have occurred: the largest, measuring three feet in width from wing to wing, was furnished on the back with patches of strong hooked spines or prickles, much as in the figure in the British Fishes; but the second example, scarcely two feet wide, although decidedly a male, was devoid of these appendages. The colour of the upper surface was a pale, dull, yellowish, or ashy-grey, obscurely mottled or dappled with a few scattered distant paler whitish spots.

TRYGON ALTAVELA.—"*Andorinha do mar.*" *T. corpore rhomboideo, duplo latiore quam longo, alis expansis, cauda perbrevi.*

Pastinaca marina altera πτερυπλατεῖα, Altavela Neapoli dicta *Columnæ*. Will., Hist. 65. Tab. C. 1. f. 3. (Copied from F. Columna.)—Rariss.

A single female individual only has occurred, measuring five feet and a half from tip to tip of wings.

June 11, 1839.

William Yarrell, Esq., Vice-President, in the Chair.

Mr. Bucknell exhibited his *Eccaleobion*, or machine for hatching eggs; and having broken eggs in every stage of incubation, explained the nature and incidents of the process. Mr. Bucknell stated that the period of incubation in the common fowl, which was, on an average, 21 days, sometimes varied from 18 to 24 days, and that he attributed this variation to the mode of keeping, and previous treatment, by which the embryo was injured, either from the heat of the weather, exposure to variety of temperature, jolting in carriage, &c. The young bird was occasionally known to emit a faint chirp even so long as 24 hours before being excluded; and he believed that if this noise was heard on the 18th day the chicken would probably appear on the 19th. From this and other circumstances, such as the common mode of preparing eggs by varnishing, &c., the porosity of the shell, and other similar causes, he concluded that the small globule of air constantly found in eggs, and which he had observed to increase according to the age of the egg, was produced by the air penetrating the substance of the shell and its lining membrane.

The average number of malformations, according to Mr. Bucknell's experience, was not more than five in a thousand; though in Egypt, it was stated, that malformations were extremely common in the artificial process of incubation. He attributed this circumstance to an excess of heat, and generally found it to affect the toes and extremities; sometimes also the muscles of the neck.

A general conversation afterwards took place on this subject, during which much interesting and valuable information was extracted, with regard to the period and circumstances of the incubation.

A letter from H. Cuming, Esq., Corr. Memb., dated Manilla, November 18, 1837, was read. This letter stated that Mr. Cuming had forwarded a collection containing 395 birds and 12 quadrupeds, from the southern part of the Island of Luzon.

Mr. Cuming states that quadrupeds are scarce in the Philippine Islands, and that he has been able to procure all the species known excepting three, two of which are Deer, and the third is a species of Buffalo, of small size, with straight and sharply-pointed horns. This last animal Mr. Ogilby stated was most probably the *Anoa depressicornis*.

Mr. Ogilby exhibited the skull of an Elk from Nova Scotia, brought over by Dr. Cox, and remarkable for its great size as compared with the dimensions of the horns.

Mr. Ogilby also called the attention of the meeting to a collection of skins from Sierra Leone, exhibited by Mr. Garnett. Among others were three of the Chimpanzee, apparently adult, but too much mutilated to admit of obtaining the dimensions; two of *Colobus ursinus*, one of which had the tail of a rusty white colour, instead of the pure white which generally characterizes the species; and one of a species of Cat, which Mr. Ogilby believed to be undescribed, and for which he proposed the name of

Felis Servalina. *F. suprà fulva, maculis nigris, minutis, copiosissimis; subtùs albida; caudâ brevissimâ.*

"This species appears to be about the size of the common Serval, but differs from that animal in having a shorter tail, and in the very numerous and minute black spots which are scattered over the shoulders, back, and flanks. It is only on the thighs and arms that the spots become large and distinct; there they are less numerous, and resemble those of *Felis Serval*. The head and fore part of shoulders are entirely free from spots; the median line of the back is of a deeper fawn than the rest of the body, the minute spots having a particular tendency to run into lines; the belly is of a dirty white colour, with large brown blotches, and the tail does not exceed the length of the same organ in the lynxes. This character is alone sufficient to distinguish the present species from all the other African cats with which I am acquainted. The mutilated condition of the skin unfortunately prevents me from describing the characters of the ears, legs, feet, and under parts of the body."

	Ft.	In.
Length of the skin from the muzzle to the root of the tail	2	10
Length of the tail	0	8

As regards the species of *Colobus*, Mr. Ogilby observed, that from information communicated by M. Temminck, he was now convinced that it was identical with the *Colobus polycomos* of Pennant.

Mr. P. Buckley Williams exhibited various specimens of White-Bait (*Clupea alba*, Yarrell,) from the Dovey and some other rivers of North Wales, and stated that the common belief, that this was confined to the Thames, was now proved to be erroneous, not only from the facts now stated, but likewise from their abundance in the river Forth of Scotland, as shown by Dr. Parnell.

June 25, 1839.

Dr. Bostock in the Chair.

Dr. Richardson read his account of an interesting collection of fish formed at Port Arthur in Van Diemen's Land, by T. J. Lempriere, Esq., Deputy Assistant Commissary General, by directions from His Excellency Sir John Franklin, K.C.B., Lieutenant Governor, and now deposited in the museum of the Royal Naval Hospital at Haslar. The collection contains about thirty species, and the paper, which embraces only a part, gives detailed descriptions and anatomical notices of these, several of them being also illustrated by very elaborate drawings, executed by Mr. Charles M. Curtis with his wonted fidelity. The following species are included in the present paper, the others being reserved for a future communication.

1. Serranus Rasor. *Ser. maxillis valdè squamosis, apicibus radiorum pectoralium fasciculatis, compressis, lanceolatis; pinnis omnibus præter ventrales squamosis; radiis aculeatis pinnæ dorsi subæqualibus; fasciâ oculum cingenti cæruleâ per lineam lateralem productâ.*

Radii:—Br. 7—7; P. 13; V. 1, 5; D. 10, 21; A. 3, 9; C. $15\frac{4}{4}$.

The *Serranus Rasor*, or *Tasmanian barber*, is a beautiful fish belonging to that group of *Serrani* which was named *Anthias* by Bloch, none of which had previously been described as inhabitants of the Australian seas. It agrees with the barber-fish of the Caribbean seas in having no elongated dorsal rays, and may be distinguished readily from all the known *Serrani* by the peculiar form of its pectoral rays, whose numerous branchlets are so graduated and closely approximated as to give a flat lanceolate shape to the tip of each ray. The general colour of the fish is reddish brown, with umber-brown spots, a dark patch beneath the end of the pectorals, a bright blue stripe crossing the anterior suborbitar, encircling the eye, and running along the lateral line to the caudal fin. There are also thirteen or fourteen narrower blue streaks on the lower part of the flanks and tail. The fins are lake-red, and are all, except the ventrals, more or less scaly.

2. Centropristis Salar. *Cent. operculo suboperculoque squamosis; interoperculo seminudo; preoperculo subdenticulato; pinnis dorsi anique in fossis receptis.*

Radii:—Br. 7—7; P. 16; D. 9, 16; V. 1, 5; A. 3, 10; C. $17\frac{3}{3}$.

This species is known locally as the salmon, and differs from *C. truttaceus*, as described in the *Histoire des Poissons*, in the distri-

bution of the scales on the gill-covers, and in some other minute particulars. *Truttaceus* is said to have the interoperculum and suboperculum entirely naked, and only a few scales on the operculum itself ("*quelques écailles sur sa surface*"). In *C. salar* there are five rows of pretty large scales on the operculum, one row on the suboperculum, covering surfaces of both these bones, and a row of smaller scales on the interoperculum, clothing its upper half only. As these scales are very easily detached, and the gill-plates remain hard and silvery, after they are removed with the epidermis, it must be difficult to distinguish an injured specimen from *truttaceus*; whose description in other respects exactly accords with *salar*, except that the latter has the suborbitar very faintly denticulated, and two rays fewer in the soft dorsal.

3. Aplodactylus arctidens. *Aplo. dentibus oris tricuspidatis, superioribus in serie octuplici, inferioribus in serie quintuplici dispositis; cæcis pylori quatuor.*

Radii:—Br. 6—6; P. 9 *et* 6; V. 1, 5; D. 16—1, 17; A. 3, 8; C. $16\frac{5}{5}$.

This species differs from *A. punctatus* of the Chilian seas (the only species previously known) in its dentition, but resembles it so much in external form, colours, and markings, as well as in anatomical structure, that it cannot be placed in a separate genus. In the *Histoire des Poissons* the teeth of *dentatus* are described as follows: "*Les dents sont disposées sur trois rangées à la machoire supérieure et sur deux à l'inférieure: elles sont aplaties et ont leur bords arrondis et dentelés en petits festons; elles sont très-semblables à celles des crénidens, on en compte quatorze de chaque côté à la máchoire supérieure et treize a l'inférieure. Derrière ces rangées antérieures il y a des petites dents grenues sur une bande étroite à chaque máchoire.*" In the Van Diemen's Land fish, the teeth stand in eight or nine crowded ranks in the upper jaw, and in five or six in the lower one, those of the interior rows being very much smaller in all their dimensions, but otherwise shaped exactly like the teeth of the exterior rows, which resemble those of *punctatus*. Their points show three small lobes, the middle lobe being largest and most prominent. The species further differs from *punctatus* in having four cæca, but its food appears to be similar, the intestines having been found filled with large fragments of sea weed, apparently *Ulva umbilicalis*.

4 and 5. Two new species of gurnard were then mentioned as the first of the genus that have been brought from the Australian coasts, though one species (*Trigla kumu*) is known to inhabit the seas of New Zealand. They were stated to agree with that species, with several Indian ones, and with *Trigla pœciloptera* of the Mediterranean, in their large pectoral fins being ornamented with eye-like marks similar to those on the wings of some lepidopterous insects. One of them, Trigla polyommata, has minute cycloid scales on the body, an unarmed lateral line and the dorsal plates confined to the first dorsal, there being no dilation whatever of the interspinous bones of the second dorsal. All the spines of the head are stiletto-

shaped, and one whose base occupies the whole anterior end of the infraorbitar on each side, projects boldly beyond the snout, and gives the fish a very different aspect from any other known gurnard.

The other may be thus characterized:—

5. Trigla Vanessa. *Tri. squamis aspersis mediocribus; lineâ laterali aculeatâ; fossâ dorsali ad finem usque pinnæ posterioris armatâ, orbitâ oculi edentatâ, pinnâ pectorali amplâ labeculis aculeis binis ornatâ, maculâ inter aculeum pinnæ dorsi quintum et octavum nigrâ.*

Radii:—Br. 7—7; P. 12—III.; V. 1, 5; D. 8, 12; A. 12; C. 13$\frac{3}{4}$.

Trigla Vanessa has a spinous infraorbitar tooth, larger than usual in gurnards, though not so remarkable as in the preceding species, and not occupying the whole end of the bone, there being a smaller tooth and some granulations beneath it. The arming of the dorsal furrow extends to both fins, and is formed by saddle-shaped dilatations of the interspinous bones, with a triangular spinous tooth on each side of each plate directed backwards. The scales of the body are rather large, and are studded on their uncovered portions with minute spiny points; those forming the lateral line are tubular both transversely and longitudinally, and are armed with several strong spines also tubular. There is a black mark on the anterior dorsal. The sides of the head are finely granulated without radiations, and there are no denticulations on the edge of the orbit either in this or the preceding species.

6. *Apistes marmoratus* (Cuv. et Val. 4, p. 416). The specimens correspond exactly with the description given in the work referred to, except that the first suborbitar has only one tooth anteriorly. The spine of that bone reaches in one specimen to the preoperculum, but in another it is one third shorter, being in the latter case only just equal to the preopercular spine in length.

7. *Sebastes maculatus* (Cuv. et Val.). Two specimens in good order, when examined in reference to the account of the species in the work referred to, offer no discrepancy, except that the postorbitar spines are somewhat different from those of *imperialis*, which *maculatus* is said closely to resemble. *S. maculatus* is an inhabitant of the seas of the Cape of Good Hope, and although a range from thence to Van Diemen's Land may appear very great, it is not more extensive than that of the northern *sebastes* which has been taken on the coasts of Greenland, in the gulf of St. Lawrence, on the coast of Norway, and in the British Channel.

8. *Cheilodactylus carponemus* (Cuv. et Val.), known locally as the Perch, and described as having, when fresh, a bright silvery hue with dark spots.

9. Nemadactylus concinnus. The fish so designated is stated by the author to be one of those species whose natural position is difficult to ascertain, from their partaking of the characters of several different groups. Viewed as the type of a new genus, *Nemadactylus* may be characterised as having none of the bones of the gill-cover armed or sculptured, the operculum itself being destitute

of projecting points, but as differing from any described sparoid form in having simple inferior pectoral rays, one of them projecting beyond the rest, as in *Cheilodactylus*, and in the teeth, which are minute and slender, in a single row on the jaws. The palate, vomer, tongue, and pharyngeal parietes are toothless. The fins are scaleless, the dorsal single, the branchial rays only three in number, the scales cycloid, and the pyloric cæca few (three). There is but one specimen of *Nemadactylus concinnus* in the collection, which is three inches and a half long, has a compressed elliptical form, and a sparoid aspect. Its lateral line is marked by a series of bright thin scales, and beneath it, the integuments are merely silvery with wrinkles, as in some scomberoid fishes; but the specimen has been long in spirits with other fish, and it is possible that the scales of the flanks may have been detached. If they actually existed, they must have been proportionably larger than those on the back, judging from the wrinkles of the epidermis. The scales of the back and top of the head are small, thin, and delicate, like those of a mackerel. Vertebræ 34.

It may be thus characterized:—

NEMADACTYLUS, n. g.

Piscis acanthopterygius. *Operculum* læve, inerme. *Pinnæ* esquamosæ, pinnâ dorsalis unicâ: *radii pinnæ* pectoralis inferiores (sex) simplices, quorum unus productus. *Costæ branchiostegæ* paucæ (tres). *Intermaxillarum pediculi* breves. *Dentes* gracillimi minuti in ambitu oris tantum positi. Fauces palatum et lingua glabri. *Squamæ* teneræ, læves, infraque lineam lateralem scomberoideæ. *Cæca* pylorica pauca (tria).

N. concinnus, species unica adhuc cognita.

Radii:—Br. 3—3; P. 9 et 6; V. 1, 5; D. 17, 28; A. 3, 15; C. $15\frac{s}{c}$.

10. LATRIS HECATEIA is the appellation given by the author to the type of another annectant genus, which he considers as taking its position most naturally among the *mænoideæ*, but as having many characters in common with a percoid group composed of the genera *therapon*, *datnia*, *pelates*, *helotes*, and *nandus*. In *Latris* the mouth is moderately protractile, the dentition is similar to that of *mæna vomerina*, there is a scaly groove for the reception of the deeply notched dorsal as in *gerres*, which genus it further resembles in its opercular bones, the preoperculum being very finely denticulated, and the operculum terminated by a slightly concave line without projecting angles. The ventrals are still further back than in *Cæsio*, and the cæca are few in number. The scales are cycloid, without teeth or cilia, and the genus unlike any previously described mænoid group has the lower pectoral rays simple like those of *aplodactylus*. There are no elongated scales at the base of the ventrals. *Latris Hecateia* is marked by three well-defined dark stripes on each side of the back, with a more diffused one inferiorly on the flanks, the four pyloric cæca are short and wide, and the only specimen in

the collection is eleven inches long, which is said to be the ordinary size.

The principal characters of this genus are as follows:—

LATRIS, n. g.

Piscis acanthopterygius, mænoideus. *Pinnæ* esquamosæ: dorsi pinnâ unicâ, profunde emarginatâ, in fossâ decumbens: ventrales pinnæ sub abdomine medio positæ. Radii pinnæ pectoralis inferiores (novem) simplices. *Preoperculum* denticulatum. *Os* modicè protendens. *Dentes* in oris ambitu tignoque vomeris positi villosi, in ossiculis pharyngeis parvi, subulati, conferti. Palatum linguaque læves. *Squamæ* læves.

L. Hecateia, species unica detecta.

Radii:—Br. 6—6; P. 9 et 9; V. 1, 5; D. 18, 36; A. 3, 27.

11. THYRSITES ALTIVELIS. *Thyr. radiis pinnæ dorsi aculeatis, corpus altitudine æquantibus; dentibus intermaxillæ utriusque quatuordecim, in latere maxillæ inferioris utroque duodecim.*

Radii:—Br. 7—7; P. 14; V. 1, 6; D. 20—1, 11 *et* VII; A. 1, 10 & VII.; C. 17$\frac{6}{7}$.

A single specimen of this fish in the collection, agrees in most particulars with the description of *Thyrsites atten* in the *Histoire des Poissons*, but the spinous rays of the dorsal fin are considerably higher in proportion, and the teeth on the jaws much fewer.

12. BLENNIUS TASMANIUS is an undescribed species strongly resembling some of the European ones.

13. CLINUS DESPICILLATUS differs from *C. perspicillatus* of the *Histoire des Poissons* in possessing a thicker form, a larger head, a proportionably smaller eye, and in wanting the nuchal marks which give the name to that species. The marks on the body are arranged as in *perspicillatus*, but there are three transverse bands on the pectoral and caudal fins, with many other spots not mentioned in the description of the latter. The dorsal rays are 36, 4, and in other particulars the two fish seem to be much alike.

14. LABRUS LATICLAVIUS. *Lab. smaragdinus, fasciis binis lateralibus puniceis purpureo marginatis, posticè in unum coalescentibus, inque pinnâ productis;* pinnâ dorsi basi viridâ, *in medio latè purpureâ: supernè aurantiacâ, purpureo guttatâ, inque margine extremo cæruleâ; pinnâ ani basi aurantiacâ, dein primulaceo-flavâ, utrinque cæruleo cinctâ, exinde purpureâ cæruleo guttatâ, denique in extremo margine cæruleâ.*

Radii:—P. 12; V. 1, 5; D. 9, 11; A. 3, 10; C. 14.

This is a very handsome species, having a duck-green colour, with two lake-red stripes, commencing at the gill-opening and uniting opposite the end of the dorsal to form a single broader stripe which is continued into the caudal fin. These stripes are bordered on both sides by dotted lines of plum-blue, and there are also five rows of blue spots on the sides of the belly, and three rows near the base of the

anal fin, on a lake-red ground. Several purple lines radiate from all sides of the orbit, and some pass over the preoperculum, interoperculum, and lower jaw. The dorsal is dark-purple, with green at the base of the rays, and an orange band at the tips, spotted and finally edged with blue. The anal has an orange streak along its base, then a broad primrose-yellow band edged above and below by a narrow blue line, next a broad band of purple with many very regular blue spots, and finally a narrow blue edging. The caudal is purple, with many plum-blue spots near its extremity in a vertical band. The other fins are apparently colourless. The aspect of the fish is that of a *Julis*, but the operculum and cheeks are scaly.

15. Lepidoleprus australis. *Lep. squamis corporis ordinibus plurimis aculeorum arctè incumbentium instructis; pinnâ ani plus duplici altitudine pinnam dorsi posteriorem superante.*
Radii:—Br. 6—6; P. 16; V. 1, 6; D. 2, 11—89; C. 1.

This is an example of a genus which had not previously been detected in the southern hemisphere. It has the general form of *Lepidoleprus cœlorhynchus*, but there are abundant specific differences, especially in the relative size of the fins, and in the arming of the scales, which in the Antarctic fish consists of rows of closely-incumbent strong spines. The author has compared it with examples of *cœlorhynchus* from the Mediterranean, and also from Madeira, both in the Society's museum, whose scales are totally different. None of these examples have the first dorsal ray serrated, as it is stated to be by writers who have described and figured the Greenland and Iceland *Macrourus rupestris*, yet Cuvier states that he has ascertained the identity of the latter with the Mediterranean fish. The first dorsal ray of *L. australis* is also smooth. There are sixty-seven vertebræ, of which fourteen are abdominal. The collection ontained three specimens.

A *platycephalus* intermediate between *fuscus* and *grandispinis*, a *scorpæna*, a *cheironectes* which is figured in Ross's Annual for 1835, a *dajaus* closely resembling its American prototypes, several handsome *Balistes* and *monacanthi*, a *diodon* and several *tetrodontes*, a new form of *torpedo*, some fresh-water fishes, and several other sea ones, are reserved for a future communication.

A paper by T. C. Eyton, Esq., entitled "Catalogue of a Collection of Birds from Malaya, with descriptions of the new species," was read.

"The collection of Birds, of which the following is a catalogue, are in the possession of Mr. Evans of the Wyle Lop, Shrewsbury, having been collected by his brother in the above-mentioned country. This collection is particularly interesting when taken in conjunction with that of the neighbouring islands of Sumatra and Java, an account of which is published in the Transactions of the Linnean Society, vol. xiii., by Sir T. Stamford Raffles and Dr. Horsfield.

"The zoology of Malaya is altogether highly deserving of the at-

tention of the naturalist, presenting as it does a connecting link between those families of which Australia is the metropolis, and the forms of the Old World. The ornithology of Australia is distinguished by the number of species belonging to the family *Meliphagidæ* which it produces, and we find from the present catalogue and that above-mentioned, that the Indian islands and the Malay peninsula also possess a greater number of species belonging to this family than any other portion of the world excepting Australia. This transition may also be traced through the marsupial animals, and man, the Malay variety of the human species approaching nearer to the Australian than any other in the form of the cranium.

"The present collection contains eighty-nine species, of which several are new to science; there are also some entirely new genera: it is singularly deficient in Raptorial and Natatorial birds, not possessing one of either order; but this perhaps may be owing to the collection having been made chiefly in the interior."

Podargus Javanicus, Horsf. Native name, *Burong Saiang*.

Harpactes Duvaucelii, Gould. Native name, *Burong Mass*.

Harpactes Diardii, Gould. Native name the same as the preceding.

Eurystomus cyanocollis, Vieill. Native name, *Tihong Lampay*. The collection contains both male and female; the latter is merely distinguished from the former by its more obscure colouring.

Eurylaimus Corydon, Temm.

Cymbyrhynchus cucullatus. *Eurylaimus cucullatus*, Temm. Native name, *Tamplana Lilin*.

Cymbyrhynchus nasutus, Vig. Native name, *Burong Ujuu*.

Halcyon Capensis, Sw. Native name, *Burong Kaha*.

Halcyon varia. *H. pectore, guld, ventre, strigáque oculos cingente ferrugineis; capite, nuchá, et strigá a mandibulâ inferiore ad capistrum brunneis, singulis pennis tæniis cæruleis ornatis: primariis, dorso, scapularibusque, brunneis, his externè flavo marginatis, illis maculatis; rostro flavo, culmine obscuro.*
Long. tot. $8\frac{1}{4}$ unc.; *rostri*, $1\frac{1}{2}$ unc.; *tarsi*, $1\frac{1}{10}$.
Native name, *Kaing Kaing*.

Halcyon pulchella. *Dacelo pulchella*, Horsf.
Native name, *Kaing Kaing Kimba*.

Alcedo Smyrnensis, Lath. See *Kaing Kaing*.

Alcedo cærulea, Linn. Native name, *Raja Ulang*.

Nyctiornis amictus, Sw. *Merops amictus*, Temm.
Native name, *Kay Chua*.

Merops Javanicus, Horsf. Native name, *Berray Berray*.

Cinnyris Javanicus, Steph. Native name, *Clichap*.

Cinnyris affinis, Horsf. Native name, *Major*.

Calyptomena viridis, Raff. Native name, *Siebo*.

Chloropsis Malabaricus, Jard. and Selby. Native name, *Burong daou*.

The female differs from the male in having the markings less distinct.

Chloropsis Sonneratii, Jard. and Selby. Native name, *Mirbadaon*.

The female and young are destitute of the black throat, a straw-coloured mark being sometimes substituted for it.

Irena puella, Horsf. Native name, *Krouing*.

Muscipeta paradisea, Le Vaill. Native name, *Mira jabone*.

Muscipeta atrocaudata. *Mus. toto corpore purpureo-atro, sed pectore imo abdomineque albis.*

Long. tot. 9 unc.: *rostri*, $\frac{1}{2}$ unc.; *tarsi*, $\frac{7}{12}$ unc.

Native name, *Murra jabone*.

Genus Microtarsus, n. g.

Rostrum ferè capiti æquale, altius quàm latum, ad apicem incisum, ultraque nares compressum, ad basim setis armatum; *nares* membranaceæ, parvæ, rotundatæ.

Tarsi brevissimi, superiore parte plumati; *digiti* debiles, externi vix longiores quàm interni; posteriores medios æquantes; *ungues* compressi, posteriores longissimi; *scuta* tarsi indivisa.

Alæ mediocres rotundatæ, primâ pennarum spuriâ, secundâ breviore tertiâ, tertiâ duabusque proximis inter se æqualibus.

Cauda rotundata tectricibus superioribus mollibus et longis.

Obs. The above genus is closely allied to *Micropus* of Swainson.

Microtarsus melanoleucos. *Micr. ater, tectricibus primariis apicibus albis; rostro pedibusque atris.*

Long. tot. $6\frac{1}{4}$ unc.; *rostri*, $\frac{1}{2}$ unc.; *tarsi*, $6\frac{1}{2}$ unc.

Native name, *Mirba tando*.

Genus Malacopteron, n. g.

Rostrum ferè capiti æquale, altius quàm latum, ad apicem incisum, ultraque nares compressum, ad basim setis armatum; mandibulâ inferiore ad basim tumidâ.

Tarsi mediocres; *digiti* externi vix longiores quàm interni, posteriores medios æquantes; *ungues* compressi posteriores longissimi; *scuta* tarsi vix divisa.

Alæ breves, rotundatæ; pennis secondariis primarias ferè æquantibus; primâ pennarum spuriâ, secundâ breviore tertiâ, quæ longissima est.

Cauda paucarum pennarum composita, rotundata; tectricibus superioribus mollibus et longis.

Obs. This genus is allied to *Microtarsus* in some particulars and to *Brachipus* in others: it agrees with both in the soft and downy nature of the tail coverts.

Malacopteron magnum. *Mal. fronte caudâque ferrugineis, nuchâ atrâ, dorso strigâque transversâ pectore, cinereis, alis brunneis, rostro flavo.*
Long. tot., 6 unc.; *rostri*, $\frac{7}{12}$ unc.; *tarsi*, $\frac{9}{12}$ unc.
Fem. mare minor, capite nuchâque ferrugineo et atro maculatis.
Native name, *Burong Map.*

Malacopteron cinereus. *Mal. feminæ speciei præcedentis similis sed magnitudine multùm inferior.*
Long. tot. $5\frac{1}{2}$ unc.; *rostri*, 5 lin.; *tarsi*, 8 lin.
Brachypus entylotus, Jard. and Selb. Native name, *Merfa.*

Brachypteryx nigrocapitata. *Bra. vertice atro, genis cinereis, gulâ albâ, dorso caudâque brunneis, pectore abdomineque ferrugineis hóc obscurissimo; rostri mandibulâ superiore fuliginosâ, inferiore flavâ, tarsis pedibusque brunneis.*
Long. tot. $6\frac{1}{2}$ unc.; *rostri*, $\frac{1}{2}$ unc.; *tarsi*, $1\frac{1}{12}$ unc.
Dicrurus Malabaricus, Steph. Native name, *Chanwee.*
Obs. Dic. æratus of Stephens is the female of this species.
Lanius virgatus, Temm. Native name, *Burong Tana.*

Lanius strigatus. *Lan. dorso, caudâ alisque ferrugineis, illo atro strigato; paucis pennis tertiarum et flexuræ alarum lineâ atris; capite cinereo, sparso et strigato atro; corpore subtùs obscurè albo; lateribus pectoreque parcè atro strigatis; rostro apice atro, basi albâ; tarsis pedibusque brunneis.*
Long. tot. $6\frac{1}{2}$ unc.; *rostri*, $\frac{7}{12}$ unc.; *tarsi*, $\frac{9}{12}$ unc.
Obs. This is probably a young bird.

Lamprotornis chalybeus. Turdus chalybeus, Horsf.
Native name, *Terling.*

Turdus Mindanensis, Gmel. Native name, *Murray.*

Kittacincla macrourus, Gould. *Turdus macrourus*, Gmel.
Native name, *Mura buta.*

Turdus modestus. *Tur. dorso, tectricibus alarum, verticeque olivaceo-brunneis; paucis tectricum primarium præpilatis albo; primariis caudâque brunneis; gulâ, strigâ oculari abdomineque albis, illâ maculis cinereis sparsâ; lateribus capitis, et pectore inferiore cinereis; lateribus pectoreque superiore ferrugineis; mandibulâ superiore pedibusque brunneis, inferiore flavâ.*
Long. tot. $8\frac{3}{4}$ unc.; *rostri*, $\frac{7}{12}$ unc.; *tarsi*, $1\frac{2}{12}$ unc.
Native name, *Kwaran.*

Pastor Malayensis. *P. dorso, caudâ alisque viridi-æneis; tectricibus tertiariis abdomineque albis; vertice nuchâque pennis elongatis, cinereis; paucis pennis viridi circumclusis; mento albo; corpore subtùs cinereo.*
Long. tot. $6\frac{3}{4}$ unc.; *rostri*, $\frac{1}{2}$ unc.; *tarsi*, 1 unc.
Fem. dorso brunneo; reliquis coloribus obscuris.
Native name, *Brass Brass.*

Iora scapularis, Horsf. Native name, *Durong Capas*.

Genus Crataionyx, n. g.

Rostrum forte; *mandibulâ* superiore arcuatâ, mediocri; *nares* rotundatæ, basales, setis brevibus tectæ.

Pedes validi syndactyli; *digitis* medio posteriori inter se æquantibus, exterioribus interioribus vix longioribus.

Tarsi validi elongati; *ungues* validi, posteriores maximi.

Alæ remigibus primariis spuriis, secundis vix brevioribus tertiis; 4tis, 5tis, 6tisque inter se æqualibus.

Cauda longa rotundata.

Crataionyx flava. *Crat. ater vertice cristato; abdomine pectoreque inferiore flavis; tarsis pedibusque flavis.*

Long. tot. 7 unc.; *rostri*, $\frac{1}{2}$ unc.; *tarsi*, $1\frac{0}{2}$ unc.

Native name, *Seray Seray*.

Crataionyx ater. *Crat. ænea, vertice cristato; abdomine pectoreque inferiore, flavis; tarsis pedibusque flavis.*

Long. tot. 7 unc.; *rostri*, $\frac{1}{2}$ unc.; *tarsi*, $1\frac{0}{2}$ unc.

Oriolus xanthonotus, Horsf. Native name, *Simpelong Rait*.

Oriolus Sinensis, Linn. Native name, *Kapindary*.

Gracula religiosa, Auct. Native name, *Tchong*.

Platylophus galericulatus, Temm. Native name, *see Jerray*.

Pitta brachyura, Auct. Native name, *Mortua Plando*.

Pitta coccinea. *P. occipite, nuchâ, corporeque subtùs coccineis; alis, dorso, caudâ, strigâque utrinque nuchæ, cyaneis; gutture ferrugineis; lateribus capitis, pedibus, rostroque atris.*

Long. corp. 8 unc.; *rostrum*, $\frac{3}{4}$ unc.; *tarsi*, $1\frac{1}{2}$ unc.

Native name, same as the last.

Buceros bicolor. *Buc. ater, rectricibus tertiis lateralibus caudæque apicibus albis; rostro albo, strigâ cingente basim atrâ; casside mediocri carinatâ à dimidio capitis ad bis trientis rostri tendente.*

Long. corp. $33\frac{1}{2}$ unc.; *rostri*, 6 unc.; carina cassidis, 5 unc.; *tarsi*, $2\frac{1}{2}$ unc.

Jun. casside non perfectâ et atrâ.

Native name, *Kay Kay*.

Euplectes Philippinensis. *Loxia Philippinensis*, Linn.

Native name, *Tampua*.

Anthus Malayensis. *An. dorso brunneo, marginibus pennarum saturatioribus; corpore subtùs ferrugineo levitèr tincto; duabus rectricibus exterioribus caudæ albis; pectore maculis brunneis adsperso; primoribus marginibus exterioribus flavis.*

Long. tot. $6\frac{3}{4}$ unc.; *rostri*, $\frac{1}{2}$ unc.; *tarsi*, $1\frac{1}{8}$ unc.; ung. post. $\frac{1}{2}$ unc.

Native name, *Lanchar*.

The present species, which is the *An. pratensis* of Raffles, and of which the collection possesses two specimens, is nearly allied to *Anthus trivialis*, but differs in being of a larger size.

Dicæum cantillans, Ste.
Dicæum saccharina. Certhia saccharina, Lath.
Native name, *Nella.*

Dicæum cruentata, Horsf.

Dicæum ignicapilla. *Dic. dorso, caudâ, tectricibus alarum, primariis externis partibus, lateribusque capitis obscurè azureis ; strigâ oculari atrâ ; gulâ corporeque subtùs aurantiacis ; maculâ pectorali verticeque rubris.*
Long. tot. $3\frac{1}{2}$ unc. ; *rostri*, $\frac{7}{14}$ unc. ; *tarsi*, $\frac{1}{2}$ unc.
Native name, *Nalloo.*
Fem. supernè cinerea subtùsque flava irregulariter cinereo-maculata ; rubro cristata.

Anthreptes flavigaster. *An. capite, dorso, pectore colloque cinereo-viridibus ; corpore subtùs flavo ; alis, caudâ tectricibusque alarum brunneis ; rostri mandibulâ superiore atrâ, inferiore flavâ ; pedibus brunneis.*
Long. tot. 8 unc. ; *rostri*, $1\frac{5}{8}$ unc. ; *tarsi*, $\frac{9}{12}$ unc.
Native name, *Chichap Rimba.*

Anthreptes modesta. *An. vertice, dorso, alis, caudâque viridi-olivaceis hâc singulis pennis mediis brunneis, illâ præpilatâ atro ; corpore subtùs viridi, singulis pennis in mediis obscuris ; rostro pedibusque brunneis.*
Long. tot. $6\frac{1}{2}$ unc. ; *rostri*, $1\frac{1}{4}$ unc. ; *tarsi*, $\frac{5}{8}$ unc.
Native name, *Chichap Nio.*

Phœnicophaus tricolor, Steph. Native name, *Kado besar.*

Phœnicophaus chlorocephalus. Cuculus chlorocephalus, Raffles.
Native name, *see Lahia.*

Phœnicophaus Crawfurdii, Gray. Native name, *Kada Kachie.*

Phœnicophaus Javanicus, Horsf. Native name, *Kada Apie.*

Phœnicophaus viridirostris. *Phœn. alis dorso caudâque castaneis ; primariis apicibus brunneis ; rectricibus caudæ apicibus albis, ponè strigâ atrâ ornatis ; capite, collo, pectoreque superiore cinereis, corpore subtùs ferrugineo.*
Long. tot. 13 unc. ; *rostri*, 1 unc. ; *tarsi*, 1 unc.
Native name, *see Lahia.*

Psittacula Malaccensis, Kuhl. Native name, *Tana.*

Bucco trimaculata, Gray. Native name, *Tanda.*

Bucco versicolor, Raff. Native name, *Tahoor.*

Bucco quadricolor. *Buc. viridis ; primariis brunneis ; rectricibus caudæ inferioribus partibus azureis ; fronte aureo, ma-*

culâ coccineâ posteriore utrinque ad latus locatâ; strigâ perociulari atrâ, hâc anticè maculâ coccineâ, infrà azureâ ornatâ; gulâ coccineâ; pectore superiore cæruleo maculis coccineis ornato; maculâ flavâ ad angulum inferius rostri; rostro, tarsis, pedibusque atris.

Long. tot. $8\frac{1}{2}$ unc.; *rostri*, $1\frac{1}{2}$ unc.; *tarsi*, $1\frac{1}{8}$ unc.

Native name, *Tahoor Capata Cuning.*

Genus Megalorhynchus. n. g.

Rostrum validum culminatum, carinâ basali vix ad apicem aduncâ; altius quàm latum; *nares* magnæ, basales, rotundatæ; setis tectæ.

Pedes scansorii; digiti bini locati; exteriores singulis partibus æquales et longiores quàm interiores; posteriores et exteriores brevissimi.

Alæ primis pennarum spuriis, secundis brevibus, tertiis, 4^{tis}, 5^{tis}, 6^{tis}, inter se æqualibus.

Tarsi mediocres.

Cauda rotundata, mediocris.

Megalorhynchus spinosus. *Meg. superioribus partibus brunneis; pennis præpilatis oleæ colore, vertice pennis mediis spinosis, oculis spatiis nudis et rubris circumdatis; gulâ obscurè ferrugineâ; corpore subtùs sordidè albo.*

Long. tot. $6\frac{1}{2}$ unc.; *rostri*, $\frac{11}{12}$; *tarsi*, $\frac{8}{12}$ unc.

Native name, *Ariko Berine.*

Chrysonotus Tiga. *Picus Tiga*, Horsf.

Native name, *Glato.*

Chrysonotus miniatus. *Picus miniatus*, Gmel.

Native name, *Glato.*

Picus validus, Temm. Native name, *Glato.*

Hemicircus badius, *Picus badius*, Raff.

Hemicircus brunneus. *Hem. brunneus transversìm ferrugineo strigatus; gulâ strigis minutis; vertice genisque brunneis et non strigatis; maculâ oblongâ ad latera cervicis flavo-ferrugineâ; notâ ab angulo inferiore rostri utrinque ad gulam tendente coccineâ.*

Long. tot. $7\frac{3}{4}$ unc.; *rostri*, 1 unc.; *tarsi*, $\frac{3}{4}$ unc.

Hemicircus tristis. *Picus tristis*, Horsf.

Picus poicilolophus, Temm. Native name, *Glato.*

Polyplectron Chinquis, Temm.

Nycthemerus erythrophthalmus. *Phasianus crythrophthalmus*, Raffles.

Native name, *Pagas.*

Cryptonyx coronatus, Temm. Native name, *Bestum.*

Perdix æruginosus. *Perd. æruginosus; tertiariis transversìm*

strigatis atro; abdomine gulâque saturatioribus; nullo calcare; rostro tarsisque atris, illo forti.
Long. tot. 10 unc.; *rostri*, $\frac{5}{8}$ unc.; *tarsi*, $1\frac{3}{4}$ unc.
Native name, *see Hole.*

Hemipodius Taigour, Sykes. Native name, *Pochio.*

Hemipodius atrogularis. *Hem. gulâ pectoreque superiore atris; pennis ad latera colli albis atro præpilatis; illis verticis et frontis atris, albo præpilatis; dorso brunneo, singulis pennis transversìm strigatis atro, et maculis parvis albis sparsis; tectricibus atro præpilatis, et transversìm latè strigatis flavo-ferrugineo; tectricibus caudæ ferrugineis, et super caudam tendentibus; lateribus atris; rostro aurantiaco pedibus, tarsisque brunneis.*
Long. tot. $6\frac{1}{2}$ unc.; *rostri*, 7 lin.; *tarsi*, 1 unc.
Native name, *Pochio.*

Coturnix Sinensis, Temm. Native name, *Pechan.*

Columba Javanica, Gmel. Native name, *Paonay Crochi.*

Columba jambu, Gmel. Native name, *Paonay Gadang.*

Vinago vernans. Columba vernans, Linn.
Native name, *Paonay Crochi.*

Vinago Olax. Columba Olax, Temm.
Native name, *Semboan.*

Rallus gularis, Horsf. Native name, *Rentar.*

Gallinula phœnicura, Lath. Native name, *Roa Roa.*

Porphyrio Indicus, Horsf. Native name, *Burong Tedone.*

Charadrius Virginianus, Bostik. Native name, *Kangbang Saut.*

Totanus Damacensis, Horsf. Native name, *Kadidie.*

Scolopax heterura, Hodgs. Native name, *Reshail.*

Mr. Waterhouse read a paper on a new species of Rodent which had been sent from the island of Luzon, one of the Philippines, by Hugh Cuming, Esq., Corresponding Member.

In general appearance this Rodent might be mistaken for a species of *Capromys*; in size it is about equal to the *C. Fournieri*; the general characters of the skull and dentition, however, indicate that its affinity is with the *Muridæ*.

"The skull, compared with that of the common Rat, differs in being of a more ovate form, the occipital portion being somewhat elongated, and considerably contracted; the width between the orbits is comparatively great; and behind the orbits the frontal bones are expanded, and join with the temporal to form a distinct post-orbital process. The interparietal bone, instead of being transverse, is almost circular. The auditory bullæ are very small. The inter-dental portion of the palate is slightly contracted in front, so that the molares diverge posteriorly; the rami of the lower jaw are less

deeply emarginated behind, the coronoid portion is smaller, and the descending ramus is broader and rounded; the symphysis menti is of considerable extent. The incisor teeth are less compressed and less deep from front to back. The molar teeth are of a more simple structure; the anterior molar of the upper jaw consists of three transverse lobes, and the second and third consist each of two transverse lobes. In the lower jaw the anterior molar consists of four lobes, a small rounded lobe in front, followed by two transverse lobes, of which the anterior one is the smaller, and finally a small transverse posterior lobe; the second molar consists of two equal transverse lobes, and a small lobe behind them; the last molar consists of two simple transverse lobes."

On account of the differences observable in the structure of the teeth, and form of the skull, combined with the hairy nature of the tail and ears, Mr. Waterhouse regarded this animal as constituting a sub-genus, and proposed for it the name of *Phlœomys*[1], this name being suggested by the habit of the animal, which Mr. Cuming (after whom the species is named) states, feeds chiefly on the bark of trees. It may be thus characterized:

Mus (Phlœomys) Cumingi. *M. vellere setoso, suberecto, pilis lanuginosis intermixtis; auribus mediocribus extùs pilis longis obsitis; mystacibus crebris et perlongis; pedibus permagnis et latis, subtùs nudis; caudâ mediocri, pilis rigidis et longis (ad* Murem Rattum *ratione habitâ) crebrè obsitâ: colore nigrescenti-fusco sordidè flavo lavato, subtùs pallidiore; caudâ nigrescente; pilis longioribus in capite et dorso nigris.*

	unc.	lin.
Longitudo *capitis corporisque*	19	0
——— *caudæ*.....	13	0
——— *antepedis (unguibus exclusis)*	1	$8\frac{1}{2}$
——— *tarsi*	2	10
——— *auris*	1	0
——— *cranii ossei*	2	4
Latitudo *ejusdem*	1	$8\frac{1}{2}$

Hab. apud insulam Luzon.

Some notes on the birth of the Giraffe at the Society's Menagerie were communicated by Professor Owen.

Of this paper the following is an abstract.

Connexion took place between the female Giraffe and the lighter-coloured male on the 18th March, 1838, and again on the 1st of April.

The young animal was a male, and was born June 9, 1839, being 444 days, or fifteen lunar months, three weeks, and three days, since the last observed, and, in all probability, the last coitus.

The new-born animal came into the world, like other Ruminants, with the eyes open, and the hoofs disproportionately large. The skin was marked as distinctly as in the adult, with large angular

[1] Φλοιὸς, bark (φλοίω, to decorticate), and Μῦς.

spots, which were somewhat darker than those of the mother; and the hair of the legs was of a deeper fawn colour. It sucked some warm cow's-milk from a bottle with avidity, and once or twice uttered a low, gentle grunt or bleat, something between that of a fawn and a calf. The young creature made several efforts to stand, raising itself on the fore knees; and was able to support itself on its vacillating and outstretched legs, about two hours after its birth.

"No one could have seen the young Giraffe," says Professor Owen, "without being struck with its large size, compact figure, and strength of limb. The condition or purpose of the long gestation is, evidently, to bring into the world the young Giraffe of a stature and strength suitable to the exigencies of a denizen of the desert—the birthplace, likewise, of the Lion and other destructives." The length of the animal, measuring from the muzzle to the root of the tail, was six feet ten inches; the girth of the trunk was two feet nine inches; from the tuber ischii to the patella was one foot four inches; from the patella to the apex of the hind hoof three feet; from the olecranon to the carpus was one foot ten inches; from the carpus to the end of the fore hoof was one foot eleven inches. These segments of the fore leg were thus nine inches longer than the corresponding ones of the hind leg; and as this disproportion does not exist in the adult, it offers another instance of the precocious developement of the anterior extremities in the mammiferous fœtus.

She would not yield her milk to, or even suffer her offspring to come near her. The young Giraffe was nourished by warm cow's milk. It gamboled actively about when one day old, and continued, without appearance of illness, till the 28th of June, when it was attacked by convulsions, and died.

A paper was read "On the polarizing property of living animals and animal substances upon the rays of transmitted light," by Mr. J. F. Goddard.

In this communication Mr. Goddard first alluded to the double refractory (polarizing property) exhibited by the lenses of the eyes of fishes and several other animal substances, an account of which was published in 1816 by Sir D. Brewster.

On repeating these experiments, Mr. Goddard, after observing that the scarf skin of the human subject, sections of human teeth, the finger nails, bones of fishes, and other substances, possessed the same property, was led to examine some living objects, when he discovered that among others, the larvæ and pupæ of a gnat (*Corethra plumicornis*) possessed this property in an eminent degree. The extraordinary transparency of this little insect is such, that the whole of its internal structure is beautifully displayed, and when viewed by polarized light, presents the most splendid appearance; the peculiar interlacing of the muscles of the body, dividing it into regular parts, present (as the insect changes its position with regard to the plane of polarization) the most varied hues and brilliant co-

lours. Mr. Goddard stated that the same phenomena may also be seen, if possible, in a more splendid manner, in the spawn of many large fishes, which, in their early state are sometimes equally transparent, particularly those species which inhabit the sea.

The polarizing property of various substances was beautifully exhibited by Mr. Goddard, by means of his " Polariscope."

July 9, 1839.

The Rev. J. Barlow in the Chair.

A letter addressed to Col. Sykes by Sir John McNeill was read. It related to a Dog recently presented by that gentleman to the Society. This kind of dog, Sir John McNeill states, is used by the wandering tribes in Persia to guard their flocks: it is a shaggy animal, nearly as large as a Newfoundland, and very fierce and powerful. The dam of the animal at the menagerie killed a full-grown wolf without assistance.

A letter from Augustus Eliott Fuller, Esq., was read. In this letter, which is addressed to the Secretary, and is dated June 29, 1839, Mr. Fuller encloses an account from his head keeper, Henry Cheal, respecting two broods of Woodcocks (*Scolopax rusticola*), which were bred in the woods of Mr. Fuller's estate at Rose Hill in Sussex.

The two broods referred to consisted each of four birds, and when first observed, about the second week in April, they could but just run; as they grew very fast, however, they were soon able to fly. Mr. Fuller's keeper believes the young woodcock is able to run as soon as hatched, and states that, according to his own observation and the report of others, they always build in a small hole, which they make on the plain ground: they select a dry situation for the nest; but this is placed near a moist soil, to which the old birds lead their young to procure food.

Mr. Waterhouse pointed out the distinguishing characters of a new species of Toucan, which had been forwarded to the Society by the President, the Earl of Derby, for exhibition and description.

This species of Toucan approaches most nearly in size and colouring to the *Pteroglossus hypoglaucus* of Mr. Gould's Monograph; but the beak, which is totally black, is much smaller, and less arched; the nostrils do not extend so far forwards, and are hidden by the feathers of the head, and there is no longitudinal groove in front of them, as in the species above named, and others of the genus; the blue of the under parts of the body is of a much paler and purer tint, and the feathers on these parts are white at the base. It differs, moreover, in having the throat and cheeks white, and the upper tail-coverts black.

A totally black beak being an uncommon character in the species belonging to the subgenus *Pteroglossus*, Mr. Waterhouse proposed for this new species the name *nigrirostris*, and proceeded to characterize it as follows:

Pteroglossus nigrirostris. *Pt. rostro, capite summo, nuchâque nigris; gulâ albâ; corpore suprà olivacco-fusco; rectricibus se-*

condariis olivaceo-viridibus; *uropygio pallidè sulphureo*: *caudâ, tectricibus caudæ, nigrescenti-viridibus, plumis quatuor intermediis ad apicem, femoribusque castaneis*: *corpore subtùs pallidè cyaneo, crisso coccineo, pedibus nigris.*

Long. tot. 20 unc.; *rostri*, $3\frac{2}{12}$; *alæ*, $6\frac{3}{4}$; *caudæ*, 7; *tarsi*, $1\frac{1}{2}$.

Hab. ——?

Mr. Fraser read his descriptions of two new species of Birds, from a collection made in the Island of Luzon, and recently forwarded to the Society by Hugh Cuming, Esq., Corresponding Member. The first of these belongs to the family *Cuculidæ*, the genus *Phœnicophaus*, and to Mr. Swainson's subdivision of that genus, to which he has applied the name *Dasylophus*. It may at once be distinguished from all the known members of the family by the singular structure of the feathers of its crest and throat: the shafts of these feathers are expanded at their extremities into laminæ, which may be compared to the shavings of whalebone; and in this respect they resemble the feathers of the crest of the Toucan, to which Mr. Gould in his Monograph applies the name *Pteroglossus ulocomus*, which is the *Pt. Beauharnesii* of Wagler*, but are not curled as in that species.

The feathers above the nostrils, of the crest and chin, and along the middle of the throat, are gray at the base; have a decided white spot towards the middle, and are terminated by a broad expansion of the shaft, which is of a glossy black colour, and exhibits blue or greenish reflections. The external edge of this expanded portion of the shaft is minutely pectinated. The occiput and sides of the head are gray, passing into dirty white on the cheeks and sides of the throat: the hinder part and sides of the neck, and the breast, are of a deep chestnut colour; the back, wings, and tail are of a deep shining green colour; all the tail-feathers are broadly tipped with white; the vent, thighs, and under tail-coverts are dusky brown, tinged with green; the bill is horn-colour, and the feet are olive.

This beautiful and interesting species Mr. Fraser proposed to name after its discoverer Mr. Cuming. Its principal distinguishing characters may be thus expressed:

Phœnicophaus Cumingi. *Ph. cristatus, plumis cristæ et gutturis laminis corneis ovalibus splendidè nigris terminatis; nuchâ, et pectore castaneis; facie pallidè cinereâ; alis et caudâ metallice virescentibus, hâc ad apicem albâ.*

Long. tot. 16 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, 6; *caudæ*, 8; *tarsi*, $1\frac{1}{4}$.

To the bird above described the following memorandum was attached:—"*Ansic En Bicol*, language of Albay. Eyes red, pupil large and black, length from beak to tail, $8\frac{1}{2}$ inches, around the body 5 inches." Signed H. Cuming.

The second bird characterized by Mr. Fraser is a new species of Duck (*Anas*), which is nearly allied to the *Anas superciliosa*, Gmel.,

* Oken's Isis for 1832, part iii. p. 279; also in the 'Ausland,' 1830, No. 118, p. 470.

but differs in being of a smaller size, in having the whole of the plumage much lighter in colour, and in the sides of the head and neck being rufous, instead of pale buff: it moreover has but one dark stripe on the side of the head, whereas *Anas superciliosa* has two.

The middle of the forehead, crown of the head, and a line down the back of the neck, are dark brown; from the bill to the eye, and thence to the occiput, is a brown line, which is separated from the crown of the head by a broad stripe, which is of a pale rufous tint; the cheeks, sides of the neck, chin, and upper part of the throat, are of the same colour; the whole of the body is brown, becoming gradually darker on the rump and tail feathers: all the feathers on the upper parts are edged with pale rufous; the wing coverts are crossed by a narrow white band near their extremity, and terminate in a deep velvet-like black colour; the *speculum* is deep glossy green, with purple reflections, and bounded behind by velvety black; to this succeeds a narrow white line: the bill and feet are apparently dark olive.

To this species Mr. Fraser applies the name *Luzonica*: it may be thus characterized:

ANAS LUZONICA. *An. suprà cinereo-fusca, vertice nigrescenti-fusco; strigâ super oculari, genis, et gutture, pallidè castaneis; speculo alarum purpureo-virescente, anticè et posticè nigro marginato; corpore subtùs fuscescenti-cinereo.*

Long. tot. 21 unc.; *rostri*, $2\frac{1}{4}$; *alæ*, $8\frac{3}{4}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, $1\frac{1}{2}$.

A collection of Birds from South Australia was exhibited. This collection, recently presented to the Society by the South Australian Company, contains the following species:—

Falco melanogenys, Gould. Native name, *Monkah*.

Falco Berigora, Vig. et Horsf. Native name, *Car-cown, ya*.

Falco Cenchroides, *Cenchris Cenchroides*, Gould. Native name, *Monne-monnie*; Golden Hawk.

Athene fortis, Gould. Native name, *Ounda-ў-papa*.

Ægotheles lunulata, Jard. et Selb. Native name, *Na-nie*; Night Hawk, or Eve-jar of the colonists.

Dacelo gigantea, Leach. Native name, *Cracow-Kata*; Laughing-Jackass of the colonists.

Graucalus melanops, Vig. et Horsf. Native name, *Ora*.

Cracticus hypoleucus, Gould. Native name, *Corow-Raw*; Whistling Magpie of the colonists.

Platycercus Pennantii, Vig. Native name, *Na-kall-ya*; Rosetta Parrot of the colonists.

Nanodes undulatus, Vig. et Horsf. Native name, *Tir-cou-ce*; Scalp Parrot of the colonists.

Trichoglossus concinnus, Vig. et Horsf.

Trichoglossus purpureus. Native name, *Warrow-Ka*.

Meliphaga Novæ-Hollandiæ, Vig. et Horsf. Native name, *Wandow*.

Anthochæra rufogularis. *Acanthegonys rufogularis*, Gould.

Sitella melanocephala, Gould. Native name, *Coolta-tacoow*.

Coturnix Australis, Temm. Native name, *Tou-ta-wa-tee.*

Coturnix pectoralis, Gould. Native name, *Tou-ta-wa-tee.* This is no doubt the male of the preceding species.

Charadrius nigrifrons. *Ægialitis nigrifrons*, Gould.

Rallus Philippinensis, Less. Native name, *Eerncou*; Land-Rail of the colonists.

Porphyrio melanotus, Temm. Native name, *Cow-oue*; Bald Coot of the colonists.

Nycticorax Caledonicus, Less.

Anas superciliosa, Gmel. Native name, *Tow-an-da?*

Rhynchaspis Rhyncotis, Steph.

Cygnus atratus, Shaw.

Phalacrocorax Carboïdes, Gould. Native name, *Yal-tow*; Black Shag of the colonists.

Mr. Fraser, who brought these birds severally under the notice of the meeting, and who at the same time furnished the above list, observed that the chief interest attached to this collection consisted in the locality in which it was formed, as naturalists were no doubt anxious to learn the geographical ranges of the Australian birds.

July 23, 1839.

William Yarrell, Esq., Vice-President, in the Chair.

A collection of 68 Bird-skins, made by Capt. Belcher on the west coast of South America, and presented to the Society by the Lords Commissioners of the Admiralty, was exhibited, and commented on by Mr. Vigors.

Among other observations, Mr. Vigors directed the attention of the Society to typical or leading characters, of the various groups of which specimens were found in the collection; and pointed out the relations which subsist between the great primary groups of his own system of ornithology, and the different situations they are fitted to occupy,—the earth, the water, the air, the forests, and the marshes. Mr. Vigors afterwards went over the collection in detail, and made many interesting observations respecting the habits and relations of the different species.

The following paper, on the production of Isinglass from Indian Fishes, was read by Dr. Cantor, Corresponding Member:

"In the December number, 1838, of Parbury's Oriental Herald appears a letter 'On the Suleah Fish of Bengal, and the Isinglass it affords': the description of this fish I shall quote in the words of the anonymous writer. 'The Suleah Fish,' he observes, 'when at its full size, runs about four feet in length, and is *squaliform*, resembling the Shark species in appearance, but exhibiting a more delicate structure than the latter. The meat of this fish is exceedingly coarse, and is converted by the natives, when salted and spiced, into "burtah," a piquant relish, well known at the breakfast-tables of Bengal. The bladder of the *Suleah* may be considered the most valuable part of it, which, when exposed to the sun and suffered to dry, becomes purely pellucid, and so hard that it will repel the edge of a sharp knife when applied to it. These bladders vary from half a pound to three quarters of a pound avoirdupois in weight, when perfectly dry. . . . The *Suleah* Fish abounds in Channel Creek, off Saugor, and in the ostia or mouths of all the rivers which intersect the Sunderbuns, and are exceedingly plentiful at certain seasons.'

"Conceiving the great importance of the discovery of isinglass being a product of India, I was naturally anxious to examine the source, arising from a branch of natural history to which in particular I have devoted my attention; but from the general nature of the description, I was obliged to defer my desire of identifying the fish till some future opportunity should enable me to do so. Quite unexpectedly, however, a few days ago, the last overland despatch brought me a letter from my valued friend Mr. McClelland, a Corresponding Member of this Society, an extract of which, bearing upon the point

in question, I lose no time in laying before the Society:—'. . . . I have now to mention what is of far greater importance in another point of view, namely, that the Suleah Fish described in a recent number of Parbury's Oriental Herald is the *Polynemus Sele* of Hamilton. I have examined that species, and found an individual of two pounds weight to yield sixty-five grains of pure isinglass, an article which here sells at sixteen rupees (1*l.* 12*s.*) per lb. Refer to your dissections of *Polynemi*; mark those with large air-vessels to be isinglass, requiring no other preparation than merely removing the vascular membrane that covers them, washing with lime-water, and drying in the sun. You know the size these fishes attain, and the number in which they abound in the Sunderbuns; you also know the method of taking them, and can therefore state to what extent isinglass may be obtained in India. I have sent a paper on the subject to the Journal of the Asiatic Society, which I will send you by the next overland despatch.'

"Perceiving by this that the subject has been taken up by a naturalist of Mr. McClelland's rank, and that we ere long may expect his observations embodied in a paper from his hand, I think it sufficient to confine myself to a few general remarks upon those species of *Polynemus* which have come under my actual examination while I was attached as surgeon to the Hon. Company's survey of the sea-face of the Gangetic Delta.

"The species best known is the *Polynemus risua*, Hamilton; *Pol. longifilis*, Cuvier; the Tupsee or Mango Fish of the Anglo-Indians; this inhabits the Bay of Bengal and the estuaries of the Ganges, but enters the mouths of the rivers, even higher up than Calcutta, during the breeding-season (April and May), when the fish is considered in its highest perfection, and is greedily sought as a great delicacy. This species is the smallest, for its length seldom exceeds eight or nine inches, and one and a half to two inches in depth. *Polynemus aureus* and *Topsui*, Hamilton, are species closely allied to this.

"*Polynemus sele*, Hamilton, *P. plebeius*, Broussonnais, *P. lineatus*, Lacépède, is the Suleah Fish mentioned in Parbury's Oriental Herald, the same which Mr. McClelland submitted to examination. This species, as well as another closely allied to *P. quadrifilis*, Cuvier, which I have dissected, figured, and described, under the name of *P. Salliah* (*Saccolih*), appears equally plentiful, in shoals, all the year round in the estuaries of the Ganges, and is appreciated by Europeans and natives for its excellent flavour. Both species attain a size from three to four feet in length, and eight to ten inches in depth.

"In a paper which I had the honour of communicating to the Royal Asiatic Society*, the genus *Polynemus*, among others, was pointed out by me as forming an article of food fit for curing, and easily procurable in almost any quantity: by the discovery that it

* Published in the Journal of the Royal Asiatic Society of Great Britain and Ireland, No. ix., August 1838, p. 165.

produces isinglass, it has attained an additional interest; and I have no doubt the manufacture of this article will, when entrusted to judicious hands, form another valuable article of exportation from India."

Mr. Ogilby called attention to a new species of Squirrel sent from the west coast of South America, by Capt. Belcher, at the same time as the bird-skins noticed by Mr. Vigors. This species more nearly resembles the Coquallin of Buffon (*S. variegatus*, Gmel.) than any other with which I am acquainted. It is, however, much smaller; rather less indeed than the common European Squirrel, and differs both in the colours themselves and in their distribution. The whole upper surface of the head and nape, as well as the cheeks of the Coquallin, are intense and uniform black; the ears and muzzle are pure white; the black and light-yellowish brown colours of the back are finely intermixed, or as it were granulated, whilst the long hairs of the tail are yellowish red at the roots, glossy black in the middle, and intense red on the terminal portion. In the new species, on the contrary, the head, muzzle, cheeks, and neck, are of the same colour as the back; the ears are but thinly covered with short hair, and that of a sandy red colour, surrounded by a narrow black border, most conspicuous in front; the back colours are brindled, or mixed in wavy irregular patches, and the long hairs of the tail are mostly black, terminated by snowy-white tips, which give the whole organ a hoary appearance; many of these hairs, however, have yellowish gray roots. The limbs and under-surface of the body, in both species, are red, but in the present species it is of a lighter and more yellowish cast.

For this species Mr. Ogilby proposed the name *variegatoides*: its chief characters are as follow:

Sciurus variegatoides. *Sc. suprà fulvo nigroque variegatus; subtùs helvolus; caudâ longâ, cylindricâ, floccosâ, canescente; auriculis imberbibus, subrufis, nigro marginatis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin . .	10	0
——— *caudæ*	11	0
——— *tarsi digitorumque*	2	6
——— *auris*	0	9
——— ab apice rostri ad basin auris. . . .	2	$1\frac{1}{2}$

A new species of Squirrel, sent by Hugh Cuming, Esq., Corresponding Member, from one of the Philippine Islands, was thus characterized by Mr. Waterhouse:

Sciurus Philippinensis. *Sc. suprà intensè fuscus, pilis nigri-rufescenti-flavo annulatis, subtùs cinerescenti-albus, capite et anticis pedibus cinerescentibus; auribus parvulis; caudâ mediocri.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin. . . .	6	6
——— *caudæ*	6	3

	unc.	lin.
Longitudo ab apice rostri ad basin auris	1	6
——— *tarsi digitorumque*	1	9
——— *auris*	0	$3\frac{1}{4}$

Hab. Mindanado.

"This species is rather larger than *Sc. Palmarum*, and less than *Sc. bivittatus*. The general hue of the upper parts, sides of the body, and outer side of the hinder legs, is deep brown (a much richer and deeper colour than the same parts in *Sc. bivittatus*): this tint is produced by the admixture of rust colour and black, the hairs being of the latter colour, and rather broadly annulated with rusty-red near the apex. The tail is not very bushy; the hairs are black, with two bright rusty bars. The under parts of the body are grayish white, with a faint yellow tint: the head and fore legs are grayish, and the feet are black, slightly grizzled with rust colour."

Mr. Waterhouse then proceeded to point out certain differences observable in the skulls of two species of Squirrels, which are usually confounded under the name *Sciurus Palmarum*, and the external characters of which he had pointed out in the "Magazine of Natural History" for September 1837, p. 496. The specific name *tristriatus* is there proposed for the new species.

"The skull of *Sciurus tristriatus*," observes Mr. Waterhouse, "differs from that of *Sc. Palmarum* in being a little larger, considerably broader in proportion, and in having the upper surface less convex; the post-orbital process is larger, the width between the orbits is greater, and the nasal portion is more suddenly contracted; the nasal bones are larger, and narrower posteriorly. Following are the dimensions of the crania of these two species of Squirrel."

	Sc. Palmarum.		*Sc. tristriatus.*	
	unc.	lin.	unc.	lin.
Total length	1	6	1	$7\frac{1}{7}$
Width		$10\frac{1}{7}$		$11\frac{1}{7}$
——— between orbits		$5\frac{1}{3}$		$6\frac{1}{3}$
Length of nasal bones		$5\frac{1}{2}$		6
From outer side of incisors (upper jaw) to front molar tooth		5		$5\frac{3}{4}$
Space occupied by the five molars on either side of upper jaw		$3\frac{1}{7}$		$4\frac{1}{4}$
Length of palate		$7\frac{3}{4}$		9
——— of ramus of lower jaw from front to posterior part of condyle..		$10\frac{1}{7}$	1	$0\frac{1}{4}$

August 13, 1839.

William Yarrell, Esq., Vice-President, in the Chair.

A collection of Bird-skins, from the neighbourhood of Erzeroom, presented to the Society by E. D. Dickson, and H. J. Ross, Esqrs., was exhibited.

The species contained in this collection were brought under the notice of the Meeting by Mr. Fraser, and the following notes (made by Messrs. Dickson and Ross) which accompanied them, were read.

Buteo ——— ? August 20†. Very common: arrives middle of March, and leaves middle of November.

* *Falco tinnunculus*, Linn. M‡. April 28. Common. Iris dark hazel. A mouse found in its stomach. This bird was perched on a tree, with some starlings and sparrows.

Falco tinnunculus, Linn. F. April 29. A bird and a frog found in its stomach. Five well-developed eggs in the ovarium. Another had eight eggs, besides a great many small ones, and its stomach contained a frog and some scaly substances, probably a portion of a fish. It breeds in April, on lofty poplars, and also on the top of minarets. Arrives early in April and departs late in November.

Falco Æsalon, Temm. M. April 23. Eyes large, round, and of a bluish-black colour: rim of eyelids, cere, and legs, bright yellow. A great number of thin tough worms, from one to two inches long, between the peritoneum and muscles on the left side: neither stomach nor intestines contained any.

Milvus ater, Gould. M. May 10. Common. Shot on a tree close to the town. Eyes large, of a light cinnamon colour, and with a black ring round the iris. Testicles reniform; yellow. Arrives middle of March.

Noctua Indica, Franklin. August 1. Common about the foot of the mountains near the town.

Cypselus murarius, Ill. M. May 24. Very abundant. Arrives beginning of May, leaves late in September.

Merops Apiaster, Linn. F. May 20. Gizzard full of insects. Arrives middle of May, leaves latter end of September.

**Coracias garrulus*, Linn. September 6. Common in various localities. Arrives early, and departs late in September.

Collurio minor, Vig. August 6. Common. Frequents haycocks. Arrives beginning of August, leaves middle of September.

† The date when the specimen was procured.

* The species marked with an asterisk have been noticed in the Proceedings as inhabitants of Trebizond, a locality not far distant from Erzeroom. See Proceedings for 1834, pp. 50 & 133; for 1835, p. 90; and for 1837, p. 126.

‡ The letter M stands for male, and F for female, throughout the paper.

Oriolus galbula, Linn. F. September 2. Rather rare. Found in willow-trees. Arrives early in August and departs middle of September.

**Cinclus aquaticus*, Bechst. F. December 9. Very few seen. Frequenting a mountain stream. Shy: flies rather high: food, small crustacea. Eyes light hazel. Two small oval appendages, one on each side of the rectum; hollow, and communicating with its cavity. The down on the breast very thick.

Motacilla alba, Linn. Not uncommon. Arrives end of September and departs end of October. Migratory.

Budytes melanocephala, Savi. M. June 7. Very common on moist ground: food, insects. Arrives middle of April and leaves early in November.

Phœnicura ruticilla, Swains. M. April 29. A straggler: found in a garden in Erzeroom.

**Saxicola Œnanthe*, Bechst. Eyes hazel. Frequents rills; also found on adjacent hills.

Saxicola Œnanthe, Bechst. M. May 27. Common all over the neighbourhood. Food, coleopterous insects and caterpillars.

Saxicola rubetra, Bechst. A few seen in April.

**Erythaca rubecula*, Swains. (In spirit.) Found in a stony ravine in November; the only one yet noticed.

Sylvia hippolais, Penn. August 15. A few seen on high thistles, in moist situations, from the commencement of April to the middle of October. Migratory.

Salicaria Cetti? Gould. October 28. Caught in a stable after the first falls of snow. Neither this bird nor several others of the same family procured at the time had any tails.

Anthus arboreus, Bechst.

Anthus rufescens, Temm. F. June 2. Found on the adjacent hills. Gizzard filled with coleopterous insects.

Alauda Calandra, Pall. Rather numerous: frequents fields. Arrives end of October and departs late in September. Migratory.

Alauda arvensis, Linn. Very common in summer.

**Alauda* ———? Not very common. Food, the grain found among horses' dung. This variety differs from the preceding species in the construction of the bill. It is only found in winter, and occurs in flocks, in company with the Horned Lark (*Alauda penicillata*).

Alauda brachydactyla, Temm. Seen in large flocks. Only noticed from 21st of April to 28th of May. Frequents fields and the hills. The cock is of a brighter colour than the hen, and has its ears and the spot on the breast much darker.

Alauda penicillata, Gould†. Numerous: food, seeds. The specimens sent are not so bright as the living bird, probably from the effects of the arsenical soap. The males differ from the females in being of a brighter colour, and in having the black feathers on the top of the head much more distinctly marked. The yellow gorget

† Proceedings Zool. Soc. 1837, p. 126.

of both, in winter is bright, and in summer remarkably faint, while the purple on the nape is *vice versâ*. During the hot months they are found on the neighbouring mountains, from which they are driven down to the plain in winter in quest of food, which consists then of the grain found in the dung of cattle, the ground being at that time covered with snow several feet in depth. They fly in companies of from three to twelve birds; are very familiar, especially so in winter, when they may be killed easily with an ordinary whip. When approached, or in the agonies of death, they erect their horn-shaped crest quite perpendicularly, with the tips curved inwards. They run on the snow with surprising rapidity: as soon as the snow has melted on the plain they return to the mountains.

**Emberiza miliaria*, Linn. M. & F. April 23, June 5. Common in the fields close to Erzeroom. Feed on corn.

**Pyrgita domestica*, Cuv. M. Excessively common. Begin to pair and build about the end of April and beginning of May.

Pyrgita petronia, Gould. M. May 28. Very common, observed in the spring and summer months in steep and stony ravines. Gizzard filled with wheat and chaff.

Fringilla nivalis? Linn. May 27. Rare: food, insects. Found in the neighbouring hills.

Linaria montana, Ray. October 14. Noticed from the 20th of September to the 18th of November, in companies.

Fringilla sanguinea, Gould†. May 28. Tolerably common. Firs appears on the neighbouring hills, and afterwards in the plains, at no great distance from them. Food, the unripe seeds of the *Cichoraceæ*. The young bird has a lighter plumage, and its skin is of a deep pink colour. Arrives in the middle of May, and departs in the middle of September.

Pterocles arenarius, Temm. M. & F. Very common. Iris dark hazel; margin of eyelids pale light yellow. Food, grain, vetches, tares, &c. Said to breed towards the end of April, on the adjoining hills, amongst loose stones. Arrives in the beginning of April; they are then seen in those fields that are free from snow, close to the town. In summer frequents bare sterile grounds. Quits Erzeroom about the end of September. Native name, *Bahghr-Kahrah* (Black Belly).

**Otis tetrax*, Linn. Very common in ploughed fields and on the skirts of the marsh. Arrives early in September, and departs in the middle of November. Native name, *Mez-mel-dek*.

Glareola limbata, Rüpp. September 8. Rare. In flocks in marshy situations.

Vanellus cristatus, Meyer. September. Very numerous. Arrives at the end of March and departs at the end of November. During summer frequents the river‡, but on its arrival and previous to its departure it is found in moist fields near Erzeroom. Native name, *Kiz-Cooshóo* (Maiden's Bird), or *Kahmaum-Cooshóo* (Bath-bird).

† Proceedings Zool. Soc. 1837, p. 127.

‡ The river referred to in this paper is the *Karah-Soo*, or northern branch of the Euphrates.

Vanellus Keptuschka, Temm. September 17. A few observed from the middle of September to the middle of October. In flocks. This specimen sent had its right leg shrivelled up.

Charadrius morinellus, Linn.

Charadrius minor, Meyer. June 26. Numerous on the sandy and pebbly banks of the Aras at Hassán-Kaléh (18 miles east of Erzeroom), about the middle of June. The naked rim round the eye is of a deep sulphur colour. None of these birds have been noticed at Erzeroom.

Tringa subarquata, Temm. Numerous about the streams at So-ook-Tcherméh, a village four miles from Erzeroom.

Tringa minuta, Leisl. August. Plentiful at Tchif-lík, a village five miles distant, close to the houses, about pools, in company with sparrows and starlings.

Tringa minuta, Leisl. September 15. Abundant at the village of So-ook-Tcherméh.

Limosa melanura, Leisl. November 15. One leg had apparently wasted and dropped off, and the other was found in an incipient state of atrophy, like that in *Vanellus Keptuschka*, Temm., but not in so great a degree.

**Himantopus melanopterus*, Meyer. End of July. Not very common. On the borders of the river. A naked rim round the eyelid, of a bright vermillion colour.

Ardea alba, Linn. Not many: seen only at the river, from the commencement of May till the beginning of October. Sometimes in flocks and sometimes solitary.

Ibis Falcinellus, Temm. End of August. Seen during the hot months at the river.

Ibis ——— ? End of August. Not uncommon: about the river in August. Food, shell-fish: has a remarkably thick gizzard.

Fulica ater, Linn.

Tadorna rutila, Steph. August 30. Very abundant: gregarious. During the day frequents marshes, but feeds late in the evening and early in the morning, in corn and stubble-fields. Arrives in the middle of March and departs at the end of November: rarely seen in the water. Said to breed in the marshes. Great numbers on the Lake of Van in August. Native name, *Ahn-goót*.

Sterna nigra, Linn. Very common about the river during spring and summer.

The collection also contains specimens of *Cricetus accedula* (*Mus accedula* of Pallas.), which species is "very common. The eyes are large and black; cheek-pouches spacious, extending from the angles of the mouth to the back of the head, a little beyond the ear. It is one of our domestic mice. In winter it is sometimes found on the snow; its fur is then silky and glossy."

The common mouse (*Mus musculus*) is said to be very common in houses at Erzeroom.

The Spalax (*Spalax typhlus*, Illig.), a specimen of which is also sent, is said to be "common all over the plain. Its food is roots, but it will readily eat bread: its paws are thick and fleshy: it is very expert in burrowing, which it performs with all four of its feet. The

pericardium is excessively thin and transparent, and without any traces of fibrous texture. The left lung is entire, and the right one divided into four lobes; heart, pancreas and kidneys, natural; peritoneum of exactly the same structure and appearance as the pericardium; liver five-lobed, with a small appendix; a large thick, round blotch (resembling an ulcer) on the inner surface of the great curvature of the stomach; spleen narrow, very much elongated, and adhering to the posterior and left side of the stomach; *capsulæ renales* firmly attached to the upper end of the kidneys; cæcum and *appendix vermiformis* of an enormous size, in proportion to the intestines: between the rectum and bladder a flat white substance, of a follicular structure, and terminating at its posterior extremity in a thick fleshy canal. Native name, *Kior-Seetchán* (Blind Rat.)."

Mr. Charlesworth exhibited a young shell, as he supposed, of the *Nautilus Pompilius*, which he considered worthy of notice on account of its small size, its transverse diameter not exceeding half an inch. The *umbilicus* was open throughout its entire length, and a series of elegant and rather prominent striæ were transversely disposed upon the terminal portion of the external whorl. Mr. Charlesworth remarked, that the rarity of this shell in the early stages of its growth was a singular circumstance, considering the immense number of *nautili* which are annually imported to this country. The specimen on the table was by far the smallest he had ever seen.

The plates of the first part of Sir W. Jardine's work on Scottish *Salmonidæ* were exhibited by Mr. Yarrell.

August 27, 1839.

No meeting took place.

September 10, 1839.

William Yarrell, Esq., Vice-President, in the Chair.

The following letter, addressed by M. Baillon to Mr. Waterhouse, was read. It is dated Abbeville, July 16, 1839 :—

"M. De la Motte has just informed me that when he had the pleasure of seeing you in London you expressed a wish to know the name of a new species of Goose which I described in 1833 in the catalogue of the birds observed in the department of the Somme, and which I have inserted in the 'Memoirs of the Society of Emulation of Abbeville.' To this bird I gave the name *Anser brachyrhynchus*, because it appeared to me that one of its most striking characters consisted in the shortness of its beak. This species has been sent by me, under that name, to the museums at Paris, Turin, Mayence, &c. I have also forwarded two specimens, exhibiting the young and adult states, to M. Temminck for the museum at Leyden, and this learned naturalist stated that he would give an account of the species (under the above-mentioned name) in the fourth volume of his 'Manuel d'Ornithologie.'

"In the same catalogue I described two new species of *Scolopax*, one under the name of *S. LaMottei*, and the other under that of *S. pygmæa*. M. Temminck does not admit that the first is a good species, and for the same reason he will not admit the *Scolopax Brehmii*, which, like my new species, differs only from the *Scolopax gallinago* in the number of tail-feathers. *Sc. Brehmii* has sixteen tail-feathers, whilst *LaMottei* has only twelve; the last-mentioned species differs moreover in being of a much smaller size than the common snipe. The *S. pygmæa* M. Temminck regards as a good species, and he intends to insert it in his work. Like *S. gallinago*, it has fourteen tail-feathers, but it is of a much smaller size than that species; it is even smaller than the *S. gallinula*. Two specimens of this new species, resembling each other, were killed in the same week, and furnished me with the materials of my description. A new species of *Anthus* and four new small quadrupeds are also described by me in the catalogue; two of the quadrupeds belong to the genus *Arvicola*, and the remaining two belong to the genus *Vespertilio*."

The following paper, by George Gulliver, Esq., F.R.S., Assistant-Surgeon to the Royal Regiment of Horse Guards, entitled "Observations on the Muscular Fibres of the Œsophagus and Heart in some of the Mammalia," was read.

"There seems to be considerable difference of opinion as to the extent to which the muscular fibre of animal life invests the gullet, a discrepancy which has probably arisen from the want of a sufficient number of comparative observations on the lower animals. It has

been generally concluded that this fibre is confined to the upper portion of the tube, Professor Müller, Dr. Schwann, and Mr. Skey informing us that the striated muscular fasciculi are either confined to this part of it, or belong only to the muscles of the pharynx, while MM. Ficinus and Valentin have been led to assign a much more extensive range to the fibre in question.

"From a somewhat attentive investigation of this subject during a residence in the country last spring, and without any more information as to what had been done by others than is to be found in Mr. Skey's paper, it appeared to me not only that the muscular fibre of animal life extended much further towards the stomach in certain brutes than in man, but that there was also a remarkable difference in this respect even among different genera of animals. Hence I propose to communicate to the Society a short account of my observations, with the impression that they will tend as well to reconcile the discordant results of others, as to direct attention to a field of inquiry which may prove of much interest, both as regards the physiology of the muscular tissue and of an important part of the alimentary apparatus.

"1. In the Dog (*Canis familiaris*, Linn., and *C. familiaris var. Australasiæ*, Desm.) the muscular sheath, from its commencement to its termination in the stomach, was found to be composed entirely of distinct fibres everywhere marked with the striæ, which appeared to be of two distinct sizes, without intermediate gradations. Of the largest, two and a half or three occupied a micrometer space of 1–4000th of an inch, while five of the smaller were required to cover the same extent, the latter presenting a much more acute appearance than the former; so the large striæ were from 1–10,000th to 1–12,000th of an inch broad, and the small marks 1–20,000th. The fibres were of the same diameter as those of the sartorius muscle, both being larger than in the heart of the same animal.

"2. In the Fox (*Canis Vulpes*, Linn., and *Canis Vulpes, var. Americanus*), to within half an inch of its termination it was composed wholly of the striated muscular fibre, and this structure, mixed with the muscular fibre of organic life, extended as far as the stomach. The diameter of the striated fibre, or bundle of ultimate filaments, was from 1–666th to 1–333rd of an inch, which much exceeds the magnitude of the fibre in the heart of the same animal.

"In the Silvery Fox (*Canis argentatus*, Desm.) the striated fibres were abundant to within half an inch of the termination of the gullet: in the Arctic Fox (*Canis lagopus*, Linn.) they were detected to its end, though in the former they could not be seen so near to the stomach.

"3. In the common Otter (*Lutra vulgaris*, Desm.), the striated fibres were detected abundantly to within half an inch of the cardiac end of the gullet. The fibres were from 1–800th to 1–500th of an inch in diameter. In the *heart* they had a diameter varying from 1–2000th to 1–1143rd of an inch.

"4. In the Domestic Cat (*Felis Catus*, Linn.) the muscular sheath of the œsophagus consisted wholly of striated fasciculi to about a

quarter of an inch below the superior border of the sternum. The bundles were from 1–1600th to 1–1143rd of an inch in diameter. Nearer to the stomach the muscular fibres of animal life were mixed with those of organic life, the former being completely lost within half an inch of the cardiac end of the œsophagus. The muscular fasciculi in the heart were very indefinite, but manifestly smaller than in the gullet.

" 5. In the Asiatic Leopard (*Felis Leopardus*, Desm.) the muscular fibre of animal life was seen to within one inch and three quarters of the cardiac end of the gullet. In this situation, and about half an inch further up, the striæ were remarkably small and faint. Three inches from the stomach the muscular fibre was almost entirely that of animal life. The fascicles measured from 1–500th to 1–333rd of an inch in diameter; in the heart, from 1–2666th to 1–666th, 1–1000th being a common size.

" 6. In the Lynx (*Felis Lynx*, Linn.) the muscular tunic was composed entirely of the striated fibre to within seven inches and a half of the stomach. Many of the striæ were very large, and separated by rather wide intervals, viz., about 1–8000th of an inch. Two inches higher the striæ were generally of the finer kind. About six inches from the stomach the muscular fibre of animal and that of organic life were mixed in about equal proportions; and the former was lost in a little more than an inch lower down. The fibres of the latter were riband-like, about 1–4000th of an inch broad, and containing distinct corpuscles, as in the horse. The fascicles of the former were from 1–1000th to 1–666th of an inch broad. In the *heart* the fascicles presented a diameter varying from 1–2000th to 1–800th of an inch; 1–1333rd of an inch was a common size.

" In the Caracal (*Felis Caracal*, Linn.) some ill-defined fasciculi were observed to within half an inch of the cardia, but no striæ could be seen nearer to it than an inch and a half. Three inches and a half from the end of the gullet the fasciculi were distinct and general, but the striæ faint and often invisible. The riband-like fillets in the organic muscular tissue could not be detected.

" 7. In the Common Rat (*Mus decumanus*, Desm.) the muscular fibre was throughout fasciculated and transversely marked, without any visible intermixture of fibre of a different character, even close to the stomach. The striæ were chiefly, if not exclusively, of the larger kind.

" 8. In the Common Guinea Pig (*Cavia Cobaya*, Desm.) the striated fibres extended to the stomach; they measured from 1–1600th to 1–400th of an inch in diameter. In the *heart* their diameter was from 1–2000th to 1–800th of an inch.

" 9. In the common Rabbit (*Lepus Cuniculus*, Linn.) the striated fasciculi extended to the termination of the gullet, and even to a short distance on the cardia.

" 10. In the Horse (*Equus Caballus*, Linn.) the muscular sheath, to within seven or eight inches of its cardiac end, was constituted altogether of the striated fasciculi, having a diameter varying from 1–444th to 1–266th of an inch. The striæ were both of the large

and small varieties, the former being, as usual, sharp and well-defined in their course, without any appearance of a granular arrangement; while the former appeared to be composed of very minute globules, extremely regular in size and shape, the striæ apparently resulting from the exact apposition laterally of the granules, and of the depressions or spaces between them. The diameter of the granules was about 1–16000th of an inch. Some of the transversely marked fibres could be traced on the outer surface of the gullet as far as four and a half inches from its termination, but they were completely lost on the inner muscular layer one inch and a half nearer to the pharynx than here indicated. The diameter of the muscular fasciculi in the heart was from 1–1333rd to 1–666th of an inch.

"The remaining portion of the muscular fibres, as far as the stomach, was chiefly composed of the riband-like filaments, varying from 1–3000th to 1–2000th of an inch in diameter. These were everywhere pervaded by irregular corpuscles from 1–4000th to 1–2000th of an inch in diameter, giving to the gullet a knotted appearance, with about 1–500th of an inch longitudinally between these bodies.

"11. In the Fallow Deer (*Cervus Dama*, Linn.) almost the whole extent of the muscular tunic was made up of the striated fibres, which could be detected in the last portion of the œsophagus, though mixed about two inches above the stomach with the muscular fibre of organic life. There was a considerable quantity of tissue, composed of longitudinal filaments, riband-like, apparently quite flat, with very distinct margins, and each measuring transversely from 1–4000th to 1–3000th of an inch. Portions of the striated fibres often seemed to terminate insensibly in these riband-like filaments.

"12. In the Calf (*Bos Taurus*, Desm.) the muscular covering presented the striated fibres to within half an inch of the stomach. The striæ were generally of the larger kind. Only one observation was made with this animal, and that in a fœtus at the seventh month of utero-gestation.

"13. In the Sheep (*Ovis Aries*, Desm.) it was composed entirely of fibres, measuring from 1–666th to 1–250th of an inch in diameter, the striæ being both of the sharp and small, and of the large and obscurely globular varieties. Some of the transversely-marked fibre was also detected extending for three quarters of an inch on the great end of the stomach, among the muscular fibre of animal life in that situation.

"14. In the Bearded Sheep (*Ovis Tragelaphus*, Desm.) the striated fibre extended to within half an inch of the termination of the gullet. The fascicles were very variable in diameter, viz., from 1–2000th to 1–400th of an inch. In the *heart* they measured from 1–777th to to 1–1143rd.

"15. In the Cashmire Goat (*Capra Hircus*, var.) the striated fibre was continued down to the stomach, being found abundantly on the last portion of the œsophagus. A common diameter of the fibres was 1–666th of an inch; in the heart they measured from 1–2666th to 1–1333rd of an inch.

"16. In the Coati (*Nasua fusca*, Desm.) the œsophageal muscular

fibre was almost entirely of the striated kind, there being but very little of the muscular fibre of organic life, even close to the stomach. The fascicles measured from 1–888th to 1–333rd of an inch in diameter.

"17. In another Coati (*Nasua rufa*, Desm.) the striated fibre extended to the stomach; the outer layer was composed entirely of the muscular fibre of animal life, the fibres being longitudinal, and easily separable from the inner layer, which latter near to the stomach was composed of the muscular fibre of organic life.

"18. In the Sloth Bear (*Ursus labiatus*, Blainville) the muscular tunic of the gullet was remarkably strong and red, being about an eighth of an inch thick in the neck, and increasing to a fourth of an inch near the stomach. The striated fibre was detected throughout, and extended some distance on the cardiac end of the stomach. The fibres were generally large, viz., about 1–400th of an inch in diameter; in the heart from 1–2000th to 1–1000th.

"19. In the Capuchin Monkey (*Cebus capucinus*, Desm.) the striated fascicles were found abundantly, mixed with the muscular fibre of organic life, two inches from the cardiac end of the œsophagus. The fibres measured from 1–800th to 1–500th of an inch in diameter.

"20. In the Lemur (*L. Albifrons*, Desm.) no striated fibres could be seen within an inch and a half of the termination of the gullet. In the Green, Grivet, Mangabey, and Rhesus Monkeys (*Cercopithecus Sabæus*, *C. griseo-viridis*, *C. Æthiops*, and *Macacus Rhesus*), the striæ could not be observed within an inch and a quarter of the cardia, though several well-marked fasciculi were seen in this situation, presenting a homogeneous or very irregular and slightly granular appearance, as if not composed of primary fibrils. An inch further from the stomach the striated fasciculi were abundant. In the Dog-faced Baboon (*Cynocephalus Anubis*,) Mr. Siddall could only trace the striated fibres as far as three inches and a half from the stomach; in a Gibbon Monkey† he saw them no nearer to the cardia than an inch and a half; and in a Barbary Ape the striated fibre was lost on the gullet two inches from the stomach.

"Professor Müller assures us that 'the third act of deglutition is perfectly involuntary, being performed by the muscular fibres of the œsophagus, which are not in the slightest degree capable of voluntary motion.' If this statement be correct, some of the facts adduced in this paper are remarkable, since they are examples of complete identity of structure between the muscular fibres of the last portion of the gullet and the known muscles of voluntary motion; and this identity, according to my observations, is not deduced from one appearance alone, but in several instances from a combination of characters, which I am not aware that any perfectly involuntary muscle hitherto described presents; i. e. the ultimate filaments formed into fasciculi, considerably larger than in the heart, well-defined, agreeing

† To the cæcum of this Gibbon there was an *Appendicula*, which was not the case in any of the other Quadrumana mentioned in this paper.

in size with those of the voluntary muscles generally, pervaded by the two kinds of striæ, and unmixed with the muscular fibre of organic life.

"It may be remarked, that however adverse the appearance of the very definite, sharp, and minute transverse markings may be to the views of Sir Everard Home in regard to the constitution of the ultimate muscular filament, still that the larger striæ are formed from the lateral apposition of granules, as maintained by Professor Müller, seems to be very probable. This may often be seen in the œsophageal fibre of the horse, and still better in the heart of this and other animals. Yet the beaded arrangement cannot be detected in the acute and smaller striæ, and the character of these appears to me to be so distinct and constant, never running by insensible gradations into the larger kind, and unaffected by any modifications of light or manipulation, that it is not improbable that there is an essential difference between them. This view also receives support from the fact, that in the heart of several animals none of the smaller transverse marks are present, the ultimate tissue being throughout granular, and presenting only the larger or more indefinite kind of striæ.

"It is remarkable too that in this organ the character of the muscular fibre is altogether peculiar, being constituted exclusively, as before mentioned, without a visible intermixture of any other tissue whatever. Nothing can be seen in the heart like the fibre described in the last portion, either of the gullet of the horse or of the fallow deer, or indeed similar to the muscular tissue of organic life belonging to the membranous viscera of the abdomen; and if the cellular substance exist between the cardiac muscular fasciculi, it must be in a form agreeing in some respects with the ingenious hypothesis of Bordeu.

"In the preceding observations generally the muscular fibre of animal life extended further towards the stomach in the outer than in the inner layer of the œsophageal muscular sheath. Thus, in the Otter the striated fasciculi were abundant in the former portion to within half an inch of the termination of the gullet: within an inch and a half on the surface they were entirely of this kind; while the muscular fibre of organic life formed the inmost layer nearly four inches anteriorly to this point.

"In the Horse, Lynx, and Deer, the organic muscular fibre, as figured and described by Dr. Baly, was remarkably distinct. In the first the fillets were larger than in the others, and in the last the corpuscles were not seen. In many of the other observations these peculiar riband-like fibres were either less evident or not to be detected by the most careful examination, even in that part of the gullet where the striated fibre constituted but a small part of, or was altogether absent from, the muscular sheath."

A paper communicated by Dr. Lhotsky, and entitled "Some Remarks on Animal Tuition," was read.

Dr. Severn exhibited a species of *Balistes*, which had been caught on the coast of New Zealand.

September 24, 1839.

The Honourable Sir Edward Cust in the Chair.

A letter from R. J. Bourchier, Esq., Corresponding Member, dated Malta, Sept. 5, 1839, was read. It stated that Mr. Bourchier had forwarded a young Lioness to the Society, which Sir Thomas Reade, Honorary Member, had sent to Malta for that purpose.

A letter from Col. Warrington, Corr. Memb., was read. This letter, which is dated Tripoli, July 20, 1839, states that Col. Warrington had forwarded to the Society two small boxes, containing preserved specimens of natural history, and some living gundies. (*Ctenodactylus Massonii.*)

A letter from E. D. Dickson and H. J. Ross, Esqrs., dated Erzeroom, July 18, 1839, was read. It referred to a collection which these gentlemen had forwarded for the Society's Museum. The specimens alluded to in this letter having arrived, were severally brought before the Meeting by Mr. Fraser, and the following notes which accompanied them were read:—

Accipiter fringillarius, Ray. Procured April 3. Male. Found in the stomach small birds. Iris bright orange; margins of eyelids yellowish; bill blue, with black tip; cere yellowish green; legs yellow; claws black. Total length 12·5 inches. Shot near the town.

Falco subbuteo, Linn. Procured May 22. Total length about 12 inches. Bill bluish; legs orange; claws black. The only specimen we have yet seen. Female.

Circus pallidus, Sykes. Procured April 4. Iris bright yellow, with yellow margin to the eyelids; bill bluish; cere greenish yellow; legs orange yellow, with black claws. Total length 17 inches. This year (1839) arrived March 24, and left April 7; last year they arrived March 8 and left May 1. They were then also much more numerous than this year, and most abundant in April.

* *Circus rufus*, Briss. One specimen, a male, procured May 8. Found in the stomach frogs and mice. Shot close to town. Legs pale yellow. A second specimen procured May 24. Found in the stomach a Tern (*Sterna nigra*). Iris bright sulphur-yellow; legs pale dirty yellow. Common about the river: they are shy, but bold.

Hirundo rustica, Linn. Procured April 25. Found in the stomach insects. Iris dark brown; bill and legs black. Total length 8·5. Arrives April 20, and remains here the whole summer; very

* The species marked with an asterisk have been noticed in the Proceedings as inhabitants of Trebizond, a locality not far distant from Erzeroom.—See Proceedings for 1834, pp. 50 and 133; for 1835, p. 90; and for 1837, p. 126.

numerous all over the plain: builds under eaves; the nest is made of mud, straw, and coarse large feathers, neatly lined with fine hay, over which there is a layer of feathers; eggs four, white, speckled with brown.

Lanius Collurio, Linn. One specimen, a male, procured April 20. Found in the stomach Coleopterous insects. A second, a female, procured May 4: found in the stomach worms, &c. Total length 7 inches. A small number seen together in a burying-ground.

Muscicapa grisola, Linn. Found in the stomach insects. Very common in May, in the burying-grounds, and also in fields.

Muscicapa luctuosa, Temm. Procured April 8. Found in the stomach insects. Shot in a burying-ground. No others have been seen.

Turdus merula, Linn. Procured March 28. Found in the stomach insects. Observed from March 28 to April 7 about burying-grounds, &c. Said to be common in winter both at Tortoom and Trebizond.

Turdus pilaris, Linn. Procured April 1. Found in the stomach beetles. Only one seen; on moist ground.

**Turdus musicus*, Linn. Procured March 28. Found in the stomach Coleopterous insects. Seen from March 23 to April 19: frequents the gardens and ditches near town, and also the roofs of houses. Common. Said to be numerous at Tortoom in February.

Petrocincla saxatilis, Vig. Procured April 19. Found in the stomach insects. Iris brown; bill and legs dusky. Total length 8·5 inches. Found near the river, on moist ground. Another was seen April 22 in a burying-ground near the town.

Sylvia Hippolais, Temm. Found in the stomach small insects. There are two varieties, both of which were sent on a former occasion.

**Curruca cinerea*, Bechst. Procured May 11. Found in the stomach insects. Total length 5·5 inches. Only two seen; one in a ditch, and the other in a burying-ground.

Salicaria phragmitis, Selby. Procured May 11. Found in the stomach insects. Frequent bogs and other moist localities.

Phœnicura Tithys, Jard. and Selb. Procured April 17. Found in the stomach small *Coleoptera*. The only specimen found. Bill and legs black.

**Phœnicura Succica*, Jard. and Selb. Procured March. Found in the stomach small insects. Common about rills from March 28 to April 22. Total length 5·7 inches. Subject to several varieties of plumage.

Saxicola rubicola, Bechst. Procured April 19. Found in the stomach small *Coleoptera*. Burying-grounds, and the vicinity of moist ditches. Common. Seen from 19th of April to the present time.

Alauda arborea, Linn. Procured April 19. Found in the stomach insects. Shot in a burying-ground adjoining the town: only one seen.

Alauda ——? Var. Albino, of a species we sent in the first box. No other lark except the *Alauda penicillata* has been seen this winter.

Parus cæruleus, Linn. Procured February 17. Bill black, with

brownish white margins; legs and claws bluish gray. Total length 4·5 inches. Several noticed in the same places as (*Parus major*, Linn.) from February 17 to April 7. Some were seen at Tortoom in February.

**Parus major*, Linn. Procured March 25. Bill black, with dark margins; legs and claws bluish gray. Total length, 5·5 inches. Among trees and rose-bushes in town. Noticed from January 31 to March 2.

**Emberiza Cia*, Linn. Procured April 4. Found in the stomach very small graminaceous seeds. Total length 6·8 inches. Bill bluish; legs light brown. Observed from 3rd to 25th of April, near mill-streams and in burying-grounds. Common.

Emberiza citrinella, Linn. Procured March 24. Food the same as that of *Emberiza Cia*. Common upon trees and in burying-grounds. Seen from March 23 to April 23. Total length 7 inches.

Emberiza hortulana, Linn. Procured April 19. Found in the stomach insects and small seeds. Total length 6·3 inches. Bill light brown; legs very pale light brown. Frequents the vicinity of mill-streams. Noticed from April 19 to May 8. It is singular, that among fourteen or fifteen birds which we examined, shot at different times and places, every one had insects as well as seeds in the crop and gizzard. The female has the feathers of the breast, summit of the head, nape, and sides of the chin, marked with longitudinal dusky spots.

Coccothraustes chloris, Flem.

Coccothraustes vulgaris, Briss. Procured April 10. Found in the stomach seeds, both large and small. On a tree in town. Only two seen.

Fringilla montifringilla, Linn. Procured March 31. Bill yellowish, and black at the tip; legs dusky. No others have been seen.

Fringilla Cœlebs, Linn. Procured March 26 and 27. Found in the stomach small seeds. Common in the vicinity of rills. Total length 6·3 inches. Bill light brown, or of a smoke-blue colour; legs dark brown. Arrived March 26, departed April 17.

Pyrrhula ——? Procured Feb. 27. Found in the stomach seeds. Total length 5·7 inches. Shot on some willows at Tortoom, where they are said to be common.

**Sturnus vulgaris*, Linn. Procured March 8. Total length 9·6 inches. Very common. Frequents the habitations of man, and feeds in fields, &c.; these birds are also the constant attendants of cattle while grazing: at sunset they return in large flocks, to roost upon trees and eaves of houses. Arrive in the beginning of March and disappear late in November. Turkish name, *Sighergik* (diminutive of ox).

Garrulus melanocephalus, Bonelli. Procured February 27. Bill black; legs light brown. Shot at Tortoom, thirty miles from Erzeroom, having a much milder climate than this. Shy.

Pica caudata, Ray. Procured February. Found in the stomach carrion, insects, &c. A few live in and about town: roost and build on trees: none are found at Trebizond.

* *Corvus monedula*, Linn. Found in the stomach carrion, offal, &c. Very common. Frequents town and the vicinity of man; often seen in fields, and is very familiar: in winter is only seen about the town: towards sunset these birds assemble in large flocks to roost upon the trees about the town: begin to pair early in April, and build in the end of the same month, low down in chimneys.

Corvus frugilegus, Linn. Killed March 24. Begins to arrive about the end of January. Common. Frequents fields, &c., and is often seen following the plough: towards sunset these birds assemble into small flocks, and return to town to roost upon trees, on which they build.

Corvus Cornix, Linn. Procured January 13. Found in the stomach grain, hair, bones, offal, &c. Arrives January 1 and leaves March 28. Common about the streams near town; when approached it sometimes erects the feathers on the crown of the head: it is by no means shy. Only seen on clear sunny days.

Cuculus canorus, Linn. Procured April 22 and 30. Found in the stomach insects. Iris yellow; margin of eyelids bright sulphur-yellow; tip of the bill and greater part of the middle black, remainder greenish; margins of the gape and the root of the lower mandible yellow; legs bright yellow: the plumage of both sexes alike. Noticed from April 22 to May 17. Frequents burying-grounds, fields, and the adjoining hills. Not numerous.

Yunx torquilla, Linn. Procured May 4. Found in the stomach very small brown ants. Shot on a tombstone. Solitary. Total length 7 inches.

Upupa Epops, Linn. Noticed from April 21 to September 17. Most common during summer.

Columba Ænas, Linn. Food seeds. Common.

Perdix saxatilis, Meyer. Numerous at Tortoom. Sometimes found here in the depth of winter, in burying-grounds and in the ditches round the town: in summer it is said these birds inhabit the neighbouring mountains.

Glareola limbata, Rüpp. Procured May 5. Found in the stomach small crickets. Total length 11 inches. Bill black, the margins of the gape being red; legs dusky, with black claws. Only seen in May, when these birds were common in small flocks about the moist turf near the river. Shy.

Nycticorax Europæus, Steph. Procured March 29. Shot at the river, perched on a tree. Total length 24 inches. Iris bright scarlet.

Gallinula chloropus, Lath. Procured April 14. Found in the stomach very small black seeds. Anterior half of the bill yellow, with a greenish tinge; the remainder, as also the plate on the forehead, bright red, inclining to scarlet; iris bright red, with two very narrow rings round the pupil, the inner one being dark yellow and the outer one black; legs yellowish green, with a patch of bright orange red above the knee-joint. Fell with a few others into the yard of a house, where it was caught alive.

Totanus hypoleucos, Temm. Procured April 6 in a burying-

ground, near a pool of water. Another shot on the 19th, near a mill-stream.

**Scolopax major*, Gmel. Procured April 19. Total length 11·5 inches. Common in boggy grounds.

Charadrius minor, Meyer. Procured in March. Found in the stomach insects. Only three seen.

Platalea leucorodia, Linn. Procured May 24. Found in the stomach grass and feathers. Seen at the river, where it breeds: several nests are placed near each other, about the middle of the river. They are made of reeds, bound together by weeds, which are piled up a few inches above the water's edge. Over this foundation dried reeds are placed in various directions, to form the body of the nest, which is not lined with anything, and is just large enough to allow one bird to sit, and the other to stand beside it: we found four eggs in each; they are white, spotted with brown. Turkish name, *Cashik Booroonoo* (Spoon-bill), and *Taktar Boornoo* (Broad-bill).

Zapornia pusilla, Steph. Procured April 19. Bill green, with the margins of the gape red. Boggy ground near the river. Another shot May 5.

**Anas Boschas*, Linn. Procured May 12. Very common at the river: breeds here. The ducklings seen on the 1st of August 1838; these birds arrived on the 5th of April. Early in spring a few were seen in the fields near town; they afterwards feed in wet fields near the river.

Dafila caudacuta, Leach. Procured April 1. Found in the stomach small seeds. Shot in a brook near the river. Total length 26 inches. Upper mandible bluish, with slate-coloured sides near its base, and black culmen; under mandible brownish black; legs slaty colour, with the webs and claws dusky.

Chaulelasmus strepera, G. R. Gray. *Chauliodes strepera*, Sw. Procured March 28. Found in the stomach sand. In a wet field near mill-streams, close to town. Iris hazel. Drake, total length $19\frac{5}{10}$ inches. Maxilla black; mandibula dark brown; legs yellow, with very dark brown webs and claws. Duck, total length $18\frac{5}{10}$ inches. Bill yellow, with a very dark brown ridge along the middle of the maxilla; legs like those of the drake.

Rhynchapsis clypeata, Steph. Procured April 21. Crop filled with worms, caterpillars, and a number of eggs of some insect or fish; gizzard contained small seeds and gravel. Total length 18·5 inches. Feet orange, with dusky webs and claws; maxilla of a dusky greenish tinge; mandibula dirty orange brown. A few of these birds seen together at the marsh.

**Querquedula circia*, Steph. Procured April 15. Total length 15·5 inches. Iris hazel; bill dusky; legs dusky gray; claws and webs dusky. A couple seen in a wet field near town.

**Podiceps cristatus*, Lath. Procured May 24. Found in the stomach grass, fish, and feathers. Iris bright cochineal colour, with a narrow yellow ring round the margin of the pupil; bill greyish dusky; legs outside dusky, inside yellowish gray, marked with patches of dusky. The bill in some (especially the males) has a good

deal of red. The plumage of both sexes is alike. Frequents the river.

Podiceps rubricollis, Lath. Procured May 24. Found in the stomach grass. At the river.

Podiceps auritus, Lath. Procured June 2. Found in the stomach grass, with a few insects. Iris of a very bright golden scarlet; margin of the eyelids orange; bill black; legs dusky outside, grayish inside. Inhabits the river.

Larus argentatus? Brunn. Procured April 12. Found in the stomach hair, clots of blood, chick peas, and a portion of a sheep's hoof. Iris hazel; margin of eyelids bright orange red; bill orange, marked with red, dusky near its tips, which have a horny appearance; legs yellowish orange, the claws dusky. Arrives March 23. At first frequents rills, at a short distance from the town, but after the melting of the snow these birds are found at the river. They are shy, and fly high.

**Larus ridibundus*, Linn. Procured April 20. Found in the stomach water-beetles. Iris hazel; bill of a deep lake-colour, with the tip inclining to dusky; margins of the eyelids bright red; legs same colour as bill; the claws dusky. Total length 14·5 inches. These birds are very common about the river, where they breed, on small strips of land, just appearing above water, and surrounded by sedges: the nests are placed in a row, mingled with those of other birds, and are constructed of reeds externally, and weeds inside; each nest is three or four inches high, and contained on the first of June one egg, of an olive-green colour, spotted irregularly with chocolate, brown, and purple patches.

Sterna nigra, Linn. Procured May 24. Found in the stomach beetles. Iris very dark brown, almost approaching to black. Common at the river, where these birds are seen in small companies.

**Sterna Hirundo*, Linn. Procured May 24. Found in the stomach fish. Iris hazel. Frequents the river: common. Breeds on the slips of land that are laid bare by the diminishing of the waters at the river: it makes no nest, but lays its eggs on the ground.

Mr. Waterhouse exhibited skulls of the various genera contained in the order *Carnivora*, and stated that he had laid them before the Meeting for the purpose of pointing out certain characters, both in the crania and dentition, which might serve to distinguish the subdivisions of that order.

Judging from the form of the skull and lower jaw, and from the structure of the teeth, the order *Carnivora* (Mr. Waterhouse observed) appears to consist of six families, of which the Dog, Viverra, Cat, Weasel, Bear, and Seal afford familiar examples; of these the Cats and Weasels appear to be the most truly carnivorous, and the Bears the least so.

To these six families Mr. Waterhouse applies the names *Canidæ*, *Viverridæ*, *Felidæ*, *Mustelidæ*, *Ursidæ*, and *Phocidæ*.

In the first of these families (the *Canidæ*) the muzzle is elongated;

the bony palate terminates in a line with the hinder margin of the posterior molars, or even in advance of that line, and in this respect differs from other *Carnivora*; the posterior portion of the skull is short, and there are two true molars on either side, both of the upper and lower jaw.

The principal genera contained in this family are *Canis*, *Fennecus*, *Lycaon*, and *Megalotis*. In the form of the lower jaw, and in dentition, the last-mentioned genus affords a most remarkable exception to the other *Carnivora*, and the palate terminates behind the line of the posterior molars; there may be some doubt therefore as to its real situation.

The *Viverridæ* have the same general form of skull as the *Canidæ*, but differ in having the posterior portion more produced; the bony palate is carried further back, and the small back molar observable in the lower jaw of the Dogs is here wanting; they have, therefore, but one true molar on either side of the lower jaw, and two true molars on each side of the upper jaw.

To this family belong the genera *Paradoxurus*, *Cynogale* (which is the *Potamophilus* of Müller and *Limictis* of De Blainville), *Ambliodon*, *Hemigaleus*, *Herpestes*, *Cynictis*, *Ryzæna*, *Crossarchus* (the three last being divisions or subgenera of *Herpestes*, in which there is a complete bony orbit), *Viverra*, *Genetta*, *Prionodon*, and *Cryptoprocta*.

The Hyæna, Mr. Waterhouse stated, he was inclined to regard as an aberrant form of the *Viverridæ*: in the general characters of the cranium, and especially in the curved form of the lower jaw, it differs considerably from the Cats (with which it has by some been associated), and approaches the Viverras. If, however, it be placed with the *Viverridæ*, it will form an exception, as regards its dentition, having but one true molar on either side of the upper jaw. The 'carnassière' has a large inner lobe, and in this respect also resembles the *Viverras*, and not the Cats.

The species of the family *Felidæ* may at once be distinguished by the short rounded form of the skull, combined with the straightness of the lower margin of the ramus of the lower jaw, and the reduced number of the teeth, especially of the true molars, of which there are none in the lower jaw, and but one in the upper, and that very small.

This family contains the genus *Felis*, species of which are found in all quarters of the globe, Australia excepted. The Cats appear to bear the same relation to the *Mustelidæ* as the Dogs to the *Viverridæ*.

The *Mustelidæ*, like the *Felidæ*, have the muzzle short and obtuse; the skull, however, is more elongated. They may be distinguished by there being one true molar on either side of each jaw; that in the upper jaw is well-developed, and generally transverse; but in some, such as the Badger, it is longer than broad: in the Otters, Skunks, and American Badger (*Taxidia Labradorica*), the true molar is intermediate in form between the common Badger (*Meles vul-*

garis) and the more typical *Mustelidæ*. The false molars in the Weasels (*Mustela*) are typically $\frac{3-3}{4-4}$, but in some species they are reduced to $\frac{1-1}{3-3}$. As in the *Felidæ*, the angle of the lower jaw, in the greater portion of the *Mustelidæ*, is on the same plane as the lower edge of the horizontal ramus: in other *Carnivora* it is raised. In this family there is a great tendency in the glenoid cavity of the temporal bone to enclose the condyle of the lower jaw. The condyle is more truly cylindrical, and longer than in other *Carnivora*. In the Dogs there is no trace of the anterior descending process of the temporal bone, which in the Mustelas confines the condyle of the lower jaw; in other *Carnivora* there is always a slight trace of this process, but in none does it enclose the condyles, as in most of the *Mustelidæ*.

The genera contained in this family are *Mustela*, *Zorilla*, *Galictis*, Bell (which must not be confounded with the *Galictis* of Is. Geoffroy St. Hilaire, published in the 'Comptes Rendus' for October 1837, p. 581.), *Mellivora*, *Ursitaxus*, *Helictis* and *Gulo*, in which the true molar of the upper jaw is transverse; *Lutra* and *Mephitis*, in which this tooth approaches more or less to a square form; *Taxidea*, in which it is triangular; and lastly, *Meles*, *Arctonyx* and *Mydaus*, in which the true molar is longer than broad. This last-mentioned genus evinces an approach to the order *Insectivora*.

In the *Ursidæ* there are two well-developed true molars on either side of each jaw: the 'carnassière' here has changed its function, not being suited, as in other *Carnivora*, to cutting flesh. The palate is considerably elongated. In the Bears (*Ursus* and its subgenera) it is small, being robbed as it were of its nutriment by the true molars, which are very large. In the other *Ursidæ* (*Procyon*, *Nasua*, *Cercoleptes*, *Arctictis* and *Ailurus*,) the 'carnassière,' especially that of the upper jaw, and the true molars, are nearly equal in size, and also nearly resemble each other in other respects†.

In the true Bears the form of the lower jaw differs from that of any of the preceding *Carnivora* in having a projecting process on the under side of the ramus, and situated a little in advance of the angle of the jaw. The same character is also found in many Seals (*Phocidæ*), which in several other respects appear to approach the Bears.

† "From an examination of the external characters of *Bassaris astuta*, it appears to me that it belongs to this group."

October 8, 1839.

The Rev. F. W. Hope in the Chair.

The following letter, addressed to the Chairman of the Scientific Committee by John Gould, Esq., Corresponding Member, was read; it is dated Van Diemen's Land, May 10th, 1839:—

"Although my present occupations will not permit me to send a lengthened communication, still, as a Corresponding Member of the Zoological Society, I am desirous of contributing to the pages of its proceedings; I therefore forward herewith the characters of some new species of birds, together with a very slight summary of my peregrinations since leaving England, trusting to lay before you at some future period a more full account of the results of my labours. The greater number of the birds from which the following characters are taken are from the collection made by the officers of Her Majesty's ship the Beagle. To Captain Wickham and the other officers of that vessel I am indebted for much kindness and attention. By the exertions of Mr. Bynoe, surgeon of the Beagle, science has been enriched, not only by the discovery of these new species of birds, but of several others, and some quadrupeds of a most interesting description, the whole of which have been placed in my hands for the purpose of describing, figuring, &c.

"It is now twelve months since I left England. The early part of the passage was boisterous and adverse, our ship being detained eleven days in the Bay of Biscay, during which period numbers of land-birds, all of European species, constantly visited the vessel; but as no great interest attaches itself to their chance occurrence, I shall confine my observations more particularly to those species that make the expansive ocean their home, and whose natural limits have been but slightly recorded. The members of the genus *Thalassidroma* were the birds to which my especial attention was directed, from the circumstance of the group being but slightly understood, and from the great interest these little tenants of the ocean excite in the mind of the voyager. Immediately off the Land's End, Wilson's Storm-Petrel (*Thalassidroma Wilsoni*) was seen in abundance, and continued to accompany the ship throughout the Bay. The little Storm-Petrel (*Thalassidroma pelagica*, Selby) was also seen, but in far less numbers: both species disappeared on approaching the latitude of Madeira, their place there being occupied by another species, which I took to be *Thal. Bulweri*. This latitude was also favourable to the Shearwaters, *Puffinus cinereus*, and *Puff. obscurus*, the former being there in great numbers.

"We came to anchor in the roadstead of Santa Cruz, Island of Teneriffe, on the 11th of June. During our short stay at this island,

I proceeded as far into the interior as circumstances would permit, and spent a part of two days most delightfully. Among the birds I observed during my rambles were the Common Blackbird (*Merula vulgaris*, Ray), the Robin (*Erythaca rubecula*, Swains.), and the Black-cap Warbler (*Curruca atricapilla*, Bechst.),—a more southern locality, I believe, than has been hitherto recorded against these species. The fishes of this island also claimed a portion of my attention, several species of which I procured and preserved.

"We crossed the equator on the 7th of July, having been more than twenty days within the tropics, part of which time our vessel lay becalmed. This portion of the ocean's surface was also inhabited by Storm-Petrels, but of a distinct species from any I had hitherto observed, and which I believe to be new to science. These birds, with now and then a solitary *Rhynchops* and Frigate Bird (*Tachypetes*), were all of the feathered race that I observed in these heated latitudes, a part of the voyage which always hangs heavily upon those destined to visit these distant regions; by me, however, it was not so much felt, the monotony being relieved by the occasional occurrence of a whale, whose huge body rolled lazily by; by a shoal of porpoises, who sometimes perform most amusing evolutions, throwing themselves completely out of the water, or gliding through it with astonishing velocity; or by the occasional flight of the beautiful Flying Fish, when endeavouring to escape from the impetuous rush of the Bonito or Albacore.

"On the 20th of July we reached the 26th degree of south latitude, and were visited for the first time by the Cape-Petrel (*Procellaria Capensis* of authors). On the 23rd, lat. 31° 10′ S., long. 24° W., we found ourselves in seas literally teeming with the feathered race. Independently of an abundance of Cape-Petrels, two other species and three kinds of Albatrosses were observed around us. The latter were *Diomedea exulans*, *D. chlororhyncha*, and *D. fuliginosa*. A few days after this we commenced running down our longitude, and from this time until we reached the shores of Van Diemen's Land, several species of this family (*Procellaridæ*) were daily in company with the ship. Whenever a favourable opportunity offered, Captain McKellar obligingly allowed me the use of a boat, and by this means enabled me to collect nearly all the species of this interesting family that we fell in with.

"As I had every reason to expect, I found the Australian seas inhabited by their own peculiar Storm-Petrels (*Thalassidroma*), four distinct species of which I have already observed since leaving the Cape.

"From the westerly winds which prevail in the southern hemisphere, between the latitudes 35° and 55°, I am induced to believe that a perpetual migration is carried on by several of the members of this oceanic family continually passing from west to east, and circumnavigating this portion of the globe. This remark more particularly refers to the Albatrosses, Prions, and other large kinds of Petrels; the same individuals of several of these species having been observed to follow our ship for some thousands of miles. Until I

had ascertained that they were nocturnal, it was a matter of surprise to me how the birds which were seen around the vessel at nightfall were to be observed crossing our wake at daybreak on the following morning, the ship having frequently run a distance of nearly 100 miles during the night.

"In conclusion, I may observe, that whatever success I have met with on the ocean, or whatever pleasures I may have enjoyed during the voyage, the country to which we were safely conveyed by our frail bark (now lying a wreck on the Trowbridge Shoal, Spencer's Gulf) has still greater treasures.

"During the eight months spent in these regions, six have been devoted to Van Diemen's Land and the islands in Bass's Straits, where I have made extensive and most interesting collections. Independently of the skins of birds and quadrupeds, skeletons of all the forms, together with entire bodies for dissection, have been procured, as also the nests and eggs of nearly seventy species of birds from Van Diemen's Land alone. The short visit I have paid to the continent of Australia has convinced me that much of interest there remains buried in obscurity, and that I shall there find much to occupy my attention when I fairly commence my researches in that country. The drought this season has been most distressing to the colonists. The Liverpool range was the furthest journey I made into the interior. While there I procured several specimens of the *Menura superba*; three of these I have entire for Mr. Owen to dissect; I have also the skeletons of two others, besides skins, &c. The only remark I shall now offer respecting this truly interesting bird is, that it has no relationship whatever to the *Gallinaceæ*, as has hitherto been considered.

"My assistant is now at Swan River, and I start for South Australia tomorrow; after which I proceed to Sydney; thence into the interior. I intend going to Moreton Bay and New Zealand before my return, and if I can accomplish, it to Port Essington and other parts of the north.

"I am happy to add, that in the execution of my researches the governors of the different colonies lend me their aid most willingly; and I shall ever be proud publicly to acknowledge the unremitting kindness of Sir John Franklin, whose goodness of heart is only equalled by his zealous attention to the duties of his high official station."

Mr. Gould's descriptions of the new Australian birds referred to in the letter were next read.

CYPSELUS AUSTRALIS. *Cyp. gutture et uropygio albis; corpore supernè et subtùs intensè fusco; dorso metallicè splendente; plumis pectoris abdominisque albo marginatis; alis caudâque nigrescentibus; rostro, oculis, et pedibus nigris.*

Long. tot. 6½ poll.; *rostri*, ⅜; *alæ*, 7¼; *caudæ*, 3½; *tarsi*, $\frac{7}{16}$.

This species is about the size of *Cypselus murarius*: I first met with it on the 8th of March, 1839. They were in considerable abundance, but flying very high. I succeeded in killing one, which

was immediately pronounced by Mr. Coxen and others to be new to the colony. On the 22nd I again saw a number of these birds hawking over a piece of cleared land at Yarrondi, on the Upper Hunter: upon this occasion I obtained six specimens, but have not met with it since.

PODARGUS PHALÆNOÏDES. *Pod. cinereo, fuscoque ornatus, lineâ nigrâ centrali per plumas singulas excurrente; scapularibus, tectricibusque majoribus castaneo sparsis; primariis fuscis, albo angustè fasciatis; caudâ cuneiformi, nigro angustè fasciatâ; rostro fuscescenti-corneo; pedibus olivaceis.*

Long. tot. $14\frac{3}{4}$ poll.; *rostri*, $2\frac{1}{4}$; *alæ*, $8\frac{1}{2}$; *caudæ*, $6\frac{1}{2}$; *tarsi*, 1.

Hab. The north-west coast of Australia.

This bird is smaller than any other species of the genus yet discovered in Australia.

From Benjamin Bynoe, Esq.

GRAUCALUS PHASIANELLUS. *Grauc. cinereus; uropygio abdomineque albis, angustè nigro-fasciatis; crisso albo; alis caudâque nigris, hâc ad basin albâ; rostro tarsisque nigris.*

Long. tot. 15 poll.; *rostri*, $1\frac{1}{4}$; *alæ*, $8\frac{1}{2}$; *caudæ*, 8; *tarsi*, $1\frac{5}{8}$.

Hab. Liverpool Plains.

From the collection of Stephen Coxen, Esq.

PACHYCEPHALA LANIOÏDES. *Pach. vertice, plumis auricularibus et pectore nigris; dorso posteriore fasciâ castaneâ ornato; gutture, abdomine medio, crissoque albis; dorso, lateribus, humeris, necnon primariis secundariis tectricibusque, externè, cinereis; caudâ, rostro, pedibusque nigris.*

Long. tot. $7\frac{1}{2}$ poll.; *rostri*, 1; *alæ*, $3\frac{3}{4}$; *caudæ*, $3\frac{1}{4}$; *tarsi*, 1.

Hab. The north-west coast of Australia.

From Benjamin Bynoe, Esq.

PETROICA ROSEA. *Pet. (mas) vertice, gulâ, corporeque supernè cinereis; fronte fasciâ angustâ albâ notato; pectore rosaceo; abdomine, crissoque, albis; alis, rectricibusque caudæ sex intermediis nigrescentibus; rectricibus externis ad apicem albis; rostro, pedibusque nigrescentibus.*

Fœm., fasciâ frontali luteâ; corpore suprà cinereo-fusco; alis, fasciis, secundariis fasciis duabus luteis, obscurè notatis; caudâ fuscâ.

Long. tot. $4\frac{1}{2}$; *rostri*, $\frac{1}{2}$; *alæ*, $2\frac{3}{4}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{1}{2}$.

Hab. Hunter, and the Liverpool Range.

This species is nearly allied to *Petroica Lathami*. It inhabits thick brushes. I killed specimens both on the Hunter River and the Liverpool Range.

PETROICA PULCHELLA. *Pet. nigra, fronte notâque humerali albis; pectore abdomineque coccineis; rostro nigro; pedibus fuscis.*

Long. tot. 5 poll.; *rostri*, $\frac{3}{4}$; *alæ*, $\frac{3}{4}$; *caudæ*, $2\frac{1}{8}$; *tarsi*, 1.

Hab. Norfolk Island.

MALURUS CRUENTATUS. *Mal. (mas) dorso, humerisque coccineis; partibus reliquis nigris.*
Fœm., pallidè fusca, abdomine albescente; rostro, tarsisque pallidè fuscis.
Long. tot. 4 poll.; *rostri*, $\frac{1}{2}$; *alæ*, $1\frac{5}{8}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.
Hab. North-west coast of Australia.

PARDALOTUS UROPYGIALIS. *Pard. vertice et lineâ oculari nigris; lineâ superciliari, pectore, et abdomine medio, albis; gulâ, genisque croceis; uropygio sulphureo; dorso cinerescenti-olivaceo; alis nigris, primariis plurimis ad basin albo notatis; alâ suprà ad apicem coccineâ; caudâ nigrâ, plumis externis tribus ad apicem albis; rostro nigro; tarsis plumbeis.*
Long. tot. $3\frac{1}{2}$ poll.; *rostri*, $\frac{1}{2}$; *alæ*, $2\frac{1}{4}$; *caudæ*, 1; *tarsi*, $\frac{3}{4}$.
Hab. North-west coast of Australia.
From Benjamin Bynoe, Esq.

AMADINA ANNULOSA. *Am. facie guláque albis, vittâ nigrâ marginatis; pectore albescente, subtùs fasciâ nigrâ marginato; vertice dorsoque cinerescenti-fuscis, lineis albidis transversis, angustè notatis; uropygio, crisso, caudâque nigris; alis fuscis; tectricibus, secundariisque cinereo crebrè ornatis; rostro pedibusque plumbeis.*
Long. tot. 4 poll.; *rostri*, $\frac{3}{8}$; *alæ*, 2; *caudæ*, $2\frac{1}{8}$; *tarsi*, $\frac{1}{2}$.
Hab. North-west coast of Australia.
This species is nearly allied to *Estrilda Bichenovii*.
From Benjamin Bynoe, Esq.

AMADINA ACUTICAUDA. *Am. vertice genisque cinereis; corpore cervino; abdomine roseo lavato; loris, gulâ, fasciâ per uropygium currente, caudâque, nigris; tectricibus caudæ, crisso, et femoribus, albis; rostro pedibusque flavis.*
Long. tot. $5\frac{3}{4}$ poll.; *rostri*, $\frac{3}{8}$; *alæ*, $2\frac{3}{8}$; *caudæ*, $3\frac{3}{4}$; *tarsi*, $\frac{5}{8}$.
Hab. North-west coast of Australia.
This species has the two central tail-feathers very long and tapering.
From Benjamin Bynoe, Esq.

DASYORNIS STRIATUS. *Das. fuscus; abdomine cinerescente; plumis dorsalibus lineâ centrali albâ notatis; rostro pedibusque nigrescentibus.*
Long. tot. $6\frac{1}{2}$ poll.; *rostri*, $\frac{5}{8}$; *alæ*, $2\frac{3}{8}$; *caudæ*, $3\frac{1}{2}$; *tarsi*, 1.
Hab. Liverpool Plains, New South Wales.
This species is nearly allied to the *Amytis textilis* of Lesson.

MYZANTHA FLAVIGULA. *Myz. spatio pone oculos, fronte, gulâque flavis; uropygio albo; dorso cinereo, obscurè albo fasciato; loris, plumisque auricularibus, nigris; gulâ, genis, corporeque subtùs, albis, pectore notis fuscis in formâ sagittæ ornato; alis caudâque fuscis; primariis externè, caudâque ad basin fla-*

vescentibus ; caudâ ad apicem albâ ; rostro flavo ; pedibus flavescenti-fuscis.

Long. tot. $9\frac{3}{4}$ poll. ; *rostri*, 1 ; *alæ*, $5\frac{1}{4}$; *caudæ*, 5 ; *tarsi*, $1\frac{5}{16}$.

Hab. Banks of the Namoi, interior of New South Wales.

This species is rather larger than *Myzantha garrula*, to which, and *M. citreola*, it is closely allied.

Myzantha lutea. *M. cute nudâ pone oculos, fronte, apicibusque plumarum ad latera colli, citreis ; loris nigro-fuscis ; plumis auricularibus nigrescentibus splendore argenteis ; corpore suprà cinereo, nuchâ dorsoque albo transversìm fasciatis ; uropygio, tectricibus caudæ, et corpore subtùs, albis ; gulâ, pectoreque cinereo lavatis, plumis singulis notâ fuscâ fasciatis ; alis fuscis plumis obscurè citreo marginatis ; caudâ fuscâ ad apicem albâ ; rostro citreo ; pedibus flavescenti-fuscis.*

Long. tot. $10\frac{3}{4}$ poll. ; *alæ*, $5\frac{7}{8}$; *caudæ*, $5\frac{1}{4}$; *tarsi*, $1\frac{1}{4}$.

Hab. North-west coast of Australia.

From Benjamin Bynoe, Esq.

Tropidorhynchus argenticeps. *Trop. vertice argenteo, capitis partibus reliquis nudis, et nigrescentibus ; corpore subtùs albo ; pectoris plumis lanceolatis ; corpore suprà caudâque fuscis ; rostro pedibusque nigrescenti-fuscis.*

Long. tot. $10\frac{1}{2}$ poll. ; *rostri*, $1\frac{3}{8}$; *alæ*, $5\frac{1}{2}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, $1\frac{1}{8}$.

Hab. North-west coast of Australia.

From Benjamin Bynoe, Esq.

Pomatorhinus rubeculus. *Pom. gulâ, strigâque superciliari albis : pectore, et abdomine superiore rufescenti-fuscis ; strigâ a rostro, per oculos, ad occiput tendente nigrescenti-fuscâ ; vertice, dorso, abdomineque imo intensè fuscis, olivaceo-tinctis ; tectricibus caudæ, crisso caudâque nigris, hâc ad apicem albâ, rostro corneo ; pedibus nigrescentibus.*

Long. tot. $9\frac{1}{4}$ poll. ; *rostri*, $1\frac{1}{8}$; *alæ*, 4 ; *caudæ*, $4\frac{3}{8}$; *tarsi*, $1\frac{1}{4}$.

Hab. North-west coast of Australia.

From Benjamin Bynoe, Esq.

Ptilotis flavescens. *Pt. olivaceo-cinerea, capite corporeque subtùs citreis ; notâ ad latera capitis fuscâ, et pone hanc alterâ nitidè flavâ.*

Long. tot. $4\frac{1}{2}$ poll. ; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{7}{8}$; *caudæ*, $2\frac{1}{2}$: *tarsi*, $\frac{3}{4}$.

Hab. North-west coast of Australia.

From Benjamin Bynoe, Esq.

Myzomela erythrocephala. *Myz. intensè fusca, capite, et uropygio, coccineis ; rostro pedibusque nigris.*

Long. tot. $4\frac{1}{2}$ poll. ; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{1}{4}$; *caudæ*, $1\frac{3}{4}$; *tarsi*, $\frac{5}{8}$.

Hab. North-west coast of Australia.

From Benjamin Bynoe, Esq.

Sittella leucoptera. *Sitt. vertice, plumis auricularibus, necnon alis, caudâque nigris, hâc ad apicem albâ, illis fasciâ trans-*

versâ albâ ornatis; gulâ, tectricibus caudæ, corporeque subtùs albis; dorso, cinerescenti-fusco, plumis ad medium fusco notatis; rostro ad basin pallidè flavo, ad apicem nigro, pedibus flavis.

Long. tot. 4 poll.; *rostri*, $\frac{11}{16}$; *alæ*, 3; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{11}{16}$.

Hab. North-west coast of Australia.

From Benjamin Bynoe, Esq.

HEMIPODIUS CASTANOTUS. *Hem. capite, et pectore olivaceo-cinereis, plumis colore cervino notatis, illius ad apicem, hujus apud medium; abdomine medio crissoque stramineis; strigâ superciliari, caudâ, dorso et humeris, castaneis, dorsi, humerorumque plumis albo guttatis, singulis guttis anticè nigro marginatis; primariis fuscis, cervino colore marginatis; rostro pedibusque pallidè flavis.*

Long. tot. 7 poll.; *rostri*, $\frac{7}{8}$; *alæ*, $3\frac{1}{2}$; *tarsi*, 1.

Hab. North-west coast of Australia.

From Benjamin Bynoe, Esq.

Mr. Yarrell exhibited a small but perfect specimen of the Eagle Ray, *Myliobatis aquila* of British fishes, which had been found on the shore of Berwick Bay, and was sent to him from thence by Dr. George Johnston.

"Particular interest attaches to this very rare specimen," observed Mr. Yarrell, "since it establishes the fact that this fish is a native species; the only evidence which previously existed of the Eagle Ray being a British fish was founded on some parts of a specimen, believed to belong to this species, which were procured from a fisherman of Scarborough by Mr. Travis, a surgeon in that place."

A fresh specimen of the Angler-fish (*Lophius piscatorius*), presented by John Goldham, Esq., was also exhibited.

October 22, 1839.

James Whishaw, Esq., in the Chair.

A letter from R. J. Bourchier, Esq., Corr. Memb. Z.S., dated Malta, October 2nd, 1839, was read. It stated that Mr. Bourchier had shipped two cases of preserved specimens of Natural History, a box containing some living Gundies (*Ctenodactylus Massoni*), and an Eagle, for the Society; the Eagle from Sir Thomas Reade, Hon. Memb. Z.S., H. M. Consul-General at Tunis, and the remaining specimen from Col. Warrington, Corr. Memb. Z.S., H. M. Consul-General at Tripoli.

A letter from the Society's Corresponding Member, R. Mackay, Esq., H. M. Consul-General at Maracaibo, was also read. It is dated Maracaibo, July 12, 1839, and refers to an insect presented by the writer to the Society, in the body of which a kind of plant had taken root.

Mr. Waterhouse observed, "that the insect in question was apparently the larva of one of the *Lamellicornes*, and that on one side of the body, springing partly from the thoracic segments, and partly from the foremost segments of the abdomen, were about six sprouts of some vegetable, probably of the genus *Clavaria*. The longest of these sprouts is about one inch in length; they are cylindrical, bent in an irregular manner, have no branches, and for the most part are joined together near and at the root. He also observed that numerous similar instances of insects having this kind of vegetable production attached to different parts of the body were on record: he might refer to the well-known instance of the caterpillar found in New Zealand, an account of which is published in the Transactions of the Entomological Society*, where will also be found references to several other cases.

"That the dead body of animals constituted a substance fitted to nourish a vegetable is not extraordinary; but in the letter from Mr. Mackay it is stated that the insect was alive when first found; and this is by no means a solitary instance in which these vegetable productions have made their appearance on living insects. These facts, combined with others, which tend to show that to a slight degree there is an independent existence in the different parts of the same insect,—where life is retained for a considerable time in parts, although they may be separated,—are highly interesting in a physiological point of view."

Dr. Horsfield communicated to the Meeting a "list of Mammalia

* Vol. II. Part 1, Journal of the Proceedings, p. vi.

and Birds collected in Assam by John McClelland, Esq., Assistant-Surgeon in the service of the East India Company, Bengal Establishment, Member of the late Deputation which was sent into that country for the purpose of investigating the nature of the Tea Plant."

"On the return of the Deputation above-mentioned to Calcutta," says Dr. Horsfield, "Mr. McClelland delivered his collection of Mammalia and Birds, accompanied by a descriptive catalogue and drawings of many subjects, to the Bengal Government, to be forwarded to the Court of Directors. These subjects arrived safely in England, and are now, with few exceptions, prepared and exhibited in the Company's Museum at the India House.

"In his official correspondence with the Bengal Government, Mr. McClelland explains the object he principally had in view in making the collection in the following terms: 'Having been invited to offer any suggestion I may have to submit, as to how this portion of my labour may be disposed of with most advantage, I shall, in venturing an opinion, keep in view the objects with which my collections were made: these were, to procure as much information as Upper Assam is calculated to afford, in elucidation of the circumstances under which the Tea Plant is found in that country.

"'Next to the relations of the plant in regard to soils, and its association with other vegetable productions, the *zoology* of the province is entitled to careful examination; so that all its productions may be compared with those of the tea districts of China.

"'The accompanying catalogue of animals will be found to display an interesting balance numerically in favour of the extension of species from the eastward, a point that ought to be carefully examined, as bearing upon the main question; for in proportion as the Tea Plant is associated in Assam with the prevalence of Chinese forms, the prospect of its successful cultivation becomes the more certain.' —*Extract from Mr. McClelland's letter to the Secretary of the Bengal Government.*

"Mr. McClelland then expresses his desire that his Descriptive Catalogue, before publication, should be revised in England, in order to prevent the introduction of mere nominal species, and to conform the nomenclature to the latest discoveries in science. In accordance with this desire, the entire collection has been carefully compared with subjects from India contained in the British Museum and in the Museums of the Zoological Society and the East India Company, as well as with the drawings and descriptions lately published in various zoological works to which Mr. McClelland had no access.

"The following catalogue now exhibits Mr. McClelland's collection, with those alterations which the progress of discoveries required, and with a partial modification of the arrangement; and in performing this task the only object has been to secure to Mr. McClelland the discoveries he has made, and to bring before the public a faithful statement of his zoological observations in Assam, and of the zeal and ability with which he has executed the charge confided to him."

MAMMALIA.

Order I. QUADRUMANA.

Genus Hylobates, Illig.

1. *Hylobates Hoolook*, Harlan, Trans. Amer. Philos. Soc.

The first authentic account of this animal is contained in the fourth volume of the Transactions of the American Philosophical Society. Dr. Harlan here describes and figures, from a prepared specimen, an adult male, which was brought to Philadelphia in 1832 by Dr. M. Burrough, together with a large collection of rare and valuable skins of quadrupeds and birds, obtained on the plains of the Burhampooter river, near Assam. The specimen described, with another adult and a young subject, was presented to Dr. B. by Capt. Alex. Davidson, of the Hon. East India Company's station at Goalpura, in the latitude of 26° north on the Burhampooter. They were taken on the Garrow Hills, in the vicinity of that station; they soon became tamed, especially the young one; they were docile and affectionate, and rather inclined to melancholy. They lived some time in the possession of Dr. B., but died on his voyage down the river to Rangoon.

A specimen of this species was brought from India by General Hardwicke, and presented to the museum of the Zoological Society, where it is exhibited. Living individuals are at present in the Society's Gardens in the Regent's Park.

"The colour of the Assam animal is uniformly black, except the eye-brows, which are white. Some individuals are grayish-yellow. Its length is not much above two feet. It is possessed of the most wonderful activity, making use of its arms in swinging from tree to tree: nor is the female in any way restrained in her movements by the young, which she carries suspended to her body.

"Inhabits the Cossiah Mountains and valley of Assam."—*McClelland's MS.*

Genus Macacus, *La Cép.*

2. Macacus Assamensis*. *Fulvo-cinereus, suprà saturatior, gastræo artuumque latere interiore canis; capillitio pilis paucis nigris sparso; facie natibusque carneis; caudâ partem tertiam longitudinis totius superante omnino pilis tectâ.*

"Bluish-gray, with dark brownish on the shoulders; beneath light gray: face flesh-coloured, but interspersed with a few black hairs: length $2\frac{1}{2}$ feet: proportions strong: canine teeth long, and deeply grooved in front; the last of the cheek-teeth in the upper jaw blunt."—*McClelland's MS.*

Order II. CHEIROPTERA.

Genus Pteropus, Briss., &c.

3. Pteropus Assamensis. *Capite anticè toto ex saturato rufes-*

* The names used in this paper, where no authority is given, are those of Mr. McClelland's MS.

cente fusco, posticè zonâ pallidiore in aureum vergente cincto; collo omni, nuchâ, interscapulio, pectore abdomineque e xerampelino aureis, plagâ laterali saturatiore; vellere in his elongato sublanuginoso; notæo e saturato fusco-nigricante pilis albis commisto; patagio nigro; auriculis elongatis acuminatis; axillis humerisque lanugine fusco vestitis.

The face and the whole anterior part of the head are deep chestnut-brown, with a slight tendency to tawny; the back part of the head is surrounded by a belt of a lighter tint, inclining to orange, which also includes the throat. Around the entire neck, to the origin of the membrane, is a broad collar of rusty-yellow, inclining to orange, diversified with deeper rufous shades; the same colour, with its variation of tints, embraces the interscapulium, and extends to the breast and anterior part of the abdomen; the lower portion of the abdomen and the vent are rufous-brown. The back is deep blackish-brown, with a scanty admixture of white hairs; the fur, though slightly appressed, is more soft and silky than in the other species belonging to this section of *Pteropus*. The membrane is blackish. The flanks, armpits, and the bones of the shoulders and arms, are covered with a soft, silky, lengthened down, of a rufous-brown colour. The ears are long and pointed. The entire length is eight inches.

This species, although it resembles the *Pt. edulis* and *Edwardsii* (or *medius*) in habit, distribution of tint, and in the form of the ears, is nevertheless distinguished from them by the character of the fur on the neck, breast, and adjoining parts. This is not short and rigid, as in the species mentioned, but long, soft, and silky, furnished at the base with a close down, of a dark colour: in this particular it approaches to the second section of this genus, which is characterized by a lengthened, silky, frizzled fur, and of which the *Pteropus dasymallus*, Temm., is the type. The toes and claws are proportionably large.

There are in Mr. McClelland's collection two specimens of this species, for which he has proposed the specific name of *Assamensis*: this, notwithstanding the objection raised to local names, has been retained, in order to direct naturalists in India to the country where it was discovered, and thus to determine, by future search, its rank as a distinct species, and also the existence of other species of both groups, typified by *Pteropus edulis* and *Pteropus dasymallus*.

Genus Vespertilio, Auct.

4. *Vespertilio* —— *?*

A single specimen of *Vespertilio* has been received, which is not sufficiently perfect to determine its true character.

Order III. FERÆ.

Genus Ursus, Linn., &c.

No opportunity was afforded to determine the species of *Ursus* found in Assam.

Genus MANGUSTA, Oliv.

5. *Mangusta auropunctata*, Hodgs. Journ. Asiat. Soc. V. 1836, p. 235.

Genus FELIS, Linn, &c.

6. *Felis Tigris*, Linn.

"There are other species of this genus, but their characters I have not had an opportunity of examining."—*McClelland's MS.*

Order V. PACHYDERMATA.

Genus ELEPHAS, Linn.

7. *Elephas Indicus*, Linn.

Genus SUS, Linn.

8. *Sus Scropha*, Linn.

"The size the wild boar attains in Assam may be conceived, from one of the sculls of the animal in my collection, containing a tusk which measures in length twelve inches."—*McClelland's MS.*

Genus RHINOCEROS, Linn.

9. *Rhinoceros Indicus*, Cuv.

Order VI. RUMINANTIA.

Genus CERVUS, Linn.

10. *Cervus porcinus*, Zimmerm.

"The *Cervus porcinus* is not a rare animal, as has been supposed; I have seen it in the Tarrai, at the foot of the Kemaon mountains, as well as in Assam, where it is the commonest species of the genus. I had in my collection a curious instance of an albino of this species, for which I was indebted to Mr. Hugon of Assam. It was a female, every part of it white; but it was shot and prepared before I had an opportunity of examining the irides. It is an interesting proof that the change of colour in the fur of animals is not dependent on the cold of northern latitudes."—*McClelland's MS.*

11. *Cervus Pumilio*, Hamilt. Smith, Griff. Anim. Kingd. V. No. 788.

"A small portion of the scull of this animal has been procured by me.

"There are other large species of *Cervus* in Assam, and several smaller kinds, but which I have not been able to procure."—*McClelland's MS.*

Order VII. RODENTIA.

Genus SCIURUS, Linn., &c.

12. *Sciurus bicolor*, Auctor. *Sciurus giganteus*, McClelland's MS.

"Upper part of the head, the nose, the ears, outer and hinder portion of the fore-legs, the feet, tail, and back, deep glossy-black; beneath yellowish-white; two small spots on the chin; cheeks white; a rudimental thumb, covered by a flat nail. Body fifteen, tail sixteen inches long.

"The above description has been derived from seven or eight specimens procured during the course of three months. Among the various individuals I have seen there appeared to be no difference.

"It differs from the *Sciurus maximus* by the absence of the marone colour on the head, and from *Sciurus Leschenaultii* by its greater size, its deep black colour above, without any diminished intensity of shade on the anterior part of the head and nose; and from *Sciurus bicolor* of Sparmann by the uniform blackness of the upper parts of the body, extending to the extremity of the tail, which is entirely black."—*McClelland's MS.*

Individuals of this species, agreeing in all particulars with those collected in Assam by Mr. McClelland, have been observed in other parts of India by Dr. Francis (Buchanan) Hamilton and by Dr. Finlayson. The latter forwarded several specimens to the Museum at the India House. The specific character originally constructed by Sparrmann, and subsequently adopted by all systematic writers, defines accurately the animal as described by Dr. Hamilton and by Mr. McClelland. Schreber's figure also agrees with the same, while the animal from Java (represented in Horsfield's Zoolog. Res.), and indicated as a variety in Fisher's 'Synopsis Mammalium,' appears to differ from the continental species by the variations to which its tint is subject. It remains therefore for further research and observation to determine, whether these two varieties may not be specifically distinct, and whether the name proposed by Mr. McClelland should not henceforth be applied to the species observed in Continental India by himself and by Hamilton and Finlayson.

13. *Sciurus hippurus*, Isid. Geoff. Guerin. Mag. Zool., Pl. VI.

"Gray above, on the cheeks, on the outside of the limbs, and base of the tail: feet grayish-black: throat and lower part of the body reddish-brown: posterior third of the tail reddish-brown in a single specimen procured by Mr. Griffith in the Cossia mountains, but black in five specimens procured by myself in Upper Assam: tail as long as the body. Entire length of the animal eighteen to twenty inches. Inhabits the Cossia mountains, as well as the eastern parts of Assam."—*McClelland's MS.*

14. *Sciurus Lokriah*, Hodg., Journ. Asiat. Soc., Bengal, V. 1836. p. 232.

"Above brown, sprinkled with yellow, the hairs being dark at their bases, but towards their extremities alternately barred with fulvous. A broad irregular yellowish stripe extends from the chin to the tail, and is broadest on the throat. Ears rounded, and nearly naked: tail nearly equal to the body in length: body eight inches long, and of stout proportions."—*McClelland's MS.*

One imperfect specimen sent by Mr. McClelland agrees precisely with Mr. Hodgson's description, referred to above.

15. *Sciurus Lokrioides*, Hodg., Journ. Asiat. Soc., Bengal, V. p. 232.

"Light gray, with a yellow tinge on the sides of the thorax; silver-gray beneath; hairs above alternately barred with light and dark gray. Tail scarcely so long as the body: ears short, but pointed upwards: length eight inches."—*McClelland's MS.*

16. Sciurus McClellandii, Horsfield. *Suprà fuscus fulvo tenuissimè irroratus notæo saturatiore; subtùs ex sordido fulvo canescens; dorso summo lineâ rectâ atrâ; lineâ insupèr utrinque laterali fuscâ læto fulvo marginatâ, anticè saturatiore, ad oculos extensâ, posticè obsoletâ in uropygio utrinsecus approximatâ; caudâ mediori subcylindrico-attenuatâ nigro fulvoque variegatâ auriculis atris barbâ niveâ lanuginosâ insigni circumscriptis; vibrissis longis nigris.*

"A black line extends along the spine, with a double-shaded line of yellow and brown on each side, softly relieved from the remaining upper portion of the body (which is most minutely variegated fulvous and brown); yellowish-gray beneath: tail slightly tapering, shorter than the body and legs, more bulky than in Squirrels in general: length three and a half inches, exclusive of the head, which measures one inch.

"It inhabits Bengal as well as Assam, and is the only one of the foregoing species possessed of pencilated tufts on the ears. They have each long black beards."—*McClelland's MS.*

Genus Lepus, Linn.

17. *Lepus timidus*, Linn.

"This Hare is found in Assam, but its size is degenerate, measuring only from seventeen to nineteen inches in length. It is not esteemed as an article of food. The ears are more uniformly gray than in the European variety."—*McClelland's MS.*

18. *Lepus hispidus*, Pearson.

This species is admitted by Mr. McClelland, on the authority of J. T. Pearson, Esq., late Cur. Mus. As. Soc., who described it in the Calcutta Sporting Magazine.

"Its hair is harsh and bristly; ears very short, not projecting beyond the fur: length eighteen inches: colour more dusky-gray than that of the Hare. Inhabits Assam, especially the northern parts of the valley along the base of the Boutan mountains.

"I am indebted to Lieutenant Vetch of Assam for the skin of this animal, but unfortunately the scull is wanting; but according to Mr. Pearson it is the same as the scull of the common Hare."—*McClelland's MS.*

Order VIII. EDENTATA.

Genus Manis, Linn.

19. *Manis brachyura*, Erxl.

"This animal has fifteen rows of scales, extending longitudinally over the body; those on the back are longest, and are rounded posteriorly, but they are narrow below, and carinose; while on the back they are simply striated at the base. Bristly hairs pass out between the scales.

"Lower parts of the head, the throat, and a line extending along the lower portion of the body to the tail, and the inner sides of the legs, without scales, but covered with a scanty coarse white hair."—*McClelland's MS.*

AVES.

Order I. RAPTORES.

Fam. Falconidæ. Sub-Fam. Aquilinæ.

Genus Haliaëtus, Sav.

1. *Hal. Macei. Falco Macei*, Temm. Pl. Col. Pl. 8.

"A Fisher Eagle. Throat and nape yellowish-white, covered with long pointed feathers; crown and base of the neck grayish-yellow (feathers of the latter obtusely pointed), all other parts of the bird brown, except a broad band across the tail, which is white. The tarsi are naked two-thirds of their length: wings long, extending nearly to the extremity of the tail: length thirty-three inches.

"This eagle preys on fish, and is particularly active during a storm, when it is found soaring over the lee-shore, descending on such fishes as are driven into shallow water. During fine weather it spends the principal portion of its time on some high solitary bank, quite motionless."—*McClelland's MS.*

2. *Hal. Pondicerianus. Aquila Ponticeriana*, Briss. Pl. enlum. 416. *Falco Pondicerianus*, Gmel. Linn. I. 265. Lath. Ind. Orn. I. p. 23.

Genus Spizaëtus, Vieill.

3. Spiz. rufitinctus. *Suprà fuscus capite saturatiore, notæo nebulis dilutioribus vario; caudâ fusco et cinerescente latè fasciatâ; subtùs albo fuscoque varius, collo pectoreque vittatis, abdomine femoribusque fasciatis; tarsi ultra medium plumosi.*

"Upper part of the body dark brown, with slight undulations of a deeper tint: breast and throat longitudinally striped with brown: belly and under surface of the wings white, transversely barred with brown: tarsi feathered to the lower third, each feather marked with five transverse bars: tarsi shielded: the beak short, much hooked, and sharp: claws and toes strong and formidable.

"It inhabits the banks of the Burhampooter and other rivers in Assam, where it conceals itself in bushes and grass, along the verge of the water, seizing such fishes as approach the surface within its reach."—*McClelland's MS.*

Sub-Fam. FALCONINÆ.

Genus FALCO, Linn, &c.

4. FALCO INTERSTINCTUS. *Suprà lætè ferrugineus nigro fasciatus; subtus dilutior subflavescens; pectore abdomineque nigro vittatis; capite nigro lineato; rectricibus pogoniis singulis nigro fasciatis, fasciâ caudali terminali latiore ferrugineo marginatâ; remigibus nigricantibus margine fasciisque interioribus ferrugineis.*

"Brown striated Falcon. Upper part of the body and wing-coverts brown, with blackish bars across the feathers, but on the head the stripes are longitudinal; quill-feathers blackish; inner margin barred with pale ferrugineous; tail-feathers transversely barred with black; below paler, inclining to dusky-yellow, except the breast and sides, which are marked with longitudinal brown spots. Entire length fourteen inches."—*McClelland's MS.*

The bird here described, to which Mr. McClelland has given the specific name of *interstinctus*, agrees in many points with the female of *F. Tinnunculus*; but from the observations hitherto made, it would appear that it is entitled to distinction by the fact that the sexes have not the same difference in markings and external character which belongs to the European and Asiatic Kestrils. The researches made by Col. Sykes in the Dukhun confirm the determination of Mr. McClelland. Col. S. mentions, in the Catalogue of Birds from Dukhun, "his being in possession of a male bird exactly like the female Kestril in plumage and size, and consequently larger than the male Kestril; and as this was shot from a party of five or six perched on the same tree, and without a male Kestril in company, he is induced to believe that there is a distinct species, in which both sexes have the plumage of the female European Kestril."

The museum of the East India Company has received specimens from Madras agreeing accurately with those collected by Mr. McClelland, but further observations are required to determine whether Mr. McClelland's bird deserves to be ranked as a distinct species.

Sub-Fam. BUTEONINÆ.

Genus CIRCUS, Auct.

5. *Circ. melanoleucus. Falco melanoleucus*, Gmel. Linn. I. 274. Black and White Indian Falcon, Penn. Ind. Zool., Pl. 2. Engl. Ed.

"This bird is a fisher, like the *Brown Spizaëtus* above described; but instead of inhabiting the banks of rivers, it is found in low inundated places, where it feeds, with Waders, on Reptiles and Mollusca, as well as on Fishes."—*McClelland's MS.*

Sub-Fam. MILVINA.

Genus MILVUS, Auct.

6. *Milvus Govinda*, Sykes?

"The primary quill-feathers are blackish-brown at their tips; every other part of their plumage is brown. It is a common Kite in Assam, as in every other part of India."—*McClelland's MS.*

Note.—A single specimen of this bird, not well preserved, was found in the collection: some uncertainty respecting the species to which it really belongs still remains.

Fam. STRIGIDÆ. Sub-Fam. NOCTUINA.

Genus, ATHENE, Boie: NOCTUA, Sav.

7. *Athene cuculoïdes. Noctua cuculoïdes*, Gould's Cent. Himal. Birds, Tab. IV.

Sub-Fam. BUBONINA.

Genus SCOPS, Sav.

8. *Scops Lempiji. Strix Lempiji*, Horsf. Trans. Linn. Soc. XIII. p. 140.

Order II. INSESSORES, Vigors.

Tribus FISSIROSTRES, Cuv.

Fam. MEROPIDÆ.

Genus NYCTIORNIS, Swains. Zool. Illust. II. Pl. 56.

9. *Nyctiornis Athertonii.*

"Toes much longer than the tarsi; outer ones united to the last joint, and the inner to the first joint: beak compressed, arched equally from the forehead, and terminating in a point formed by both mandibles: nostrils concealed with feathers: body seven, tail five inches long."—*McClelland's MS.*

Fam. HIRUNDINIDÆ.

Genus HIRUNDO, Auct.

10. HIRUNDO BREVIROSTRIS. *Suprà nigricans nitore olivaceo; subtùs fuscescens, alis elongatis; caudâ mediori subfurcatâ; rostro brevissimo.*

This species agrees with *Hirundo fuciphaga* in habit, in proportional length of wing, and shortness of beak, and in colour above; but it is darker underneath, and more than one third larger: entire length six inches.

11. *Hirundo Jewan*, Sykes, Proceed. Zool. Soc. 1832, p. 83.

The specimens of this bird sent from Assam by Mr. McClelland agree in all points with those discovered in Dukhun by Col. Sykes.

12. Hirundo brevicaudata. *Suprà fusca; subtùs cana; uropygio albido; caudâ brevissimâ subæquali.*

This species has the general physiognomy of the *Hir. concolor*, Sykes, but it is considerably smaller, of a lighter tint, and without the white spots on the tail which mark that species.

Fam. Todidæ.

Genus Eurylaimus, Horsf.

13. *Eurylaimus lunatus*, Gould, Trans. Zool. Soc. of London, I. 175.

The specimens forwarded by Mr. McClelland from Assam agree with those preserved in the Museum of the Zoological Society, which have been examined and marked by Mr. Gould.

14. *Eurylaimus Dalhousiæ*, Jamieson, Edin. New Phil. Journ., vol. 18, p. 389. *Psarisomus Dalhousiæ*, Swainson, Cab. Cyclop. Birds, Vol. II. 261. Royle's Illustr., Part VI. Pl. 7.

Eurylaimus Psittacinus, Tem. Pl. Col. 598.
Eurylaimus (*Crossodera*) *Dalhousiæ*, Gould, 'Icones Avium,' Part I. Aug. 1837.

"Above grass-green, beneath light bluish-green; throat yellow; crown velvet-black, with blue and yellow spots; quills black on their inner margins, but anteriorly light blue in the middle of the wings; tail slender, light blue above, beneath black; length nine inches."—*McClelland's MS.*

Fam. Halcyonidæ.

Genus Alcedo, Linn.

15. *Alcedo Bengalensis*, Gmel. Linn. I. 450. Little Ind. Kingfisher, Edw.

16. *Alcedo rudis*, Linn. I. 181. Black and White Kingfisher, Edw.

Genus Halcyon, Swains.

17. *Halcyon Smyrnensis. Alcedo Smyrnensis*, Linn. I. 181.

18. *Halcyon leucocephala*, Gmel. Linn. I. 456.

Tribus Dentirostres, Cuv.

Fam. Muscicapidæ.

Genus Phœnicornis, Sw.

19. *Phœnicornis princeps. Muscipeta princeps*, Gould's Cent. of Himal. Birds, Pl. VII.

20. *Phœnicornis brevirostris. Muscipeta brevirostris*, Gould's Cent., Pl. VIII. The male.

21. Phœnicornis elegans. *Capite elongato, sincipite admodum*

compresso; capite, collo, dorso summo, alis, rectricibusque duabus mediis nigris; corpore subtùs, dorso imo, fasciâ latâ alarum, maculis paucis apud remiges secundarios, rectricibusque lateralibus aurantio-coccineis.

The character given by Mr. Gould of the *Phœnicornis (Muscipeta) princeps*, as far as regards the nature and distribution of its colours, applies also to the *Ph. elegans*, but the latter is somewhat less in size, while it is chiefly distinguished by the flatness of the crown, which brings it nearly on a plane with the upper mandible. Mr. McClelland has given on one sheet a comparative view of the *Phœn. elegans*, *princeps*, and *brevirostris*, in order to illustrate the form of the head in each species, and the depression of the sinciput in *Phœn. elegans*, in which its essential difference consists.

22. Phœnicornis affinis. *Capite colloque suprà cum regione interscapulari griseis; collo subtùs gastræo, dorso imo, maculis tribus alarum, rectricibus interioribus ad basin exterioribus totis flavis: alis caudâque in medio nigris.*

"The male is larger than the female, and distinguished from her by a yellow band on the forehead between the eyes."—*McClelland's MS.*

Mr. Gould has figured this bird as the female of *Phœn. brevirostris*, but by annexing a mark of interrogation to the specific character, has indicated his doubt respecting the correctness of his determination, or its being really a distinct species. This doubt has now been explained by the researches of Mr. McClelland in its native country.

Genus Muscicapa, Auct.

23. *Muscicapa melanops*, Vigors, Proceed. Zool. Soc. 1831, 171; Gould's Cent. of Himal. Birds, Pl. VI.

24. Muscicapa? capitalis. *Capite suprà tectricibus primariis, rectricibusque suprà atris; maculâ suboculari utrinque ad occiput productâ albâ; subtùs, dorso lateribusque colli saturatè fuscis; crisso et uropygio canis.*

The distinctive character of this species rests on a very concise description of Mr. McClelland, accompanied by a drawing: no perfect specimen was found in the collection. Length five inches.

Genus Rhipidura, Vigors & Horsf.

25. *Rhipidura fuscoventris*, Frankl., Proceed. Zool. Soc. 1831, 117, Broad-tailed Fly-catcher, Lath.?

Genus Cryptolopha, Swains. Nat. Lib. Ornith. Vol. X., Fly-catchers.

26. *Cryptolopha poiocephala*, Sw., *loc. cit.* p. 200. Pl. XXIII. *Platyrhynchus Ceylonensis*, Swains. Zool. Illust., I. 13.

Fam. Laniadæ, Vigors.

Genus Artamus, Vieill.

27. *Artamus leucorhynchos*, Vieill. *Lanius leucorhynchos*, Linn. Mantis. (1771) p. 524.

Genus Dicrurus, Vieill.

28. *Dicrurus grandis*. *Edolius grandis*, Gould, Proceed. Zool. Soc. 1836, p. 5.

Several specimens of this bird received from Assam agree with the specific character and description given by Mr. Gould (as above cited) in all points excepting the size, being about one-third smaller; but further observations are required to determine with precision the points by which the long-tailed *Edolii* are to be discriminated.

29. *Dicrurus Rangoonensis*. *Edolius Rangoonensis*, Gould, Proceed. Zool. Soc. 1836, p. 5.

One of our specimens agrees accurately with Mr. Gould's specific character; in two others the crest is less developed, and the lanceolated plumes on the throat are less prominent.

30. *Dicrurus Balicassius*, Vieill, Enc. Meth. Ornith., 751. *Corvus Balicassius*, Linn. Syst. I. p. 155. *Le Drongo Balicasse.*

31. *Dicrurus æneus*, Vieill, Enc. Meth. Ornith., 751. *Le Drongo Bronzè.*

Genus Trichophorus. Temm.

32. *Trichophorus flaveolus*, Gould, Proceed. Zool. Soc. 1836, p. 6.

"Yellowish-green above, with a tinge of brown on the wings and tail; beneath bright yellow: crested with narrow feathers, becoming progressively longer from the nostrils to the crown; bill strong, compressed, and slightly hooked; cheeks and nucha scantily covered with feathers. Eight inches long."—*McClelland's MS.*

The specimens sent from Assam agree with those contained in the Museum of the Zool. Society from the Himalaya, which are the originals of Gould's description.

Genus Collurio, Vigors.

33. *Collurio nigriceps*, Frankl., Proceed. Zool. Soc. 1831, p. 117. Indian Shrike, Lath.

"Crown, nape, tail, and wings black; throat and breast white; body and secondaries reddish-gray. Length nine inches."—*McClelland's MS.*

34. *Collurio erythronotus*, Vigors, Proceed. Zool. Soc. 1831, p. 42. Gould's Century of Himal. Birds, Pl. XII. fig. 2.

"This species, as found in Assam, compared with the figure in Gould's Century of Himalayan Birds, is considerably smaller, and

the colours more dull in the Assam than in the Himalayan bird. I am therefore disposed to think that the species has here reached its south-eastern geographical limit, as the *Irena puella* may be supposed in Assam to have reached its northern limit."—*McClelland's MS.*

Genus Hypsipetes, Vigors, Proceed. Zool. Soc. 1830–1, p. 43.

35. Hypsipetes McClellandii, Horsf. *Suprà olivaceo-viridis; capite subcristato vinaceo-fusco, plumis albicante strigatis; subtùs vinacea, abdomine pallidiore; gulâ albidâ, plumis laxis lanceolatis; rostro flavicante.*

"Head brown; body and tail above yellowish-green; beneath vinaceous-gray, the tints of the abdomen being lighter. (Plumes of the throat white, lanceolate, and straggling, being bedded in a bluish down.) Inner vanes of the quills brownish-black; tarsi slender, and rather short. Length nine inches."—*McClelland's MS.*

36. *Hypsipetes psaroides*, Gould's Century of Himal. Birds, Pl. X.

37. Hypsipetes gracilis. *Suprà olivaceo-cinerea, crisso pallidiore; subtùs ex diluto cinnamomeo albicans; capite summo atro; remigibus primoribus atris, vexillis exterioribus tenuiter cano marginatis, secundariis canis margine nigro; rectricibus ex diluto olivaceo canescentibus, fasciâ latâ subterminali nigrâ in exterioribus gradatim latiore.*

This species deviates slightly from the character of *Hyps. psaroides*, the type which served for the definition of the genus, and gradually approaches that of *Kittacincla* of Gould.

Genus Graucalus, Cuv.

38. Graucalus maculosus. *Cœrulescenti-canus, alis caudâque saturatioribus obscuro olivaceo nitentibus; rectricibus exterioribus albo apiculatis.*

"Olive-black on the wings and tail; body above dark olive-gray, with light gray longitudinal streaks on the feathers under the throat, and light wavy lines on the abdomen and vent; outer tail-feathers with white tips. Length eight and a half inches."—*McClelland's MS.*

Fam. Merulidæ.

Genus Ianthocincla, Gould, Proceed. Zool. Soc. 1835, p. 187.

39. Ianthocincla gularis. *Capite suprà pectoreque cœrulescenti cinereis; notæo, abdomine, femoribus, rectricibusque exterioribus lætè cinnamomeis in aurantium vergentibus; dorso saturatiore; rectricibus intermediis nigricantibus; strigâ aterrimâ a rostri basi sub oculos ad regionem paroticam productâ; gulâ tarsisque flavicantibus; rostro nigro.*

"Head ash-gray, with a black band passing along the eyes; throat yellow; breast gray; rest of the body light olivaceous-brown, incli-

ning to reddish-yellow; beak compressed, arched above a little more than below, depressed at the point; tarsi strong, longer than the middle toe, and yellow; wings rather short and round."—*McClelland's MS.*

This bird, although greatly resembling the *Ianthocincla albogularis* of Gould, is clearly distinguished from that species by the yellow colour of its throat, by the absence of the white tips to the exterior tail-feathers, by its yellow tarsi, and by the brighter orange shade of its general tint.

40. *Ianthocincla pectoralis*, Gould, Proc. Zool. Soc. 1835, p. 186.

"Above greenish-brown, beneath yellow and white, irregularly intermixed. A black band extends over each eye, descending on the sides of the neck, unites (from each side) in front of the neck; throat yellowish-white; lower tail-feathers tipped with white; beak compressed, slightly arched above; upper mandible projecting and slightly depressed at the tip; tarsi high and strong."—*McClelland's MS.*

41. Ianthocincla lunaris. *Cinnamomeo-olivacea, capite summo caudáque nigricantibus; fronte, gutture pectoreque in medio atris; lunulâ insigni collari a regione paroticâ gulam versus extensâ crissoque lætè ferrugineis.*

"Dark olive; throat and lores black, bounded posteriorly by a light brown crescent; vent and a few clouds on the abdomen of the same colour; tail blackish; wings short, and chiefly concealed beneath the downy plumage of the back; tarsus strong, longer than the middle toe; beak arched beneath, compressed, slightly denticulated, but not hooked. Length nine inches."—*McClelland's MS.*

Genus Oriolus, Auct.

42. *Oriolus melanocephalus*, Gmel. Linn. I. 383. Black-headed Oriole, Lath.

43. *Oriolus Traillii. Pastor Traillii*, Gould's Cent. Himal. Birds, Pl. XXXV.

Genus Irena, Horsf.

44. *Irena Puella*, Horsf., Linn. Trans., XIII. p. 153. *Coracias Puella*, Lath. Ind. Orn. 171.

Genus Ixos, Temm.

45. Ixos monticola. "Above grayish-brown; crown black and crested; throat and abdomen white; vent scarlet; lower tail-feathers tipped with white; wings short; body four inches, tail three inches long, and square; a scarlet ring about the eye, but no red tuft beneath this organ; by the latter circumstance it differs from *Ixos jocosus.*

"Inhabits the Kossia mountains, and usually seen in numerous flocks, flying from tree to tree in quest of insects. Their note is

shrill and inharmonious, not unlike that of the sparrow."—*McClelland's MS.*

Further observations are required to determine the rank of this bird as a distinct species, or as a variety of *Ixos jocosus.*

46. *Ixos Cafer. Turdus Cafer*, Linn. I. 295. *Le Curouge*, Le Vaill.

Genus Timalia, Horsf.

47. *Timalia pileata*, Horsf., Linn. Trans., XIII. p. 151.

"This is another instance of a species of the Malayan Archipelago having extended itself to Assam, and is more interesting from the smallness of its size, its length being only five and a half inches in Assam, but in Sumatra and Java it is six and a half inches in length. The tail in the Assam variety is marked with obscure bands, which does not appear to be the case with the Java variety; and the plumes of the belly and thighs are shorter in the former than in the latter." —*McClelland's MS.*

Genus Geocichla, Kuhl.

48. *Geocichla Rubecula*, Gould, Proceed. Zool. Soc. 1836, p. 7.

Fam. Sylviadæ.

Genus Motacilla, Auct.

49. *Motacilla variegata*, Steph. Pied Wagtail, Lath. *Mot. picata*, Frankl.

Genus Saxicola, Bechst.

50. *Saxicola Rubicola*, Temm.

51. Saxicola? olivea. *Suprà olivaceo-viridis, subtùs ex plumbeo cœrulescens; fronte flavicante.*

"A minute species, olive-green above, leaden-blue beneath, and olive-yellow on the forehead; anterior toes short; tarsi elevated. Length three inches."—*McClelland's MS.*

A single specimen only has been forwarded, which is not sufficiently perfect to determine its true generic character with certainty.

Genus Phœnicura, Jard. & Selb.

52. *Phœnicura Reevesii*, Gray, Zool. Misc.

Genus Zosterops, Vigors and Horsf.

53. *Zosterops Maderaspatanus?* Catal. of Zool. Specim. Append. to Life of Sir T. S. Raffles, p. 661.

The specimen sent home by Mr. McClelland differs from that brought from Sumatra by Sir T. S. Raffles in being a trifle smaller.

Fam. Pipridæ.

Genus Parus, Linn.

54. *Parus atriceps*, Horsf., Trans. Linn. Soc., XIII. 160.

55. *Parus flavocristatus*, De Lafresnage. *Mésange à huppe jaune*, Guerin, Mag. Zool., Pl. 80. Janvier 1837. *Parus Sultaneus*, Hodgson, India Review and Journal of Foreign Science, &c., by F. Corbyn, Esq., April 1837.

"The female is distinguished from the male by the black colour being less intense, and intermixed more with a greenish tint. For the first specimen of this elegant bird I was indebted to Mr. Griffith, who procured it during our descent from the Kossia mountains into Assam, in which place, however, they are more common."—*McClelland's MS.*

Genus Leiothrix, Swains.

56. Leiothrix lepida. *Capite subcristato suprà nucháque cinereis in cœrulescentem vergentibus; dorso tectricibusque alarum ex olivaceo cinnamomeis; alis caudáque suprà ex parte cœruleis; remigum pogoniis internis latè nigris, apicibus albis; rectricibus exterioribus pogoniis internis, omnibus apicibus albis: subtùs ex diluto cinnamomeo canescens.*

"Gray; bluish on the crown, brownish on the back, and light bluish-gray beneath; wings and tail blue (inclining to black), with minute white tips and light blue outer margins. Length five inches."—*McClelland's MS.*

57. Leiothrix signata. *Olivaceo-fusca abdomine pallidiore; alis, caudáque subcastaneis; guld obsoletè flavicante; fasciá collari ex lætè-cyaneo nitente.*

"Olive-brown above, lighter beneath; a Prussian-blue streak on each side of the neck; tail short and square. Length five inches."—*McClelland's MS.*

58. Leiothrix ornata. *Capite colloque suprà nigricantibus; subtùs tæniáque ad latera colli per oculos ad rostrum ductá albis; notæo cinnamomeo, crisso pallidiore; alis caudáque nigris, remigibus secundariis albo marginatis, primoribus rectricibusque ad apices albo limbatis, omnibus nitore cruento inductis.*

"Head black, with a white streak passing over each eye; back brown; wings and tail black, variegated with scarlet and white; beneath white."—*McClelland's MS.*

Tribus Conirostres, Cuv.

Fam. Fringillidæ, Vigors.

Genus Mirafra, Horsf.

59. Mirafra Assamica. *Corpore cinereo-brunneo varicgato, uropygio pallidiore; remigum pogoniis internis caudæque basi rufis;*

subtùs ex rufescente cana, plumis pectoris nigro maculatis; lunulâ obsoletè fuscâ temporibus.

This species appears to be intermediate between *Mirafra Javanica*, Horsf., and *Mirafra phœnicura*, Frankl., but its characters are sufficiently marked to distinguish it from both.

60. Mirafra flavicollis. *Suprà olivaceo-brunnea, vertice saturatiore, tectricibus secundariis albicante marginatis; subtùs flava, fasciis paucis obsoletè fuscis; crisso caudâque subtùs albicantibus.*

Length five inches.

Genus Ploceus, Cuv.

61. *Ploceus Manyar.* *Fringilla Manyar*, Horsf., Trans. Linn. Soc., XIII. p. 160.

Genus Lonchura, Sykes, Proceed. Zool. Soc., 1832, p. 94.

62. Lonchura melanocephala. *Capite, collo, pectoreque atris; corpore, alis caudâque saturatè badiis.*

Length four inches.

63. *Lonchura Cheet*, Sykes, Proceed. Zool. Soc., 1832, p. 95.

Fam. Sturnidæ.

Genus Pastor, Temm.

64. *Pastor tristis*, Temm. *Gracula tristis*, Lath., Ind. Orn., I. 190.

65. *Pastor Pagodarum*, Temm. *Turdus Pagodarum*, Gmel. Linn.

Genus Lamprotornis.

66. *Lamprotornis spilopterus*, Gould's Cent. of Himal. Birds.

Fam. Corvidæ.

Genus Corvus, Linn.

"The Raven, the Carrion Crow, and the Rook, are inhabitants of Assam, but are seldom found in the depths of the forests. They rather follow the footsteps of man, and establish themselves in small numbers in the vicinity of villages and such places on the banks of rivers as are frequented by travellers as halting-places. The Hooded Crow is very common, but I did not perceive anything peculiar about it to induce me to add it to my collection."—*McClelland's MS.*

Genus Dendrocitta, Gould, Proceed. Zool. Soc., 1833, p. 57.

67. Dendrocitta frontalis. *Facie aterrimâ, conterminio exactè circumscripto, alis caudâque nigris; occipite, vertice, collo, pectoreque albis, diluto canescente lavatis; humeris, notæo, hypochondriis, femoribusque badiis in ferrugineum vergentibus; tectricibus secundariis saturato cœrulescenti-canis.*

Length of the body seven, of the tail ten inches.

68. *Dendrocitta vagabunda*, Gould's Cent. Himal. Birds. *Pica vagabunda*, Vieill, Encyclop. Method. Ornitholog., p. 888. *Coracias vagabunda*, Lath., Ind., I. 171.

Genus KITTA,

69. *Kitta venatorius*, Gray, Illustrations of Indian Zoology, I. Pl. XXIV.

Genus CORACIAS, Linn.

70. CORACIAS AFFINIS. *Capite suprà æruginoso, nuchâ dorsoque olivaceis, æneo subnitentibus; fasciâ alarum latâ, tectricibus utrinque, rectricibus ad basin, salvis intermediis glaucis, saturatissimè cyaneis; fasciâ remigum primorum subterminali, secundariarum basali, uropygio, fasciâ latâ terminali rectricum, crissoque lætè thalassinis: subtùs et lateribus colli vinaceis; guld plumis laxis, in medio violaceo-vittatis, ornatâ.*

Genus GRACULA.

71. *Gracula religiosa*, Linn. Syst., I. p. 164.

Fam. BUCERIDÆ.

Genus BUCEROS, Linn.

72. *Buceros Malabaricus*, Gmel. Linn., I. 359. Pied Horn-Bill, Lath.

73. *Buceros Homrâi*, Hodgson, Journ. As. Soc. Bengal, Vol. I. p. 251.

Mr. Hodgson's description of the *Buceros Homrâi* applies closely to Mr. McClelland's specimens, and also to the bird figured in the 44th plate of Gould's Century of Himalayan Birds, and to specimens from Sumatra in the East India Company's Museum; while the *Calao à casque concave* of Le Vaillant, according to Dr. Shaw's description and specific character, differs in various particulars.

Fam. LOXIADÆ, Vigors.

Genus PARADOXORNIS, Gould, Proceed. Zool. Soc., 1836, p. 17.

74. *Paradoxornis flavirostris*, Gould, *loc. cit.*, figured in Gould's 'Icones Avium,' Part I. *Bathyrhynchus brevirostris*, McClelland, Quarterly Journal of the Calcutta Med. and Phys. Society, Dec. 1837. With a figure.

"Brown, beneath yellowish-brown; head brown, with a black circle under each eye, the interior feathers of which have white tips; wings short; beak much compressed, strong, shorter than its depth, and thrice the depth of its breadth at the base; mandibles equally arched, and meeting in front, without a hook, in an obtuse point; nostrils small, round, and concealed by recurved feathers."—*McClelland's MS.*

Tribus Scansores.

Fam. Psittacidæ.

Genus Palæornis, Vigors.

75. *Palæornis torquatus*, Vigors. *Psittacus torquatus*, Auct.

76. *Palæornis Pondicerianus*, Vigors. *Psittacus Pondicerianus*, Auct.

Fam. Picidæ.

Genus Bucco, Auct.

77. *Bucco corvinus*, Temm. Pl. Col. DXXII.

78. *Bucco cyanops*, Cuv. *Capito cyanocollis*, Vieill. Gal. des Ois. XXXV.

Genus Picus, Linn.

79. *Picus strenuus*, Gould.

80. *Picus occipitalis*, Gould's Cent. of Himal. Birds, Pl. XLVII.

81. *Picus Nepalensis*, Gray and Hardw. Ind. Zool., Pl. XXXI. Fig. 1.

82. *Picus Macei*, Temm. Pl. Col. LIX.

83. Picus (*Chrysonotus*, Swainson) Grantia. *Fronte, alis, caudâque suprà ex sordidè aurantio rufescentibus; collo suprà et ad latera ex viridi flavicante; subtùs fuscus; rectricibus flavicante fasciatis; remigibus primoribus fuscescentibus, vexillis alternis flavo-guttatis vel fasciatis.*

Length nine inches.

This bird belongs to Mr. Swainson's subgenus *Chrysonotus*, Lard. Cab. Cycl. Birds, II. p. 309, of which *Picus Tiga*, Linn. Tr., XIII. 177, is given as the type.

Genus Yunx, Linn.

84. *Yunx torquilla*, Linn.

The specimens collected by Mr. McClelland agree in all points with the bird as found in Europe.

Fam. Certhiadæ.

Genus Sitta, Linn.

85. *Sitta frontalis*, Horsf., Linn. Trans., Vol. XIII. p. 162.

Genus Upupa, Linn.

86. *Upupa Epops*, Linn.

From comparison with European specimens, it appears that this bird, as occurring in Assam, can scarcely be considered a variety of the *U. Epops* of Linnæus; although Mr. McClelland's specimens

are rather smaller, they do not agree with the *U. minor* of Shaw, which is found in Africa.

Genus Pomatorhinus, Horsf.

87. *Pomatorhinus montanus*, Horsf., Linn. Trans., XIII. p. 165.

No essential difference is apparent between a specimen of this bird sent from Assam and the specimens obtained in the Island of Java, from which the original description was made.

Fam. Cuculidæ.

Genus Phœnicophaus, Vieill.

88. *Phœnicophaus tristis*, Lesson?

"Bottle-green above; dark greenish-gray beneath; throat light greenish-gray, with black streaks; naked space around the eyes; superciliary streak white; tail with white tip; beak green. Thirteen inches long."—*McClelland's MS.*

No specimen having been found of this species, it will require further observations to determine its true character.

Genus Centropus, Ill.

89. *Centropus Philippensis*, Cuv.

"This species is very common in villages and cultivated rice-fields in Assam, and in low inundated lands along the banks of rivers. It is tame even in the most deserted places in which it is found, and seldom flies; but if pressed too closely, it rather forces its way into a thick hedge. It delights in moist humid climates, as is proved by the vast numbers of them which occur in the Sunderbunds, the only part of India except Assam in which I have seen them; but I believe they are also seen in the vicinity of Calcutta. I am informed that they are common at Maulmain on the Tenasserim coast, but I question if they are to be found in India further north-west than Bengal. They have a very peculiar suppressed note, resembling *whono*, uttered with such a degree of ventriloquism, that although you see the individual from which the sound escapes, you do not expect it as the cause. In passing through the Sunderbunds in April last, this *whono* was almost the only sound I heard, and I was at first induced to suppose that it proceeded from some concealed animal in my boat."—*McClelland's MS.*

90. *Centropus lepidus*, Horsf., Linn. Trans., XIII. p. 180.

Mr. McClelland's specimen is comparatively of a large size, but agrees in all particulars with the *Cent. lepidus* from Java.

Genus Trogon.

91. *Trogon Hodgsonii*, Gould, 'Monograph of Trogonidæ.'

Tribus Tenuirostres, Cuv.

Fam. Cinnyridæ.

Genus Cinnyris, Cuv.

92. Cinnyris Assamensis. *Cinn. nigrescens, capite suprà gulâque metallicè purpureis; dorso et colli lateribus intensè fuscescenti-rubris; plumis ad partem dorsi posteriorem flavido terminatis; uropygio, tectricibus caudæ superioribus, rectricibusque caudæ duabus intermediis metallicè purpureis; his elongatis; abdomine et crisso flavido lavatis: rostro valdè incurvo, et quàm caput paululùm longiore.*

This species is closely allied to *Cinnyris Gouldiæ.*

93. Cinnyris labecula. *Punicea; gulâ pectoreque nitidissimis; capite, plumis scapularibus, caudâque metallicè aureo viridibus; alis fuscis viridi nitentibus; subtùs cana.*

Body three inches, tail two inches long.

Genus Arachnothera, Temm.

94. *Arachnothera inornata*, Temm., Pl. Col. LXXXIV. Fig. 2.

Fam. Meliphagidæ.

Genus Chloropsis, Jard. & Selby.

95. Chloropsis chrysogaster. *Suprà viridis, nitens; pectore abdomineque ex aurantio luteis; gulâ, jugulo, lateribus colli, arcuque per oculos ducto atris, conterminio arctè circumscriptis; genis violaceis, maculâ scapulari æruginosâ; tectricibus, remigibus primoribus, rectricibusque nigris, nitore violaceo; pileo aureo subnitente.*

In the specimens of the female the black mark on the throat and neighbouring parts is not apparent; the spots on the chin and shoulders are obscure; but the general colour of the upper and lower parts is the same as in the male.

Genus Dicæum, Cuv.

96. *Dicæum erythronotum. Certhia erythronotos*, Ind. Orn., I. 290. Red-backed Creeper, Lath., Gen. Hist. of Birds, IV. 241. 'Souimanga à dos rouge,' Ois. dor., II. 57. Pl. XXXV.

November 12, 1839.

William Yarrell, Esq., V.P., in the Chair.

A letter was read from Lady Shelly, relating to the manners, whilst in confinement, of a Black Spider Monkey (*Ateles ater*), recently presented to the Society.

From this letter it appears that the animal in question was extremely gentle and partial to some persons, but disliked others. It learnt many little tricks, and exhibited a considerable degree of intelligence.

A letter from Sir Thomas Reade, Hon. Memb. Z.S., H. M. Consul-General at Tunis, dated Tunis, Sept. 30th, 1839, was read. It stated that that gentleman had forwarded as a present to the Society a living Bubaline Antelope (*Antilope Bubalis*, Pall.), three Numidian Cranes (*Anthropoïdes Virgo*, Vieill.), and a young Lynx.

A letter from R. J. Bourchier, Esq., Corr. Memb. Z.S., which was also read, states that the above-mentioned specimens are safely arrived at Malta, and that he will take the first favourable opportunity of forwarding them to the Society.

A letter from Lieut. J. Frembly, R.N., Corr. Memb. Z.S., dated Gibraltar, Oct. 17, 1839, was read. This letter relates to some specimens of Fishes which Mr. Frembly had forwarded to the Society.

The specimens referred to in this letter were exhibited.

Professor Owen exhibited the bone of an unknown struthious bird of large size, presumed to be extinct, which had been placed in his hands for examination by Mr. Rule, with the statement that it was found in New Zealand, where the natives have a tradition that it belonged to a bird of the Eagle kind, but which has become extinct, and to which they give the name "Movie." Similar bones it is said are found buried in the banks of the rivers.

The following is an abstract of Profesor Owen's paper upon this bone:—

"The fragment is the shaft of a femur, with both extremities broken off. The length of the fragment is six inches, and its smallest circumference is five inches and a half. The exterior surface of the bone is not perfectly smooth, but is sculptured with very shallow reticulate indentations: it also presents several intermuscular ridges. One of these extends down the middle of the anterior surface of the shaft to about one-third from the lower end, where it bifurcates; two other ridges or lineæ asperæ traverse longitudinally the posterior concave side of the shaft; one of them is broad and rugged, the other is a mere linear rising.

"The texture of the bone, which affords the chief evidence of its ornithic character, presents an extremely dense exterior crust, varying from one to two lines in thickness; then there occurs a lamello-cellular structure of from two to three lines in thickness. The lamellæ rise vertically to the internal surface of the dense wall, are directed obliquely to the axis of the bone, decussate and intercept spaces which are generally of a rhomboidal form, and from two to three lines in diameter. This coarse cancellated structure is continued through the whole longitudinal extent of the fragment, and immediately bounds the medullary cavity of the bone, which is about one inch in diameter at the middle, and slightly expands towards the extremities. There is no bone of similar size which presents a cancellous structure so closely resembling that of the present bone as does the femur of the Ostrich; but this structure is interrupted in the Ostrich at the middle of the shaft where the parietes of the medullary, or rather air-cavity, are smooth and unbroken. From this difference I conclude the Struthious bird indicated by the present fragment to have been a heavier and more sluggish species than the Ostrich; its femur, and probably its whole leg, was shorter and thicker. It is only in the Ostrich's femur that I have observed superficial reticulate impressions similar to those on the fragment in question. The Ostrich's femur is sub-compressed, while the present fragment is cylindrical, approaching in this respect nearer to the femur of the Emeu; but its diameter is one-third greater than that of the largest Emeu's femur, with which I have compared it.

"The bones of the extremities of the great *Testudo elephantopus* are solid throughout. Those of the Crocodile have no cancellous structure like the present bone. The cancellous structure of the mammiferous long bones is of a much finer and more fibrous character than in the fossil.

"Although I speak of the bone under this term, it must be observed that it does not present the characters of a true fossil; it is by no means mineralized: it has probably been on, or in, the ground for some time, but still retains most of its animal matter. It weighs seven ounces twelve drachms, avoirdupois.

"The discovery of a relic of a large struthious bird in New Zealand is one of peculiar interest, on account of the remarkable character of the existing Fauna of that island, which still includes one of the most extraordinary and anomalous genera of the struthious order, and because of the close analogy which the event indicated by the present relic offers to the extinction of the Dodo of the island of the Mauritius. So far as a judgment can be formed of a single fragment, it seems probable that the extinct bird of New Zealand, if it prove to be extinct, presented proportions more nearly resembling those of the *Dodo* than of any of the existing *Struthionidæ*.

"Any opinion, however, as to its specific form can only be conjectural; the femur of the Stilt-bird (*Himantopus*) would never have revealed the anomalous development of the other bones of the leg; but so far as my skill in interpreting an osseous fragment may be credited, I am willing to risk the reputation for it on the statement

that there has existed, if there does not now exist, in New Zealand, a Struthious bird nearly, if not quite, equal in size to the Ostrich."

Mr. Yarrell exhibited some specimens of the Portuguese Man-of-War (*Physalia pelagica*), which were sent to him by the Rev. Robert Holdsworth, who procured them off the coast of Devonshire, at Brixham.

A collection of Skins of Quadrupeds and Birds from the Society's Corresponding Member, Col. H. Warrington, H. M. Consul-General at Tripoli, was exhibited.

November 26, 1839.

William H. Lloyd, Esq., in the Chair.

An extensive collection of shells, sponges, &c., presented by J. B. Harvey, Esq., Corr. Memb. Zool. Soc., was exhibited. The specimens contained in this collection are from South Australia, and were principally collected in Kangaroo Island.

Prof. Rymer Jones called the attention of the Meeting to certain specimens contained in this collection, and to the sponges in particular, and, having made some observations upon their structure and mode of reproduction, he entered into the question relating to their animal or vegetable nature.

Mr. Waterhouse laid before the Meeting the following tabular view of the distribution of the *Rodentia*:—

			Europe and North Asia.	North America.	Africa.	India and Islands.	South America and West Indian Islands.
MURINA.	*Sciuridæ.*		5. Sciurus. 1. Pteromys. 1. Tamias. 3. Spermophilus. 2. Arctomys.	20. Sciurus. 3. Pteromys. 5. Tamias. 10. Spermophilus. 8. Arctomys. 1. *Aplodontia*.	5. Sciurus. 3. Xerus. 2. Graphiurus.	25. Sciurus. 9. Pteromys.	6. Sciurus.
	Muridæ.		3. Myoxus. 8. Dipus.	2. Meriones.	3. Myoxus. 4. Dipus.		
			16. Mus. 6. Cricetus.	6. Mus. Hesperomys. 1. Sigmodon. 2. Neotoma.	10. Mus. 2. Dendromys. 6. Gerbillus. 1. Psammomys. 3. Euryotis.	12. Mus. 2. Gerbillus. 1. Phlœomys. 2. Rhizomys.	30. Mus. Hesperomys. 3. Reithrodon.
	Arvicolidæ.		1. Castor. 20. Arvicola. 4. Lemmus. 2. Spalax.	1. Castor. 1. Ondatra. 8. Arvicola. 4. Lemmus. 10. Geomys.			
HYSTRICINA.	*Hystricidæ.*		1. Hystrix.	1. Erethison.	1. Hystrix.	1. Hystrix. 1. Atherura.	3. Cercolabes. 2. Synetheres.
	Octodontidæ.				1. Aulacodus. 1. Orycterus. 4. Bathyergus. 1. Petromys.		3. Capromys. 1. Myopotamus. 10. Echimys. 6. Nelomys. 1. Cercomys. 2. Dasyprocta. 1. Cœlogenys. 2. Ctenomys. 1. Poephagomys. 1. Octodon. 2. Abrocoma.
	Chinchillidæ.						1. Chinchilla. 2. Lagotis. 1. Lagostomus.
	Caviidæ.						6. Cavia. 2. Kerodon. 1. Dolichotis. 1. Hydrochœrus.
LEPORINA.	*Leporidæ.*		5. Lepus. 3. Lagomys.	15. Lepus. 1. Lagomys.	6. Lepus.	4. Lepus. 1. Lagomys.	1. Lepus.
			31 spe. 16 gen.	69 spe. 19 gen.	53 spe. 14 gen.	58 spe. 10 gen.	89 spe. 25 gen.

Mr. Waterhouse stated, that in the construction of this table he had endeavoured to display the geographical distribution of the sections of the order *Rodentia*, and that to accomplish this, it of course became necessary to combine some system of classification, with an arrangement of the genera according to the countries in which they were found. The table is divided into five columns, one column being devoted to each of the following portions of the globe: 1st, Europe and North Asia; 2nd, North America; 3rd, Africa; 4th, India and the Indian Islands; 5th, South America and the West Indian Islands.

In these columns the names of the genera found in each province are inserted, and the number of known species belonging to each genus (as nearly as can be ascertained) is also indicated. Horizontal lines separate the genera according to the sections to which they are supposed to belong.

"The few Rodents found in Australia all belong to the family *Muridæ*. About six species are known, and these appertain to the genera *Mus*, *Hapalotis*, Licht. (which is the *Conilurus* of Mr. Ogilby), *Hydromys* and *Pseudomys*.

"The first thing that strikes the attention," observed Mr. Waterhouse, "is, that the great mass of South American Rodents belong to a different section from those of the northern portions of the globe, and that they are of a lower grade of organization, as is also the case with respect to the Old and New World Monkeys."

The next point to which Mr. Waterhouse drew attention was the relative number of species found in warm and in temperate climates. "If the number of species found in the two provinces, Europe (including North Asia) and North America, be added together, the total is 180 species, whilst in all the rest of the world, taken together, the amount is only 206; and if from this last number those species which inhabit the temperate portions of South America and Australia (amounting to about 30) be deducted, and added to the first amount, it would appear that the Rodents are most abundant in temperate regions. In the Mammals of large size the case is reversed.

"The total number of species inhabiting each of the provinces pointed out in the table varies less than perhaps might be expected. The European province, North America, and South America, are nearly equal as to the number of species they contain; India and Africa are also nearly equal, but they contain fewer species than either of the other provinces.

"The Squirrels, Rats, Porcupines, and Hares (constituting the genera *Sciurus*, *Mus*, *Hystrix*, and *Lepus*), are the only groups which are found in all the provinces.

"The *Sciuridæ* abound most in North America and India, and are least abundant in Africa and South America. In the latter country they appear to be chiefly confined to the northern portions, and are totally wanting in the southern.

"The *Muridæ* are about equally abundant in Europe, Africa, and South America; in North America and India they are much less numerous.

"The *Arvicolidæ* appear to be confined to North America and the European province. In South America they are apparently replaced by the *Octodontidæ*, *Chinchillidæ*, and *Caviidæ*.

"The family *Leporidæ* is but feebly represented in each of the provinces above-mentioned, excepting in North America, where the number of species already discovered is almost equal to all those found in other portions of the globe taken together. In earlier periods, these Rodents, which are very low in the scale, appear to have been much more numerous, judging from the fossil remains which have been found,—at least in the European province.

"The remaining families of Rodents are almost entirely confined to South America. The genus *Aulacodus* of Western Africa, the genera *Petromys*, an inhabitant of the Cape of Good Hope, and *Bathyergus*, found both at the Cape and north-east portions of Africa, possess certain characters in which they approach the South American forms. *Petromys* analogically appears to represent the Octodons of South America, and *Bathyergus* may be compared to the genera *Poephagomys* and *Ctenomys*; whilst in *Aulacodus* we possess a representative of the *Capromys* of the West Indies."

Mr. Waterhouse observed "that he had not yet been able to satisfy himself as to the precise situation, in a systematic classification, of the genera *Ctenodactylus* and *Helamys*, the former from North, and the latter from South Africa. Four other genera are omitted in the above table for the same reason; they are, *Otomys** of Dr. Smith, a genus found at the Cape of Good Hope; *Akodon*, Meyen, which inhabits Peru; *Heteromys*, Desmarest, founded on the *Mus anomalus* of Thompson, an animal found in the island of Trinidad; and lastly, *Saccomys* of F. Cuvier, which is supposed to be from North America. These four genera in all probability belong to the family *Muridæ*.

"The genus *Aplodontia* is placed with the *Sciuridæ*, but it must be observed that it differs much from the typical species of that group, there being no post-orbital process to the skull, and the molar teeth being rootless.

"The remains of Rodents found in a fossil state indicate that the different provinces were formerly inhabited by the same forms as those which are now found in them."

* This is a different genus to the *Otomys* of Cuvier, which is *Euryotis* of Brants.

December 10, 1839.

William H. Lloyd, Esq., in the Chair.

A letter from Dr. Weissenborn, dated Weimar, October 6, 1839, was read. It accompanied a present of two specimens (male and female) of the black variety of the common Hamster (*Cricetus vulgaris*), and a head, preserved so as to display the cheek-pouches of that animal. The writer of the letter states that he possesses a common Pigeon, just fledged, in which no vestiges of the organs of vision can be traced. "The orbits are tolerably well developed, and lined with a sort of half-mucous membrane, and therefore destitute of feathers. I have never heard of a similar defect in any animal; and in one where the incubation is extra-uterine it appears doubly wonderful or anomalous. The bird is quite healthy, and presents in its habits several curious anomalies, which may be traced to its monstrosity."

Professor Owen communicated his notes on the Anatomy of the Biscacha (*Lagostomus trichodactylus*, Brookes).

"The individual dissected," says Mr. Owen, "was a female, full-grown, weighing 8 pounds 2 ounces, avoirdupois: the weight of the brain was 5 drachms, avoirdupois, the proportion of the brain to the body being as 1 to 416. This is the smallest relative size of the brain that has yet been recorded in the Rodent order, in some of the species of which order, as the Mouse, the brain approaches that of Man, the relation of its mass to that of the body being as 1 to 46; that of the human subject is as 1 to 30. The brain presented the usual broad depressed form and simple unconvoluted surface characteristic of the Rodent order: its length was 1 inch 8 lines, its breadth 1 inch 5 lines, and the length of the cerebral portion 1 inch 3 lines. The proportion of the cerebellum to the cerebrum was as 1 to 5. The breadth of the *medulla oblongata* was to that of the *cerebrum* as 1 to 6. The upper surface of each lobe of the cerebrum is marked with two slightly curved fissures, each between 3 and 4 lines in length, and one a little in advance of, and exterior to the other: a single anfractuosity defines the external convex prominence of the cerebrum. On the under surface a fissure is continued from the posterior part of the cerebral hemisphere forwards, along the middle of the natiform protuberance, to the outer boundary of the root of the large olfactory nerve.

On laying open the abdomen an immense accumulation of adipose membrane concealed the viscera; the bag of the great omentum formed, however, a small part of this covering, as after extending down over half the abdomen it was reflected upwards, in front of the liver. The lower half of the abdominal cavity was overlapped

by broad and thick adipose processes, continued from the lower convolutions of the colon, without being connected with the great omentum, and from the fundus of the urinary bladder. The *appendices epiploicæ* of the human colon may be regarded as rudimentary conditions of the adipose folds here so enormously developed. The stomach corresponded in form and relative size with that of the *Chinchilla* (see Trans. Zool. Soc., vol. i. p. 51. pl. V.). The left blind extremity projected about an inch beyond the cardia; the pyloric end became suddenly contracted: the cuticular lining of the œsophagus terminated at the cardia in five pointed processes, radiating from the cardia.

The duodenum was dilated, as in many other phytophagous Rodents, at its commencement; it descends with a slight sigmoid flexure to the right lumbar region, then crosses over to the left side, being freely suspended in a broad duodenal mesentery, which contracts as the gut perforates the base of the meso-colon to become the jejunum. The small intestines presented the usual disposition: the cæcum is of moderate length, viz. four inches, with a diameter of two and a half inches, thus corresponding in general form with that of the *Chinchilla*. The colon first crosses obliquely the lower part of the abdomen, and returns, forming a fold of about four inches in extent; it then describes a second much larger and narrower fold, of ten inches in length: it is at the bend of this fold that the fæces begin to be separated into pellets, and it is from these loops that the omental processes are continued: the colon then bends over the root of the mesentery, passing below the stomach to the left side of the abdomen, where it describes a series of convolutions before ending in the rectum. No omental process is continued from these folds, but the meso-colon, to which they are suspended, is of great breadth, and was loaded with fat.

	Feet.	Inches.
Length of the small intestines	14	9
———— large ditto	7	5

"The anal, vaginal, and urethral outlets are separate from one another.

"The liver consists of a left lobe, a cystic lobe, and two small right lobes, with a spilegian appendage. The cystic lobe is fissured, and the left division is perforated on its free convex surface to receive a process of the suspensory ligament.

"The gall-bladder was of very small size.

"The spleen is triangular, with the upper or anterior angle most produced.

"The kidneys and suprarenal glands as usual in Rodents. The heart presented the usual form; two superior venæ cavæ, the left joining the inferior cava, and receiving the coronary vein. The right lung presented three lobes and the median lobule; the left lung three lobes.

"There was nothing remarkable in the ovaria or fallopian tubes. The two uteri terminate by distinct valvular orifices; they are long

and narrow: in each mesometry there is a plexus of transversely disposed vessels, principally veins, which runs parallel with the uterus, and seems to represent the remains of the wolffian body. The most interesting feature in the generative organs was a longitudinal septum, dividing the vagina into two canals for upwards of an inch beyond the *ora tincæ*. This septum terminated by a thin concave edge, directed towards the outlet of the vagina. There was no constriction or valvular fold between the divided and the undivided portions of the vagina; the former were somewhat more vascular, and slightly plaited longitudinally. The whole length of the vagina was four inches. The clitoris was perforated by the urethral canal, and was nine lines in length.

"No other placental quadruped has hitherto presented so near an approach to the marsupial type of the female organs as the *Lagostomus*. Rudiments of a vaginal septum occur in the young or virgin state of several genera; but it is only in the *Lagostomus* that a continuation of the median separation of the genital tubes has been continued beyond the uterine portion along so great an extent of the vagina, and as a permanent structure."

Professor Owen also communicated the following paper, entitled "Observations on the Generative System of some of the lower Animals," by Professor Rudolph Wagner, M.D.

"Among a variety of observations which I undertook on the coast of Nice in August and September 1839, for the purpose of obtaining a more intimate knowledge of the anatomy and physiology of marine animals, there are several which perhaps afford some more general interest for the natural history of animals.

"Many of my own earlier observations had produced the conviction, that a disjunction of the sexes is much more universal than has been hitherto admitted. Cuvier, in his 'Règne Animal,' and after him the most of those who have entered upon Zoological Classification, still assume that among the so-called lower animals many are no more than females, and others without sex.

"Thus, to begin with the *Mollusca*, and judging from assertion, the *Cyclobranchiata* up to the present time are known only as females. I succeeded as well in *Patella* as in *Chiton* in finding some individuals that were males, and others that were females. The males have a white testis, with active spermatozoa, resembling those of muscles; the females have all the elements of the primitive ovum. The *Ascidiæ* also appear to be of disjoined sex. I found, however, in several species merely ova, but ova that presented the germinal vesicle and germinal spot.

"Among the *Radiata* I had hitherto found only females, as well in the Starfish as in the Sea-urchin and the *Holothuriæ*. The pear-shaped vesicles which open into the efferent duct of the ovary in *Holothuria tubulosa*, and which Delle Chiaje regards as testes, positively showed no spermatozoa in three individuals, in which the pale rose-red ovary was otherwise much developed, and presented the most beautiful ova, with germinal vesicle and germinal spot. But

in the first individual which my friend Professor Valentine opened, the organ corresponding and very similar to the ovary immediately presented a difference (from the ovary) in its white contents. We also saw indeed in those contents the most beautiful spermatozoa, much resembling those of osseous fishes. Numerous other individuals constantly presented themselves, either as males or females.

"Regarding the *Medusæ*, Von Siebold of Dantzic had already mentioned that he had found male individuals with spermatozoa in *Medusa aurita*. In Nice I convinced myself with the greatest certainty in *Pelagia*, *Aurelia*, *Cassiopeia*, and a fourth genus, that these *Medusidæ* are always of disjoined sex. The males, with their spermatozoa actively moving (even within the capsules of the testes), are at the first glance to be distinguished from the females, whose ovaria always contain ova in different stages of development*.

"It is of especial interest to find that a disjunction of sex admits of demonstration, even in the *Polyps*. One of my companions, Dr. Erdl, (?) of Munich, found in *Veretillum* only female individuals in one *Polypary*, and in others only males. He writes me that he has afresh convinced himself of the same relation in *Alcyonium*, though the specimen had been preserved in spirit; and that among the *Mollusca* he has found similar sexual differences in *Halyotis*; thus in the *Aspidobranchia* of Cuvier.

"I must here remark, that my earlier statements on the spermatozoa of the *Actiniæ* are erroneous, since I regarded entirely peculiar and remarkable capsules with long threads (situated even on the prehensile arms) as spermatozoa.

"My researches on the spermatozoa of cartilaginous fishes have shown the remarkable fact that the individual genera of the Rays and Sharks are distinguishable by the form of their spermatozoa. These spermatozoa are for the most part spirally wound, as in birds of song. Very remarkable is the structure of the testis; which is constantly connected with a largely developed and winding *vas deferens*. That which Johann Müller has described in the Rays as a peculiar gland is nothing else than this *vas deferens*. The relations in form of the male genital organs alternate much, as I shall show in a special and more comprehensive work.

"The facts here reported were not witnessed by myself alone, but also by Professor Valentine of Bern, Dr. Peters of Berlin, and five young zootomists, pupils of mine, who were all in Nice at the same time as myself, and took a part in my observations."

* I shall state these sexual relations in a special and detailed work on the whole anatomy and physiology of the *Medusæ*.

December 24, 1839.

No meeting took place.

INDEX.

The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of Species respecting which Anatomical Observations are made, in CAPITALS.

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PROCEEDINGS

OF THE

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OF LONDON.

PART VIII.

1840.

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OF

CONTRIBUTORS,

With References to the several Articles contributed by each.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 14, 1840.

William Yarrell, Esq., V.P., in the Chair.

Mr. Ogilby exhibited the skull of the Mangabay Monkey (*Cercopithecus Æthiops*, Auct.), and called the attention of the members present to the fact that this species, like the *C. fuliginosus*, differs from other Cercopitheci in possessing a fifth tubercle to the last molar of the lower jaw.

Mr. Ogilby then commenced the reading of his paper entitled "Monograph on the hollow-horned Ruminants."

A variety of the common Hare (*Lepus timidus*, Auct.), shot in Sussex, and presented to the Society by Augustus E. Fuller, Esq., was exhibited: it differs chiefly in being of a smaller size, and in having the fur somewhat mottled with whitish and in parts rust colour.

Mr. Waterhouse exhibited a new species of Rodent from the river Gambia, and stated that he was indebted to Alexander Nasmyth, Esq., for the loan of this curious animal, which constitutes a most interesting link between the genera *Mus* and *Cricetus*: like the first of these genera, it has a long scaly tail, but it resembles the Hamsters in possessing large cheek-pouches. In the number of its molar teeth and the form of the skull it presents all the most common characters of the *Muridæ*, as defined by Mr. Waterhouse in the Magazine of Natural History*.

The skull compared with that of the Common Rat (*Mus decumanus*, Auct.) differs chiefly in having the nasal portion more elongated: the anterior root of the zygoma, as in that animal, is in the form of a thin plate, but this plate is less extended in its antero-posterior direction, is directed obliquely outwards and upwards, and leaves a tolerably large and nearly round ant-orbital opening, thus differing from the Common Rat, in which the lower portion of this opening is in the form of a vertical slit: the zygomatic arch is less extended in the longitudinal direction, the incisive foramina are much smaller, and the auditory bullæ are rather smaller in proportion. The molar teeth are rooted; the foremost of these teeth in either jaw is the

* Vol. iii. p. 275.

largest, and the posterior one the smallest: in the upper jaw, as in *Mus*, the molars present a central row of larger, and two lateral rows of smaller tubercles; and the molars of the lower jaw have two principal rows of tubercles; there are however some slight modifications in the structure of these teeth, which should be noticed. The front molar of the upper jaw has three central tubercles, three smaller ones on the outer side and two on the inner side, and besides these there is a small ninth tubercle on the posterior part of the tooth, which is not observed in the Black and Common Rats; the second molar has two small extra tubercles, one in front and one behind; the crown of this tooth therefore presents eight instead of six tubercles, as in *Mus* proper, and the last molar possesses one extra small tubercle, which is placed on the anterior and outer part of the tooth. The molars of the lower jaw very closely resemble those of *Mus decumanus*.

In the form of the lower jaw the present animal differs from that last mentioned, chiefly in the greater breadth of the descending ramus or angle, which is moreover somewhat raised, and so far approaches the Hamsters.

The name *Cricetomys* was proposed for this new subgenus, and that of *Gambianus* to distinguish the species, and to indicate the locality in which it was first discovered. The principal characters may be thus expressed:—

Subgenus ad genera *Cricetus* et *Mus* dicta affine, et inter hæc medium locum tenens. Criceto simile quoad saccos buccales, Muri simile quoad formam corporis et caudæ; hâc perlongâ et pilis brevibus vestitâ, inter quos squamæ in more annulorum positæ videntur. Pedes ut in Mure.

Dentes fere ut in Mure. Incisores compressi; molares radicati, $\frac{3-3}{3-3}$.

Cricetomys Gambianus. *Cri. magnitudine corporis duplo, vel plus, majore quàm in* Mure decumano *: colore ferè eodem : auribus mediocribus, pilis minutis vestitis; caudâ corpus cum capite æquante; pedibus mediocrè parvis; vellere brevi, adpresso, et subrigido; colore cinerescenti-fusco; pedibus partibusque inferioribus sordidè albis; caudâ ad basin, pilis intensè fuscis, ad apicem, albis, obsitâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	16	0
———————— basin auris	2	9
———— *tarsi digitorumque*	2	6
———— *auris*	0	11
———— *caudæ*	15	0

The Gambia Pouched-Rat is about double the size of the common Rat (*Mus decumanus*); in its colouring and proportions it greatly resembles that animal; the fur is rather harsher, and more scanty: the general colour of the upper parts of the body is a trifle paler than in *Mus decumanus*. The head is tolerably long, and pointed;

the ears are of moderate size and rounded form; the feet are of moderate size; the tail is nearly equal to the head and body in length, thick at the base, covered with small adpressed harsh hairs; but these are not sufficiently numerous to hide the scales; about one third of the tail at the base is of a deep brown colour, the hairs covering the remaining portion are pure white, and the skin itself has evidently been of a paler hue than on the basal part of the tail. The fur on the body is somewhat adpressed, and the hairs are glossy on the back; they are of an ashy-gray colour at the base; the apical half of each is brownish-yellow, but at the points many of them are brownish; many longer hairs intermixed with the ordinary fur of the back are almost entirely of a brownish-black colour. The whole of the under parts of the head and body and inner side of the limbs are white; the hairs on the belly are rather scanty, and of an uniform colour to the root: the fore feet are whitish, and the tarsi are white, but clouded with brown in the middle. The ears are but sparingly clothed with short hairs, which on the inner side are whitish, and on the outer brown.

January 28th, 1840.

William Yarrell, Esq., Vice-President, in the Chair.

Mr. Ogilby resumed the reading of his 'Monograph of the Hollow-horned Ruminants.' The following is an abstract of this paper:—

"In revising the history of the *Ruminantia*," says Mr. Ogilby, "the zoologist who, like myself, has made a special study of these animals, must be forcibly struck with the confusion of synonymes, the carelessness and inaccuracy of description, the vague and indefinite limits of the generic and subgeneric groups, the trivial and confessedly empirical principles of classification, and, as a consequence, the great number of nominal species, and the general disorder which still prevail in this department of Mammalogy." He proceeds to show that the views of the modern writers on this subject are no more philosophical than those of their predecessors, and that as regards their generic distribution, the Ruminantia remain at present in very nearly the same state as that in which Ray left them a hundred and fifty years back.

The history of the classification of this group next comes under the consideration of the author, and the views of the various writers are given and commented upon, commencing with the publication of the 'Synopsis Methodica' of Ray, published in 1693. The genera *Ovinum*, *Bovinum*, and *Caprinum*, established by that author, Mr. Ogilby regards as strictly natural groups, but the characters by which they are distinguished, derived principally from the curvature of the horns, the existence of a beard or dewlap, the number of teats, and the woolly or hairy nature of the covering, he considers trivial, arbitrary, and uninfluential.

The 'Systema Naturæ' is next considered; and although arbitrary and empirical, the generic definitions of Linnæus, (the author of the paper states,) possess all the logical correctness and simplicity which so peculiarly characterize the genius of that great man. Though neither natural nor scientific, his distribution was, at all events, exclusive and diagnostic, in reference to the small number of Ruminants then known. But whilst the zoology of the *Ruminantia* remained thus almost stationary in the hands of Linnæus, it was making rapid and brilliant progress under the auspices of his great rival and cotemporary, Buffon: even as early as the year 1764, two years before the publication of the 12th edition of the 'Systema Naturæ,' the French philosopher had described new forms, and indicated important relations among the hollow-horned Ruminants. The article 'Gazelles,' contained in the 12th volume of his great work, was the most important addition which had been made to the generic distribution of the Ruminants since the time of Ray, and must be considered as the first monograph of the genus two years afterwards

founded upon it, and more formally proposed by Pallas under the name of *Antilope*.

The works of Pallas, Pennant, Allaman, Gmelin, Erxleben, Shaw, Illiger, Lichtenstein, De Blainville, and Col. Hamilton Smith, next pass under the notice of the author.

The consideration of the muzzle and lachrymal sinus was first introduced by Illiger, and his principles were quickly adopted, in successive monographs by Lichtenstein, De Blainville, and Hamilton Smith, to subdivide the Antelopes into something more nearly approaching natural groups than the old principles admitted. The publication of Illiger's 'Prodromus' may be considered therefore as an epoch in the history of these animals.

The monograph of Dr. Lichtenstein contains descriptions of twenty-nine species, and these are distributed into four groups, characterized by the presence or absence of horns in the females, and of lachrymal sinuses, the existence or non-existence of dewlap, and the comparative length of the tail. But the author was in many cases ignorant of the specific characters of the animals, and the composition of his groups is consequently faulty in proportion. The divisions, however, are exceedingly well imagined, and less encumbered with trivial characters than those of De Blainville and Hamilton Smith.

M. De Blainville, whose monograph of the genus *Antilope* was published in 1816, contented himself with separating from the main group successive detachments of what he conceives to be the most anomalous species, afterwards elaborating the characters of the subgenera thus formed from those of their component species. By this means he has unquestionably succeeded in forming a few natural groups, to which no other objection can be made than that they are considered as subdivisions of a primary group which is not itself a natural genus.

To the eight genera established by De Blainville, Desmarest added three others, two of which, viz. the separation of the Antelopes proper from the Koodoo and Boshbok, and of the Oryxes, were decided improvements.

The principal merit of Col. Hamilton Smith's monograph, published in Griffith's translation of the 'Régne Animal,' consists in the resolution of the residual group of De Blainville and Desmarest, which he subdivides into eight minor groups, in all respects more definite and natural than the original.

The next section of the paper is devoted to the consideration of the characters hitherto employed in the generic distribution of these animals.

The genera *Bos*, *Ovis*, and *Capra*, represented by familiar and well-known types, observes Mr. Ogilby, carried with them clear and definite ideas, and represented to the mind of the naturalist distinct and determined forms, but the genus *Antilope* not being exemplified by any common domestic species familiar to the observation of the student, every thing connected with the genus was vague and indeterminate; the only conception it enabled him to form was,

that the animal, whatever else it might be, was neither an ox, a sheep, nor a goat. The characters, moreover, upon which this genus is established, are in reality so many negative traits, and merely served to distinguish all other hollow-horned Ruminants from the oxen, sheep, and the goats respectively, but they limit no positive group, and consequently cannot be received as the definition of a natural genus. The genus *Antilope* in a short time became an asylum for the reception of all hollow-horned Ruminants, which could not be associated with the known genera *Bos*, *Ovis*, and *Capra*, and consequently the most incongruous forms and opposite characters were associated in the same genus, till, independently of its unphilosophical structure and total want of character, whether natural or artificial, the practical inconvenience arising from its undue extension, forced zoologists to devise the partial remedies detailed above, and which all proceeded upon one common principle, that, namely, of dividing the genus *Antilope* into such subordinate groups as were conceived best calculated to obviate the inconsistencies, and approximate those species which most nearly resembled one another in habit and conformation. In thus subdividing the genus *Antilope* it is assumed by every writer on the subject to be a natural group, even whilst they confess that it has not a single character either exclusively appropriate to it or even common to the generality of its component species: far, therefore, from being a natural, it is not even entitled to be considered an artificial group. The diagnosis proposed by M. Geoffroy St. Hilaire regarding the nature of the core of the horns, and that broached at a meeting of the Zoological Society by M. Agassiz, to the effect that these animals are distinguished from *Bos*, *Ovis*, and *Capra*, by having a spiral twist of the horns turning from left to right, instead of the opposite direction, are founded upon hasty generalizations, inapplicable to at least three-fourths of the species.

The form or curvature of the horns, the beard, the dewlap, the scopæ, the number of teats, and other such diagnoses hitherto employed to define the genera of Ruminants, according to the views of Mr. Ogilby, are purely trivial and accidental characters, which not only exercise no assignable influence on the habits or economy of the animals, but which may be modified to any extent, or even destroyed altogether, without in the slightest degree changing the generic relations.

Having demonstrated the imperfections of the actual distribution of hollow-horned Ruminants, Mr. Ogilby proceeds to the exposition of the principles which he proposes to make use of for that purpose, and to explain the nature and extent of his own researches. He insists, upon the law of classification, that no generic characters should be admitted but such as are founded upon the necessary relations that subsist between the organic structure of animals and their habits and economy.

The next section of the monograph is devoted to the consideration of the horns of the *Ruminantia*. Under this head the author first treats of their substance; 2ndly, their permanent or deciduous cha-

racter; 3rdly, their presence or absence in different genera and sexes; and 4thly, their number, forms, and flexures.

The distinctions between the horns of the stag tribe generally, and those of the hollow-horned Ruminants, are pointed out, and in the next place the various modifications observable in the horns and their core of the latter group. "In some cases the substance of this bony core is solid, or at least penetrated only by minute pores; in others, and they are by far the greater number, it is partially hollow, or filled with large cancelli, which communicate with the frontal sinuses. These variations are not confined to any particular groups, but are equally common to solid and hollow-horned genera. The giraffe, for instance, has very extensive cancelli; so likewise have the oxen, sheep, goats, and all the larger species hitherto classed among the antelopes: nor have I found the solid core, so much insisted on by MM. Cuvier and Geoffroy St. Hilaire, in any of these animals, except the *A. Cervicapra*, the *Dorcas*, and their allied species."

Speaking of the raised ridges and annuli on the horns, Mr. Ogilby states that the number of these added in a given time appears to be very variable. "The common cow is generally supposed to acquire one ring on the horn every year after the third, but this is far from being a general law. Between the 20th of July and the 31st of October, 1833, the horns of a young Indian Antelope (*A. Cervicapra*), which I had marked for the purpose in the gardens of the Society, acquired an addition of no fewer than three rings, and an increase of length of a full inch and a half; and I have observed a similar phenomenon in other species."

The permanent or deciduous character of the horns is said to depend upon their hollowness or solidity; and the author, moreover, states that it is not correct to suppose that hollow horns are, strictly speaking, permanent; the hollow horn is shed, as well as the solid, but in a different sense. "Buffon has been much ridiculed for asserting this fact with regard to the domestic ox, but Buffon was a much better observer than his critics; and I have myself verified his observations on many other Ruminants. If the horns of any young animal be examined, it will be found that they are of a coarse, scabrous, spongy texture, very thick and blunt in proportion to their length, and hollow nearly to the point: let the same individual be examined when it arrives at maturity; the horns, especially towards the extremity, have a close, compact, and polished surface; they are much attenuated, end in a very fine point, and have the terminal third perfectly solid. These changes do not arise from the mere rubbing and polishing of the horn, as is commonly supposed. That hypothesis does not account for the difference of texture and solidity which distinguish the old and young horns; but the truth is that, as in the case of the second dentition, the permanent organ is developed under, or rather within the other, and by its growth gradually carries it upwards, and supports it like a sheath or scabbard. The young horn thus severed from the vessels which formerly supplied it with nutriment, dries up, bursts from the expansion of the perma-

nent horn within it, and exfoliates in large irregular stripes, leaving the latter with the finely polished surface, and solid, sharp, attenuated points which distinguish them. As far as my observations enable me to judge, this exfoliation takes place only once during the life of the animal, and that at the period of adolescence, immediately before the appearance of the first annulus. Though it does not take place all at once, nor absolutely deprive the animal of horns for a certain period, it is nevertheless a true and actual shedding of these organs, and accounts satisfactorily for many phænomena which I found inexplicable before making these observations. The horns of the Oryxes, for instance, which in the adult state are remarkable for their straightness and extreme sharpness, have the points very blunt, and bent backwards, almost at a right angle, in the young animal; and the Koba, or Sing-Sing, whose permanent horns are partially lyrated, has the young organs nearly straight, as may be observed in the specimen now in the Society's museum. It is only necessary to observe further, that the young horn, which afterwards exfoliates, appears to be entirely the growth of the first year, though it generally remains a much longer time before being cast. A young *Leucoryx* in the museum at Frankfort, with horns eighteen or twenty inches long, has the points still blunt, exactly as in another specimen, where they are only two inches long." "Now this permanence or deciduousness of the horns—for in a general sense, and especially as contrasted with the solid organs of the deer kind, the hollow horn may be considered as permanent—is a constant and invariable character, which has a direct and powerful influence upon the habits and œconomy of the animals. The deer kind invariably affect particular localities at the period of casting and renewing their horns; their manners then undergo a complete change; from bold and daring, they become irresolute; they lose their flesh, abandon the open hills and upland plains for the thick cover of the forests, and foregoing their gregarious habits, desert their companions, and pass the period of weakness in solitude and seclusion. As soon, however, as the new horn acquires strength and solidity, the stag resumes his usual habits, and regains his former confidence. Hollow-horned Ruminants present no such phænomena; the habits and manners of the same species are similar at all seasons, and the differences which we observe in different species depend upon other causes, which shall be developed in the sequel. The modifications of organic structure which produce these different effects are too permanent and influential to be neglected among the characters of a natural classification of the Ruminants. Nor have they been overlooked by zoologists; it may be said, indeed, with truth, that they constitute the only really important characters hitherto employed to distinguish the genera of these animals."

The presence or absence of horns in species or sexes has been partially employed by naturalists for the distinction of genera; the importance of this character, however, in the opinion of the author, has not been duly appreciated. Its effects on the habits and œconomy of the species of Ruminants is pointed out. The gentleness

and timidity of those species which have hornless females, their being either perfectly monogamous, or residing in small detached families, composed of a single adult male and variable number of females, and the circumstance of the males adhering throughout life to the same female are all phænomena which are traceable to the defenceless condition of the females. These phænomena are contrasted with those exhibited by Ruminants, in which there are horns in both sexes; they are said to be extremely bold, to reside generally in large herds, and to have a community of sexual intercourse, and rarely attach themselves to particular individuals.

The number, form, and peculiar curvatures of the horns are next considered; and the author arrives at the conclusion, that all the various flexures of the horns, as well as their number, form, and direction, have no assignable relation to the habits and economy of animal life; they should not therefore be selected for generic diagnoses. On the other hand, the form of the upper lip, as well as its hairy or naked character, having a very decided influence on the habits and economy of ruminating animals, ought by no means to be neglected in the classification of this group. Other important characters may be derived from the crumens and other glands, or certain pits or sinuses which open externally, especially in different parts of the head in ruminating animals. The most remarkable, as well as the most common of these are the suborbital, sometimes called the lachrymal sinuses, or tear-pits, but which Mr. Ogilby distinguishes by the name of *crumens*, a term applied to them by Dr. Flemming. These are situated at a short distance below the inner canthus of the eye, and received into a cavity of the lachrymal bone; at their bottom is a gland, opening into the crumen by a number of small apertures, and secreting a viscous substance, of the consistence of ear-wax. The various modifications of the form of these crumens in different Ruminants being pointed out in the paper, the author proceeds to the consideration of their functions and uses: he observed that the Gazelles and Antelopes in the Society's menagerie frequently protruded this crumen, and rubbed its inner surface against the rails of the compartments in which they were confined, seeming to take a pleasure in smelling and licking it afterwards. A male and female Gazelle, occupying contiguous compartments, were changed, and it was found that they immediately discovered the viscous deposit, and became restless and agitated; the male Gazelle was some days after made to change places with an Indian Antelope, but neither animal appeared to take the slightest notice, or to be aware of the presence of its predecessor. "This, to be sure," says Mr. Ogilby, "is but a single experiment, but it countenances the idea, highly probable in itself, that the deposit which the animals leave behind them by rubbing the crumens against the shrubs or stones of their desert and mountain habitats, (for it is only the inhabitants of such localities that are furnished with these organs, at least among the hollow-horned family,) may serve to direct them in their wanderings and migrations, when the storms and fogs incident to such places obscure all visible landmarks. But whatever it may be, the principles of

sound philosophy and the great doctrine of design forbid us to entertain the notion that so remarkable an organ has been formed without some special and appropriate function in animal œconomy."

A superficial slit, situated in a depression of the maxillary bone, on either side, called by the author the maxillary sinus, is found in certain Ruminants hitherto classed among the Antelopes; its secretion is of a thin watery consistence, and thus differs from the secretion of the crumens. The situation of these glands, and their peculiar secretion, induces the author to regard them as distinct organs, and he doubts their coexistence with the crumens, though M. F. Cuvier and Colonel Smith have reported such sometimes to be the case.

The membranous sac which opens behind the ear of the *Chamois*, and the large gland which Mr. Hodgson describes in the nose of the *Chiru*, are of too partial occurrence to be made available in generic characters; there are, however, two large and deep sacs, situated one on each side of the udder, which are of pretty general occurrence, but their function does not appear to exercise sufficient influence over the animal economy to entitle them to be considered among the generic characters. "The same observation may be applied to the odoriferous bags attached to the prepuce of the *Musk* and *Antilope gutturosa*; so that, upon the whole, the crumens, maxillary and facial glands, are the only organs of this nature which appear entitled to the rank of generic characters."

The modifications of the feet are considered as scarcely definite enough to be employed for generic definitions: "the glands or pores which open between the toes of many Ruminants afford much better characters for this purpose, and bear a very evident relation to the habits and geographical distribution of the animals. These glands are of greater or lesser extent in different genera, according to the nature of the localities which they frequent; in the *Gazelles*, *Antelopes*, *Bubals*, and *Oryxes*, which inhabit the burning deserts of Africa and central Asia, they are extremely large, and frequently occupy the whole interspace between the first and second phalanges; in the *Sheep*, *Capricorns*, and *Tragelaphs* again, which live on the open grassy downs and mountains of a less arid nature, they are of a much smaller size; whilst in the *Oxen*, *Calliopes*, &c., which inhabit the moist forests and swamps of tropical regions, or grassy meadows of temperate climates, they are altogether wanting.

After describing the uses of these digital pores, and pointing out the great influence they have on the œconomy and manners of the animals, the author observes that he is not aware of their having been noticed by any previous zoologists, and concludes by expressing the hope that the employment of this and other influential characters, which it is the object of this first part of his monograph to explain, will be found to establish a logical, scientific, and natural arrangement among the *Ruminantia*, instead of the prevailing arbitrary and artificial system.

February 11, 1840.

The Rev. J. Barlow in the Chair.

A letter addressed to the Secretary by Sir John McNeill, and dated January 31, 1840, was read. It related to the two Persian Deer presented by that gentleman to the Society's menagerie, and contained an answer to some inquiries from the Secretary respecting them.

The letter states that this species of Deer is called by the Persians, Marāl, or Gevezu, or Goo Koohee, and is frequently noticed in their literature. It is found in all the wooded mountainous districts of Persia, but apparently does not occur in the central parts of the country.

The Persian Deer "rarely descend into the plains. During the summer they are found in the highest wooded parts of the mountains, and during the winter in the lower ravines near their bases, where they are frequently tracked in the snow.

"The horns of the adult male closely resemble those of the Red Deer of this country, insomuch that I doubt whether an unscientific observer could distinguish them, unless by the superior size of those of the Marāl."

Mr. Yarrell communicated to the meeting, on the part of R. H. Sweeting, Esq., some facts relating to a female Rorqual Whale (*Balænoptera boops* of authors), which was stranded near high-water-mark at Charmouth, Dorsetshire, early in the morning of Wednesday, February 5th, 1840.

The whole length was 44 feet.
Girth ..... 21 —
Breadth of tail .... 9 —

Probable weight from twenty to twenty-five tons.

The jaws long and slender, but not sharp, the tip obtuse and convex; the upper jaw the shortest, and received, when the mouth is closed, within the lower jaw, which projected nine inches beyond it. The plates of whalebone amount to upwards of 250 on each side of the jaw; the palate and tongue of a pale pink colour; no warts about the lips. The back black; the under surface of the body white; the throat plicated. The nostrils or blow-holes are two longitudinal fissures, the anterior points nearly touching, but diverging posteriorly to a distance of three inches, and separated by a furrow. The opening of the eye six inches in length, from canthus to angle; the bony socket from anterior to posterior margin is eight inches; eye-ball seven inches; the pupil oval; the irides hazel. There was not the slightest appearance of eyelashes, which some authors state whales possess.

The distance from the end of the under jaw to the origin of the

pectoral fin ten feet nine inches; the length of the fin five feet six inches; the breadth eighteen inches. The dorsal fin small, of cartilage only, conical, the basal length eighteen inches, the elevation twelve inches; placed eleven feet in advance of the tail.

The subcutaneous layer of fat varied in thickness from three to five inches.

The figure at the bottom of page 521 in Mr. Bell's History of British Mammalia and Cetacea, was referred to as a very good representation.

The dimensions of the skeleton are as follows:—

Whole length	40 feet.
Head	10 —

The vertebræ are sixty in number; viz. seven cervical, fifteen dorsal, sixteen lumbar, fifteen caudal, and seven caudal bones. Of ribs there are fourteen, the first of which is double-headed, and is attached to the two first dorsal vertebræ; each of the other ribs is attached to a single vertebra, and has a single head; the dorsal vertebræ, therefore, exceed the ribs in number by one.

The rest of the details of the bony fabric, as regards the pectoral fins, &c., correspond precisely with Dewhurst's plate and description of the Ostend specimen, allowing of course for the inferior size of the present animal.

Mr. Yarrell exhibited, at the request of G. T. Fox, Esq., of Durham, a specimen of a beautiful spiny Lizard, from Texas,—the *Agama cornuta* of Harlan, *Phrynosoma Bufonium* and *Phrynocephalus Bufonius* of other modern authors. The specimen on which Dr. Harlan drew up his description was from the west of the Rocky Mountain Range.

A paper was then read, by Mr. Blyth, entitled "A Summary Monograph of the species of the genus *Ovis*," in which the author recognized nine species, besides indicating others as more or less doubtful.

The Argalis of Asia and America were provisionally considered as the same, under the appellation of *Ovis ammon*, as also the Kamtschatka sheep of M. Eschscholtz, which Mr. Blyth suspected to be only an individual slight variety; and accordingly, he traced the geographic range of this animal from Asia through Kamtschatka and the Aleutian Isles to the Rocky Mountains of North America, and southward upon that continent to California, where there was reason to believe it occurred, together with the true Californian species described by Mr. Douglas. In Asia he followed it southward to the Himalayas, but suspected that the *Ovis ammon* mentioned by different authors as inhabiting the Caucasus and Taurus, referred to a distinct species which he had to describe. The *Ovis Californiana* was next noticed; and then a superb new species, believed to be from Mount Taurus, the horns of which were suggested to bear every appearance of having supplied the model which ancient sculptors followed in their representations of Jupiter Ammon, and which therefore it was proposed to designate *O. sculptorum*. Mr. Blyth then proceeded

to distinguish two Himalayan species, which presented a somewhat different form of horn from the rest of the genus; one, the *Ovis Nahoor*, Hodgson, of superior size, and general pale colour, which he believed did not inhabit so high; the other he termed *O. Burrhel*, which was of a very dark colour, and presented numerous other specific distinctions, being an inhabitant also of more elevated regions. The *Ovis aries* he considered a species *per se*, and not descended from the Moufflon; and the *O. musimon* was treated of in detail under its two alleged varieties, specimens of which, however, had never been compared together. The *Ixalus probaton*, Ogilby, was deemed to belong strictly to the genus *Ovis*, and Mr. Blyth suggested, that as the abnormal growth of its hoof indicated that it had long lived in captivity, it was not unlikely that castration at an early age may have obstructed the developement of its horns, the rudiments of which exactly resembled those found upon many breeds of true sheep, and upon the lambs of all horned breeds of a certain age. The last animal included was the *Ovis tragelaphus*, Auctorum, of which the *O. ornata*, Geoffroy, appeared to be merely a dwarfish individual: the characters of this species were treated of at considerable length, and it was proposed to elevate it to the rank of a subgenus of *Ovis*, for which the name *Ammotragus* was suggested. The paper was illustrated by numerous elaborate drawings of the horns, &c., and by a pictorial group, containing the principal species, the relative sizes of which were thus rendered obvious to the eye.

Mr. Strickland, at the request of the chairman, exhibited some Birds selected from his collection, several of which he thought were undescribed, and would interest the members present.

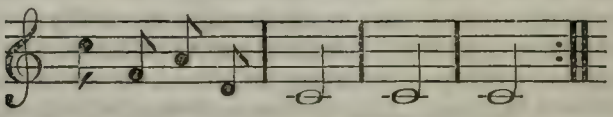
Mr. G. T. Lay read the following account of the habits of a Bird of Paradise, *Paradisea apoda*, Linn.:—

"This bird has been in the possession of Mr. Beale upwards of fourteen years, and seemed when I left China at the commencement of the past year to be in full health and vigour. It is fed mainly upon boiled rice, with a few grasshoppers, as meat with its vegetables. These it eats whole when small, but pulls off the legs and wings when large. The tip of the abdomen, with the lower intestine, are rejected, while the rest of the viscera are devoured as a sort of choice morsel. It seizes the insect near its head with so firm a gripe, that life is soon extinct, which answers the double purpose of securing its prey and of shortening the dying throes of the poor victim. It is very careful to cleanse its bill after every such operation, wiping it upon the perch, and shaking it with a peculiar jerk. I have heard one remark that it is not a clean feeder, but this is true only of the mode of eating, which is gross and eager, as the largeness of the mouthful is incompatible with much grace or nicety in conveying the food to the place of its destination.

"The voice is loud and sonorous when he calls in a rapid succession of notes. This is probably the strain in which he answers his fellows in the wild state, and may be heard, from its clearness, a great distance, where walls and dwellings do not interfere with the

pulsations. When you approach his cage he often treats you with a ditty, which I have called in my memorandum 'the song of solicitation.' It is short, but very pleasing, and not a little curious, for the notes are repeated in harmonic progression.

"The Serenade of Beale's bird.



"The first four notes are very exactly intonated, very clear, and very sweet. The three last are repeated in a kind of caw, a very high refinement of the voices of a daw or a crow, yet possessing a striking resemblance. And this suggests a lively affinity between the crows and the paradise birds. While this serenade is uttered, the black pupil, encircled by a golden iris, waxes or wanes, as the creature wishes to contemplate more distant or nearer objects. The bill snaps as the prelude of a meal and the token of appetite, while the body is conveyed from side to side by the highest and most easy springs. The crow and its congeners love to range upon the ground, as having feet formed for walking, but the Paradise Bird shuns the bottom of the cage, as if afraid of soiling its delicate plumage. For I must observe, that it is always as clean and wemless as it is gay and splendid. The Creator, who has poured so much beauty upon it, has also endowed it with an instinct to delight in these charms, and with wisdom to preserve them in their fullest integrity. In the wild state it is not unlikely that they catch their prey upon the wing, either by taking it in flight, like the swallow, or by darting upon it, like the Drongo Shrike, as it passes by the seat of its pursuer.

"The form and disposition of the pennons afford it the power of floating gracefully upon the breeze, not of cutting the air in rapid flight. The ease with which it glides upon the auræ must be increased by the hypochondrial feathers, which are lifted up and displayed in the act of flying. The hypochondrial feathers are yellow at the base, whitening towards the end, with brown shafts. The shortness of the vanes make them resemble the teeth of a saw near the end. The tail-coverts with long toothed shafts. The feet and legs are of a dark leaden blue. They are strong, and grasp the perch with great ease and firmness."

Mr. Fraser pointed out the characters of several new species of Humming-birds, which had been placed in his hands by the Earl of Derby for that purpose, and that they might be exhibited at one of the Society's scientific meetings. These birds were obtained at S^ta^ Fé de Bogota, and the collection contained eighteen species, a great portion of which being undescribed, were thus characterized :—

Trochilus exortis. *T. rostro quàm caput paululùm longiore; caudâ nigrescente, latissimâ, subfurcatâ; colore viridi; pectore cæruleo enitente; maculâ frontali splendidè viridi; laciniâ gulari*

purpurascenti-rubrâ nitore cæruleo ; menti plumis cæruleis ; crisso albo.

Long. tot. 4 unc. ; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{1}{2}$; *caudæ*, $2\frac{1}{8}$.

Hab. Guaduas, Columbia.

This species is of moderate size ; the general colour of its plumage is deep rich green, with bronze reflections ; the wings are dusky, with the upper and under coverts of the same green tint as the body : the two central tail-feathers are tinted with bronze, both above and beneath ; the remaining tail-feathers, which are broad, are black, but in certain lights a very obscure purplish-green hue is observable ; the feathers on the forehead are more compact than the remaining feathers of the head ; in some lights they appear to be of a black colour, edged with green ; in others they exhibit a most brilliant green lustre.

Trochilus cupreo-ventris. *T. rostro quàm caput paululùm longiore ; caudâ brevi, subfurcatâ : femoribus albis ; colore splendidè viridi, aureo et cupreo enitente ; crisso purpurascenti-cæruleo ; primariis nigrescentibus ; caudâ nigrâ, purpureo tinctâ.*

Long. tot. $4\frac{3}{4}$ unc. ; *rostri*, 1 ; *alæ*, $2\frac{3}{8}$; *caudæ*, $1\frac{7}{8}$.

This species is remarkable for the richness of its colouring ; in certain lights it appears as if it were powdered with gold and copper-coloured particles ; the coppery hue prevails most on the belly ; and the upper tail-coverts are of a purer green than other parts.

Another blue-vented and white-thighed Humming-bird was described under the name of

Trochilus uropygialis. *T. rostro quàm caput longiore ; caudâ mediocri, furcatâ : colore corporis intensè viridi, aureo relucente ; rectricibus caudæ fulgidè aureo-viridibus ; gulâ crissoque ex purpureo splendidè cæruleis ; abdomine nitidè viridi ; alis nigrescentibus ; caudâ ex purpureo atrâ ; plumis femoralibus albis, laxis.*

In the female the throat and chest are somewhat rusty, with green spots, and the feathers on the belly are variegated with whitish.

This species is about the same size, and in many respects resembles, the *T. cupreo-ventris*, but differs in having the general colour less brilliant, whilst the feathers of the belly and the upper tail-coverts are more brilliant, and present that compact striated appearance which is always observable in those feathers which give that extreme brilliancy to different parts of these birds : it differs, moreover, in having a blue throat, and the belly, instead of being cupreous, is bluish-green. The upper tail-coverts in *T. cupreo-ventris* are of the same loose character as those on the back.

Trochilus coruscus. *T. rostro brevi ; caudâ latissimâ, subfurcatâ, ex æneo fuscâ : corpore suprà, capiteque viridibus nitore aureo ; tectricibus caudæ cupreis ; primariis purpurascentibus ; corpore subtùs viridescente, fuscescenti-ochreo, præsertim ad crissum, tincto ; lineâ gulari, ad pectus tendente nitidè viridi, apice purpurascenti-rubro.*

Long. tot. $5\frac{1}{4}$ unc. ; *rostri*, $\frac{3}{4}$; *alæ*, $2\frac{7}{8}$; *caudæ*, $2\frac{1}{8}$.

Beak about equal to the head in length; tail slightly forked, the feathers *very* broad; general colour of upper parts green, with golden reflections, upper tail-coverts coppery; under parts dull brownish-green; tail-feathers above and beneath rich bronze, with golden brown reflections; primaries dusky, with purple reflections: a stripe, extending from the chin to the chest, is composed of compact brilliant feathers; those on the chin and throat are green, and those beyond are purplish-red, exhibiting bluish reflections; under tail-coverts brownish-yellow; some of the feathers are whitish; the feathers on the edge of the shoulders are varied with brownish-ochre.

The female is deficient of the flame-like mark on the throat.

Trochilus brachyrhynchus. *T. rostro quàm caput breviore; caudâ brevi, nigro, cupreo et æneo subnitente; rectricibus utrinque duabus externis cæteris paululùm præstantibus, et ad apicem albis: corpore suprà, ex aureo viridi, corpore subtùs albo (interdùm flavido lavato), maculis ex aureo viridibus ornato; primariis purpurascentibus.*

Long. tot. $3\frac{5}{12}$ unc.; *rostri*, $\frac{1}{3}$; *alæ*, $1\frac{7}{8}$; *caudæ*, $1\frac{7}{12}$.

In one specimen there is a rufous tint on the upper tail-coverts; in another there are several purple feathers irregularly scattered with the ordinary golden green ones on the back; perhaps in the adult bird this purple is the prevailing colour of the back.

This small-sized species is remarkable for the shortness of its beak, which is acutely pointed, and a little dilated in the middle.

Trochilus Derbianus. *T. rostro recurvo, quoad longitudinem, corpus cum capite æquiparante; caudâ mediocri, paululùm furcatâ: colore viridi, corpore subtùs albido variegato; guld nigrescente.*

♂ Long. tot. 8 unc.; *rostri*, $3\frac{3}{8}$; *alæ*, 3; *caudæ*, $2\frac{1}{4}$.

♀ ——— $7\frac{1}{4}$ ———, $2\frac{3}{4}$; —, 3; ——, 2.

Bill immensely long, and somewhat recurved, equal in length to the head and body; tail moderate, slightly forked; head and upper parts of body green, with golden and bronze reflections; wings purplish-black; tail blackish, tinted with bronze, the central feathers being the richest; chin and throat dusky, each feather very obscurely tinted with bronze in the middle, and edged with ashy-white; belly and vent green; the feathers edged with white, or in parts greyish, those on the chest are whitish, with a large green spot near the apex; under wing-coverts green.

The female has a shorter beak; and there is more white on the under parts of the body; the feathers on the throat and chin are somewhat variegated with yellowish.

Trochilus aurogaster, Loddiges' MSS. *T. rostro ferè duplo quàm caput longiore; caudâ mediocriter latâ et furcatâ; plumis corporis permagnis, et suprà et subtùs: colore splendidè viridi; tectricibus caudæ plumisque abdominis nitidè aureo relucentibus; notâ gulari purpureo-cæruleâ, necnon apud frontem notâ, luce favente, gramineo-viridi; crissi plumis aureo-viridibus, ferrugineo*

marginatis ; alarum primariis fuscescenti-nigris non sine æneo nitore ; caudâ ex-aureo-æneo-viridi.

In the female the throat is of a rusty yellow tint, and is sparingly spotted with green ; the belly and vent are of an ochreous colour, with heart-shaped green spots ; on the former the green predominates, and on the under tail-coverts the yellowish tint prevails.

This species is of moderate size ; that portion of the under mandible which shuts into the upper one is white.

Trochilus fuscicaudatus. *T. rostro quàm caput longiore ; caudâ subrotundatâ : colore ex aureo viridi ; plumis gulæ, pectoris, et abdominis, albido marginatis ; plumis analibus albis ; crisso fusco, rectricibus caudæ submetallicè castaneis, nigrescente marginatis ; remigibus alarum nigrescentibus, purpureo paululùm relucentibus ; mandibulâ inferiore (apice excepto), necnon superioris basi, pallidè fuscis.*

Long. tot. 4 unc. ; *rostri*, $\frac{7}{8}$; *alæ*, 2 ; *caudæ*, $1\frac{1}{2}$.

Hab. Chachapayas, Peru.

Trochilus cyanopterus, Loddiges' MSS. *Tr. rostro quàm caput multo longiore ; caudâ latissimâ et levitèr furcatâ : colore intensè viridi, ad nigrum hìc atque illìc vergente, præsertim apud caput ; primariis tectricibusque alarum metallicè cæruleis, illis ad apices marginesque nigrescentibus ; caudâ nigrescente, viridi tinctâ ; alis subtùs cærulescentibus.*

This is a very large species, being nearly equal in size to the *T. gigas* ; its deep green colouring and blue wings render it easily distinguished ; the female differs considerably from the male, inasmuch as nearly the whole of the under parts of the body are of a rust-like tint ; the two outer tail-feathers are of a blackish colour, but have a white shaft ; the outer web is grayish-white, excepting at the margin and at the apex of the feather ; the outer edge of the first primary is palish.

Trochilus Gibsoni, Loddiges' MSS. *T. rostro quàm caput longiore ; caudâ mediocri, rotundatâ : corpore suprà, sic et rectricibus caudæ duabus intermediis aureo-viridibus ; corpore subtùs albo ; plumis gularibus magnis, strophium efficientibus, purpureo relucentibus ; rectricibus caudæ utrinque tribus, exterioribus, ad basin cinerascentibus, apicibus albis.*

Long. tot. $2\frac{7}{8}$ unc. ; *rostri*, $\frac{7}{8}$; *alæ*, $1\frac{3}{4}$; *caudæ*, $1\frac{1}{8}$.

Hab. ——?

The green on the upper parts of the body of this little species is rather paler, and has a greater admixture of the golden lustre, than usual : words can convey no idea of the brilliancy of the large ruff on the throat ; in some lights it assumes a deep blood-red hue ; in others there is a slight admixture of purple observable ; in others, again, they put on a brilliant cupreous-red tint, as we observe in the copper ore.

Trochilus angustipennis. *T. rostro quàm caput paululùm longiore; caudâ levitèr furcatâ, hujus rectricibus, necnon remigibus alarum, valdè arctis: capite corporeque suprà intensè æneo-viridibus; gulâ et corpore subtùs, plumis albis analibus exceptis, aureo-viridi metallicè relucentibus; alis caudâque intensè purpureis.*
Long. tot. $3\frac{1}{4}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $1\frac{3}{4}$; *caudæ*, $1\frac{3}{8}$.

This small-sized species has the wing and tail-feathers narrower than usual.

Trochilus parvirostris. *T. rostro parviusculo, acuto, quàm caput breviore; caudâ levitèr furcatâ, mediocri, rectricibus sub-latis: capite corporeque suprà aureo-viridibus, in obscurum transeuntibus; frontis plumis ochreo pallidè lavatis; corpore subtùs flavescenti-albo; gulæ plumis singulis maculâ obscurâ; abdomine sordidè ochreo, plumis singulis maculâ magnâ, obscurè viridi; plumis analibus albis; crissi plumis obscuris, apicibus albis; caudæ rectricibus, æneo-viridibus suprà, subtùs aureo-æneis, scapis albis; rectricum tribus utrinquè externis, lineâ centrali albâ, in externâ utrinquè hâc lineâ extensa, ferè ad marginem; alis obscuris, purpureo subtùs, paululùm relucentibus.*
Long. tot. $4\frac{1}{2}$ unc.; *rostri*, $\frac{1}{2}$; *alæ*, $2\frac{3}{8}$; *caudæ*, 2.

This is in all probability a young bird, or perhaps a female of some species, the male of which remains to be discovered; the yellow white, or cream-colour of the lower part of the throat, extends in a narrow line across the back of the neck.

Trochilus flavicaudatus. *T. rostro quàm caput duplò longiore, et arcuato; caudâ mediocri: capitis vertice obscurè fusco; corpore suprà aureo-viridi, corpore subtùs ochreo; gulæ plumis punctis aureis et cupreis; pectoris lateribus maculis aureo-viridibus, ornatis; crisso pallidè ochreo; rectricibus caudæ duabus intermediis aureo-viridibus, reliquis ochreis, apicibus viridibus; remigibus alarum obscuris, purpureo relucentibus; rostro nigro; pedibus suprà nigrescentibus, subtùs pallidis.*
Long. tot. $4\frac{3}{4}$ unc.; *rostri*, $1\frac{1}{8}$; *alæ*, $2\frac{1}{2}$; *caudæ*, $1\frac{3}{4}$.

Trochilus melanogenys. *T. rostro quàm caput vix longiore; caudâ sub-brevi, rectricibus mediocriter latis, et acutis: capite et corpore suprà aureo-viridibus; corpore subtùs ex-ochreo-albo; abdominis lateribus rufo lavatis; genis nigris; lineâ flavescenti-albâ pone oculos; plumis gulæ singulis notâ ad apicem nigrâ, notis lineas longitudinales efficientibus; abdomine, obscurè, aureo-viridi guttato; caudâ suprà nigrescente, æneo tinctâ, apicem versus nigrâ purpureo relucente, et rectricibus flavescenti-albo, duabus intermediis exceptis, terminatis; alis obscuris, violaceo relucentibus; mandibulæ inferioris basi, pedibusque flavis.*
Long. tot. $3\frac{3}{4}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, $3\frac{3}{4}$; *caudæ*, $1\frac{3}{8}$.

Trochilus tyrianthinus, Loddiges' MSS. *T. rostro acuto, capite longitudine æquante; caudâ mediocri, vix furcatâ; rectricibus la-*

tissimis : capite, corporeque suprà, aureo-viridibus ; sic et corpore subtùs, at ochreo variegato ; gulâ nitente, et intensè viridi ; rectricibus caudæ suprà æneo-viridibus, ex-aureo, et cupreo relucentibus, subtùs, cupreis, aureo nitentibus ; alis obscuris ; rostro pedibusque nigris.

Fœm : *gulâ e castaneo flavâ ; abdomine albo, ochreo lavato ; singulis plumis notâ aureo-viridi.*

Long. tot. 4 unc. ; *rostri*, $\frac{1}{2}$; *alæ*, $2\frac{1}{8}$; *caudæ*, $1\frac{3}{8}$.

February 25, 1840.

Prof. Rymer Jones, in the Chair.

A letter from the Society's Corresponding Member, R. J. Bourchier, Esq., was read. It is dated Malta, February 4, 1840, and relates to some living quadrupeds and birds which had been forwarded to that place by Sir Thomas Reade, for the Society's menagerie. These animals, Mr. Bourchier states, notwithstanding the greatest possible care had been taken, have all died, with the exception of one Crane. They originally consisted of three Cranes, a Wild Cat, and a Cervine Antelope, or Bubalus.

A letter from Petty Vaughan, Esq., was also read: it accompanied two specimens (male and female) of a species of *Icterus*, and their nest, which he begged to present to the Society in the name of Mrs. Vredenburg. These specimens, the letter states, were sent from Para by the lady of the British Consul.

The Secretary called the attention of the meeting to some specimens of Quadrupeds, Birds, Reptiles, and Fishes, which were upon the table. These specimens were presented to the Society by P. L. Strachan, Esq., who procured some of them at Sierra Leone, and others at the Gambia. The collection consists of forty specimens of Birds and six Quadrupeds, together with some specimens of Reptiles, Fishes, and Crustacea, preserved in spirit.

Mr. Ogilby more particularly drew attention to a fine female specimen of the *Colobus Temminckii*, procured by Mr. Strachan at the Gambia, which differs somewhat in its colouring from the mounted specimen in the Society's museum; the tint of the upper parts of the body being darker, and the rusty hue on the limbs much richer.

Mr. Ogilby next drew attention to a prepared specimen and skull of a Gibbon, which had recently died at the Society's menagerie. The precise locality from which this animal was procured had not been ascertained; it was presented by John Abel Smith, Esq., and after living some months in the menagerie, fell a victim to the same complaint which carried off so many of the Quadrumana during the past winter.

The whole body is of an uniform deep black colour, except the throat and cheeks, which are covered with long white hair, forming a broad band which extends from ear to ear. This circumstance induced Mr. Ogilby to propose the name of *Hylobates leucogenys* for this species. There is no white mark over the eyes, as in the Hoolock, and the chin and under jaw are black, like the rest of the body. The head is remarkable for its pyramidal elevation, as contrasted with the flattened form of the same part in the Hoolock. Mr. Ogilby stated, that the only doubt he had with respect to the spe-

cific distinction of this animal, is the probability of its being the male of that described by Dr. Harlan under the name of *H. niger*. The hair of the forehead and head in general is directed backwards, towards the neck: that on the crown of the head is very long, and gives to the head that pyramidal or conical form before mentioned.

The skeleton and dentition show it to have been a young animal; the permanent teeth had not yet protruded from the alveoli. The total length of the skull (from the intermaxillaries to the occiput) is 4 inches; its greatest width is 2 inches $7\frac{2}{3}$ lines; width between the outer boundaries of the orbits, 2 inches; from base of nasal bones to apex of intermaxillaries, 1 inch $1\frac{2}{3}$ lines. The length of the humerus is 7 inches 2 lines; of the ulna, 8 inches; radius, 7 inches 7 lines; femur, 6 inches; tibia, 5 inches 3 lines; fibula, 5 inches 1 line.

The principal external characters of this animal may be thus expressed:

Hylobates leucogenys. *Hyl. niger; pilis ad latera faciei et ad gulam albis; pilis verticis longis et semi-erectis.*

Mr. Waterhouse exhibited a new species of Squirrel from the Society's collection, and pointed out its distinguishing characters, which are as follows:—

Sciurus dimidiatus. *Sci. suprà griseus fulvo lavatus, subtùs flavus; capite, corpore ad latera pedibusque rufescentibus; caudâ ferè corporis longitudinem æquante, indutâ pilis nigris, flavis atque fulvis commixtis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin	10	0
——— *caudæ*, ferè	7	6
——— ab apice rostri ad basin auris	1	11
——— *tarsi digitorumque*	2	3
——— *auris*	0	8

Hab. South America?

This curiously-coloured species of Squirrel was purchased at a sale, and in the same lot were specimens of *Sciurus æstuans* and *Sc. Langsdorffii*, well known South American species; it is probable, therefore, it may be an inhabitant of the same country. Its fur is very short for a Squirrel, rather harsh, and less loose than in the generality of Squirrels: the back is gray, or what might be termed an iron-gray, having a rusty hue; on the upper part of the head the rust-like tint prevails, and the muzzle is almost entirely of a rich rust colour; the sides of the head and neck are of a golden-yellow tint, and the under parts of the body are yellow: a bright rust-coloured line runs along each side of the body, and separates the yellow colouring of the under parts from the iron-gray of the upper: on the outer sides of the limbs, and on the feet, a rich deep golden-yellow hue prevails. The tail is apparently cylindrical, and not bushy; the prevailing hue of the hairs is deep rust colour, but they are for the most part more or less broadly annulated with black in the middle. The ears are slightly pointed, and well clothed with

golden-yellow hairs; those on the outer side are of a bright rust colour; they have no pencil of hairs at the tip. The hairs of the moustaches are numerous, long, and of a black colour. The incisors of both upper and under jaws are deep orange.

Mr. Fraser read his descriptions of, and observations upon, some new species of Insessorial Birds, belonging to the genus *Agrilorhinus*.

"In the northern parts of South America and in Mexico," Mr. Fraser observed, "are certain small birds, resembling the Warblers in size, and in having a slender beak; they differ, however, in having the beak stronger and compressed; the upper mandible straight, or even slightly recurved; its apical portion strongly hooked, and distinctly notched; its cutting edges are curved inwards, so as to inclose the corresponding edges of the under mandible. But the most remarkable character consists in the existence of three or four small notches in the edge of the upper mandible, on either side, and behind the ordinary notch which characterizes the *Dentirostres*.

"The Prince of Musignano first noticed these peculiarities in a bird from Mexico, and described them in the 'Nuovi Annali delle Scienze Naturali,' where he used the name *Agrilorhinus* to distinguish generically the bird in question.

"I have now the honour of laying before the meeting four new species of this interesting genus; three from a collection belonging to the Earl of Derby, which I am informed was made at S^{ta} Fé de Bogota, and one from the Society's museum, the precise habitat of which is not known; there are reasons, however, for believing it to be a Mexican bird.

"The Prince of Musignano is of opinion that the genus *Agrilorhinus* has affinities both with the *Sittinæ* and *Sylvicolinæ*. The strong notch in the upper mandible, its distinctly curved point, and the compressed form of the beak, combined with the well-developed *vibrissæ*, lead me to believe that this genus ought rather to be regarded as a somewhat aberrant form of *Laniadæ*.

Agrilorhinus Bonapartei. *Agr. in toto niger, humeris exceptis, his cærulescenti-cinereis.*
Long. tot. $6\frac{5}{8}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, 3; *caudæ*, 3; *tarsi*, $\frac{7}{8}$.
Hab. S^{ta} Fé de Bogota.

Agrilorhinus humeralis. *Agr. in toto niger, humeris exceptis, his cærulescenti-cinereis.*
Long. tot. 5 unc.; *rostri*, 7 lin.; *alæ*, $2\frac{3}{4}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{7}{8}$.
Hab. S^{ta} Fé de Bogota.

This bird only differs from the preceding species in its smaller size.

Agrilorhinus olivaceus. *Agr. olivaceus, corpore subtùs pallidiore, et flavido tincto.*
Long. tot. 4 unc.; *rostri*, $\frac{1}{2}$; *alæ*, 2; *caudæ*, 2; *tarsi*, $\frac{5}{8}$.
Hab. Mexico?
This specimen is probably a female.

Agrilorhinus personatus. *Agr. cæruleus; fronte, spatio circa oculos, rostro pedibusque nigris; remigibus rectricibusque interne nigrescentibus.*

Fœm. *plumbea.*

♂ Long. tot. $6\frac{1}{2}$ unc.; *rostri*, $\frac{3}{4}$; *alæ*, 3; *caudæ*, $2\frac{3}{4}$; *tarsi*, $\frac{3}{4}$.
♀ ——— $5\frac{3}{4}$ —; ——, $\frac{5}{8}$; —, $2\frac{5}{8}$; ——, $2\frac{3}{8}$; ——, $\frac{3}{4}$.

Hab. S^ta^ Fé de Bogota.

This bird is about the size of the Blue Bird (*Sialia Wilsoni*) of North America; its blue colouring is much darker, and less brilliant. The bill is strong, long, and compressed, and suddenly bent downwards at the apex; the lower edge of the upper mandible is curved inwards and encloses the cutting edges of the lower one, but it is not notched as in the more typical species of *Agrilorhinus*. The forehead, a broad space around the eye, and the ear-coverts, are black: the chin is blackish. The feathers of the wing are blackish, but externally edged with blue; and so are the tail-feathers.

March 10, 1840.

Professor Owen in the Chair.

A paper by Dr. Richardson, on a collection of Fishes, was read:

The proceedings of the Society for June 25, 1839, contain the first part of the description of this collection, which was made at Port Arthur in Van Diemen's Land, by Deputy-Assistant-Commissary-General Lemprière, pursuant to the directions of His Excellency Sir John Franklin, K.C.B. &c., Lieutenant-Governor of the colony. The subject is resumed in this paper, and the author describes a Dajao, which differs from the three known mullets of Australia in many particulars, and from all the *Mugiloideæ* described in the *Histoire des Poissons*, in the greater number of rays of the anal fin, as well as in the combinations of other characters. The only Dajao mentioned in the work referred to, is an inhabitant of the mountain streams of the Caribbee Islands; while the Van Diemen's Land one has been found only in the sea; but perhaps both are anadromous. The rough plates on the palate and vomer of some acknowledged typical mullets assimilate their dentition greatly to that of the Dajaos; and the present species approaches the ordinary mullets in the form of the orifice of the mouth, while its palatine and vomerine teeth are nearly as large as those on the jaws. It is prized as an article of food.

Dajaus Diemensis (Richardson). *Tasmanian Dajao.*

Dajaus, rostro ferè truncato, vix prominente.

Radii:—Br. 6—6; P. 15; D. 4—1 | 9; A. 3 | 12; V. 1 | 5; C. $14\frac{5}{4}$.

The author next remarks that of four *Labri* in the collection, two species, comparatively little ornamented, are furnished with six gill rays, while the other two, more gaily coloured, and one of them indeed brilliantly striped, have only five rays in the branchiostegous membrane. They are all true labri, but the scales which protect their *opercula*, though in fact much larger than those of *Labrus bergylta*, are so deeply imbedded in mucous skin, that in a recent state these fish might pass for examples of the genus *Tautoga*, which they further resemble in possessing a tolerably regular inner row of minute teeth. They are without scales on the interoperculum, and the small scales on their cheeks being variously distributed, furnish specific characters. All four have canine teeth at the corners of the mouth, and, contrary to the prevailing character of the *Labri*, the soft rays of the dorsal exceed the spinous ones in number, resembling in this respect the *Labrus pœcilopleura* of New Zealand.

Labrus tetricus. *Lab., squamis minutis in ordinibus duobus ad*

marginem anteriorem superiorem preoperculi instructis ; operculo squamis majoribus in seriebus ternis quaternisve dispositis tecto.

Radii :—B. 6—6 ; P. 13 ; D. 9 | 11 ; V. 1 | 5 ; A. 3 | 10 ; C. 14.

Labrus fucicola. *Lab., squamis parvis inter oculum et preoperculum in seriebus quatuor instructis ; squamis opercularibus majusculis.*

Radii :—B. 6—6 ; P. 13 ; D. 9 | 11 ; V. 1 | 5 ; A. 3 | 10. C. 14.

Labrus psittaculus. *Lab., squamis genæ in ordinibus quatuor præoperculo approximatis, oculoque remotiusculis ; corpore ovali ; pinnâ caudæ supernè apiculatâ.*

Radii :—B. 5—5 ; P. 13 ; D. 9 | 11 ; V. 1 | 5 ; A. 3 | 10 ; C. 14.

Labrus laticlavius. *Lab., smaragdinus, fasciis puniceis purpureo marginatis, binis lateralibus posticè in unam coalescentibus inque pinnâ caudæ productis ; pinnâ dorsi basi viridi : in mediâ latè purpureâ : supernè aurantiacâ, purpureo guttatâ, inque margine extremo cæruleâ ; pinnâ ani basi aurantiacâ, dein primulaceo-flavâ cæruleo cinctâ, exinde purpureâ cæruleis guttis, denique in margine extremo cæruleâ*.*

Radii :—Br. 5—5 ; P. 12 ; V. 1 | 5 ; D. 9 | 11 ; A. 3 | 10 ; C. 14.

Then follows the description of a small *Odax*, known at Port Arthur by the name of "Kelp fish." It agrees with *Odax semifasciatus* of the *Histoire des Poissons* in many of its details, but on a minute comparison with the description of that species it appears to be distinct.

Odax algensis. *Od. capite longiusculo ; præoperculo denticulato ; facie utrinque sex-striatâ.*

Radii :—Br. 5—5 ; P. 14 ; D. 17 | 12 ; A. 2 | 12 ; V. 1 | 4. C. $12\frac{3}{5}$.

Another species of kelp-fish common at Port Arthur, and of which a specimen was sent by Mr. Lemprière, but too much decayed for identification, is described by that gentleman as being marked with a dark stripe. It is probably the *Odax balteatus* of the *Histoire des Poissons* which was discovered by Peron.

The author then describes a new scaroid fish which did not form part of Mr. Lemprière's collection, but which there is reason to believe was taken either at Hobart Town or Sydney. It was presented to the Museum of Haslar by Mr. Conway, formerly medical superintendent of a convict ship, and since deceased. The specimen being a mounted one, no details of internal structure can be given, and in so far the characters of the genus or sub-genus are incomplete ; but it differs from the ordinary *Labri* in the scaliness of the vertical fins, and from *Scarus* in external aspect, the form of the fins, the smallness of the scales, especially at the base of the caudal fin,

* The character of this species being rendered obscure in the abstract of the former paper by the omission of a word in printing, is here repeated.

and in the manner in which the lips cover and move with the jaws. It differs from *Odax* in the teeth and ventral fins.

OPLEGNATHUS, *genus novum.*

Corpus ellipticum, crassum, squamis parvis oblongis tectum. *Mandibulæ* modo *Scarorum* dentes incorporatos gerentes. *Labium* superius basi profundè sulcatum, intermaxillas ferè tegens, et cum illis movens. *Operculum* osseum altè sinuatum, hinc bilobatum, cum genâ squamis parvis tectum. *Dorsum* monopterygium. Costæ branchiostegæ quinque. *Pinnæ* ventrales ponè pectorales sitæ, radiis quinque ramosis et uno aculeato sustentatæ. *Radii* aculeati pinnarum dorsi anique fortes. *Fasciæ* squamosæ inter radios articulatos pinnarum verticalium decurrentes.

OP. CONWAII, *species unica cognita.*

Radii:—Br. 5—5; P. 18; V. 1 | 5; D. 12 | 12; A. 3 | 12; C. $15\frac{1}{4}$.

In Mr. Lemprière's collection there are three specimens of *Ostracion* which the author considers as examples of the *Auritus* of Shaw, of different ages, and one which he characterizes as a new species, also belonging to Mr. Gray's sub-genus *Aracana*. They are known at Port Arthur by the name of "Pig-fish."

OSTRACION SPILOGASTER. *Ostr.* (*Aracana*), *ventre maculato; lateribus dorsoque fasciis interruptis ornatis, quarum quatuor sub oculo numerandis, tribus in basibus pinnarum dorsi anique et tribus propè finem pinnæ caudæ anastomosantibus.*

Radii:—P. 11; D. 11; A. 11; C. 11.

The three following species are also from Van Diemen's Land, though not now characterized for the first time.

OSTRACION AURITUS (Shaw). *Ostr.* (*Aracana*), *ventre pallenti unicolore; lateribus dorsoque lineis saturatis rectis curvisque ornatis, quarum quinque sub oculo numerandis, et tribus in propriis basibus pinnarum dorsi, ani, caudæque.*

Radii:—P. 11; D. 11; A. 11; C. 11.

OSTRACION FLAVIGASTER (Gray). *Ostr.* (*Aracana*), *ventre pallido unicolore, lateribus dorsoque lineis saturatis percursis, quarum octo sub oculo numerandis, totidemque lineis pallidis interjacentibus; in basi pinnæ caudæ lineis quinque pallidis et tribus in basibus pinnarum dorsi caudæque.*

OSTRACION ORNATUS (Gray). *Ostr.* (*Aracana*), *lateribus dorsoque albo tessellatis; facie ventreque lineis purpureis, fuscis, et albidis numerosis, percursis; fasciis sex obscuris in pinnâ caudæ, sub finem anastomosantibus.*

MONACANTHUS RUDIS. (Nob.) *Grey Monacanthus. Mon.* (*nec paleari extensivo, nec caudâ setosâ, nec corpore papilloso vel penicelligero præditus;*) *retro-scaber; colore* (*murino ?*) *immaculato;*

rostro mediocri; dentibus latis in serie duplici dispositis, decem superioribus sex inferioribus; aculeo dorsali subulato, spinifero; pinnâ caudæ rotundatâ.

Radii:—P. 14. D. 2 | 35; A. 34; C. 12.

This *Monacanthus* known at Port Arthur (as well as the *Aleuteres* described below,) by the name of "Leather Jacket," attains the length of a foot or more, and is considered to be a good fish for the table, the skin being removed before it is cooked. After long maceration in spirits it has a dull greyish-brown hue, without any traces of spots or other configurations of colour, and the species also wants the extensible dewlap, the bristly tail, pedunculated warts or branching cirri, which characterize other groups of *Monacanthi*.

Aleuteres maculosus (Nob.). *Speckled Leather Jacket. Al. retro-scaber, sub-ovalis, ventre prominulo; angulis quatuor aculei dorsalis spiniferis; pinnâ caudæ rotundatâ, sub finem nigro fasciatâ; corpore colore murino? nebuloso-guttato.*

Radii:—P. 11, aut 12; D. 2—34; A. 32; C. 12.

This is a small Aleuteres, seldom exceeding five inches in length, and having a sub-oval form, the back being less arched than the belly. The dorsal and anal fins are arched, the curvature being more abrupt anteriorly. The dorsal spine is four-sided, with rows of prickles pointing downwards on each of the angles. The minute second spine is very slender. As has been remarked by Salvian, this small spine aids like a trigger in fixing the large one in any required position. The colour of the fish after being kept in spirits is dull olive-brown or mouse-colour, with scattered clusters of small dark spots. The subterminal black band on the caudal fin is very faint.

Aleuteres paragaudatus (Nob.). *Trim Leather Jacket. Al., retro-scaber; dorso depresso ex ore usque ad pinnam secundam ferè recto; ventre regulariter arcuato; pinnâ caudæ rotundatâ, sub finem nigro-fasciatâ; colore corporis murino; fasciâ pallidâ (flavâ) è mento per pinnam pectoralem medio in latere tractâ, sub quâ lineâ cæruleâ; lineâ alterâ cæruleâ è mento per oculum et ultra extensâ; corpore subtùs et posticè cæruleis guttis pulchrè interstincto.*

Radii:—P. 12; D. 2—34; A. 32; C. 12.

This handsome Aleuteres is named in allusion to the striped upper vestments of the Roman ladies. Like the preceding, it is a small-sized fish. One of our specimens had the gut and the whole abdomen distended by a large *Idotea*, full of roe, not at all crushed, and apparently little digested: a portion of its tail fin protruded at the anus of the *Aleuteres*.

The *Aleuteres Ayraud* of Shark Bay (Quoy et Gaimard) differs from this and the preceding species in the dorsal spine having only two rows of prickles, and in the dorsal fin having a concave outline, and reaching to the caudal fin. It is also differently striped, and no spots are mentioned. The *Aleuteres spilomelanurus* taken by the

same naturalists at Port Jackson resembles the Port Arthur fish in the form of the dorsal spine and shape of the three vertical fins, but the numbers of the rays in the dorsal and anal are different; there are no spots on the body, and merely a single dark line extending from the angle of the mouth along the higher part of the sides. In both the Port Arthur *Aleuteres* the minute prickles of the skin, when examined by a good microscope, appear to be solitary, and to spring from a globular base.

Callorhynchus Tasmanius (Nob.). *Tasmanian Callorhynchus. Call., pinnis pectoralibus ad ventrales haud attingentibus; pinnâ dorsi secundi pone ventrales incipienti, ante lobum anteriorem inferiorem pinnæ caudæ desinenti.*

This species agrees with the *Callorhynchus Smythi* of Bennet, figured in Beechey's Zoological Appendix, in the distance between the pectorals and ventrals, but is so unlike that figure in other respects that it is impossible to assign it to that species. *Call. Antarcticus* has large pectorals whose tips overlie the base of the ventrals.

Narcine Tasmaniensis, (Nob.). *Tasmanian Narcine.*

This species has not yet been compared with *Narcine capensis*, but it is most probably distinct. A full description is given in the paper, to enable authors who have the opportunity of seeing figures or recent specimens of *Narcine capensis*, to point out the differences. It is named "Ground Shark" at Port Arthur and Hobart Town.

Syngnathus argus (Nob.). *Ocellated Pipe-Fish. Syng., depressus, latus, pinnis pectoralibus dorsique præditus; ventralibus caudæque orbatis; dorso maculis oculeis ornato; maculis albis unâ serie in margine ventris dispositis.*

This very handsome pipe-fish differs from all the groups of species indicated in the Règne Animal, in having pectoral fins, while the caudal and ventrals are wanting. It did not form part of Mr. Lemprière's collection, but is said to have been presented to the Haslar Museum by the surgeon of a convict ship; its exact habitat being unknown.

It was mentioned in the former paper that labels of many of the specimens were detached, so that correct references could not be made to Mr. Lemprière's list. In this predicament is the 'Saw-fish' or 'Bugler,' which attains the weight of sixteen pounds, but the example sent was below the usual size. Also one of the 'Parrot Fish,' known locally as the 'Blue-head.' The *Thyrsites altivelis* is named the 'Baracoota,' and Mr. Lemprière says that there is a second species taken at Port Arthur, which has much lower dorsal spines, but is more esteemed as an article of diet. This is probably the *Thyrsites atun* of the *Histoire des Poissons*. The most choice fish in the colony is called the 'Trumpeter', and weighs, when full-sized, eight or nine pounds. A single specimen of this was sent, and is doubtless described in this or the former part of the paper.

There are also in the collection several specimens of a *Hemiramphus*, which is known locally by the name of 'Guard Fish.' They are only half the full size, which is said to be fifteen inches. Several specimens of a Diodon have all the characters ascribed to *D. nycthemerus* in Cuvier's monograph (*Mem. du Mus.*, iv.). Two species of Hippocampi are probably those described by White and Shaw as inhabitants of Port Jackson. A 'Rock Cod' taken in the sea was too much decayed for examination, the skull being all that could be preserved; and several examples of a small freshwater fish were also very much injured. The species bears the local name of 'Trout,' is said to have an olive colour, with small red spots, and to weigh when full grown about nine ounces. It is perhaps the *Galaxias truttaceus* of Cuvier, or an allied species. A 'Sea Cow' mentioned in the list may be the *Callorhynchus Tasmanius*. A *Solea* of a suborbicular form, and having a small square spot on each scale, and a freshwater *Anguilla*, remain undescribed.

A paper by G. Gulliver, Esq., entitled 'Notes on the Ova of the *Distoma hepaticum*, and on certain Corpuscles obtained from the genera *Cysticercus*, was read.

The physiology of the Common Liver-Fluke is extremely interesting, on account of the connection which this parasite has with a very frequent and fatal disease of that useful animal the sheep.

"If we obtain," says Mr. Gulliver, "from the bile-ducts of the sheep some of the larger ova of the entozoon, and subject them to careful examination, it will be found that the cyst of the ovum presents a very clear outline, the continuity of which is uninterrupted, except at one end, where a well-marked *operculum* may be seen, as represented in the drawing.

"The size of these ova differs considerably; their average length is about $\frac{1}{250}$th of an inch, and their breadth $\frac{1}{400}$th.

"The interior of the cyst is occupied by granular matter, often contained within secondary and more delicate cysts or cellules, generally of a circular figure, and occasionally having within them a third still smaller cyst. The diameter of the latter is about $\frac{1}{4000}$th of an inch, and of the secondary cysts $\frac{1}{1500}$th of an inch is a common size, although their magnitude is very variable. The granules within the cells or cysts also differ much in size, but they are very commonly about $\frac{1}{8000}$th of an inch in diameter.

"When the ova of the *Distoma* are compressed forcibly, the operculum is lifted up, or even separated entirely, and the granular matter extruded, with its containing cells or cysts generally broken.

"The operculum does not appear to exist in the smaller and immature ova. The drawing No. 2. represents this in some ova obtained from the uterus of the Fluke.

"Whether what is commonly called the ovum of the entozoon, may not be a cyst containing numerous ova within it, and furnished with an operculum, to allow of their extrusion when mature, and fit for propagation, appears to me to be an interesting question. At all events it should be ascertained if the cysts be discharged with the

dung of the diseased sheep, whether the granules have escaped or not, and whether they are to be found in the pasturage of those localities, where the entozoon is sometimes known to be propagated so quickly as soon to infect entire flocks of sheep.

"I could never see anything like a small fluke in the outer cyst, at any period of its growth, although the operculum was often observed just ready to open and give exit to its contents, as above described.

"The granules may possibly be regarded as yolk-globules, in which case I apprehend the numerous secondary cysts, or cells, must be considered as so many different yolks.

"*On the oval Corpuscles of the Cysticercus.*

"If the opake part near the head of this entozoon be gently pressed, a little rather viscid fluid will escape, which on examination will be found to be pervaded by a great number of oval corpuscles, presenting a very beautiful microscopic object. They have a remarkably distinct dark outline, with a brilliant surface, semitransparent, and apparently homogeneous, except very rarely, when they appear to contain an inner corpuscle or cellule.

"They are generally but slightly oval, their length often scarcely exceeding their breadth by a third, as exhibited in the drawing, though they may occasionally be seen nearly twice as long as they are broad. A common size of the corpuscles is about $\frac{1}{1300}$th of an inch long, and $\frac{1}{2000}$th broad.

"The bladder-like body of these hydatids is everywhere pervaded by distinct spherules, presenting a bright oil-like appearance, varying in diameter from $\frac{1}{20000}$th to $\frac{1}{4000}$th of an inch. They have no resemblance whatever to the oval corpuscles.

"Hydatids are described as being without discernible generative organs. Whether the remarkable oval corpuscles shown in the drawing be ova or gemmules, must be determined by future observation. That they are the former appears probable, from their form and general regularity of size. Besides they are situated in one particular part of the parent, never appearing in the walls of the transparent sac. If this conjecture should be confirmed, the cysticercus can no longer be regarded as destitute of any distinct generative organ, for the part in which the ova are contained will correspond to the uterus of the higher entozoa, and probably lead to a further knowledge of the method by which the different species of this genus are propagated.

"I am indebted to the kindness of Mr. Siddall for the accompanying drawings, which have been made by the aid of the camera lucida. As they were taken from dried specimens, the internal structure of the ova of the *Distoma* is not well exhibited, though the form is faithfully shown."

Mr. Lay exhibited a small Bird's Nest from Borneo, and a species of *Ateuchus* from China, together with the ball which it forms for the protection of its eggs. He also made some remarks on a species of *Gobiocephalus*, found in the Sea of Japan.

March 24, 1840.

William Yarrell, Esq., Vice-President, in the Chair.

Mr. Waterhouse laid before the Meeting the Society's collection of *Caviidæ*, upon which he made some observations.

There not being a sufficient number of Members present to constitute a quorum at the Meetings on April the 14th and 28th, and May the 12th, the Society adjourned to May the 26th.

May 26, 1840.

William Yarrell, Esq., Vice-President, in the Chair.

A letter from Hugh Cuming, Esq., was read. This letter is dated Manilla, November 5, 1839, and gives an account of some cases of specimens forwarded to the Society. Mr. Cuming states that he has not yet been successful in procuring a certain Ruminant, known by the name Tamaroo, but he entertains hopes of having a specimen forwarded to England after him, he being about to return. With the exception of this animal, he had procured all the quadrupeds of the Philippines of which he could obtain any information. The letter, moreover, states that he observed two varieties of the Monkey he had sent home (*Macacus cynomolgus*), and which is the only species found in the Philippine Islands; one was variegated with black and white, and the other is of a light chestnut colour, and varied with white. Only one of each of these varieties was seen by Mr. Cuming, and the variety was, in both cases, in company with ordinary coloured individuals.

A letter from the President of the Society, the Earl of Derby, was also read; it is dated Prescot, May 13, 1840, and relates to some crosses which have taken place among the animals in his Lordship's menagerie. "A female common Zebra (*Equus Zebra*)," says his Lordship, "has lately taken to my young Dshiggetai (*Equus hemionus*), and is the only animal he has yet appeared to notice in this way. The produce, if any, would, I should think, be curious.

"I think I have often heard that Foxes will not breed in confinement, but I have a female which, about two days since, produced three young; they only lived about two days. The sire is from America."

His Lordship has reason to believe that a female Fox also produced a similar litter about four years back, but destroyed them.

On the 'Great Water' of his Lordship's park, a Bernicle paired with, and constantly accompanied, a Canada Goose, but there was no produce; this happened last season. In the present one the same Bernicle has paired with a white-fronted Goose, and the pair have a nest with nine or ten eggs. It is not known, in either case, which was the goose and which the gander.

The Polish Swan has bred with the common species, and his Lordship further states, that this year a pair of their cross-breed have laid again, but the eggs are not yet hatched.

In a letter from Madame Power, dated Messina, March 25, 1840, which was read, that lady states that she had forwarded for the Society's museum some packages containing some bird-skins, and also

some molluscous animals and zoophytes, preserved in spirits, from Sicily.

A paper by John Wyllie, Esq., describing the peculiar structure of the branchial appendages of one of the Indian *Siluridæ*, was read.

"The fish to whose singular branchial appendages I wish to draw the attention of the Society," says Mr. Wyllie, "is named 'Singee' in the Mahratta, and 'Bichoo-Mutchie' (Scorpion Fish) in the Hindostanni language. It is the *Silurus Singio* of Dr. Hamilton's 'Fishes of the Ganges.'"

"The following description is drawn from memoranda taken at Nagpoor, December 6, 1825:—

"B. 7; D. 6; P. $\frac{1}{6}$; V. 6; A. 65; C. 14; Cirrhi, 8.

"Length of body $7\frac{3}{4}$ inches, breadth at anus one inch. Head much depressed, very hard, without scales, terminating posteriorly in three equal spinous processes, resembling a trident.

"Body elongated, much compressed; above rounded, below carinated, naked. Colour, when alive, of a very dark olive green; when dead, of a bluish black. Ventral and dorsal fins opposite; pectoral quadrangular with one very strong sharp bony ray, and six soft rays; anal extending as far as the tail; lateral line mesial.

"Cirrhi of nearly equal length, one pair arising immediately before the nostrils; another from the angles of the mouth; and a third and fourth from the lower jaw, near the angles of the mouth.

"Stomach small, with a moderate cul-de-sac; intestines equal, without cæca, of several convolutions, measuring seven inches in length.

"No air-bladder.

"The peculiar organs to which I wish to direct attention are situated exterior of the abdomen: there is one on each side, lying immediately over the transverse processes of the vertebræ; and in the angle formed between them and the spinous processes they are loosely attached to the surrounding parts, and covered only by the general integuments. They have the form of cylindrical tubes, are about the size of an ordinary black-lead pencil; they are closed at the posterior extremity, which extends within about three inches of the tail, and they open under the base of the cranium, between two of the branchial pairs. They are of loose cellular texture, of a whitish gray colour, speckled with numerous minute black points; they are traversed from one extremity to the other by a blood-vessel (vein?) of considerable size, into which numerous smaller branches open at right angles.

"These sacs are perhaps intended for reservoirs of water, to enable the animal, during its migrations from tank to tank, to maintain the gills in a constantly moist condition. They may also perhaps serve, in ordinary circumstances, as an extension of the respiratory surface, and the numerous blood-vessels that are seen on their coats would tend to give a probability to such a conjecture."

Mr. Ogilby pointed out the characters of a new species of Ante-

lope, which was exhibited to the Meeting. This animal lived for some time in the menagerie, having been presented to the Society by W. Willshire, Esq., Corresponding Member, who procured it at Mogadore. It is closely allied to the *Antilope Dorcas* and *A. Arabica*, and most nearly resembles the latter in its colouring, but is readily distinguished by its much greater size; its total length, from the tip of the muzzle to the tail, being about forty-three inches, and its height twenty-eight inches: the ears of the Mogadore animal are moreover proportionately larger, measuring in height about $6\frac{3}{4}$ inches, or rather more. Like *A. Arabica*, it has a black patch on the upper surface of the muzzle, and a black line on either side of the face, extending forwards from the eye, and terminating above the angle of the mouth: the dark band on the flanks is very broad, and of a deep brown colour, inclining to black; there is also a distinct broadish black mark on each side of the rump; the fore knees are furnished with distinct black tufts. The specimen is a female, and has slender horns, about equal to the ears in length; the horns are indistinctly lyrated, in fact, nearly straight, and exhibit eleven or twelve annulations, four or five of which, at the base of the horn, are very close together. Mr. Ogilby stated that he had observed specimens of the same species in the Paris Museum, and that it was the intention of M. F. Cuvier to have described them; he should therefore propose the name *Cuvieri* be used to distinguish the species.

The Secretary also called the attention of the Members present to a species of Musk Deer, from Sierra Leone, which had been brought from that part of Africa by Mr. Whitfield, who had kindly allowed it to be exhibited to the Meeting. In general colour, and in the markings on the throat, this species most nearly resembles the *Moschus Sanleyanus*, but its body has spots and markings nearly similar to those in the *M. meminna*; it is much larger, however, than either of these species, being, in size, about midway between them and the *M. moschiferus*. The chief interest attached to this animal is the locality in which it is found, the well-established species of *Moschus* being either from the continent of India or the islands of the Indian Archipelago. Mr. Ogilby stated that the present animal could not be identified with the *Moschus Guineensis* of Brisson, Gmelin, and some other of the older authors; it was therefore necessary to give it a new name, and he proposed for that purpose the name of *M. Aquaticus*, in allusion to the peculiar habits of the species which will be described more at length in the Transactions of the Society.

June 9, 1840.

William H. Lloyd, Esq., in the Chair.

A paper from the Rev. R. T. Lowe, M.A., describing certain new species of Madeiran Fishes, and containing additional information relating to those already described, was read. The paper commences with an account of a new species of the

Family Triglidæ.

Scorpæna ustulata. *S. minor, laciniis nullis, rubra, pallido variegata nigroque punctata; genis operculisque granulato-pustulosis, macula fusca notatis: pinnæ dorsalis medio unimaculatæ spina quarta ceteris longiore: capite s. rostro abbreviato, obtuso; maxillis æqualibus: squamis majusculis, scabriusculis.*

D. 12+9; A. 3+5; P. 1+VII.+10; V. 1+5; C. $\frac{5+VI}{5+V}$.

Rariss.

Occasionally taken with the common sort (*Sc. scrofa*, L.), with which it agrees in general colouring, resembling rather the Rocaz (*Sebastus maderensis*, nob.) in shape. It appears undescribed, and is very distinct in its characters, being a true *Scorpæna*, notwithstanding the absence of *laciniæ*, having the whole head naked or scaleless. It scarcely attains half the size of *Sc. scrofa*, L.

Fam. Scombridæ.

Nauclerus abbreviatus, Cuv. et Val. Hist. IX. 251.

Two individuals have occurred of this pretty little fish, answering so well to the species above referred to, that it were unreasonable to doubt their identity, although its describers have omitted mentioning a strong superscapulary spine, and a fourth smaller tooth or spinule along the lower border of the preopercle, anterior to the three which arm its angle. Alive, and in a glass of sea-water, the activity and lovely colours of these little fishes rendered them most interesting objects. They were taken following a piece of floating timber; and until close examination after death, could scarcely be distinguished from the young of *Naucrates ductor*, Cuv., but for the absence of the caudal keels.

Tetrapturus Georgii.—"*Peito.*"

Having at length, through Mr. Leacock's kind exertions, obtained a fine example of the *Peito* in perfect condition, I am enabled to state that it forms a new and very distinct species of *Tetrapturus*, Rafin.; differing from *T. belone*, Raf., as described by MM. Cuvier and Valenciennes, especially in having the pectoral fins proportion-

ally twice as long, and the body clothed with large scales of a peculiar shape and nature. I only forbear to draw up its specific character till I have checked my notes and observations by examination of more examples; but I hope to be allowed the privilege at once of commemorating by its specific name the valuable assistance rendered to the cause of Ichthyology by Mr. George Butler Leacock, of this island generally, as well as in the present instance.

Fam. Coryphænidæ.

Asteroderma coryphænoides (Bon.); *Astrodermus coryphænoides*, Cuv. et Val. IX. 353. *t.* 270.—*Diana semilunata*, Risso, Hist. iii. 267. *f.* 14.

A single small example only has occurred.

Fam. Labridæ.

Ctenolabrus iris, Cuv. et Val. XIII. 236. Rariss.

A most elegant and well-marked little species.

Julis unimaculata.—"*Peixe Verde.*"—*J. elliptico-oblonga, graciliuscula: corpore aurato-viridi, lateribus medio fascia longitudinali obscura: squamis magnis, litura rufa perpendiculate notatis: capite rosaceo-rufo, strigis fasciisve flexuosis cæruleis picto: pinna dorsali medio unimaculata analique basi squamatis: operculo postice biangulato: cauda lunata, lobis abbreviatis.*

D. 8+13; A. 3+11; P. 2+13; V. 1+5; C. $\frac{2\text{v.}3+\text{VI}}{2\text{v.}3+\text{VI}}$.

Var. *α. tæniata*: corpore 5–6-fasciato: fasciis angustis viridibus, immaculatis. Vulgatiss.

Var. *β. lineolata*: corpore efasciato, toto lituris rufis creberrimis ad perpendiculum ductis æqualiter picto. Vulg.

Blended apparently by Valenciennes (Hist. XIII. 377.) with the blue-collared *J. turcica*, Risso, under the name of *J. pavo*; as formerly by me considered merely a variety of *J. turcica*. Long-continued observations have, however, established its claim to rank as a species, which is composed of two varieties, precisely corresponding with the two of which the true *J. turcica* consists.

Fam. Gadidæ.

Merlucius ambiguus.—"*Morcégo do mar.*"

Having only obtained a single individual, I forbear attempting a specific character of this little Hake, which, in the production into a filament of the second ray of the ventral fins and grooved nape, resembles a *Motella*; wanting, on the other hand, the beards, and having no trace of any fin within the nuchal groove. From *Merlucius Maraldi*, Risso, Hist. iii. 220. it differs in the colouring; and though the upper jaw closes over the under, it scarcely can be called "longer." In Risso's fish the nape is grooved (*sillonnée*), but he says nothing of any peculiarity about the ventral fins.

The Madeiran Hake, or "Pescada," *Merlucius vulgaris* of my

Synopsis, p. 189, proves, upon better acquaintance, distinct from the common British Hake, *M. vulgaris*, Cuv., Yarr., &c. (*Gadus Merluccius*, L.). Instead of being even, the dorsal and anal fins are each produced at their hinder end into a rounded lobe; the jaws are nearly equal in length; the teeth are large and numerous; the scales small. I do not name it, for I believe it has already been called by Mr. Swainson *M. sinuatus*; and I am doubtful whether it may not also be the *M. esculentus* of Risso, iii. 220, though in his synonyms he has confounded it with the true Northern Hake. I believe it to be the fish imperfectly figured long ago by Salviana, p. 73, copied by Willoughby, *t.* L. membr. 2. *n.* 1, which has usually been referred to also for the Northern Hake.

Fam. Esocidæ.

Cypselurus pulchellus.

From want of materials for comparison, I am unable to give correctly the specific characters of this most elegant little Flying-fish, which is remarkably characterized by two or three bright rose-coloured horse-shoe-shaped marks on each side of the belly, one behind the other. The ventral fins are placed a little behind the middle of the body, not reckoning the caudal fin, and their tips reach to the base of the latter. The tips of the pectoral fins reach only to the end of the base of the dorsal fin, which is large, high, and produced. The anal fin is small and low, but a little produced backwards. The cirrate appendage to the lower jaw is like a leathern flap or apron, torn irregularly at the bottom into strips or thongs. I willingly abandon my own MS. name of *Cheilopogon* for this genus, distinguished from *Exocœtus* by the variously-appendaged lower jaw, in favour of the designation which I find this group of fishes has received from Mr. Swainson whilst this paper has been going through the press.

Fam. Diodontidæ.

Diodon Hystrix, *a.* Linn.—*D. punctatus*, Cuv.—*Histrix piscis Clusii*, &c., Will. *t.* I. 5.

A single example only has occurred.

Fam. Squalidæ.

Carcharias microps.—"*Tubarao*."

The *Tubarao* of Madeira proves to be a genuine species of *Carcharius*, as defined by MM. Müller and Henle in the Magazine of Natural History for the year 1838, p. 35. It is remarkable for the smallness of the eye; and the teeth, as reported previously by the fishermen, are really feeble in proportion to its bulk; they are in only two rows, and precisely similar in both jaws. The tail is very large and powerful. The individual examined measured eight feet five or six inches in length. I name it only provisionally, and abstain again from attempting a specific character,—deferring, in both points, to the expected publication of MM. Müller and Henle, amongst whose indicated "twenty species" it will probably be found.

ALOPECIAS SUPERCILIOSUS.

At once distinguished from the only other known species of the genus, *Carcharias vulpes*, Cuv., by the enormous eye and its prominent brow. I have at present only seen a single young example.

A paper "On Parthenia, a new genus of Recent Marine Shells or Mollusks, containing British Species," also by the Rev. R. T. Lowe, M.A., was then read.

Genus PARTHENIA.

Testa eximie turrita, acuminata, imperforata, plerumque lactea, epidermide pallida s. fere nulla; spira apertura longiore; anfractibus plurimis, costis striisque eleganter sculptis, sæpe cancellatis. Apertura ecanaliculata, ovata, integra: columella simplex, antice effusa, postice aliquando torta s. plicata: labrum tenue, simplex.

Obs. Testæ figura et sculptura elegantissimæ, parvulæ. *Animal* corpore admodum spirali; pallio simplici, ecanaliculato; pede antice abrupte truncato, postice attenuato exappendiculato, operculifero. Tentacula duo, triangularia s. prismatica, basi coalita, oculis sessilibus, superne ad basin internam positis, approximatis. Buccæ labiales coalitæ, infra tentacula exsertæ, proboscidem abbreviatam, depressam, profunde emarginatam s. bilobam referentes. Operculum aperturæ fere magnitudine, corneum, tenue, ovatum, integrum; nucleo . . . . . ?

Obs. Animal marinum, branchiis pectinatis, corpore capiteque simplicibus, sc. nec velo nec membranis neque ciliis instructum. Tentacula figura fere *Limnææ*; sed elongatiora, e membrana longitudinaliter ab apice ad medium basis conduplicata constare videntur. Figura pedis inter Gasteropodes non siphoniferos infrequentior, in *Rissois* tamen æque obtinet.

Genus et animale et testa distinctissimum, cum *Melaniis*, *Eulimis*, *Turritellis*, &c., a testaceologis recentioribus diutius confusum.

The group proposed for generic distinction consists of several shells remarkable for their elegance of form and sculpture, but which it has been neither easy to associate with others in established genera, nor advisable, in the absence of all knowledge of the animal, to place apart. Accordingly, they have been variously arranged by different authors. Philippi, in his excellent *Enumeratio Molluscorum Siciliæ* (Berol. 1836), whilst uniting some of them with several species of *Eulima*, Sow., under the head *Melania*, Lam., has not failed to remark their discrepancy as marine shells from the last-named genus, and to point out the probability of their formation into a genus or subgenus, "quando animalia eorum cognita erunt": the species which belong to *Eulima*, Sow., being, after Bronn, considered by him to be congeneric with *Niso* of Risso. The genus *Eulima*, as proposed by Risso, consisted of the same exceptionable kind of mixture; but being now ably defined by Sowerby, and restricted within its proper limits to the latter of these groups, the type of which is the *Turbo politus* of some British authors, I am induced to bring forward, in relation to the other, some materials obtained twelve or

thirteen years ago, which at the time indeed immediately suggested the formation of the genus *Parthenia*, but which the progress of Conchology, in the more recent establishment of *Eulima*, seems to have rendered really interesting.

The genus *Turbonilla* (rectius *Turbinella*) of Risso, though perhaps composed in chief of true *Partheniæ*, is not so constituted, even should this supposition prove correct, as to supersede or clash with the reception of *Parthenia*. Its definition is extremely incomplete and faulty, and it differs no less in its limits than its constitution; whilst its very author places in his *Eulima* and in *Turritella* some undoubted species of *Parthenia*. The name, moreover, rightly spelled, is long preoccupied by a well-known genus of Lamarck.

The group, however, constituted as above, appears sufficiently distinct from every other. From *Melania* it is distinguished primarily by being marine instead of fluviatile, and in the shell being destitute of a dark-coloured epidermis. It differs from *Rissoa* or *Cingula*, Flem., in the animal, much as *Limnæa* does from *Physa*, and in the shell, as *Turritella* does from *Littorina*; whilst from *Eulima*, Sow., the shells are at once distinguished by their rough or sculptured, ribbed, and generally cancellated surface; and the animal wants the lateral membranes and subulate tentacula of *Turritella*, from which the shells also differ in the transverse ribs or plaits of the volutions, and in the shape of the aperture and of the opercle, the nucleus of which is also probably eccentric and anterior; but this, without destruction of the specimens, I cannot ascertain.

The name is formed from παρθενος, a virgin; the word παρθενια, virginity, expressing well, in contrast with *Melania*, the simple elegance and purity so remarkably characteristic of these shells, which are wholly colourless, and of a spotless milk or ivory whiteness.

Several recent species of this group are found in the Mediterranean, and two at least in the British seas. Others appear also to occur subfossil, in the tertiary beds of Sicily and Nice.

The animal of the shell, called by Montagu *Turbo unidentatus* (*Odostomia* of Fleming), would appear, from the observations of my friend, the Rev. M. J. Berkeley, to be very similar. But the shell, in most points, differs, except in having a fold or plait upon the columella. Still future observations may warrant possibly the modification of the characters of *Parthenia*, for the reception of this shell and its allies.

Species quædam.

1. Parthenia bulinea. *P. testa subcylindraceo-attenuata, oblongiuscula, juniore ovato-tereti: anfractibus planis, elegantissime reticulato-cancellatis, striis spiralibus crebris æquidistantibus, transversas æquidistantes decussantibus; sutura distincta impressa: columella postice torta, uniplicata.*

a. subventricosa.

$$\frac{\text{Lat.}}{\text{Long.}} = \frac{1\frac{1}{2} - 1\frac{2}{3}}{5} \text{ lin.} : \frac{\text{Long. apertæ.}}{\text{Long. testæ}} = \frac{1\frac{1}{2}}{5} \text{ lin. vel } \frac{3}{10} \text{ millim.}$$

Turbonilla Humboldti, Risso, Hist. IV. 394. *f.* 63. male. *Testa junior.*

Tornatella? clathrata, Phil. Enum. 166.

β. gracilis, angustata.

$$\frac{\text{Lat.}}{\text{Long.}} = \frac{1\frac{1}{4} - 1\frac{1}{3}}{5} \text{ lin.} : \frac{\text{Long. apertæ.}}{\text{Long. testæ}} = \frac{1\frac{1}{2}}{5} \text{ lin.}$$

Anfractus 8 in utraque varietate.

Hab. in mari Maderensi, rara; vv. Animal omnino lacteum.

Dredged in deep water in the bay called Labra at P^ta^ Saõ Lourenço, in the spring of 1827, by H. Richardson, Esq. This shell in form resembles a *Bulinus*.

2. Parthenia Terebra. *P. testa elongato-turrita, gracili, sensim attenuata: anfractibus convexiusculis, transverse obsolete costatis s. plicatis, striisque exiguis, concinnis, crebris, spiralibus, alias creberrimas, transversas, tenuissimas, plicasque decussantibus: sutura distincta, impressa.*

$$\frac{\text{Lat.}}{\text{Long.}} = \frac{2}{7} \text{ lin.} : \frac{\text{Long. apertæ.}}{\text{Long. testæ}} = \frac{1\frac{1}{2}}{7} \text{ lin. Anfr. 12.}$$

Turritella cancellata, Risso, Hist. IV. 110. *f.* 40?

Hab. in mari Maderensi cum priore rariss. v. m.

Of two examples dredged up without the animal, one is in perfect condition. The columella is quite simple, without any fold or plait. The whole shell is sub-opake or milk-white, and in form resembles a *Turritella*.

3. Parthenia elegantissima. *P. testa elongato-turrita, gracili, sensim attenuata, lævi: anfractibus convexiusculis, costis transversis validis, latis, obliquis, confertis, æquis sculptis: interstitiis lævibus, costis angustioribus: sutura simplici, distincta: columella postice subtorta.*

$$\frac{\text{Lat.}}{\text{Long.}} = \frac{\text{vix } 1}{3} \text{ lin.} : \frac{\text{Long. apertæ.}}{\text{Long. testæ}} = \frac{\frac{3}{4}}{3} \text{ lin. vel } \frac{1\frac{1}{2}}{6\frac{1}{2}} \text{ millim.}$$

Anfr. 9–11.

Turbo elegantissimus, Mont. Turt., &c., &c.

Turritella elegantissima, Flem. Brit. An. 303. *n°.* 218.

Eulima elegantissima, Risso, Hist. IV. 123. *n°.* 296.

Melania Campanellæ, Phil. Enum. 156. *t.* 9. *f.* 5?

Hab. in mari Britannico, Mediterraneo; Maderensi, rariss. vv. Animal lacteum, omnino ut in *P. bulinea*, nisi quod tentacula obtusiora sunt.

Dredged with the former. Found also in 1824 at Sheean Ferry, near Appin, in Argyleshire.

Aliæ species videntur:

4. *Parthenia crenata* (*Turbo crenatus*, Mont. inedit. *Melania rufa*,

Phil. Enum. 156. *t.* 9. *f.* 7 ?); quæ a *P. elegantissima* interstitiis costarum spiraliter striatis potissimum differt.
Hab. in mari Britannico rariss. vm.

5. *Parthenia pallida.* *Melania pallida*, Phil. Enum. 157. *t.* 9. *f.* 8.
An *Turbo unicus*, Mont. Turt. Dict. 209, &c.
Hab. in mari Siculo (Britannico ?).

6. *Parthenia scalaris.* *Melania scalaris*, Phil. Enum. 157. *t.* 9. *f.* 9.
An *Turbo simillimus*, Laskey, Turt. Dict. 209 ?
Hab. in mari Siculo (Britannico ?).

The genus *Turbonilla* of Risso (Hist. IV. 224. *ff.* 70. and 72.) appears to contain some fossil species also of *Parthenia*, besides the recent one above referred to. Other species are indicated by Philippi as figured by Brocchi.

The following paper was next read. It is entitled "Observations on the Blood Corpuscles of the Snowy Owl and Passenger Pigeon," by George Gulliver, F.R.S., Assistant Surgeon to the Royal Regiment of Horse Guards.

"Although I have found generally less difference in the blood corpuscles of birds than in those of the Mammalia, yet in some of the former there are peculiarities in the size and shape of the red particles, which appear to me, after a careful examination of the blood of upwards of two hundred different species, deserving of especial attention. As examples of this kind, I select from my notes an account of the blood corpuscles of the Snowy Owl and Passenger Pigeon, and, by way of comparison, of one or two other allied species.

"In the following measurements, as noted in the first observation, the common-sized corpuscles are first indicated; then the small and large extremes, and lastly, the average size, deduced from the whole. They are all expressed in fractional parts of an English inch.

Obs. 1.

In the Snowy Owl (*Surnia nyctea*).

Long Diameter.		Short Diameter.	
1·1600	Common sizes.		
1·1500		1·4000	Common sizes.
1·1455		1·4570	
1·2000	Extreme sizes.	1·5333	Extreme sizes.
1·1333		1·3000	
1·1550	Average.	1·4042	Average.

The nuclei of the corpuscles, exposed by the action of acetic acid, were generally 1–3200th of an inch long, and 1–10666th broad.

Obs. 2.

In the Common Brown Owl (*Syrnium Aluco*).

Long Diameter.	Short Diameter.
1·2000	1·4000
1·1895	1·3555
1·1777	1·5333
1·2400	1·3000
1·1714	
1·1930	1·3801

Obs. 3.

In the Passenger Pigeon (*Columba migratoria*).

Long Diameter.	Short Diameter.
1·2133	1·4800
1·2000	1·4570
1·1895	1·5333
1·1777	1·4000
1·1714	
1·2666	1·4626
1·1542	
1·1909	

Obs. 4.

In the Russet Pigeon (*Columba rufina*).

Long Diameter.	Short Diameter.
1·2400	1·3428
1·2286	1·4000
1·2666	1·3000
1·2000	
1·2314	1·3429

"From the observations on the blood corpuscles of the Snowy Owl, it results that their average long diameter is 1–1550th, and their average short diameter 1–4042nd of an inch, so that their length is considerably above twice and a half greater than their breadth; while in the Brown Owl the corpuscles are scarcely twice as long as they are broad.

"Now both the absolute size of the latter, as well as the relation between their long and short diameters, approach very nearly to the dimensions frequently presented by the corpuscles of various birds. But in the Snowy Owl the corpuscles are not only peculiarly long, in proportion to their breadth, but their absolute length is much greater than is often to be found in the red particles of other birds, whether belonging to the rapacious order or not. Indeed it is probable that the difference generally between the blood-disks of any

two orders of birds is not greater than that now indicated between the disks of two species of one natural family, the *Strigidæ*.

"The corpuscles of the Snowy Owl, therefore, are very remarkable and characteristic, as any one may immediately see who will take the trouble to compare them with those of the Common Brown Owl. I have examined the blood of several other species of this family, and find the size and shape of the corpuscles of the Barn Owl (*Strix flammea*) to approximate most nearly to those of the Snowy Owl.

"It will be seen that the nuclei of the blood particles of the Snowy Owl, exposed by acetic acid, were fully three times the length of their breadth; and it may be noticed incidentally, that in most birds the nuclei thus exhibited have a more elongated ellipse than the outline of their envelopes*.

"We might expect to find an exact resemblance between the elementary parts of such a truly natural family as the *Columbidæ*, and yet the observations show a striking difference between the blood corpuscles of the Passenger and Russet Pigeons, the average long diameter of the former being 1–1909th, and the short diameter 1–4626th of an inch, while the latter are 1–2314th of an inch long, and 1–3429th broad. Although I have examined the blood of many different species of the *Columbidæ*, in no instance did the corpuscles agree in figure with those of the Passenger Pigeon; in the Turtle Dove (*Columba Turtur*) the long diameter appeared to be nearly similar, but the short diameter agreed with that observed in the disks of the Russet Pigeon. Hence there was a remarkable difference in shape, and the corpuscles of the Passenger Pigeon, as far as I have yet ascertained, are quite peculiar, since the singularly narrow ellipses which they present have not hitherto been found in the red particles of other species of the *Columbidæ*.

"It should be recollected, however, that the results of my observations may exhibit differences rather apparent than real, since our knowledge of the blood corpuscles is at present so limited, that we are not sure whether their size and shape may not be subject to some variation in relation to season, to the habits, or to certain conditions of the animal. In Man, and some of the other Mammalia, I have seen remarkable changes in the appearance of the blood corpuscles, apparently in connection with disease; and their size and shape are undoubtedly liable to modifications, from the effect of causes which have not yet been clearly explained. The observations recorded in this paper have been made with so much care, to obviate any source of fallacy, that I am disposed to place much confidence in the results; but even if it should ultimately appear that the differences which I have described are not permanent, but merely within the limits of variation to which the blood-disks are liable, this would be some addition to our knowledge of these curious bodies, and would, at all events, be sufficient to reconcile the numerous discrepancies apparent in the measurements of various eminent observers.

* See Dublin Medical Press, No. 59, March 4, 1840.

"In conclusion, it may be remarked, that however paradoxical the history of the red particles may be, still, that of the blood generally is in many respects equally so. As we can only expect to obtain a knowledge of the physiology of the corpuscles by the multiplication of observations, it is especially desirable that persons residing abroad should avail themselves of opportunities of examining the blood of such animals as are not easily to be seen alive in this country. Among the birds, it may be mentioned that an examination of the blood of the different species of Temminck's orders *Anisodactyli* and *Inertes* is especially required; and when made, it is not improbable that some interesting results may be obtained."

June 23, 1840.

William Yarrell, Esq., V.P., in the Chair.

A letter from the Society's Corresponding Member, Dr. Cantor, was read. The writer states that he is on his way to Penang, Sincapore, and China, where he hopes to make extensive collections of objects of Natural History for our museums.

Dr. Cantor also states that he met with a specimen of the *Ursus Syriacus*, or *isabellinus*, in captivity. This animal is not known to the natives of Bengal, but abounds in the mountains of Cashmere, where the natives know it by the name '*Reetck*' or '*Ritck*.' The dimensions of the specimen referred to are—total length (the very short tail not included), four feet two inches; height at the shoulders, three feet; height at hip, two feet eight inches.

The Rev. F. W. Hope read a paper entitled "Observations on the *Stenochoridæ* of New Holland, with descriptions of new species."

Of this paper the following is an extract:—

Fam. Stenochoridæ, Leach.

Type of the family *Stenochorus semipunctatus*, Fab.

Section 1. *Armigeri.*

Antennis thoraceque spinosis, apicibus elytrorum bidentatis.

Sp. 1. Stenochorus gigas. *Sten. ater thorace spinoso inæquali, elytris basi nigro flavoque variegatis.*

Antennæ corpore fere duplo longiores, articulis ternis primis nigricantibus, reliquis fusco-ferrugineis, articulis intermediis apice spinosis. Caput atrum antice rufo-ciliatum palpis ferrugineis. Thorax utrinque spinosus spinis brevibus, tuberculatus, rugosus et ater. Elytra bidentata, basi nigro flavoque variegata, varioloso-punctata. Corpus infra nigrum abdomine postice piceo, femoribus atris, tibiis tarsisque fusco-brunneis et tomentosis.

Long. lin. $18\frac{1}{2}$; lat. lin. $5\frac{1}{2}$.

Hab. In interiori parte Novæ Hollandiæ.

This magnificent species, the largest of the genus, was given to Captain Roe, when engaged on his survey of the Australian coast; it was labelled as coming from the inner country.

In Museo Dom. Hope.

Sp. 2. Stenochorus latus. *Sten. fusco-brunneus, thorace cinereo-tomentoso, elytris flavo brunneoque variegatis. Caput cinereum. Antennæ longitudini corporis vix æquales. Thorax utrinque spinosus, spinis acutis, tomentosus et rugosus, antice binis tuberculis*

rubro-piceis insignitus. Elytra flavo-brunnea maculisque nigris variegata, macula suturali magna lunulata, ad apicem posita, corpus infra nigrum, pectore pedibus brunneo-piceis, tarsisque auricomatis.

Long. lin. 15; lat. lin. 4.

Hab. In Nova Hollandia circa Flumen Cygneum.

In Mus. Dom. Hope.

Sp. 3. Stenochorus longipennis, *Sten. atro-brunneus, thorace cinereo, elytris antice flavo variegatis, postice, piceo-brunneis. Antennæ longitudine corporis, fusco-flavæ et tomentosæ. Thorax utrinque spinosus spinis acutis, ad humeros elytrorum curvatus, rugosus, tuberculo nigro et glabro in medio disci posito. Elytra elongata ad apicem parum attenuata, antice brunnea, lineis flavis longitudinalibus variegata, postice reliqua parte disci atro-brunnea. Corpus infra fusco-brunneum, femoribus tibiis pallidioribus et tomentosis, tarsisque auricomatis.*

Long. lin. 13; lat. lin. $3\frac{1}{2}$.

Hab. Van Diemen's Land.

Sp. 4. Stenochorus Mitchelli. *Sten. straminicolor, caput nigrum antennis flavis, thorace atro-cinereo, elytrisque flavo brunneoque variegatis. Caput atrum thorace bispinoso, spinis utrinque minutis, disco rugoso atro-cinereo. Elytra pallide flava sutura brunneisque maculis variegata. Corpus infra rubro-brunneum annulis abdominis aurato-tomentosis, femoribus et tibiis concoloribus tarsisque aurato-spongiosis.*

Long. lin. 12; lat. lin. $3\frac{1}{4}$.

Hab. In Nova Hollandia.

This singularly marked insect I have named in honour of Sir T. Livingston Mitchell, the author of one of the most interesting works which has yet appeared respecting Australia.

Sp. 5. Stenochorus trimaculatus. *Sten. pallide flavus, antennis pedibus luteis thorace cinereo elytrisque nigro maculatis. Caput piceo-brunneum. Antennis flavis sparsimque tomentosis. Thorax utrinque spinosus, spinis brevibus, rugoso-tuberculatus et argenteo-cinereus, scutellum flavum. Elytra ad basin nigra, macula magna ovali pallide flava, ante apicem in singulo posita. Corpus infra rubro-fuscum et argenteo-tomentosum. Pedibus luteis.*

This elegant species I received from Captain Roe; it was captured at the Swan River Settlement.

Sp. 6. Stenochorus obscurus, *Donovan. Sten. thorace rugoso spinoso, fuscus elytris antice punctato-rugosis, postice lævibus nitidis apice bidentatis.*

Long. lin. 11; lat. lin. 3.

This species appears to be of rare occurrence. I have seen only three specimens; all of them were from Van Diemen's Land.

Sp. 7. Stenochorus punctatus, *Donovan. Sten. thorace spinoso,*

fuscus, elytris punctatis antice subrugosis, apice bidentatis maculis tribus flavis.

Long. lin. 11 ; lat. lin. $2\frac{1}{2}$.

This species I obtained at the sale of the late Mr. Donovan's insects; it was labelled as received from Van Diemen's Land. The colour of this species in Donovan's plate is not dark enough; the variety with the basal and medial spots united on the elytra, is by no means uncommon; the species is also liable to vary considerably in size; a small specimen measured only $8\frac{1}{2}$ lines long and 2 in width.

Sp. 8. Stenochorus semipunctatus, *Fabricius. Sten. thorace spinoso, fuscus, elytris antice punctato-rugosis, flavo-fasciatis, postice lævibus, apice bidentatis macula flava.* Vid. Oliv. 4—67. p. 37, 48; Stenoch. 69. tab. 2. f. 19; Enc. Méth. 5. p. 303, 56; Schonherr. Syn. Ins. vol. i. part 3. page 404. species 9.

Long. lin. 11 ; lat. lin. 3.

The localities of 'Brasilia' and 'Nova Hollandia' are mentioned by the latter author; there cannot exist a doubt that the former locality is erroneous. The species is subject to great variation. I mention some of the most particular.

Var. *α. Elytris* (*long. lin.* 8 ; *lat. lin.* $1\frac{3}{4}$) *mediis trimaculatis, maculis binis antice parvis, postica triplo majori.*

Var. *β. Elytris* (*long. lin.* 7 ; *lat. lin.* $1\frac{1}{2}$) *late flavo-fasciatis maculis nigris aspersis.*

Var. *γ. Elytris* (*long. lin.* 11 ; *lat. lin.* 3) *late flavo-fasciatis nigris binis maculis notatis, apice late flavo, spinisque concoloribus, antennis pedibusque pallidis.*

This is probably an immature specimen. It is by no means uncommon.

Sp. 9. Stenochorus angustatus, *DeJean. Sten. valde elongatus, parallelus, pubescens, fusco-cinereus, thorace subplicato, conico, lineis duabus albidis. Elytris macula laterali antica, elongata, fusca.*

Long. lin. 10; tot. 15.

In Museo M. M. DeJean et Gory.

The above description is taken from the Voyage De l'Astrolabe, by Mons. Boisduval, vide part 2. p. 475.

Sp. 10. Stenochorus undulatus. *Sten. nigro-brunneus, antennis aurato-tomentosis thorace supra tuberculato et concolori, medio disci macula elevata rubro-picea et polita. Scutellum aureo-tomentosum. Elytra fusco-brunnea, fasciis binis mediis undulatis pallide flavis apicibus concoloribus. Corpus infra rubro-piceum pedibus aureo-tomentosis.*

Long. lin. 10; lat. lin. $2\frac{1}{2}$.

This species inhabits New Holland, and was sent me by Captain Roe from the New English Settlement at the Swan River in Australia. I must remark that in this species the spines at the apex

of the elytra appear unusually short, those at the suture are scarcely perceptible. I imagine therefore, as the insect is unique and much damaged, that probably they have been broken off.

Sp. 11. Stenochorus assimilis. *Sten. affinis præcedenti, rufo-brunneus, antennis concoloribus et tomentosis. Thorax-rufo-piceus, supra tuberculatus tuberculis quinque elevatis majoribus ita dispositis :|: reliquis minoribus. Elytra rufo-brunnea, fascia elongata irregulari undulata et flava apicibus flavo-maculatis. Corpus infra rufum femoribus et tibiis concoloribus et sub-tomentosis tarsisque auricomatis.*
Long. lin. $10\frac{1}{2}$; lat. lin. $2\frac{1}{2}$.
I received this insect from Van Diemen's Land.

Sp. 12. Stenochorus acanthocerus, MacLeay. *Sten. fusco-ferrugineus capite punctato; antennis rubris, articulo 3^tio, 4^to, 5^to et 6^to apice spinosis; ore rubro; maxillis elongatis, apice ciliatis membranaceis; palpis securiformibus; thorace obscuro utrinque unispinoso margine antico tuberculisque dorsalibus utrinque posticoque semicirculari rubris; scutello rubro; elytris rubris fasciis tribus nigris undatis, ad basin inter lineas elevatas subcrenatis, apicemque versus punctatis, apice bidentatis; corpore subtus nigro nitido tomentoso pedibus rubris.*
In Mus. Dom. MacLeay.

Sp. 13. Stenochorus dorsalis, MacLeay. *Sten. fulvo-piceus capite angusto labro palpisque testaceis; vertice canaliculato; thorace inæqualiter rugoso eminentia media ovali glabra tribusque aliis utrinque inconspicuis; elytris bidentatis subelevatis interstitiisque punctatis macula media suturali testacea antice subemarginata; antennis subtus villosis, articulis apice haud spinosis; corpore pedibusque piceis; femoribus incrassatis.*
In Mus. Dom. MacLeay.
Hab. In Nova Hollandia.

Section 2. *Tubericolles.*

Antennis spinosis, thorace tuberculato, haud spinoso, apicibus elytrorum bidentatis femoribusque incrassatis.

Sp. 14. Stenochorus uniguttatus, MacLeay. *Sten. fuscus capite cum antennis villosis, thorace inæquali rugoso, tuberculato. Elytris depressis crebrissime punctulatis, in singulo macula quadrato-elongata, et lutea fere in medio disci posita. Corpus infra rubro-fuscum tomentosum femoribus incrassatis et concoloribus, tarsis infra flavo-spongiosis.*

This species I received from the Swan River: it is subject to great variation in size. A specimen similar to Mr. MacLeay's *Uniguttatus* measures in length, lin. $10\frac{1}{2}$; lat. lin. 2. It seems likely that *Sten. elongatus* of DeJean is the same as the above species.

Sp. 15. Stenochorus rhombifer. *Sten. affinis præcedenti at*

multo minor. Fuscus, antennis et corpore sparsim flavo-tomentosis, capite haud villoso, rubro. Thorax inæqualis et tuberculatus. Elytra depressa bidentata, macula quadrato-elongata lutea fere in medio disci posita. Corpus infra rubro-piceum nitidum, binis ultimis segmentis pallidioribus. Pedes rubro-fusci femoribus parum incrassatis tarsisque infra aureo-tomentosis.

Long. lin. 7.; lat. lin. $1\frac{1}{4}$.

I received this species in a box of insects from Mr. Charles Darwin. Its true locality is either Sidney or Van Diemen's Land.

I consider it quite distinct from Mr. Sharpe MacLeay's *Stenochorus uniguttatus*.

In Mus. Dom. Hope.

Sp. 16. Stenochorus tunicatus, MacLeay. *Sten. flavus antennarum articulis duobus primis nigris quinto apice septimo nonoque nigris; thorace subcylindrico utrinque unidentato, supra quadrituberculato tuberculis anticis majoribus; elytris apice flavis unidentatis, parte basali ultra medium subviolaceo-flava linea obliqua terminata; corpore pedibusque flavo-testaceis.*

In Mus. Dom. MacLeay.

Sp. 17. Stenochorus rubripes, Boisduval. *Sten. elongatus parallelus; antennis pedibusque rufis; thorace angustiori, cylindrico, tuberculato, coleopteris dilute fuscis; apice spinosis, punctis crebris impressis, macula communi maxima irregulari, nigra notata, altera postica, scutelloque flavis.*

Long. lin. $10\frac{1}{2}$; lat. lin. $2\frac{1}{2}$.

Described from Mons. Boisduval's 'Voyage de l'Astrolabe,' vid. part ii. page 479. I had given the name of *Undulatus* to the species, and had figured it before I was aware of its being described: the sexes apparently differ considerably in size.

Sp. 18. Stenochorus Roei. *Sten. rubro-fuscus; antennis pallidioribus; thorace tuberculato, elytrisque macula irregulari flava notatis, alteraque apicali lutea, spinis apice brevibus, externo longiori. Corpus infra rubro-piceum nitidum pedibus concoloribus et tomentosis.*

Long. lin. $6\frac{1}{4}$; lat. lin. $1\frac{1}{4}$.

This species was sent to me from the Swan River by Captain Roe; it is named after that indefatigable and enterprising officer.

Section 3. *Fissipennes.*

Antennæ spinosæ, thorace inæquali tuberculato seu denticulato, apicibus elytrorum transverse truncatis, haud spinosis.

Gen. Coptocercus*, Hope, Nov. Gen.

Caput antice rugosum, antennis spinoso-tomentosis. *Thorax* fere cylindricus, tuberculatus. *Elytra* parallela thorace latiora ad

* Koptocercus, from Κοπτω, *scindo*, and Κερκος *cauda*.

apicem parum contracta, transverse fissa, haud spinosa. *Corpus* infra convexum, antennis pedibusque fere ut in *Sten. Roei* conformatis.

Type of the Genus, *Stenochorus biguttatus* of Donovan.

Sp. 1. Coptocercus biguttatus, Donovan, vid. pl. 2. fig. 7. *Copt. biguttatus, thorace mutico, ferrugineus, elytris antice punctato-rugosis, testaceo-maculatis, bidentatis macula flava.*

Long. lin. 8; lat. lin. 2.

I received this insect from Mr. Donovan, and therefore have no doubt respecting the individual species. The elytra, according to the above description, can scarcely be considered as bidentate; they appear as if they were abruptly broken off at their apex. The sexes vary very much in size.

Sp. 2. Coptocercus sexmaculatus. *Copt. niger; antennis brunneis; thorace tuberculato et rugoso; elytris 6 maculis luteis notatis, pedibus rufescentibus. Caput atrum antennis brunneis. Thorax utrinque denticulatus, inæqualis, rugosus, tuberculatus, macula media elevata et glabra. Elytra nigra antice varioloso-punctata, postice punctis minoribus. Sex-maculata, macula* 1ma *lutea paullo infra basin,* 2da *fere media seu melius fasciata,* 3tia *apicali pallidiore. Corpus infra cinereo-piceum; pedibus rufo-brunneis.*

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

This species, which appears to have escaped the notice of entomologists, is abundant. I suspect that the male sex will have the denticulation on each side of the thorax more marked than in the female described.

Sp. 3. Coptocercus unifasciatus. *Copt. ater thorace inæquali tuberculato, elytris nigris punctatis, et flavo-fasciatis, punctis ternis, maculisque minutis in singulo, inter basin et medialem fasciam positis. Corpus infra rubro-piceum; pedibus concoloribus, aureo-tomentosis; abdomine nigro, et nitido.*

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

The above insect I received from Captain Roe, of the Swan River Settlement in New Holland.

Section 4. *Denticolles.*

Antennæ tomentosæ. *Thorace* utrinque spinoso; dorso dentato; elytris apice obtusis.

Gen. Trachelorachys*, Nov. Gen.

Type of the Genus, *Stenochorus fumicolor.*

Caput exsertum, oculis prominentibus, antennis corpore brevioribus. *Palpi* maxillares mandibulis longiores. *Antennæ* 11-articulatæ, 1mo cylindrico parum deformi ad basim tenuiori et externe crassiore, 2do brevi subcyathiformi, reliquis fere æqua-

* The above word is formed of τραχηλος, *collum*, and ραχις, *a spine.*

libus, at extimo minori, apice attenuato. *Thorax* convexus utrinque spinosus, disco spinis armato. *Elytra* thorace quadruplo longiora, depressa, ad apicem obtuse rotundata et inermia. *Pedes* simplices, femoribus haud incrassatis.

Hab. In Nova Hollandia.

Trachelorachys fumicolor. *Trach. fusco niger; thorace utrinque spinoso, disco spinis quatuor fere in medio armato. Elytra parallela marginibus undique elevatis ad basim crebre granulata, granulis ad apicem e medio elytrorum magnitudine decrescentibus. Corpus infra picco-nigrum, pedibus pallidioribus et tomentosis, plantisque aurato-tomentosis.*

Long. lin. $10\frac{1}{2}$; lat. lin. $2\frac{1}{2}$.

This insect was obtained from a collection made in the vicinity of Sydney.

Trachelorachys pustulatus. *Trach. flavo-fuscus antennis tomentosis; thorace concolori utrinque spinoso; spinis binis fere in medio armatis. Elytra marginata; pustulis nigris in lineis sparsim dispositis. Corpus infra fusco-rubrum; pedibus subtomentosis.*

Long. lin. 8; lat. lin. $1\frac{1}{2}$.

The above insect was purchased out of a New Holland box, along with various nondescripts; most likely they were from Hobart Town.

Section 5. *Femorales.*

Antennæ tomentosæ; thorace utrinque spinoso, dorso dentato; elytris transverse sectis; femoribus incrassatis.

Gen. Meropachys*.

Caput exsertum, antennis tomentosis articulis undecim articulatis; 1mo fere ut in *Trach. fumicolori*, at externe crassiori et ovato; 2do brevi et globoso; 3^{tio} triplo longiori; 4to paullo breviori, reliquis gradatim increscentibus, extimo apice subacuto. *Thorax* antice et postice contractus, utrinque in medio spinosus; dorso dentato. *Elytra* depressa; thorace latiora postice latiora transverse fissa. *Totum corpus* supra et infra argenteo sericie aspersum. *Femoribus* valde incrassatis in medio fortiter globosis.

Meropachys MacLeaii. *Merop. fusco-flava antennis flavis tomentosis, thorace concolori, utrinque spinoso, maculis binis atris, antice et postice signato. Elytra aurato sericie aspersa, ad humeros tuberculata, fascia nigricanti ante apicem posita. Corpus infra rubrum nigro et argenteo variegatum. Pedes flavescentes, femoribus globosis, nigro-maculatis; tibiis quatuor posticis medio atratis; tarsisque pallidis binis anticis fere omnino nigris subtusque auri-comatis.*

Long. lin. 8; lat. lin. $1\frac{1}{2}$.

This beautifully sericeous insect is named in honour of William

* Meropachys is from μηρος, *femur*, and παχυς, *crassities*.

Sharpe MacLeay, Esq., from whom we may shortly expect some valuable communications relating to the entomology of Australia.

This genus appears to differ chiefly from *Trachelorachys* in having both the sexes remarkably characterized by their incrassated femora; and it is probable that, as in other New Holland Stenochoridous genera, the length of the antennæ will vary in the sexes.

MEROPACHYS TRISTIS. *Merop. flavo-fuscus antennis tomentosis, thorace aurato lanugine obsito. Elytra depressa, minutis pustulis lineari serie insignitis. Corpus infra rubro-piceum sericie aurato tectum. Femora valde incrassata; tibiis rubro-testaceis; tarsisque infra auri-comatis.*

Long. lin. 9¼; lat. lin. 2.

The above species was sent to me by Captain Roe from the vicinity of the Swan River settlement. There were also other species allied to the present, but they arrived in too mutilated a state to describe.

CONICOLLES.

Scolecobrotus Westwoodii. This species was described at p. 109 in the first volume of the Zoological Transactions, and is admirably figured at Plate XV. *n.* 5. It is remarkable for the joints of the antennæ, all excepting the first three appearing as if they were eaten by worms. I have lately obtained from Mr. Fortnum the other sex of this singular insect, and now briefly describe it. The antennæ are of a light coral-red colour, which may partly be occasioned by abrasion. The joints of the antennæ do not appear serrated as in the former sex, excepting under a high magnifying power, and even then it is scarcely perceptible. The spines at the apex of the elytra are wider apart than in the specimen previously described; in other respects the insects accord almost entirely. I have reason to think that both the above specimens are from the Swan River settlement, and am not aware that any others are to be found in our metropolitan, or even in the French collections.

Uracanthus, Hope. For the description of this genus, *vide* the details published at page 108 of the 'Zoological Transactions,' where only one species was described; two more are now added.

URACANTHUS PALLENS. *Uracan. affinis præcedenti at multo minor. Cervino-brunneus thorace conico et albo-lineato; elytris pallidioribus apicibus bidentatis.*

Caput fronte forte canaliculata pubescenti-albida tectum. Thorax alba linea utrinque notatus, binisque tuberculis ad latera subarmatus, rugisque transversis constrictus. Elytra cervino-brunnea, sericea, triangulis in singulo colore saturatiore inquinatis. Corpus infra brunneo-sericeum, femoribus parum compressis.

Long. lin. 10; lat. lin. 2.

I had originally given the name of *sericeus* to this species, which,

as it seems common to all that are at present known, I change it at present to *pallens*. It was received from Van Diemen's Land in 1839.

Uracanthus marginellus. *Uracan. fusco-brunneus thorace albo-lineato, elytrisque brunneo marginatis.*

Totum corpus supra tomentosum, capite porrecto et inter oculos parum sub-canaliculato. Thoraæ rugis constrictus, tuberculo utrinque posito. Elytra albo-pubescentia marginibus brunneis apicibus abrupte truncatis, spinis parum prominentibus. Corpus infra concolor, femoribus compressis.

Long. lin. 9; lat. lin. $1\frac{1}{3}$.

I received this insect from Captain Roe, of the Swan River. In form it approaches a singular genus named *Stephanops* by Mr. Shuckhard; it is however decidedly an *Uracanthus*, and there can be little doubt that *Stephanops Nasutus* of the above author belongs to my section of the cone-necked-shaped *Stenochoridæ*.

Section *Conicolles*, Hope.

Genus Strongylurus, Hope.

Type of the Genus *Sten. scutellatus*, Hope.
Vide Zool. Trans., vol. i. p. 107.

Caput porrectum, oculis prominentibus. *Antennæ* undecim articulatæ: articulus 1^{mus} crassus antice latior quam ad basim; 2^{do} brevi, reliquis gradatim increscentibus, compressis. *Thorax* coniformis antice et transverse truncatus. *Elytra* thorace latiora, parallela apicibus rotundatis. *Femora* in utroque sexu subincrassata, et parum compressa.

Sp. 1. Strongylurus scutellatus. *Strong. fuscus et tomentosus, thorace flavo-ochraceo colore utrinque lineato medio disci nigricante. Scutellum valde distinctum flavum. Elytra fusco-brunnea, fasciisque undulatis parum distinctis notata. Corpus infra sordide fuscum, abdomine rubro-piceo, pedibus concoloribus et tomentosis.*

Long. lin. $12\frac{1}{3}$; lat. lin. 3.

The above insect I have received from various parts of New Holland; as it is accurately figured, I have not given very full generic details. I must remark, however, that in the sexes of this genus the antennæ vary very considerably, in one instance exceeding the length of the body, whilst in the other sex they are shorter than the elytra. These Longicorn beetles also vary much in size, which is a remark that appears to apply to most of the *Cerambycidæ* of New Holland. Can the long drought which sometimes prevails in this country be regarded as the cause of *dwarfishness*, which is certainly one of the striking features of the *Coleoptera* of Australia?

Sp. 2. Strongylurus varicornis. *Strong. testaceo-fuscus, antennis flavo-nigroque variegatis. Thorace tomentoso utrinque, dentibus atris armato. Scutellum distinctum et album. Elytra*

fusco-testacea fasciis binis undatis parum distinctis. Corpus infra concolor, pedibus tomentosis.

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

There are in our English collections two other species belonging to this genus; as however I have them not at hand, I must leave others to describe them.

Genus Coptopterus, Hope.

Type of the Genus *Stenochorus Cretifer*, Hope.
Vide Zool. Trans., vol. i. p. 107.

Caput porrectum inter oculos canaliculatum. *Antennæ* compressæ, et fere ut in Strongyluro. *Thorax* obconico-truncatus, lateribus rotundatis. *Elytra* thorace latiora parallela; apicibus sub-oblique truncatis, seu abrupte sectis. *Femora* sub-incrassata et parum compressa; tibiis subincurvis.

Coptopterus cretifer. *Copt. fusco-brunneus, capite albida macula inter oculos posita. Thorax nigro-cinereus variis maculis cretaceis notatus. Elytra brunnea maculis nigris aspersa, in quibusdam speciminibus maculæ conjunctæ fascias exhibent. Corpus infra fusco-rubrum maculisque variis albidis obsitum. Pedes rubro-picei et tomentosi.*

Long. lin. $10\frac{1}{2}$; lat. lin. 3.

This insect appears to be abundant at Sydney: there are also other allied species undescribed, and from the vicinity of the Swan River.

Genus Piesarthrius, Hope.

Type of the Genus *Stenochorus marginellus*.
Vide Zool. Trans., p. 112. Genus 12.

Caput exsertum. *Antennæ* valde compressæ, 11-articulatæ. *Thorax* fere tetragonus angulis anticis parum rotundatis. *Elytra* thorace paullo latiora parallela, interne spinosa, angulis externis rotundatis. *Femora* antica quatuor vix incrassata, posteriora minora; tibiis subincurvis.

Hab, In Nova Hollandia.

Piesarthrius marginellus. *Piesar. flavo-fuscus antennis compressis, tomentosis et pallidis. Thorax niger, lateribus flavo-ochraceis. Scutellum distinctum et flavum. Elytra testaceo-flava marginibus interne et externe rubro-piceis. Corpus infra brunneo-piceum lateribus pectoris annulisque abdominis utrinque flavo-maculatis, pedibus pallidioribus.*

Long. lin. 10; lat. lin. $2\frac{1}{2}$.

This insect I received from Captain Roe of the Swan River, and it is, I believe, unique in our London cabinets. I have seen a second species, but have not been able to obtain permission to describe it.

Seven species of Birds of Paradise, presented to the Society by the Duke of Northumberland, were exhibited at the Meeting.

A collection of Birds and Molluscous animals, from Messina, were also exhibited, these specimens having been presented to the Society by Madame Power, Corr. Memb.

Mr. Ogilby characterized a new species of Monkey, under the name of *Papio ochreatus*. "I saw this animal" (observed Mr. Ogilby) "in a travelling collection last June. It was of a uniform dull black colour on every part of the body, both above and below, except the arms and legs, from the paws to the elbows and knees, respectively, which were dark gray, as was likewise the space between the scrotum and the callosities; the scrotum itself was dirty flesh-colour; the face and ears naked and black; the naked part of the hands and feet brown, and there was a large naked patch, of the same colour, surrounding the callosities; but whether natural, or the effect of accident, I am unable to determine. The ears were rounded, and less pointed than in the Papios generally; the countenance resembled that of the Pig-tailed Baboon (*P. Nemestrina*), but the face was more attenuated; size that of the Pig-tail. I was unable to learn whence the individual here described had been obtained. It constitutes a very distinct species, and may be characterized as follows:—

"The Booted Baboon, Papio ochreatus: *P. supra subtusque niger, brachiis et cruribus canis.*"

A species of *Trionyx*, or, according to MM. Dumeril and Bibron, *Gymnopus*, was exhibited. This specimen had lived for some time in the Society's menagerie, having been sent from the Euphrates by Colonel Chesney.

The following description and observations relating to this animal were communicated by Mr. Martin:—

"Total length, from the tip of the muzzle to the end of the tail, two feet; width about one foot; head and neck, measuring to the anterior edge of the carapace, seven and three quarters inches: carapace slightly convex and oval, slightly truncated posteriorly; composed of nine costal plates, the ribs being eight in number; a double mesial furrow runs along the back, leaving a slightly convex elevation between them: between the first, and most anterior, of these plates and the second, are two depressions, each about half an inch in diameter, placed near the mesial line, and separated by a space less than a quarter of an inch in extent. The whole upper surface of the carapace, excepting at the margin, irregularly reticulate. The depressions between the costal plates are well marked. The length of the carapace is nine inches, and the breadth seven and three quarters inches; on the sides of the body the coriaceous membrane extends about two inches beyond the lateral margins of the carapace, the ribs themselves extending about one inch and a half beyond the carapace. Towards the hinder part of the body the membrane gradually increases in width, and posteriorly over the tail it had at-

tained a width of nearly six inches: here the free portion of the membrane is about two and a half inches in width. The head is in the form of an elongated triangle; the snout is considerably produced and attenuated: the width of the head at the base is two inches and a quarter; the total length of the skull is three inches five lines; the space from the eye to the upper lip, beneath the nostrils, is eleven lines; the space between the orbits is five lines; on the vertex, above and between the orbits, the skull is smooth and convex. In both the fore and hind feet the first or front claw is the largest. The tail is rather short and thick; its length is about four inches and a half.

"When alive this animal was of an uniform mud colour, slightly tinted with olive-green.

"In many respects this animal agrees with the *Gymnopus Ægyptiacus* (*Trionyx Ægyptiacus*), as described by M. Bibron, but neither the head nor the margin of the carapace is spotted with yellowish white, as in that species; besides, the two nearly confluent depressions on the anterior part of the carapace are not alluded to in the account of *G. Ægyptiacus*; they are, however, very conspicuous in the animal in question. There are, it may be added, no pellucid scales, placed in a transverse direction, on the under surface of each elbow, nor are there any depressed convex tubercles, either anteriorly or posteriorly, on the cartilaginous expansion of the carapace, as are often, though not invariably, found in the *G. Ægyptiacus*.

"With respect to the *Gymnopus Euphraticus* (*Trionyx Euphraticus*), originally described by Olivier (*Voyage en Perse*, tom. iii. p. 453, tabl. 41.), the carapace is described as being broader behind than before, which, if reference be extended only to the osseous disc, is not the case in the present animal. As in that species, however, the circumference of the carapace is smooth, and the skin is folded at the elbow-joint above, but does not simulate scales. The circumstance of a mesial depression, or rather double channel, with a convex line between, down the vertebral column, is not noticed as characteristic of the *G. Euphraticus*, nor yet are the smooth anterior oval foveæ.

"Still, however, it is not improbable that the animal in question may be identical with that described by Olivier; but it remains to be seen whether his species be distinct from *G. Ægyptiacus*, a point which his short and imperfect account does not enable us to solve.

"The sternum of the specimen having been removed by the animal preserver, and lost, has prevented my noticing this part in the above description."

A skull of an adult Chimpanzee, recently purchased by the Society, was exhibited, and Professor Owen pointed out the distinguishing characters between this and the skull of the Orang, also on the table; he also called attention to certain points of agreement between this skull and that of the Hottentot.

July 14, 1840.

William Yarrell, Esq., Vice-President, in the Chair.

A letter from Sir Robert Heron, Bart., dated July 8, 1840, was read. It related to a young Kangaroo, which had crawled out of the pouch of the parent long before the proper time, and was consequently unable to return; its body was marked all over by the mother in her attempts to get it back into the pouch. In a second letter Sir R. Heron states that this young Kangaroo was quite naked, and unable to move. It was some hours before he could find the keeper, and when he arrived the little animal was scarcely alive. The keeper took it home, gave it milk, and by careful treatment it quite revived, and was restored to the pouch of the mother, where it has remained for five days, appears to be perfectly well, and frequently protrudes its nose. The mother never left it, and was evidently under great anxiety.

A species of Ibex, and a Mouflon, from Erzeroom, together with some other specimens from the same part of the world, presented by Messrs. Dickson and Ross, were exhibited.

Some specimens, displaying the different stages of the *Rana Paradoxa*, were also exhibited. These specimens were brought from Demerara by Capt. Warren, who presented them to the Society.

Mr. Yarrell exhibited the first ten numbers of Mr. Audubon's new royal 8vo edition of his 'Birds of America,' in which the plates are carefully reduced and coloured from the original large drawings.

Mr. Yarrell also exhibited a specimen of the Snow Bunting, in perfect summer plumage, and stated that the bird was given to him by his friend Thomas Wortham, Esq., on whose grounds, at Royston, in Hertfordshire, it was shot, on the 22nd of May, 1840.

Mr. Fraser exhibited and pointed out the characters of the following new species of birds from the collection of the Earl of Derby:

Turdus gigas. *T. nigrescenti-olivaceus; subtus fuscescenti-cinereus; hóc colore apud gulam crissumque obscuriore, caudâ et capite fuliginosis; gutturis plumis strigâ obscurâ et oblongâ notatis; rostro, pedibusque flavis.*

Long. tot. 14 unc.; *rostri*, $1\frac{1}{8}$; *alæ*, $6\frac{1}{2}$; *caudæ*, $6\frac{1}{2}$; *tarsi*, $1\frac{1}{2}$.

Hab. S^ta^. Fé de Bogota.

This bird may at once be distinguished from any other American species with which I am acquainted by its much greater size.

Psittacus chalcopterus. *P. nigricans, nitore submetallico; plumis capitis, cæruleo, et nec non viridi lavatis; illis dorsi sub-fuli-*

ginosis, tinctura viridi; illis corporis subtus cæruleo suffusis; alarum tectricibus æneo-viridibus, hic et illic ochreo tinctis; primariis, uropygio, caudáque intensè cæruleis; tectricibus caudæ paululùm virescentibus, crisso rubro; plumis femorum gutturisque rubro variegatis; alis subtus virescenti-cæruleis, tectricibus inferioribus intensè cæruleis; rostro flavo.

Long. tot. $11\frac{1}{2}$ unc; *rostri*, 1; *alæ*, $8\frac{3}{8}$; *caudæ*, $3\frac{1}{2}$; *tarsi*, $\frac{1}{2}$.

Hab. S^{ta}. Fé de Bogota.

Very closely approximates to the *Psittacus purpureus*, Gmel., but may at once be distinguished by its beak being entirely yellow; the absence of the red spot in front of the eye; its blue rump; the feathers on the legs, throat and chest being variegated with red; the darker colour of the abdomen, and also in the colouring of the upper and under surfaces of the wings.

Picus elegans. *P. coccineus, fasciâ per genas excurrente, et abdomine, flavis; mento, guttureque nigro flavidoque variegatis; plumis pectoris et uropygii rubello, flavido, et nigro fasciatis; caudâ nigrâ, primariis fuscescenti-nigris, extus olivaceis.*

Fœm. *differt gutture, capiteque supernè nigris.*

Long. tot. 12 unc.; *rostri*, $1\frac{1}{2}$; *alæ*, $5\frac{3}{4}$; *caudæ*, $4\frac{1}{2}$; *tarsi*, $\frac{7}{8}$.

Hab. S^{ta}. Fé de Bogota.

Head, neck, back, wings, and moustache, blood-red; a stripe, commencing at the nostril, passing through the eye, and extending on to the ear-coverts, together with the abdomen, under surface of the tail, and wing-coverts, yellow; chin black, each feather having a narrow bar of yellow, which becomes more distinct on the throat and chest, which are tinged with red; the feathers of the rump and upper tail-coverts are similarly marked with those on the chest, but more obscurely; primaries olive; tail, beak and feet black.

The female only differs from the male in having the upper surface of the head and moustache black; all the colours are less brilliant.

This bird appears nearly related to *Colaptes campestris* (*Picus campestris*, Licht.).

The three species above described are from the collection of the Earl of Derby.

Mr. Fraser also exhibited some specimens of the true *Pteroglossus Azaræ* of Wagler and Vieillot, and pointed out the differences between that species and the bird figured by Mr. Gould, in his Monograph of the family of Toucans, under that name.

"This bird differs from the *Azaræ* of Gould, in having the broad dusky dash along the upper mandible (having seen about twenty specimens of this species, of all ages and sexes, I can safely say that it is not a sign of immaturity, or caused by decomposition, as Mr. Gould was led to suppose, but really a specific difference), the *very* broad black belt, and the *very* narrow band of scarlet across the abdomen, as may be seen by a comparison of the figure given by Gould in his Monograph, and the one by Vieillot in his *Galérie des Oiseaux*, tom. ii.

"The specimen now before me, of the *Azaræ* of Wagler, was brought from British Guiana by R. H. Schomburgk, Esq., Corr. Memb. Zool. Soc., and presented by him to this Society. In the Earl of Derby's collection there is a specimen of the bird figured by Gould, for which I propose the name of *Pteroglossus flavirostris*, from the uniform colouring of its beak. M. Natterer informs me the latter species is from Rio Janeiro."

Mr. Blyth exhibited a fine pair of horns of the *Rass* of Pamîr*, brought from that elevated table-land by Lieut. Wood, of Sir A. Burnes's party. Mr. Blyth also exhibited the horns of a new species of wild Sheep, from Little Thibet, whence the specimens had been brought by G. T. Vigne, Esq., to whom he was indebted for the loan of them.

[* See page 64.] (63)

July 28, 1840.

Professor Owen in the Chair.

A letter from Capt. Christopher Smith, of H. M. Brig 'Star,' was read: it is dated July 20, 1840, and refers to two living Agoutis which that gentleman begged to present to the Society. The letter moreover states that he had collected a few specimens of Natural History, which he would take an early opportunity of forwarding for the Society's Museum.

Mr. Leadbeater exhibited an extensive collection of Birds, most of which were rare species from the various islands of the Indian Archipelago.

Mr. Cuming exhibited some specimens of Quadrupeds, which he had procured during his stay at Malacca; they consisted of two specimens of *Semnopithecus obscurus*, which species, Mr. Cuming states, is subject to great variation in its colouring, one specimen of *Felis marmorata*, and one of *Rhizomys Sinensis*.

Mr. Cuming's notes relating to the last-mentioned animal state that the specimen was a male, and before it was skinned afforded the following dimensions: length from the tip of the nose to the root of the tail, 15 inches; of tail, 6 inches; girth behind the shoulders, 8 inches. The animal lives on the roots of bamboos, under which it burrows; the eyes are very small, and of a black colour.

Mr. Blyth read his paper entitled "An Amended List of the Species of the genus *Ovis*."

"The arrival of various spoils of different species of wild sheep," remarks the author, "since my memoir upon this genus of animals was read before the Society, enables me now to clear up several points which I formerly left as doubtful, as well as to include some additional species in the catalogue, and to indicate still more as probably distinct, and therefore desiderata to which the attention of travellers and others should be directed.

"1. *Ovis Polii*, nobis (the Pamîr Sheep). In the narrative of the celebrated Venetian traveller, Marco Polo, we read (in Marsden's edition, p. 142) that upon the elevated plain of Pamir, eastward of Bokhara, and which is 16,000 feet above the sea-level, 'wild animals are met with in great numbers, particularly sheep of a large size, having horns three, four, and even six palms in length. The shepherds form ladles and vessels of them for holding their victuals. They also construct fences for enclosing their cattle, and securing them against the wolves, with which they say the country is infested, and which likewise destroy many of the wild sheep or goats (*mou-*

toni v. becchi or 'boucs').' More recently, an animal called the *Rasse* was indicated, from report, in Sir Alexander Burnes's 'Travels in Bokhara,' ii. 208, and its horns have since been transmitted to the Royal Asiatic Society by Lieut. Wood, of Sir A. Burnes's party, through the medium of G. T. Vigne, Esq. In this magnificent specimen of a frontlet I recognize (though with some hesitation) the *Ovis sculptorum*, formerly described by me from a horn in the Museum of the Royal College of Surgeons; but as the characters of that specimen, as originally drawn up by me, have not hitherto been published; as its flexure, too, which suggested the appellation of *sculptorum*, would appear to form a less extended spiral than is probably normal, and the habitat also proves to be different from that anticipated,—namely, the Taurus, which I have still reason to suspect contains a large undescribed species of this genus,—I here propose to dedicate the present splendid animal to the illustrious Venetian traveller of the thirteenth century, by the name of *Ovis Polii*.

"As compared with the Rocky Mountain Sheep of North America, the *Rass* or *Roosh* of Pamir differs in having the horns considerably less massive, but more prolonged, approaching more in character to those of the domestic *O. Aries*, but differing again from the latter, not only in their very superior size, but in having their two front angles about equally developed. As in the Rocky Mountain species, and I believe also the *O. Aries* normally, the pair at first diverge backward, and then descend and gyre round at a parallel with the axis of the body, inclining, as they again spire backwards, more outward to the tip. The horns described were in their seventh year of growth, and measure 4 feet 8 inches in length, following the curvature, and $14\frac{1}{4}$ inches round at base, having the tips, which are continued round till they point obliquely backwards, 45 inches apart. The width of their upper plane is $3\frac{1}{2}$ inches at base, $2\frac{3}{4}$ inches at the distance of one foot from the base, and $2\frac{1}{2}$ inches at 2 feet distance from the base; the depth of the base inside is 5 inches, and distance apart of the pair, measured outside, where they gyre forward at a parallel, 21 inches. The years of growth are successively $15\frac{1}{2}$, $10\frac{1}{2}$, 13, 8, 5, 3, and the last (incomplete) 1, inches. The College of Surgeons' specimen, a single horn, was in its eighth year of growth, but measures only 4 feet 4 inches round the curvature; its depth towards the base is 6 inches, and greatest width, about the middle, $2\frac{3}{4}$ inches. The successive annual growths are $12\frac{1}{2}$, 9, 8, 8, 7, 5, $3\frac{1}{2}$, and the incipient eighth 1, inches. It is curved in a spiral involution, and scarcely outwards for three-fifths of a circle, when it gradually inclines more so to the tip, the horn describing one circle and about a third. When upon the head, it must accordingly have gyred considerably inward, instead of descending at a parallel with the other, as indeed is almost invariably the case with the domestic *O. Aries*. Both specimens are of a pale colour, and indented with rugged transverse striæ, in general half an inch apart. Of the animal nothing further is yet known. Considering, indeed, the differences of the two specimens, it is by no means improbable that they will yet prove to be of allied rather than of the same species.

in which case my former name of *O. sculptorum* might be retained for that to which it was applied.

"2, 3, and 4. The museums of Western Europe do not, that I can learn, contain any portion of the Siberian Argali, *Ovis ammon* of Pallas, that might serve for comparison with the Rocky Mountain Sheep of North America, *O. montana* of Desmarest; but as the Kamtschatka Argali is described as a distinct species, *O. nivicola*, by M. Eschscholtz in his *Zoologischer Atlas*, (differing from the two preceding in its inferior size, and in wanting, it would appear, the pale disc surrounding the tail, so conspicuous in both the others,) the probability is thus enhanced, that the Siberian and Rocky Mountain species are not the same, however closely they may resemble. The descriptions of *O. Ammon* would seem to apply in every particular to the *O. montana*, though it is still probable that actual comparison of specimens would lead to the detection of some discrepancies, as generally, but not always, happens in like cases. I may notice, that while Mr. Drummond affirms that the horns of old rams of *O. montana* 'attain a size so enormous, and curve so much forwards and downwards, that they effectually prevent the animal from feeding on level ground*,' the same had previously been remarked by Strahlenberg of the Argalis of Siberia†, and no doubt is equally observable in the *Rass* of Pamîr. The finest specimen of a head of the Rocky Mountain animal, of seven heads of adult males examined, is in the collection of this Society, and gives the following admeasurements: horns 3 feet 5 inches over the front ridge, and $17\frac{1}{4}$ inches round at base, where the front angles are $4\frac{3}{4}$ inches apart. They number nine years of growth, which successively give 9, $7\frac{1}{2}$, $6\frac{1}{2}$, 5, $4\frac{1}{2}$, 4, $2\frac{1}{4}$, $1\frac{1}{4}$, and 1, inches. They are nearly equilaterally triangular, but bulge a little between the angles, having the inner or front angle obtusely prominent, the posterior double, or forming a second plane at a slight angle with the superior one, and the inferior angle (if such it can be called) much rounded off: the greatest depth of the horn is about 6 inches; from base of front angle to tip they measure 11 inches; and the tips apart 26 inches. They are everywhere strongly furrowed across, more particularly in front, the intervals between the grooves swelling out considerably; and they gradually become, as in all the rest of the genus, more compressed to the extremity.

"Of the *O. nivicola* of M. Eschscholtz, that naturalist writes: 'The specimen described is a male in winter garb, measuring 5 feet (French?) in total length, and 2 feet 5 inches high. Its outer coat is of a yellowish grey colour, brighter on the under parts, and inclining to straw-yellow on the head and neck; the markings in front of the limbs are of a rust-colour: horns equilaterally triangular, 3 inches thick at base, and gyring outwards to form one complete spiral circle, 10 inches in diameter, and having their points directed

* *Fauna Americana-borealis.*

† Description of the northern parts of Europe and Asia.—Eng. Transl., p. 332.

outwards and forwards; the upper and posterior portions of the horn are level, and marked with deep annual indentations, which successively measure 7, 6, 5, 4, 3, 2, 2, and 1½, inches, making eight years of total growth; besides which, there are numerous minor indentations or ordinary cross-striæ, but no protuberant intervals.' From the figure they would seem not to bulge between the angles, as is usual, though not invariably the case, with the Rocky Mountain species; as also to be somewhat more tensely spiral, as if pulled a little outward. The appearance both described and figured at the base of the fore-limbs externally, I suspect to be nothing more than the *axilla*, that had been twisted outwards in the mounting of the specimen. M. Eschscholtz describes this animal to be very numerous on the mountains of Kamtschatka, residing upon the snow-clad heights in summer, and descending to the lower regions in winter. A notice of its chamois-like agility occurs in the narrative of Kotzebue's Voyage from 1823 to 1826.

"In the 18th volume of the 'Asiatic Researches,' part ii., Mr. Hodgson, of Nepâl, gives a figure of a horned female of the Nahoor Sheep, and also of the skull and horns of a young ram, which he erroneously refers to that species, as since described by him. He also mentions having once possessed a pair of the horns, which he 'could only lift from the ground with a considerable effort'; but it is necessary to observe, that the description which he gives in the volume adverted to, of the mutilated skin of a young wild ram, procured in mid winter, refers evidently to the Nahoor, and not to the species with horns having a triangular section, which is the subject of the present notice. According to Mr. Hodgson, the horns of this young specimen are 'equilaterally triangular,' as the figure likewise represents; whereas the Rocky Mountain species would at the same age have much compressed horns, far from attaining to an equilateral triangle. Should a true species be here indicated, as is not improbable, distinct from *O. Ammon*, I propose that it be dedicated to that assiduous investigator of Nepalese zoology, and be accordingly termed *O. Hodgsonii*.

"5. *O. Californiana*, Douglas. The Jesuit missionary Venegos observed in California 'a kind of wild sheep, the size of a calf of one or two years old, with extraordinarily thick horns, resembling those of a common ram, *and tail shorter than that of a stag*,' whence it would appear that the Rocky Mountain species, or a near ally, is here alluded to. Mr. Douglas describes the Californian Argali to have a tail 18 inches long (*vide* Zoological Journal, iv. 332). Its length, he observes, from nose to base of tail, is 5 feet 10 inches; height of the shoulder 2 feet 8 inches; girth behind the shoulders 6 feet: head 16 inches long, 7 [to] between the eyes, and 9 [to] between the horns: ears erect, 1½ inch [4½ inches?] long, obtuse. The horns deposited in the museum of this Society bear a general resemblance to those of the Rocky Mountain species, but are smoother, and form a much more open spiral: the terminal third is very much compressed; the medial intermediate, and the basal very thick and triangular: they were only in their fifth year of growth, and would

doubtless have attained to much greater dimensions. Their length is 32 inches, measured over the front ridge, and girth at base $14\frac{1}{2}$ inches, having a span of $12\frac{1}{2}$ inches from base to tip inside: from the tip to first annual depression they measure $12\frac{1}{2}$ inches, and then successively $6\frac{1}{4}$, $5\frac{1}{2}$, $4\frac{3}{4}$, and the incipient fifth year's growth 2 inches. They do not bulge between the angles, which are rather obtuse, and, as usual, are transversely striated. Approximate distance of the tips apart 33 inches.

"'From the testimony of the Indian tribes about the Great Falls of the Columbia River,' writes Mr. Douglas, 'this species appears to inhabit the subalpine regions of Mounts Wood, St. Helen's, and Vancouver, but is more numerous in the mountainous districts of the interior of California. The only good skin that ever came under my observation was in lat. 46° 14′ 55″, and long. 121° 17′ 0″.' Forbes, in his recent work on California, appears to allude to it by the name of *Berindo*, which in Mexico is applied to the *Antilocapra furcifera*. He quotes, however, the description by Venegos, including the statement that it has a short tail, and remarks, that 'they still abound in the plains at the foot of the mountains, and are always found in large herds.' It does not, from the context, appear to me that the prong-horned animal is intended.

"From these we might proceed, through the domestic *Aries*, to the species generally typified by the Moufflon of Corsica; but I shall interpolate a small group from the Himalaya, and apparently Caucasus, distinguished by having smooth and sub-cylindrical horns, that form a bold arc outwards at nearly right angles with the axis of the body, and have the tip turned backward. Such is

"6. *O. Nahoor*, Hodgson; the *Nahoor* or *Nervati*, and *Snà* (not *Shù*) of Thibet. Size of the larger breeds of tame sheep, with pale horns, and general colour dull brownish grey in old animals, with the ordinary dark markings on the face, breast, and limbs, more or less developed. Younger specimens, more particularly, have their coat, when renovated, tipped with a light fulvous tint, deeper along the middle of the back; the tail is bushy, and conspicuously white, its medial portion generally dark. Length, as given by Mr. Hodgson, 4 feet from nose to base of tail, and height of the back 32 inches. A female was 3 feet 4 inches from nose to tail, and stood 29 inches high at the shoulder. From nose to between the horns a male measured $8\frac{1}{2}$ inches; the ears $4\frac{1}{2}$ inches; and tail 4 inches, or 7 inches to the end of the hair. A pair of horns in the museum of this Society, which are far from having attained their full growth, measure 12 inches in circumference at base, and $20\frac{1}{2}$ inches long over the curvature, having their tips 27 inches asunder: their successive annual growths were respectively $6\frac{1}{2}$, 4, 3, $2\frac{3}{4}$, $2\frac{1}{2}$, and $1\frac{3}{4}$, inches. Mr. Hodgson mentions a pair that were each 32 inches long. Those of a very old female in the British Museum have precisely the same curvature as in the male, only that the tips do not turn so much backwards; they are, however, much compressed, and measure $9\frac{3}{4}$ inches long, $4\frac{1}{2}$ inches round, with the tips 14 inches apart. Another female, in the collection of this Society, is entirely

destitute of horns. The latter, and a young male which I formerly examined at Mr. Leadbeater's, accorded perfectly with the description of Mr. Hodgson, having pale slaty-blue hairs, deeper on the back, and tipped with a rufous tint, more particularly on the back, which caused the animal to appear of a pale fulvous or isabelline hue. An old male in the museum of the Linnean Society*, and the aged female in the British Museum, together with another skin which I have seen, have not only no trace of this colour in their present state of *pelage*, but I doubt whether they showed much of it when their coat was new: the colour of all three is a dingy grey-brown, not easy to express in words.

"The horns of the Nahoor differ but little in flexure from those of the next species, but may nevertheless be distinguished by many differences, in general strongly pronounced: as their superior size; the greater proportional thickness of the basal half, beyond which they narrow somewhat abruptly; the flatness of their dorsal aspect, with a much more acutely raised ridge along its middle; and by the comparative sharpness of all the angles, together with the existence, generally, of some traces of cross striæ, more particularly towards their compressed tips; whereas the horns of the Burrhel Sheep are much less angular, of a deep rufous-brown colour, and quite smooth. Those of the female Nahoor described were entirely destitute of cross furrows, but all have the marks of annual growth conspicuously indented.

"This species, according to Mr. Hodgson, 'inhabits the Kâchar region of Nepâl, northward of the habitat of the Jharal Goat, amid the glaciers of the Himalaya, and both on the Indian and Thibetan sides of that range.' Mr. Vigne informs me that it is plentiful in Great, but not in Little Thibet. I suspect that it is never found at so considerable an altitude as the next species.

"7. *O. Burrhel*, nobis. Smaller and more robust than the Nahoor, with shorter ears, and very dark horns; having no white upon it; and general colour dark and rich chestnut-brown, with the ordinary black markings upon the face, chest, and front of the limbs very distinct; tail apparently minute.

"This handsome species bears pretty much the same relationship in appearance to the Nahoor, which the English breed of South Down domestic sheep bears to the Leicester breed, except that there is not so much difference in size. Length of the unique stuffed specimen in the museum of this Society, from nose to tail, 54 inches, but a foot less would probably give the dimensions of the recent animal, as the skin is evidently much stretched; height of the back 32 inches, from which also about 2 inches might be deducted; from muzzle to base of horn 8 inches, and ears $3\frac{1}{2}$ inches. The horns measure 20 inches over the uppermost ridge, and 10 round at base, having their tips 25 inches apart; but those of a specimen noticed in the 'Bengal Sporting Magazine' (for 1839, p. 295) were $25\frac{1}{2}$

* Mistaken for *Ovis Ammon* in the *Fauna Americana-borealis*, vol. i. p. 274, and for a second specimen of *O. Burrhel* in Part 6, p. 79, for July 10th, 1838, of these 'Proceedings.'

inches long, with a girth of $11\frac{1}{2}$ inches; and a horn of this same species, which I examined at Mr. Leadbeater's, had attained a length of 2 feet, and circumference of 11 inches at base, having a span of 14 inches from base to tip inside, and numbering at least ten indications of annual growth, and probably at least one more towards the tip, which could not be made out with certainty. The respective lengths of these were successively $10\frac{1}{2}$, $2\frac{1}{2}$, $2\frac{1}{4}$, $1\frac{3}{4}$, $1\frac{1}{4}$, $1\frac{1}{2}$, 1, 1, $\frac{3}{4}$, and the basal $\frac{1}{2}$, inches. The coat of the Burrhel Sheep is rather long, and harsher than that of the Nahoor, having less wool concealed beneath it than in the Moufflon and Rocky Mountain species. The female is undescribed, and I have met with no other specimens than are here mentioned.

"In the description of the preceding species, the principal differences are stated which distinguish the horns of that animal from those of the present one. The Burrhel's horns have all the ridges rounded off, though still sufficiently distinct, and the marks of annual growth are deeply indented, the horn bulging a little between them. Upon a front view, the backward curvature of the tips disappears altogether, and the animal has an imposing appearance, finer than that of the Nahoor. Its colour is much darker than that of the Moufflon.

"The Burrhel would seem to inhabit a much loftier region of the Himalaya than the Nahoor, where it bounds lightly over the encrusted snow, at an altitude where its human pursuers find it difficult to breathe. It has the bleat of the domestic species, as indeed they all have, and is very shy and difficult of approach. Flocks of from ten to twenty have been observed, conducted by an old male, which make for the snowy peaks upon alarm, while their leader scrambles up some crag to reconnoitre, and if shot at and missed, bounds off a few paces further, and again stops to gaze. They pasture in the deep hollows and grassy glens. The Society's specimen was met with near the Boorendo Pass, at an altitude estimated to have been from 15,000 to 17,000 feet. The notice in the 'Bengal Sporting Magazine' refers to the same locality; and another notice most probably alludes to this species, in Lieut. Hutton's 'Journal of a Trip through Kunawar,' published in the 'Journal of the Bengal Asiatic Society' for 1839, p. 994. Finally, Mr. Leadbeater informed me that the horn described as having been in his possession was brought from Nepâl, together with specimens of the Nahoor and Musk, and the skull and horns of a Himalaya Ibex, which I also examined.

"8. *O. cylindricornis*, nobis (the Caucasian Argali). Col. Hamilton Smith notices this animal in his description of *O. Ammon* (published in Griffiths's English Edition of the 'Règne Animal,' vol. iv. p. 317), and writes me word that an individual died on landing it at Toulon, whither it had been brought by a French consul, who did not preserve the skull or skin, but set up the horns, which were quite fresh when he saw them. 'Each horn was about 3 feet long, arcuated, round, as thick at the top as at the base, of a brown colour, nearly smooth, and about 15 inches in circumference. They were so heavy and unmanageable,' writes Col. Smith, 'that I could not lift both together from the ground, nor place them in that kind

of juxta-position which would have given me an idea of their appearance on the head. I could not well determine which was the right or which the left horn. Circumstances prevented my taking a second view of them, as they arrived only the day before I left Paris, and they are now doubtless in the museum of that capital.' In my former paper I alluded to this animal as probably distinct, and apparently allied to the Burrhel: the foregoing details confirm me in that opinion, and remove all doubt of its distinctness, as there is no other species to which they will at all apply. The sketch which Col. Smith has favoured me with represents a sheep-horn, apparently of the same general form as those of the Burrhel and Nahoor; but the dimensions specified are very superior to those attained in the instance of either of the two Himalayan species adverted to, and I can only suppose that the (reverted?) tips had been broken off, and the truncated extremity worn smooth. The wild sheep of Caucasus and Taurus are at present little known, nor does any notice of this genus occur in the catalogue of Caucasian animals published by M. Ménétries; though it is nevertheless certain, from the vague incidental notices of various travellers, that some, and not unlikely several, exist. At Azaz, by the foot of Taurus, Mr. Ainsworth mentions having seen an animal which he designates *Ovis Ammon* (*vide* 'Travels in Assyria, Babylonia, and Chaldea,' p. 42).

"9. *O. Gmelinii*, nobis (the Armenian Sheep). This species belongs to the Moufflon group, but is yet very different from the Moufflon Sheep of Corsica. It is described and rudely figured in the *Reise durch Russland* (vol. iii. p. 486, and Tab. LV.) of the younger Gmelin; and the skull and horns, forwarded by that naturalist to St. Petersburgh, have been figured and described by Pallas in his *Spicilegia* (Fasc. xii. p. 15, and Tab. V. fig. 1.). Messrs. Brandt and Ratzeburg erroneously identified it, at the suggestion of M. Lichtenstein, with the wild Cyprian species, the horns of which have a nearly similar flexure. Fine specimens of the male, female, and young, lately received by this Society from Erzeroom, enable me to give the following description:

"Size of an ordinary tame sheep, with a remarkably short coat, of a lively chestnut-fulvous colour, deepest upon the back; the limbs and under parts whitish, with few traces of dark markings, except a finely contrasting black line of more lengthened hair down the front of the neck of the male only, widening to a large patch on the breast; and in both sexes a strip of somewhat lengthened mixed black and white hairs above the mid joint of the fore-limbs anteriorly, which corresponds to the tuft of *O. Tragelaphus*; tail small, and very slender: horns of the male subtrigonal, compressed, and very deep, with strongly marked angles and cross-striæ, diverging backwards, with a slight arcuation to near the tips, which incline inwards. As regards the flexure alone, but not the character of the horn, which is allied to that of the Common Ram, this handsome species links the Moufflon group with the Nahoor and Burrhel group.

"Length nearly 5 feet from nose to tail; the tail 4 inches; from nose to base of horn 8 inches, and ears $3\frac{1}{2}$ inches. Horns (about

full-grown, or nearly so,) 20 inches over the curvature, 10 round at base, 4 deep at base inside, their widest portion 2 feet apart, and tips 21 inches, with a span of $13\frac{1}{2}$ inches from base to tip inside; their colour pale. Around the eye and muzzle this species is whitish; the chaffron and front of the limbs are more or less tinged with dusky, and its coat is rather harsh, and fades considerably in brightness before it is shed. Female generally similar, but smaller, with no black down the front of the neck, and in the observed instances hornless. The lengthened black hair of the male is only 1 inch long, and that composing the tuft on the fore-limbs is so disposed that the latter is white in the centre, flanked with blackish.

"According to M. Gmelin, this species is found only on the highest mountains of Persia. Its rutting season takes place in September, and lasts a month; and the female yeans in March, producing two or three lambs at a time: the males, he informs us, are very quarrelsome amongst each other, insomuch that he had been at one place where the ground was completely strewed with horns that had been knocked off in their contests; so that if any variation in the flexure of these horns had been observable, this industrious naturalist would doubtless have remarked it. Sir John McNeill informed me that 'it appears to be the common species of the mountains of Armenia; occurring likewise on the north-west of Persia;' but the wild sheep of the central parts of Persia is evidently distinct, 'having horns much more resembling those of the domestic Ram, being spiral, and completing more than one spiral circle. I think I am not mistaken in supposing,' continues Sir John, 'that I have also had females of this species brought to me by the huntsmen with small horns, resembling those of the ewes of some of our domestic sheep; but, on reflection, I find that I cannot assert this positively, though I retain the general impression.' It is highly probable that a wild type of *O. Aries* is here adverted to, which would thus inhabit the same ranges of mountains as the wild common Goat (*C. Ægagrus*); and with respect to the circumstance of horns in the female sex, I may here remark that this character is very apt to be inconstant throughout the present group. It has already been noticed in the instance of *O. Nahoor*; and the elder Gmelin states that the females of *O. Ammon* are sometimes hornless, while those of the Corsican *O. Musimon* are generally so. The same likewise happens in different species of wild Goats, in the Goral of India, and in the prong-horned animal of North America; and even in the Gazelles, and other ovine-nosed species of what are commonly confused together under the name of *Antelope*, there have been instances of hornless males as well as females. A male Springbok of this description, as I am informed by Col. Hamilton Smith, was long in the possession of the Empress Josephine; and the specimen of *Ixalus Probaton*, Ogilby, in the museum of this Society, doubtless affords another example of the same phenomenon.

"10. *O. Vignei*, nobis: the *Shû* (not *Snû*) of Little Thibet, and *Koch* of the Sulimani range between India and Khorassan. This fine species is closely allied to the Corsican Moufflon, but is much

larger, with proportionally longer limbs, and a conspicuous fringe of lengthened blackish hair down the front of the neck, and not lying close, as in the Moufflon. Its size, I am informed by Mr. Vigne, is that of a large Fallow Deer; and from the general appearance of these animals, their length of leg, and swiftness on the mountains, 'they reminded me,' remarks that gentleman, 'of Deer rather than Sheep.'

"The general colour of this animal, to judge from an elaborately finished painting, taken from a living individual in its native country by Mr. Vigne, to whom we are indebted for all we know concerning the species, is a rufous brown, apparently not so deep as in the Moufflon; the face livid, or devoid of the rufous tinge of the body, and not terminated by a white muzzle, as in the Moufflon Sheep: the belly is white, separated by a black lateral band; and the limbs are brown, not mottled, as in the Moufflon, but with a whitish ring immediately above each hoof, then a dark ring, and above this a little white posteriorly, as in the Nylghau. The fringe in front of the neck is doubtless peculiar to the male, and the hairs of it would appear to be 4 or 5 inches long, and hang loosely. Tail about 6 inches long, and slender, apparently resembling that of the Armenian species rather than the Moufflon's.

"A full-grown pair of horns measure $32\frac{1}{2}$ inches over the curvature, and 11 inches round at base; their widest portion apart, measured outside, is 2 feet, the tips converging to 8 inches, and span from base to tip also 8 inches: they are subtriangular, much compressed laterally, the anterior surface $2\frac{3}{4}$ inches broad at base, with its side-angles about equally developed, and the posterior part of the section tapers rather suddenly to a somewhat acute angle; eight years of growth are very perceptible, which successively give 12, 7, 4, 3, 3, $1\frac{1}{2}$, $1\frac{1}{2}$, and $\frac{1}{2}$, inches; they bear considerable resemblance to those of the Moufflon Sheep, but differ in being very much larger, and in the circumstance of the outer front-angle being as much developed as the inner one; and they have not the slightest tendency to spire, but, describing three-fourths of a circle, and originally diverging as in a common Ram, they point towards the back of the neck, somewhat as in *O. Tragelaphus*. Another and younger specimen, however, has a decided spiral flexure outward, more especially towards the tip, and has also the outer angle much less developed than in the corresponding terminal portion of the former. This pair had grown to 11 inches long, with the tips $14\frac{1}{2}$ inches apart; only one year's growth, and that appparently incomplete, is however exhibited, and the curvature is likewise less than in the older specimen. The portion of skull attached is also so much smaller, that I think it prudent to hesitate in identifying it as specifically the same. The posterior margins of the orbits are but $4\frac{1}{2}$ inches apart, whereas in the other they are $5\frac{1}{2}$ inches. There are no materials for extending the comparison, but a few more dimensions may be given of the smaller one. The greatest width of this skull, at the posterior portion of the *zygoma*, is 5 inches, and the orbits are $3\frac{1}{4}$ inches distant where most approximated: the series of 5 developed

molars occupied $2\frac{3}{4}$ inches; width of second true molars apart, posteriorly and externally, $2\frac{1}{4}$ inches; of anterior false molars, measured outside and before, $1\frac{1}{8}$ inch; greatest width of palate $1\frac{3}{4}$ inch, and from front of first false molar to anterior portion of occipital *foramen*, $5\frac{3}{4}$ inches. Mr. Vigne, indeed, assures me that the adult has only five grinders on each side of both jaws, as in the Chirew, which, if normal, would make an important distinction, as the smaller specimen would undoubtedly have developed a third true molar, and possesses three false ones; whereas it is in one of the latter that the Chirew is deficient. I am inclined, however, to regard the two specimens as belonging to the same species, since I have observed analogous differences in the mere flexure of the horn in different Corsican Moufflons; but it was at all events proper to indicate the disparity.

"'Vast numbers of this species,' relates Mr. Vigne, 'are driven down by the snow in winter to the branches of the Indus, near Astor, at the southern extremity of Little Thibet, where the river breaks through the chain of the Himalaya. I once saw a young one, apparently of this species, in Persia, but took no memorandum of it at the time; it was dirty and draggled, but, I think, was covered with short wool.' I have great pleasure in dedicating this species to that gentleman.

"11. *O. Musimon*, Linnæus: the Moufflon Sheep of Corsica and Sardinia, but not, there is reason to suspect, of the Levantine countries. It is unnecessary to give a detailed description of this beautiful little species, though I may mention that the fine living male in the Gardens measures 39 inches from nose to tail, the tail 5 inches; from nose to base of horn 7 inches; ears 4 inches; neck, from posterior base of horn to the abrupt angle of its insertion, 8 inches, and thence to base of tail 21 inches; height at the shoulder $2\frac{1}{4}$ feet. The horns of this individual are remarkable for not spiring in the least degree, whence they point towards the back of the neck: they measure 21 inches over their curvature, and $8\frac{1}{4}$ inches round at base, being in their fifth year of growth; their widest portion apart is 15 inches, and at the tips 6 inches; but another pair, upon the stuffed specimen in the museum, which show the more usual slight spirature, are 26 inches long, having the widest portion 14 inches apart, and the tips as much as 12 inches: this pair shows seven years of growth, and their development was evidently completed, though they are only 7 inches in girth at base. The female has seldom any horns, which, when they exist, are ordinarily about 2 inches long.

"The character of the horn of the Moufflon is nearly the same as that of the domestic Ram, only that it is never so much prolonged, nor indeed to more than two-thirds of a circle: the inner front edge is acute to near the base, where the outer one approaches to an equality with it; the first half being thus unequally triangular, and the remainder much compressed, with strongly marked *rugæ*, and having the inner surface of the horn concave. It has always appeared to me, however, that the specifical distinctness of the Moufflon is very obvious, and I doubt whether it has contributed at all to the origin of any tame race. That it interbreeds freely with the latter, under

circumstances of restraint, is well known; but we have no information of hybrids, or *Umbri*, as they are called, being ever raised from wild Moufflons, though the flocks of the latter will occasionally graze in the same pasture with domestic sheep, and all but mingle among them. The male of this animal is denominated in Corsica *Mufro*, and the female *Mufra*, from which Buffon, as is well known, formed the word *Moufflon*: and in Sardinia the male is called *Murvoni*, and the female *Murva*, though it is not unusual to hear the peasants style both indiscriminately *Mufion*, which (as Mr. Smyth remarks in his description of that island,) is a palpable corruption of the Greek *Ophion*. It is sometimes stated, but I do not know upon what authority, that a few of these animals are still found upon the mountains of Murcia.

"12. The Cyprian Moufflon, figured and described by Messrs. Brandt and Ratzeburg from a specimen in the Berlin Museum, and contrasted by them with M. F. Cuvier's figure of the Corsican animal, is probably a distinct species, intermediate to *O. Musimon* and *O. Gmelinii*: its horns have more the curvature of those of the latter species, but are not so robust, and curve round gradually backward from the base, instead of at first diverging straightly, as in *O. Gmelinii*; but the colour of the coat would appear to resemble that of the Corsican Moufflon, only without the rufous cast, and the specimen figured wants also the saddle-like triangular white patch, which is seldom absent in the Moufflon of Sardinia and Corsica. The *Tragelaphus* of Belon, it is true, observed by that author in Candia and in Turkey, is described by him to have 'horns similar to those of Goats, but sometimes gyrated like those of a Ram'; yet the fact of a nearly similar flexure of horn to that represented by Messrs. Brandt and Ratzeburg, proving to be of normal occurrence in the allied Armenian wild Sheep, confers additional probability on the supposition that the Berlin specimen of the Cyprian Moufflon has also normally curved horns, which alone would go far to establish its claim to rank as a species, in which case it might bear the appellation of *O. Ophion*.

"13. *O.* ——: *Ixalus Probaton*, Ogilby. I stated in my former paper an opinion, to which I am still disposed to adhere, that this animal is no other than a genuine sheep, but specifically distinct from any at present known: the specimen had long lived in captivity, as is obvious from the manner in which its hoofs had grown out; but whereas I formerly sought to account for its absence of horns, by ascribing this to probable castration at an early age, I am now inclined to consider that this abnormity—for such there is every reason to suppose it—was individually congenital, as in other rare cases before alluded to. The Armenian wild Sheep approaches more nearly to this species than any other as yet discovered; so much so, that before actually comparing them I thought that they would prove to be the same; but they are nevertheless distinct, as is particularly shown by the longer and less slender tail of the present animal, and the very different texture of its coat: the absence of dark markings on its face and limbs may prove to be an individual peculiarity. The specimen is of the size of a large tame Sheep, and entirely of a

chestnut fulvous colour, dull white beneath and within the limbs, as also on the lips, chin, lower part of the cheeks, and at the tip of the tail. From nose to base of tail it measures about 50 inches,—the tail half a foot, and height of the back $2\frac{1}{2}$ feet. From nose to rudiment of horn 9 inches, and ears 4 inches: the vestiges of horns, which exactly resemble those found upon many breeds of tame Sheep, are 2 inches apart. Upon the minutest examination of the specimen, I can perceive no character whatever to separate it from the genuine Sheep, nor any distinction more remarkable than the trivial circumstance of its chaffron not being bombed, as usual, which however is equally the case with *O. Tragelaphus*. I have been favoured, however, by Col. Hamilton Smith with a drawing of an animal observed by himself on the banks of the Rio St. Juan in Venezuela, which appears to accord so nearly with *Ixalus Probaton*, except in the particular of bearing horns similar to those of the Rocky Mountain Goat, that its absolute identity is probable, in which case it would be curious that a species so very nearly allied to the genus *Ovis* should yet differ from it so considerably in the character specified. The South American animal adverted to is the *Aploceros Mazama* of Col. Smith, and is probably congenerous with the *Pudu* of the Chilian Andes mentioned by Mŏlina, (the existence of which would appear to have been lately re-ascertained by M. Gay,) and also with the fossil *Antilope Mariquensis* of Dr. Lund: there would indeed appear to be other living species of this type, more or less distinctly indicated by different authors.

"14. *O. Aries*, Linnæus: the Domestic Sheep. Assuming that different species have commingled to produce this animal, as appears to be very evident in the instance of the Dog, it is still remarkable that we have certainly not yet discovered the principal wild type, or indeed any species with so long a tail as in many of the domestic breeds, which I cannot doubt existed also in their aboriginal progenitors: nothing analogous is observable among the endlessly diversified races of the domestic Goat, which all appear to have been derived exclusively from the Caucasian *C. Ægagrus*; and as in my former paper I suggested the probability that a wild Sheep more nearly resembling the domestic races than any hitherto discovered would yet occur somewhere in the vicinity of the Caucasus, it now appears that such an animal does exist in central Persia, as noticed in my description of *O. Gmelinii*: nor should it be forgotten that Hector Boëtius mentions a wild breed in the island of St. Kilda, larger than the biggest Goat, with tail hanging to the ground, and horns longer and as bulky as those of an Ox*. Pennant remarks upon this subject, that such an animal is figured on a bas-relief, taken out of the wall of Antoninus, near Glasgow.

"Of all the wild species of true *Ovis* that have been here described, the Rass of Pamîr approaches nearest to *O. Aries* in the

* Two *crania* of sheep, apparently male and female, from the Irish peat, in the possession of the Earl of Enniskillen, and exhibited some time ago at a meeting of the Geological Society, are probably of this race.

character of its horns, though differing in one particular, besides size, that has been pointed out; namely, that the two front angles are about equally developed; whereas in *O. Aries*, as in the Moufflon, the inner angle is more acute to near the base. Some experience in the deduction of the specific characters of sheep-horns enables me to state with confidence, that the normal character of the long-tailed domestic breeds of Europe, and also of most other breeds, is intermediate to that of the Rass and that of the Moufflon, combining the flexure and the prolongation of the former with the section of the latter, but becoming proportionally broader at the base than in either; more as in the Argalis of Siberia, Kamtschatka, and North America. That *O. Aries* is totally distinct from all, I have been long perfectly satisfied, and examination of the Rass in particular has strongly confirmed me in this opinion. I think it likely, however, that more than one wild species have commingled to form the numerous domestic races, though certainly not any that have been described in this paper. It is not very long since the question was habitually discussed, whether the tame Sheep had descended from the Argali of Siberia or the Moufflon of Corsica? and now that so many more decidedly distinct wild species have been added to the catalogue of this genus, it is probable that we are still very far from having ascertained the complete existing number, but that several more yet remain to be discovered upon the lofty table-lands and snowy mountains of middle Asia, from the Caucasus and Taurus to the Altai, and among them, it is very probable, some much more nearly allied to the domestic races than any at present known.

"The whole of the foregoing animals appertain to my subgeneric group *Ovis*, as distinguished from *Ammotragus*, which latter is characterized by the absence of suborbital sinuses, like the Goats, but differs from the latter by possessing interdigital *fossæ*, as in other Sheep. This difference between the Goats and Sheep appears to have been first noticed by Pallas, and has since been descanted upon by Prof. Géné in vol. xxxvii. of the *Memorie della Reale Academia delle Scienze di Torino*. The fact of such a diversity in genera so nearly allied in habitat as the Goats and Sheep, renders the problem of the utility of the structure in question somewhat difficult of solution. The species upon which I found the subgenus *Ammotragus*, has decidedly an Ovine, rather than a Caprine aspect, when viewed alive: the male emits no stench, as in the Goats; the bleat is precisely that of *Ovis*, and the animal butts like a Ram, and not like a Goat. Unlike the other species of admitted wild Sheep, as well as the long-horned or true wild Goats, it has a concave chaffron, and no markings on the face and limbs: its tail is rather long, which is the case in no species of *Capra*, and is also remarkable for being tufted at the extremity. The indigenous habitat, North Africa, is a further peculiarity in the genus in which it is here placed, though two species of wild Goats respectively inhabit Upper Egypt and the snowy heights of Abyssinia.

"15. *O. Tragelaphus*, Pallas: the African Goat-Sheep. This animal appears to vary considerably in size, some exceeding a Fallow

Deer in stature, while others are much smaller. It has no beard on the chin, like the true Goats, but is remarkable for the quantity of long hanging hair in front of the neck, and on the upper part of the fore-limbs, the former attaining in fine males to about a foot in length, and the latter to 9 inches; there is also some lengthened hair at the setting on of the head, and a dense nuchal mane, the hairs of which are 3 inches long, continued over the withers till lost about the middle of the back. General colour yellow-brown. Horns moderately stout, turning outwards, backwards, and so inwards, with the tips inclining towards each other.

"The splendid male in the British Museum measures 5 feet from nose to tail, and tail 9 inches, or with its terminal tuft of hair 13 inches; height of the back $3\frac{1}{2}$ feet, but the living animal would not have stood so high by several inches; from muzzle to base of horn 11 inches, and ears 5 inches. The finest pair of horns which I have seen are in the same collection, and measure 25 inches over the curvature, $10\frac{1}{2}$ round at base, with an antero-posterior diameter of $2\frac{1}{2}$ inches inside; they diverge to 23 inches apart, measuring outside, at a distance of 6 inches from the tips, which latter return to 15 inches asunder; their span from base to tip inside is 13 inches; at base they are closely approximated, but not quite in contact. General form subquadrangular for nearly a foot, then gradually more compressed to the end, and having a very deep longitudinal furrow for the greater portion of their length outside, above which the horn bulges: there is a mark of annual growth at $1\frac{1}{4}$ inch from the base, another $1\frac{1}{2}$ inch further, and a third after an interval of 3 inches; but the rest are too indistinct to be made out with certainty among the wrinkles of the horn. A large pair of female horns were 16 inches long; $7\frac{1}{2}$ round at base; their widest portion apart, near the tips, 19 inches; and the tips $17\frac{1}{4}$ inches: their surface is marked with broad transverse indentations, which in the males ordinarily become more or less effaced with age. The female of this species is a third smaller than the other sex; and a lamb in the collection of this Society is extremely kid-like, with the spinal mane upon the neck and shoulders very conspicuous, but no lengthened hair on the fore-neck and limbs; in the half-grown male, the latter especially is still not much developed.

"This species is well known as the *Aoudad* of the Moors, and the *Kebsh* of the Egyptians; it is also, according to Rüppell, the *Tedal* of the inhabitants of Nubia, which is doubtless the same as *Teytal*, applied by Burckhardt to the wild Goat of that region, in addition to the word *Beden*, which (in common with Rüppell and others) he also assigns to the latter. Mr. Wilkinson, however, confirms Burckhardt, by informing us that the Goat referred to is called in Arabic *Beddan*, or *Taytal*, the former appellation referring to the male only. This author adds, that the present species 'is found in the eastern desert, principally in the ranges of primitive mountains, which, commencing about lat. 28° 40′, extend thence into Ethiopia and Abyssinia.' According to M. Rüppell, 'it is found in all North Africa above 18°, in small families, and always upon the rocky hills;' frequenting the

steepest and most inaccessible crags amid the woods and forests of the Atlas, and descending only to drink. It is a wonderfully agile leaper, even more so than the wild Sheep and Goats generally, and is remarkable for always browsing, in preference to grazing. The *Ovis ornata*, figured by M. Geoffroy in the great French work on Egypt, would appear to be merely a small-sized individual.

"The following may serve for definitions of the various ascertained species of wild Sheep that have been here described :—

"1. *O. Polii*, Blyth. O. cornibus maximis triquetris, angustis altissimisque ; angulis anterioribus equalibus : extrorsùm spiraliter gyratis, et tàm prolongatis quam sunt cornua Arietum domesticorum longissima : sulcis transversìm indentatis ; colore pallido. Animal non cognitum est, sed *O. Ammoni* magnitudine saltem haud inferius. Habitat apud planitiem elevatam *Pamîr* dictam, in Asiâ centrali.

"2. *O. montana*, Desmarest. O. cornibus maximis triquetris, crassissimis, et sæpe inter angulos tumidis, ad apicem compressioribus ; sulcis transversìm indentatis ; deorsùm et antrorsùm gyratis ad parallelum, apicibus extrorsùm eductis : colore pallido, sed sæpe rufo-brunneo suffuso. Animal ad magnitudinem *Cervi Elaphi* appropinquans, sed artubus brevioribus ; pilis griseo-fulvis pallidis, maculis genericis super facie, pectore, artubusque fuscis ; caudâ brevissimâ, et disco albescente circumdatâ. Habitat apud Americæ Septentrionalis montes, occidentalem versus.

"3. *O. Ammon*, Pallas. Diversitas hujus speciei ab præcedente non cognoscenda est, quamvis patria differt, hâc in Siberiâ Orientali habitante ; tertia alia species ambobus distincta regione intermediâ Kamtschatkæ invenitur, itidem simillima, tamen (apparenter) facillimè dignoscenda ; viz.

"4. *O. nivicola*, Eschscholtz. O. cornibus triquetris, et inter cornua *Polii* et *Montanæ* Ovium apparenter intermediis ; apicibus magis prolongatis quam in *O. montano*, sed ad basin crassioribus ; potius quam in *O. Polio* prolongatis, sed cornibus utriusque minoribus. Magnitudo huic animali inferior est, et pilorum color flavescens, sine disco caudali. Habitat apud montes Kamtschatkæ.

"5. *O. Californiana*, Douglas. O. cornibus crassis triquetris, ad apicem compressioribus ; sulcis transversìm indentatis ; curvamine aperto extrorsùm (non antrorsùm) gyrantibus, apicibus plurimùm extrorsùm ductis ; colore pallido, aut rufo-brunneo paulùm suffuso. Magnitudo Ammonis, vel paulùm inferior : caudâ elongatâ, et non (?) disco pallido circundatâ. Habitat apud Californiam.

"6. *O. Nahoor*, Hodgson. O. cornibus crassis subcylindraceis, suprà magis planiusculis, culmine abruptiore medio, dimidio-distali compressiori, et extrorsùm arcuatis, apicibus retortis : sulcis transversis obsoletis ; colore pallido. Magnitudo Arietis grandis ; pilis griseis, vel in junioribus adultis fulvo terminatis, maculis genericis fuscis ; caudâ brevi et floccosâ. Habitat apud regiones medias montium Himalaicorum, et in Tibetâ Magnâ.

"7. *O. Burrhel*, Blyth. O. cornibus crassis subcylindraceis, suprà

convexioribus, culmine longitudinali minùs abrupto, et aliis angulis minùs prominentioribus quàm in specie præcedente, subequalioribus; in arcu extrorsùm curvatis, apicibus retrorsis; sulcis transversis obsoletis; colore nigrescenti-rubido. Magnitudo inferior est *Nahoori*, sed forma robustior; pilis castaneo-brunneis intensis, maculis genericis nigris et distinctis; caudâ minimâ (?) et non floccosâ. Habitat apud montium Himalaicorum regiones summas.

"8. *O. cylindricornis*, Blyth. O. cornibus maximis cylindraceis, in arcu extrorsùm (?) sine diminutione curvatis, apicibus non cognitis; sulcis transversis obsoletis: colore nigrescenti-rubido. Habitat apud Caucasum.

"9. *O. Gmelinii*, Blyth. O. cornibus triquetris et robustis, altis, et transversìm sulcatissimis; in arcu retrorsùm divergentibus, apicibus introrsùm ductis: colore pallido. Magnitudo Arietis; pilis brevissimis, et castaneo-fulvis splendidè coloratis; maculis genericis subdistinctis, sed lineâ pilorum longiorum nigrâ infra collum in mare solo excipiendâ, apud pectore se expandente, et in utroque sexu cæsarie rudimentâ brachiis, sicut in *Ove Tragelapho*: caudâ brevi et gracillimâ. Habitat apud Armeniam et provincias Occidentales Persiæ Septentrionalis.

"10. *O. Vignei*, Blyth. *O. Musimoni* simillima, sed magnitudine *Cervi Damæ* grandis, æquans artubusque longissimis: cornibus robustis, compressis, et subtriquetris, angulis anterioribus equalibus; lunatìm non spiraliter gyratis; et sulcis transversìm indentatis: colore pallido. Corporis pilis rufo-brunneis; facie artubusque lividis; ventre, et annulis supra ungulas albis; lineâ laterali nigrâ; pedibus annulo secundo nigro anticè albo super-marginato notatis; apice caudæ (brevis et gracilis,) et lineâ pilorum paulò pendentium infra collum medium ad pectus tendente, nigris. Habitat apud Tibetam Minorem. *Varietas dubia* minor, cornibus extrorsùm gyratis, cum angulo interiori prominentiori.

"11. *O. Musimon*, Linnæus. O. cornibus compressis, ad basin triquetrioribus, angulo interiori prominentiori; lunatìm gyratis, et sulcis transversìm indentatis: colore pallido. Magnitudo *Arietis* parvi, caudâ brevi et magis villosâ: pilis rufo-brunneis; facie lividâ, cum capistro albo; ventre, clunibus, dimidiisque artuum inferioribus, albis; et lineâ laterali, caudâ, pectore, et membrorum plerumque dimidiis superioribus, nigris: maculâ triangulari albâ utroque lumbo sæpe conspicuâ. Habitat apud insulas Corsicæ et Sardiniæ, et forsan provinciam Murciæ in Hispaniâ.

"12. *O. Ophion*, Blyth. *O. Musimoni* simillima, sed cornibus retortis, apicibus accurvatis: pilisque brunneis, et non rufescentibus (?). Habitat apud Cyprum, et forsan regiones alias Levantinas.

"13. *O. Aries*, Linnæus.

"14. *O.* ——? *Ixalus Probaton*, Ogilby. Magnitudo *Arietum* maximorum, caudâ paulùm elongatâ: cornibus in specimine solo cognito abnormaliter (?) rudimentalibus. Pilis castaneo-fulvis, et infra albescentibus.

"15. *O.* (*Ammotragus*) *Tragelaphus*. O. cornibus magnis subquadrangularibus, moderatè crassis, ad apicem compressioribus, sulcis

transversìm indentatis; divergentibus et retrorsùm curvatis, sed prope basin rectis, apicibus acclinatis; colore pallido. Magnitudo *Cervi Damæ* superior, pilis flavescenti-brunneis; collo jubato, et infrà cum pectore brachiisque capillato, caudâ elongatâ extremitate villosâ; facie non convexâ—ut in omnibus speciebus aliis, sinibusque suborbitalibus nullis. Fœminâ semper (?) cornutâ, cornibusque fortioribus quàm in fœminis specierum cæterarum hujus generis, quæ sæpe non cornutæ sunt, sed plurimæ cornua parva, tenuissima, et compressiora ferunt, qua in maribus junioribus aut curvata sunt, aut sæpe rectiora. Habitat apud Africæ Septentrionalis montes rupestres."

This paper on the Sheep was illustrated by numerous drawings; and the horns of the Rass of Pamìr, from the Museum of the Royal Asiatic Society, and two pairs of those of the *Shà* of Little Thibet, and one of the Nahoor Sheep, or *Snà* of Great Thibet, brought by G. T. Vigne, Esq., were exhibited.

Mr. Blyth also exhibited various other coloured drawings and specimens collected chiefly in Little Thibet by Mr. Vigne, among the former of which were several figures of the Yak (*Bos grunniens*), a highly-finished portrait of the Jharal* of Mr. Hodgson, another of the *Ovis Vignii*, some sketches of the *Ursus isabellinus*, (or *Syriacus* of Ehrenberg?) and of Buffaloes of the same breed as that of Italy and Hungary, with the long tail, &c., that were drawn from life at Hurriana. This race was more esteemed for the quantity of milk it yields than the ordinary Indian Buffalo, with long horns, a shorter tail, &c., and is doubtless the same, in the opinion of Mr. Blyth, as the Guzurat race indicated in Dr. Buchanan's 'Journey through Mysore,' &c., which that author, however, observed at Seringapatam. It appears to be scantily diffused throughout India, becoming rarer to the eastward.

Among the specimens was the horn of a Stag, from Kashmir, which Mr. Blyth suspected would prove to be the *C. Wallichii* of Duvaucel, or a closely allied species, a description of which may be expected from Dr. Falconer. The specimen exhibited was 44 inches long, and 8 inches round above burr: it had a brow, a bez, and royal antlers, the bez a foot in length, and longest of the three, and

* "This animal is mostly known as the *Tehr*, *Thaar*, or *Thar*, to the westward of Nepâl, a name applied by Mr. Hodgson to a very different animal, which is usually called *Surow*, or *Surrow*. The first of these names, as suggested to me by Col. H. Smith, is clearly a modification of the Teuton *Thur*, ramifying into *Thier*, *Deer*, &c. &c. &c. *Surow*, or *Surrow*, again passes into various other names, applied to different Himalayan Ruminants; as *Jerow* or *Jerrow* for the *Cervus Aristotelis*, *Serow* and *Chirew* (pronounced with a soft 'Ch') for the *Panthalops chiru*, Hodgson, &c. Then we have *Jharal*, *Goral*, *Goorul*, *Baral*, *Boorul*, *Burrhel*, *Boorhoor*, *Nayoor*, *Nahoor*, and even the Persian *Maral* may be derived from the same root. These names, too, are all severally applied to different animals, whence it often requires much caution in endeavouring to ascertain what species is intended." —E. B.

it terminated in a bifurcating crown, precisely as in the *Cervus Elaphus* of the Sâl forest of Nepâl, figured by Mr. Hodgson, and supposed by Mr. Ogilby to be *C. Wallichii*, an opinion in which Mr. Blyth coincided. The general character of this horn was intermediate to that of the *Wapiti* and European Stag, but agreeing more nearly with the latter in its kind of granulated surface.

There were also three pairs of horns of the *Markbur* of Kabul, or *Rawacki* of Little Thibet, a race of feral common Goats (in the opinion of Mr. Blyth), remarkable for their large size, and also that of the horns, which last are more or less twisted, varying from the curvature of those of the Koodoo, only in an opposite direction, to the tense spiral of the Caffrarian Impoof's horns, as shown by the specimens then exhibited. It was remarkable that no tame Goats observed by Mr. Vigne in the same countries at all approached this feral race in stature, nor was it known to occur in Persia, or in Nepâl. From the circumstance of the twist alone of the horns of this animal, Mr. Blyth argued that it was not an aboriginal species; for whereas an inward spirature, or at least a tendency to it at the tips, was all but invariably observable throughout the endlessly diversified races of domestic Goats, neither the wild *Capra Ægagrus*, nor any other of the numerous distinct species of wild *Capræ* known to Mr. Blyth, exhibited this spirature in the least degree; besides which, it appeared to be alike in no two specimens of the *Markbur*. This animal, however, as he was informed, did not vary in colour, which resembles that of an ordinary brown domestic Goat. A description and figure of it have been published in Mr. Vigne's narrative of his travels in Kabul.

Finally, were exhibited the skull and horns of a magnificent specimen of the Himalayan Ibex, being the second skull and third pair of horns of this species examined by Mr. Blyth, all of which accorded with each other in the several particulars in which they differed from the Swiss Ibex. The animal is very closely allied to the latter, having a similar rudimental beard, and colouring, so far as he could learn; but the horns are much longer, considerably less divergent (a constant distinction in both species), and resemble those of the Egyptian Ibex in curvature: excepting towards the base, they are less massive than the horns of the Swiss Ibex, the middle part being narrower; and the tips, which incline more abruptly somewhat forward and inward, are much more attenuated, or drawn out. The splendid pair exhibited, which were in their twelfth year of growth, and all but fully developed, measured $4\frac{1}{4}$ feet over the curvature, and $10\frac{1}{2}$ inches round at base; diverging to 23 inches asunder, measuring outside, at nearly three-fourths of their length from the base, and the tips returning to 16 inches apart, at a distance of 20 inches from the base inside. They are 4 inches deep at base, $2\frac{1}{4}$ inches broad anteriorly, and 2 inches at a foot distance from the base, bearing 26 prominences, and numbering, as before remarked, 12 years of growth, which successively give 16, 7, 5, 4, 5, 4, $3\frac{1}{2}$, $2\frac{1}{2}$, 2, $1\frac{1}{2}$, and the last (incomplete) $\frac{1}{2}$, inches. The extreme length of skull is 12 inches, or $18\frac{1}{2}$ inches over the curves, from tip of intermaxillary to occipital *foramen*;

breadth across of orbits posteriorly 7 inches, and total length of bony palate $6\frac{1}{4}$ inches. The dimensions of the largest pair of horns of the Swiss Ibex examined by Mr. Blyth, and which were of the same age as the preceding, are given as follows. Length $3\frac{1}{2}$ feet over the arch, having a span of 2 feet from base to tip inside; the points $2\frac{3}{4}$ feet asunder, and basal circumference $10\frac{3}{4}$ inches; number of prominences above 20, several being comprised within the first 8 inches. They diverge quite regularly, and somewhat spirally, more outward to the tip.

"The Himalayan Ibex," continues Mr. Blyth, "is the *Skyn* or *Skeen*, *Sakeen* or *Sikeen* (as variously written) of different parts of its range, and is numerous, according to Mr. Vigne, in Little Thibet, where it is designated *Skyn*. In Kashmir it bears the name of *Kyl*. Mr. Moorcroft informs us that in Ladakh the male is termed *Skyn*, and the female *l' Danma**: he describes it to inhabit the most inaccessible crags of the mountains; and other authors notice its habits as entirely resembling those of its Alpine congener†. In Kashmir, as I am informed by Mr. Vigne, its *poshm* (or under-fleece of delicate silky wool), which in all the true massive-horned Ibices is amazingly copious in winter, is highly prized, 'that of one large Ibex being equal to the produce of three Shawl Goats, besides being softer and finer. I have some beautiful cloth,' continues that gentleman, 'made from the *poshm* of the Ibex. The animal is of a sepia-brown colour.' It may be further noticed, that in the 'Journal of the Asiatic Society of Bengal,' vol. v. p. 242, it is stated that Major Kennedy had a pair of these animals, stuffed, at Suhatu, in Kunawar. A skull and horns which I saw at Mr. Leadbeater's was received from Nepâl, where, however, the species does not yet appear to have been noticed by Mr. Hodgson. Dr. Falconer has probably named it.

"*Himalaya Ibex*. *Capra* Ibici Helvetico simillima, sed cornibus magis prolongatis, semper minùs divergentibus, apicibus attenuatioribus et ad antrorsùm abruptiori-curvatis,—sic ut in plurimis speciebus hujus generis, at vix in *Caprâ Ibice* verâ."

* Travels, i. 311.

† Vide 'Journal of a Trip through Kunawar,' published in the 'Journal of the Asiatic Society of Bengal' for 1839, p. 928.

August 11, 1840.

R. C. Griffith, Esq., in the Chair.

A paper entitled "Description of Shells collected and brought to this country by Hugh Cuming, Esq.," by W. J. Broderip, Esq., F.R.S., etc., was read.

"Mr. Cuming," observes the author, "the fruits of whose western voyage are so well known, left England on the 26th of February, 1836: he proceeded to the Philippine Islands, by the permission of the Queen Regent of Spain, and aided by powerful recommendations from her government, which opened to him the interior of the islands, and caused him to be received with a noble hospitality, equalled only by the warm interest which facilitated his pursuits wherever he arrived and made himself known.

"Mr. Cuming visited the whole group. His longest stay was in the island of Luzon, fifteen provinces of which were well ransacked by him. In the islands Mindoro, Negros, Panay, Siquijod, Zebu, Bohol, Camiguing, Mindanao, Leyte, Samar, Capul, Ticao, Masbate, Burias, Temple, Marinduque, Maracavan, and Ramblon, he reaped a fine harvest. He left the Philippines in November, 1839, proceeded thence to Sincapore and Malacca, and returned to England in June, 1840, bringing with him, besides the living animals which he has liberally presented to this Society, a grand collection of zoological and botanical specimens, including more than three thousand species and varieties of shells, the greater part of which appear to be new to science, and among them are several new genera. The smaller islands were particularly rich in the pulmoniferous mollusca, which were found by Mr. Cuming principally in deep forests. We commence a notice of the labours of this active and zealous collector, with an attempt to describe a few of these terrestrial species. Mr. G. B. Sowerby, who liberally gives up his valuable time to assist in laying before the public the novelties of this part of the collection, will also begin his share of the task, by describing another branch of the same numerous family; and it is intended to submit descriptions to the Society from time to time till the whole of Mr. Cuming's stores are exhausted.

"Before, however, we commence our task, I must, in justice to him who has placed the materials in our hands, observe, that, to say nothing of the variety of new forms which he has been the means of bringing to light, those who cultivate this branch of zoology so highly interesting to the geologist, as well as the physiologist, owe him a large debt of gratitude, for information on a point of no small zoological importance. It is not very long since, that the localities ascribed to shells could in very few instances be depended upon.

The cupidity of dealers, some years ago, not unfrequently prompted them wilfully to deceive those who gave extravagant prices for new shells on this point, and carelessness was generally the order of the day. Mr. Cuming, by his accurate notes, and the open publication of the places where every one of the multitudinous species and varieties collected by him was found, has mainly assisted in making a complete revolution in this department of the science, and has done more towards giving us data for the geographical distribution of the testaceous mollusca than any person who has yet lived.

"Helicidæ.

"When we consider what the genus *Helix* was when Linnæus wrote, and what it now is, we must be struck with the flood of new species which has been poured in upon us of late years. Already the vocabulary has been so drawn upon, that the mere finding names for the new species is attended with no small embarrassment, whilst the limits of each species are daily more difficult to fix. When a few forms only in a great natural group are known, they are easily defined. It is where multitudes are placed before the zoologist, marked with every variation that food and temperature and locality can impress upon them, that it becomes no longer easy to solve the problem, 'Which is a species and which is a variety?' Then it is that the pregnant question 'What *is* a species?' comes home to the mind. But our business now is to define, as well as we can, those forms which have been laid before us, and which, to us at least, are new. When the whole of the additions to this great tribe existing in Mr. Cuming's collection have been studied, we shall perhaps have materials for something like a complete natural arrangement of the group."

Genus Bulinus*.

Bulinus Mindoroensis. *Bul. testâ ovatâ, ventricosâ, subpronâ, anfractibus sex, ultimo longè maximo, lineis incrementi obliquè striatâ, aperturâ subrotundâ, columellâ latâ, labio expanso.*

Var. *a. valdè ventricosa, sordidè brunnea strigis irregularibus longitudinalibus varia; aperturâ subalbidâ; labio nigro-brunnescente.*

Hab. ad Puerto Galero in insulâ Philippinâ Mindoro dictâ.

Legit H. Cuming in sylvis.

Var. *b. Pallidior, coloribus distinctioribus, fasciâ suturali brunneâ interruptâ; anfractu ultimo fasciâ brunneâ strigis longitudinalibus interruptâ cincto; labii margine castaneo-rufescente.*

Hab. ad Mansilai in insulâ Mindoro.

Legit H. Cuming in sylvis.

Var. *c. Gracilior, longitudinaliter brunneo et flavo sordido striata.*

This comes very near in colouring, and approaches somewhat in

* "I have elsewhere (Zoological Journal, vol. iv. p. 222) given my reasons for writing Bulinus instead of Bulimus. Adanson's *Bulin* was a *Physa*, and the word, however written, is very inapplicable to the forms to which Bruguière, Lamarck and authors generally have applied it."

the shape of the aperture, to the two first varieties of *Bul. chrysalidiformis*. The markings of the young shell remind the observer of the eggs of some of the Plovers, and the shape assists the delusion.

Hab. ad Puerto Galero in insulâ Mindoro.

Legit H. Cuming in sylvis.

Var. *d. Sordidè flavescens creberrimè longitudinaliter corrugata et strigata.*

A brilliant *chatoyant* reflection, like Labradorite, is to be observed on the polished surface of the dark brown reflected part of the outer lip in fresh specimens.

Var. *e. Subnana, gracilior, strigis et coloribus distinctioribus, clarioribus.*

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

This variety was the most abundant, and Mr. Cuming informs me that he detected it in the act of depositing its eggs on the leaves of trees in the forest where it was feeding. The eggs, which are white, oblong, and covered with a hard, granular shell, were attached to the leaves by a gummy substance. They are half an inch long, and nearly four-twelfths across in their widest part.

Var. *f. Anfractu ultimo nigrescente, anticè flavo subsordido strigata vel maculata, fasciâ nigrescente basali.*

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

In this variety, the abrupt termination of the yellowish markings toward the basal portion of the body-whorl leaves the dark colour almost uninterrupted, in the shape of a dark band.

Var. *g. Strigis distantibus, anfractu basali erga basin cincturâ moniliformi, interruptâ, albidâ vel flavescente ornato.*

Hab. ad Mansalai in insulâ Mindoro.

Legit H. Cuming in sylvis.

Var. *h. Pallida, strigis latis, anfractu ultimo fasciâ pallidiori subbasali cincto.*

Hab. ad Mansalai.

Legit H. Cuming in sylvis.

Var. *i. Strigis irregularibus, angulatis, frequentibus tota picta.*

Hab. ad Mansalai.

Legit H. Cuming in sylvis.

Var. *k. Cinereo-subvirescens, strigis pallidis angulatis, distantibus, brunneo-marginatis obscurè ornata, anfractu basali fasciâ brunneo-rufescente subbasali cincto.*

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

Near the *umbilicus*, the *epidermis*, in those specimens of var. *k.* which I have seen, is worn off, exposing the rich red-brown ground colour of the shell. Indeed in all the varieties the dark colour generally appears to reside in the shell itself, and the lighter-coloured

markings, with few, if any exceptions, in the *epidermis*. In the largest variety (*a*) here described, the effect of the detrition of the *epidermis* is well shown. Var. *k*. comes very close upon var. *c*. of *Bulinus chrysalidiformis*. The length of this species is 6 inches and under, and the breadth from about 1 to $1\frac{1}{8}$th of an inch.

Bulinus chrysalidiformis. *Bul. testâ valdè productâ, subpupiformi, subcylindricâ, lineis incrementi obliquè rugosâ; aperturâ subauriculiformi, distortâ; columellâ subrectâ, amplâ, complanatâ; peristomate interrupto; labio interno expanso, labio externo expanso, subrecurvo, sæpiùs subconstricto; umbilico subobsoleto.*

Var. *a*. *Subgracilis, anfractibus 7 subventricosis, ultimo vix subventricosiori; pallidè castanea vel brunnescens strigis longitudinalibus, irregularibus sordidè flavis picta; aperturâ intus subalbidâ; labio nigro-purpurascente.*

This variety is curiously marked. In the young shells the colours are more pure and distinct, but as the animal becomes aged they are more confused, and run into each other. In both states the upper whorls are transparent, and the two last opaque.

Var. *b*. *Pallidior, labio haud constricto, ex albido dilutè purpurascente.*

Hab. ad Puerto Galero.

Legit H. Cuming in sylvis.

The distortion and a shade of the constriction may be traced in the mouth of this variety.

Var. *a*. et *b*. habitant ad Puerto Galero.

Legit H. Cuming in sylvis.

Var. *c*. *subflava, anfractibus ventricosioribus, fasciâ suturali albidâ et subpurpureâ tessellatâ; aperturâ amplâ, albâ, labii margine castaneo-purpurascente.*

The shells of this variety are much less thick than those of the two first, and are nearly transparent throughout; but it must be remembered that all which I have seen of this variety appear to be younger shells: the body-whorl is also much more ventricose in proportion.

Var. *d*. *Tota flavescens, labio albo.*

This variety, as well as the last, when held against the light, shows shadings of the longitudinal stripes.

Var. *c*. et *d*. habitant ad Mansalai.

Legit H. Cuming in sylvis.

*** *Bulinus chrysalidiformis* of G. B. Sowerby (Zool. Proc. 1833, p. 37) is a faded shell of var. *c*. or *d*. It is without *epidermis*, and entirely white, except the margin of the lip, which is brownish. The length of this species varies from $2\frac{7}{8}$ths inches to $2\frac{2}{8}$ths, and the breadth from $1\frac{5}{8}$ths to $1\frac{1}{8}$th.

"The shells which I have here attempted to describe were collected by Mr. Cuming in deep and dark forests of thick foliage, some upon, and others beneath, the leaves of trees. There were no palms in these forests.

"I cannot quit this group without acknowledging that I am not without doubts as to the specific difference of *Bul. chrysalidiformis* and *Bul. Mindoroensis*. If the shells at the greater intervals be taken, they appear to be distinct, but there are gradations in these numerous and motley Mindoro snails, that at least closely approximate the two sections into which I have divided them."—W. J. B.

Mr. Cuming exhibited the various species and varieties of shells described in the foregoing paper, and also a series to illustrate the memoir of G. B. Sowerby, Esq., which was next read: it is entitled "Descriptions of new species of the family of *Helicidæ*, collected by Mr. H. Cuming in the Philippine Islands."

Helix (Cochlogena De F.) polychroa. *Hel. testâ obovatâ, tenui, nitidâ, anfractibus quinque, primis præsertim, ventricosis, obliquè lineis incrementi, striatis, ultimo majori, cæteris duplò longiori, fasciâ diversicolore, plerùmque albâ, prope suturam: aperturâ suborbiculari, peristomate plerumque albo, extus reflexo; columellâ albâ, rectiusculâ, anticè subcallosâ, subsinuatâ.* Long. 1·9, lat. 1·3 poll.

H. virido-striata, Lea secund. Jay.

Hab. in foliis arborum ad insulam Temple dictam Philippinarum.

One of the most beautiful, as well as one of the most variable species in colour. In its general form it is very near var. *b.* of Lamarck's *Helix galactites* (*H. mirabilis*, De F. Hist. Nat. Gen. et Part. des Mollusques terr. et fluv. t. 31. f. 4 to 6), which has been called *H. Philippinarum*, but from which it may easily be distinguished by attention to the above characters. The following seven varieties in colour have been brought by Mr. Cuming: viz. var. *a.* bright green, with darker, longitudinal, oblique, slightly undulated lines and bands, and a white band at the suture: var. *b.* the same, with the addition of a narrow, very darkly coloured brown band immediately below the white sutural band, and a broad spiral dark brown basal band: var. *c.* the same, with two additional dark brown bands on the last volution: var. *d.* bright light brown, with green, slightly undulated oblique longitudinal bands, and a white sutural band: var. *e.* the same as var. *a.*, but having the sutural band of a light and dark brown colour varied: var. *f.* of chestnut brown, with a white sutural band: var. *g.* of a dark chestnut brown, with a light orange brown sutural band.

This species is *Helix virido-striata* of Lea, according to Dr. Jay; I know not if that name be published or not. I hope not, because it cannot be adopted, neither being consonant with the rules of nomenclature, nor with classic purity.

Helix (Cochlogena De F.) florida. *Hel. testâ obovatâ, tenuiusculâ, haud nitente, anfractibus quinque ventricosis, tenuissimè obliquè striatis, ultimo majori, cæteris ferè duplò longiori; suturâ minutissimè crenulatâ, albâ; aperturâ suborbiculari peristomate latiusculo, reflexo, rotundato, albo; columellâ albâ, subincurvâ.* Long. 1·6, lat. 1·1 poll.

Hab. in foliis arborum prope Munsolai ad insulam Mindoro Philippinarum.

This, like the last, is a very beautiful species, and it is also subject to much variation in colour; its varieties, nevertheless, are not so numerous. It is principally remarkable for its surface being dull like the bloom upon green plums or grapes. The following varieties are exhibited by Mr. Cuming: viz. var. *a.* of an uniform green, becoming paler toward the apex, where it is white: var. *b.* green, with a brown band close to the white sutural band, and the apex of a reddish brown: var. *c.* green, with a dark brown band near the sutural band, and a dark brown spiral band close to the *columella*: var. *d.* the same, with two intermediate brown bands, both of which, however, are not continuous: var. *e.* brown, with a dark brown band next to the sutural white band, and the dark brown spiral band surrounding the *columella*. In all these varieties the narrow white sutural band is constant, and the anterior part of the last volution within the aperture is yellower than the outer surface.

Helix (Cochlogena De F.) hydrophana. *Hel. testâ obovatâ, tenuiusculâ, nitidulâ, anfractibus quinque ventricosis, obliquè tenerrimè striatis, ultimo majori, cæteris duplò longiori, omnibus plùs minùsve epidermide hydrophanâ indutis; aperturâ suborbiculari, peristomate albo, rotundato, reflexo; columellâ subarcuatâ, anticè in tuberculam indistinctam productâ.* Long. 1·35, lat. 1·05 poll.

Hab. prope Puerto Galero ad insulam Mindoro Philippinarum.

The ground colour of this extraordinary species is brownish yellow, and it has two, three, or four broader or narrower very dark brown spiral bands. A rather thinner variety, with three bands, is found in the island of Corregidor, in the Bay of Manilla. The most remarkable circumstance in its natural history is that it is more or less covered with a very thin, opaque, white *epidermis*, which becomes transparent on being wetted; the dark brown bands are then seen brilliantly contrasted with the yellowish brown general colour of the shell.

Helix (Helicostyla De F.) cepoides. *Hel. testâ suborbiculari, tenui, spirâ subdepresso-conicâ; anfractibus senis, ventricosis, posticè depressiusculis, lineis incrementi striatis; suturâ distinctâ; aperturâ semilunari, peristomate posticè tenui, subreflexo, tùm crassiori, reflexo; columellâ in dentem obtusum producto.* Long. 1·8, lat. 2·2 poll.

H. cepoides, Lea, M.S. secund. Jay.

Hab. ad insulam Luban Philippinarum.

This species most nearly resembles *H. unidentata*, Lam. Anim. sans Vert. VI. pt. 2, p. 74, from which it may easily be known by its more ventricose volutions, and its much narrower aperture. It differs also in colour, the *unidentata* being usually of a dark chestnut brown, while in the *Dolium* the spire and more than the upper half of the last volution are of a light brown, and the remainder lighter coloured still, and between the darker and lighter colour is a band

of nearly white. The *epidermis* in this species is very thin and pale-coloured, and it has alternating darker marks close to the suture. A variety occurs of a nearly uniform pale brownish yellow colour, though in other respects similar.

I gladly adopt Lea's manuscript name of *cepoides*.

Helix (Helicostyla? De F.) arata. *Hel. testâ ovatâ, subcylindricâ, crassiusculâ, rufo-fuscescente, fasciâ antemedianâ albidâ; anfractibus senis, subventricosis, obliquè exaratis, subrugosis; suturâ distinctâ, crenulatâ; aperturâ ferè circulari, intùs albâ, peritremate expanso, subreflexo, fusco; columellâ albâ; umbilico mediocri.* Long. 1·7, lat. 1·1 poll.

Hab. ad insulam Tablas Philippinarum.

Variat testâ omninò pallidè lutescente, aperturâ peritremateque albis.

The two varieties of this remarkable species differ so much in colour that they might at first sight be regarded as distinct species; I do not, however, discover any real difference in their conformation, and therefore am compelled to unite them as varieties. The ridges between the furrows vary greatly in their distance from each other; they appear to be more and more frequent as the shell increases in age.

Helix (Helicostyla? De F.) adusta. *Hel. testâ oblongâ, subcylindricâ, castaneâ, lævigatâ, tenuissimè lineis incrementi striatâ, fasciâ antemedianâ pallidiori; anfractibus senis subventricosis; suturâ distinctâ; aperturâ ferè circulari, intùs albicante; peritremate levitèr expanso, reflexo, fusco; columellâ pallidâ; umbilico parvo.* Long. 1·8, lat. 1· poll.

Hab. ad insulam Tablas Philippinarum.

This species resembles the last in form as well as colour; it differs, however, in its general proportions, as well as in being entirely free from the numerous and deep oblique grooves so remarkable in that species; its *umbilicus* also is smaller.

Helix (Helicostyla? De F.) brachyodon. *Hel. testâ ovato-subcylindricâ, tenui, castaneâ, fasciâ anticâ pallescente; anfractibus quinque ad sex subventricosis, lineis incrementi tenuitèr obliquè striatis; suturâ distinctâ, levitèr crenulatâ; aperturâ suborbiculari, intùs albicante; dente obtuso, antico, albo; peritremate subincrassato, reflexo, subexpanso, internè inter columellam dentemque sinuato; columellâ albâ, obtusâ; umbilico parvo.* Long. 1·95, lat. 1·3 poll.

Hab. in foliis arborum prope Puerto Galero ad insulam Mindoro Philippinarum.

Variat testâ breviori, colore saturatiori, striisque fortioribus. Long. 1·35, lat. 1·2 poll.

I have named this species *Brachyodon*, from a short white tooth placed at the inner and anterior part of the lip, and which appears to be constant. I do not hesitate to regard the shorter specimens as merely a variety, though they differ greatly in their proportions from

the typical variety. A single nearly colourless specimen is intermediate in its proportions.

HELIX (COCHLOGENA De F.) PULCHERRIMA. *Hel. testâ orbiculari, subglobosâ, tenuiusculâ, haud nitente, spirâ plerùmque subdepressâ, anfractibus* $4\frac{1}{2}$, *ventricosis, lævibus, striis solùm incrementi tenuissimis insculptis, coloribus pulcherrimè ornatis, ultimo maximo, cæteris quadruplò longiori; suturâ distinctè impressâ; aperturâ rotundato-semilunari, intùs albâ, peristomate latiusculo, rotundato, reflexo, extùs ad basin columellæ subsinuato; columellâ dilatatâ, subplanulatâ.* Long. 1·5, lat. 2· poll.

Hab. prope St. Jaun in provinciâ Cagayan insulæ Luçon Philippinarum.

The usual ground colour of this very pretty shell varies from a pale yellowish brown, through orange brown, to dark chestnut brown; some of its varieties are of a nearly uniform colour, others are very elegantly varied, with narrower or broader, and more or less numerous interrupted bands of opaque white *epidermis* (which are transparent when wetted), and which gives them a very brilliant and captivating appearance, to which it is indeed impossible in words to do justice.

This species is usually about the same size as *Helix Pomatia*, differing from that, however, very greatly in form and proportions, and varying, moreover, greatly in size. It is nearly orbicular, somewhat globose, with a slightly depressed obtuse spire. It is of a thin substance, and its surface is dull. Its volutions are four and a half, of which the first is rounded, and the last is very large, being four times as long as the rest, and very ventricose; they are smooth, being closely covered with the very slender lines of growth; the suture is very distinct, inasmuch as that the posterior part of the next volution is nearly horizontal, and the anterior part of the last volution nearly perpendicular to it. The aperture is large (not so large in proportion as Deshayes's *Helix Cailliaudi*, Mag. de Zool., 1839, 'Mollusques,' Pl. 5.), of a rounded semilunar form, and white within: the peristome is rather broad and thick, rounded and reflected; in some varieties it is quite white, in others it is delicately coloured of a rose tint, and sometimes of a brownish red: the *columella* is dilated and rather flattened, usually quite white, though occasionally tinged with rose.

The following are the twelve principal varieties which have occurred to Mr. Cuming, viz.

Var. *a*. General colour dark chestnut brown; apex brownish scarlet; edge of the peristome purplish crimson; body covered with broader and narrower white interrupted bands, set nearly close together.

Var. *b*. The same, only not having so many of the white bands, the ground colour is seen in broader bands.

Var. *c*. General colour dark chestnut brown, with numerous interrupted bands of light brown *epidermis*; apex brownish scarlet; edge of the peristome purplish brown.

Var. *d*. Ground colour orange brown, with numerous white interrupted bands; peristome white.

Var. *e*. Dark chestnut brown, with only three or four light-coloured interrupted bands, so that the dark brown ground colour appears in broad bands.

Var. *f*. Light yellowish brown, with the apex red, and the edge of the peristome rose colour; numerous close-set, interrupted, nearly white bands ornament this variety.

Var. *g*. The same ground colour as the last, with a light buff-coloured edge to peristome, and a single white scarcely interrupted band, forming the circumference of the shell.

Var. *h*. With a chestnut brown ground colour, a red apex, and orange-coloured edge to the peristome, and one white band, forming the circumference.

Var. *i*. With a chestnut brown ground, a red apex, and an orange-coloured edge to the outside of the pink-edged peristome, and without any white band but a slender white sutural line.

Var. *k*. With a yellowish brown ground colour, the apex and the back of the peristome bright orange-red; peristome and columella rose-coloured; without a band, but with a slender white suture line.

Var. *l*. Of an uniform yellowish brown, with white peristome.

Var. *m*. Of an uniform pale brownish yellow, with white peristome.

The most beautiful varieties are most abundant on the leaves of bushes and young trees at St. Jaun, where also all the other varieties are found. Some of the lesser painted varieties are also found at Abulug in the same province. The species has not been found in any other part of the Philippine Islands.

Since this paper was read two other varieties have been found by Mr. Cuming in his packages; they are

Var. *n*. Of a very rich dark chestnut brown, with a scarlet apex, four very narrow interrupted white bands of *epidermis*, a white suture, and orange-coloured outer edge to the white peristome.

Var. *o*. Of a rich light brown colour, with a yellowish band forming the circumference of the shell, and another band of the same yellowish colour in front, near the *columella*; peristome white, its edge pink, and back of the lip orange-yellow.

August 25, 1840.

W. H. Lloyd, Esq., in the Chair.

Specimens were exhibited of five new species of Kangaroo, forming part of the collection made by Mr. Gould, who had just returned from Australia, after an absence of two years and a half spent in the investigation of the habits and œconomy of the animals of that continent.

The first of these Kangaroos to which Mr. Gould drew attention was a large species, but little inferior in size to the *Macropus major*, inhabiting the summits of the mountain ranges in the interior of New South Wales. Mr. Gould observed, that it is a most powerful animal, and very dangerous to approach. The unusual strength and size of the limbs suggested the specific name of *robustus*, and Mr. Gould accordingly characterized it as

Macropus (Petrogale*) robustus. *Macr. artubus anticis magnis et prærobustis; vellere e fusco cinereo, apud partes inferiores pallidiore; tarsis fuscis; digitis anticè nigris; antipedibus, et carpis, nigris; capite fuliginoso levitèr tincto; utráque genâ lineâ albescente notatâ; gulâ, guttureque albidis; caudâ supernè fuscâ, subtùs pallidiore.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	47	0
——— *caudæ*	25	6
——— *tarsi digitorumque* (sine unguibus)..	11	0
——— ab apice rostri ad basin auris	8	0
——— *auris*	3	7

Fœmina differt vellere ex argenteo cinereo, corpore subtùs ferè albo. Long. corporis cum capite, 33 unc.; *caudæ*, 26; tarsi digitorumque, 10 unc. 2 lin.

The second species has a remarkably elegant appearance, being of a slender delicate form, and adorned with two white stripes, which commencing at the *occiput*, run down the back of the neck on to the shoulders, where they are recurved. Mr. Gould proposed to designate this species

Macropus frænatus. *Macr. elegans, et gracilis; vellere molli brevi, colore e fusco cinereo; corpore subtùs albo; ab occipite utrinque super humeros lineâ angustâ albâ currente; interspatio obscuro, et apud occiput nigrescente: caudâ tuberculo parvo corneo ad apicem instructo, pilis nigrescentibus abscondito; tarsis, artubusque anticis ferè albis, digitis pilis obscuris paulò adspersis.*

* The *Petrogale* of Gray is probably identical with *Heteropus* of Jourdan.

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin. . . .	23	0
——— *caudæ*	20	0
——— *tarsi digitorumque* (sine unguibus). .	5	6
——— ab apice rostri ad basin auris	4	2
——— *auris*	2	3

Hab. Interior of New South Wales.

The third species is about the same size as the last. The most remarkable character in this animal consists in its having a nail at the tip of the tail: this nail is hidden by the tuft of hair with which the end of the tail is furnished, and greatly resembles a finger-nail, both in texture and form, but is of a black colour. The name proposed for this species was

Macropus unguifer. *Macr. corpore gracili, caudâ perlongâ; vellere perbrevi, et mediocritèr molli: colore fulvo, parte corporis anteriore, et collo albescentibus; capite ferè toto, nec non artubus abdomineque albis: notâ fuscâ longitudinali, apud dorsum; caudâ albidâ, apicem versus, pilis longis et fuscis indutâ, ad apicem cum unguc nigrescente, ferè magnitudinem et figuram unguis exhibente, ut in digito hominis videtur, instructâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin. . . .	25	0
——— *caudæ*	26	0
——— *tarsi digitorumque* (sine unguibus). .	7	0
——— ab apice rostri ad basin auris	4	0
——— *auris*	2	6

Hab. North-west coast of Australia.

To the fourth species, having two crescent-shaped white marks on the shoulders, Mr. Gould gave the name of

Macropus lunatus. *Macr. capite brevi, auribus magnis; artubus anticis parvis; tarsis mediocritèr elongatis et gracilibus; colore cinereo, collo humerisque ferrugineo pallidè tinctis; corpore subtùs e cinereo albo; lineâ arcuatâ albâ in utrinque latus, ab humeris extensâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin. . . .	18	0
——— *caudæ*	0	0 ?
——— *tarsi digitorumque* (sine unguibus). .	4	6
——— ab apice rostri ad basin auris	3	0
——— *auris*	2	0

Hab. West coast of Australia.

The fifth species resembles the Common Hare in size, and in the texture of the fur; so much so, indeed, that a portion of its skin could not be distinguished from that of a Hare. The fore-legs and feet of this animal being very small, Mr. Gould proposed to describe it as

Macropus Leporides. *Macr. pro magnitudine et velleris colore*

nec non texturâ, Lepori timido *assimilis; capite breviusculo; antibrachiis pedibusque parvulis; caudâ breviusculâ et gracili; corpore supernè nigro, fusco et flavido variegato; apud latera, et circum oculos colore pallidè fulvo prævalente; abdomine e cinereo albo; artubus anticis ad basin nigris.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	19	6
———— *caudæ*	13	0
———— *tarsi digitorumque*	4	9
———— ab apice rostri ad basin auris	4	0
———— *auris*	2	0

Hab. Interior of Australia.

Mr. Gould also exhibited a remarkable spiny Lizard, allied to the Agamas, which he had procured from Swan River.

Mr. Gould then called the attention of the Members to an extraordinary piece of Bird-architecture, which he had ascertained to be constructed by the Satin Bird, *Ptilonorhynchus holosericeus*, and another of similar structure, but still larger, by the *Chlamydera maculata*. These constructions, Mr. Gould states, are perfectly anomalous in the architecture of birds, and consist in a collection of pieces of stick and grass, formed into a bower; or one of them (that of the *Chlamydera*) might be called an avenue, being about three feet in length, and seven or eight inches broad inside; a transverse section, giving the figure of a horse-shoe, the round part downwards. They are used by the birds as a playing-house, or "run," as it is termed, and are used by the males to attract the females. The "run" of the Satin Bird is much smaller, being less than one foot in length, and moreover differs from that just described in being decorated with the highly-coloured feathers of the Parrot tribe; the *Chlamydera*, on the other hand, collects around its "run" a quantity of stones, shells, bleached bones, etc.; they are also strewed down the centre within. Mr. Gould spent much time in observing the habits of those birds, and was fully satisfied that the "runs" were actually formed by them, and constructed for the purposes described.

Two papers were then read, in which the authors resume the descriptions of the Shells collected by H. Cuming, Esq., Corr. Memb., in the Philippine Islands, who exhibited specimens in illustration of the papers.

The first of these papers is from W. J. Broderip, Esq.

Bulinus Dryas. *Bul. testâ elongato-ovatâ, vix subdiaphanâ, peristomate interrupto, crassiusculo, lato, expanso, subrecurvo; nitidè albâ vel flavescente brunneo castaneove vittatâ.*

Var. *a. alba, anfractu basali trivittato, vittâ superiore et inferiore striis nigro-fuscis; mediâ castaneâ, nonnunquam interruptâ.*

This variety is sometimes yellowish, and the three bands on the body-whorl are nearly uniform chestnut.

Var. *b. anfractu basali bicincto, vittâ superiore angustâ, vittâ inferiore tristrigatâ.*

Var. *c. anfractu basali nitidè albo, vittâ superiore et inferiore angustis nigrescentibus limbato.*

Var. *d. Pallidè flava fasciâ suturali albente, anfractu basali vittâ superiore et inferiore angustissimis, castaneis limbato; cæteris castaneo univittatâ.*

Var. *e. Tota alba.*

Hab. ad Mansalai in insulâ Mindoro.

Legit H. Cuming in sylvis.

Mr. Cuming informs us that the animal of this elegant shell, which in the form of the spire and the distribution of the colouring, though not in the colouring itself, reminds the observer of *Achatinæ fasciata, emarginata* and *virginea* of Swainson (Zool. Ill.), varies much. In all the varieties the broadly expanded lip is white, both above and below, and the bands of the body-whorl terminate abruptly upon its upper part, so that the shell almost looks as if the wide white lip had been added to some of the Riband *Achatinæ*, for varieties of which some of the young might be taken by a cursory observer. The animal was ash-coloured, darker above. General length of the shell about two inches; width of body-whorl from $\frac{6}{8}$ths to $\frac{7}{8}$ths of an inch.

Bulinus Sylvanus. *Bul. testâ elongato-ovatâ, subdiaphanâ, subpyramidali, anfractibus ventricosioribus, fuscâ castaneo vittatâ, strigis et maculis flaventibus vel albentibus, longitudinalibus pictâ; peritremate interrupto, columellæ basi subsinuatâ, aperturâ subauriculari; labro expanso, recurvo.*

Var. *a. Fusca vel flavescens fasciâ suturali tenui albâ, apice purpurascente, anfractu basali castaneo trifasciato, fasciis inferioribus maximis, strigis angulatis longitudinalibus picto, anfractibus cæteris frequentissimè longitudinaliter strigatis et maculatis.*

Var. *b. Nitidè flavescens, anfractu basali castaneo quadrivittato.*

Var. *c. Flavescens anfractu basali bivittato.*

Several of this variety have traces of the longitudinal zigzag lines and spots upon the body-whorl.

Var. *d. Ventricosior, anfractu basali trivittato, apice purpurascente, vittis nigricantibus.*

Var. *e. Sordidè fusca strigis et maculis angulatis elongatis obscurè sparsa.*

Var. *f. Tota flavescens, lineâ tenuissimâ suturali albâ, gracilior.*

Hab. In insulâ Mindoro.

Legit H. Cuming in sylvis.

Some of the varieties of this fine shell, especially variety *b*, will remind the observer, at first sight, of the species last described; but Mr. Cuming informs us that the animal is reddish brown, and, besides other differences in the shell, the colouring-matter, instead of stopping short at that point of the body-whorl, just where the lip begins to expand, is continued on to the very rim, which is in most instances bordered with it; nay, the colour generally becomes more

intense upon the upper part of the expansion. Varieties *d.* and *e.* were found at Calapan; varieties *c.* and *f.* at Puerto Galero. The latter variety has generally a chestnut oblique stripe or spot at the bottom of the whorl and on the upper expansion of the outer lip, continued from above the *columella.* Sometimes there is an obscure line of a somewhat darker hue belting the body-whorl in this same variety.

This species varies a good deal in length and breadth. The average length may be taken at about two inches, and the width across the body-whorl, at from more than an inch to $\frac{6}{9}$ths of an inch.

Bulinus fictilis. *Bul. testâ subpupiformi, anfractibus sex ventricosis, lineis incrementi obliquis fortioribus, peristomate interrupto, expanso, crassiusculo, labro expanso, aperturâ subauriculari, suprà subangulatâ, albâ.*

Var. *a. Nitidè fusca strigis, punctis, lineisque albentibus notata, anfractûs basalis vittâ suturali angustâ subalbidâ.*

Var. *b. Albescens, strigis maculisque castaneo-nigricantibus longitudinalibus, clarioribus.*

Var. *c. Flavescens, lineis strigisque longitudinalibus albentibus, anfractûs basalis fasciâ angustâ obscurâ.*

Var. *d. Griseo-albens vel albens, strigis longitudinalibus albidis.*

Hab. in insulâ Philippinâ Cuyo dictâ.

Legit H. Cuming in sylvis.

In var. *a.* the dark ground-colour of the shell is striped, and powdered, as it were, with the whitish *epidermis*; in var. *b.* this whitish *epidermis* predominates, so that the longitudinal zebra-like stripes arising from the exposure of the dark brown, but shining ground-colour, are comparatively distinct. Var. *d.* seems to be the albino-state of the species. General length about $1\frac{5}{8}$ths inch; breadth about $\frac{5}{8}$ths.

Bulinus larvatus. *Bul. testâ elongato-pyramidali, gracili, subdiaphanâ, lineis incrementi obliquis, aperturâ auriculari, supernè angustatâ, labro crasso, expanso, recurvo, fuscâ strigis pallidis obliquè longitudinalibus, distantibus, variâ; aperturâ albâ; labri margine externo infernè fusco limbato.*

Hab. in insulâ Cuyo.

Legit H. Cuming in sylvis.

It is not without doubt that I have separated this shell specifically from the last; but in addition to the difference of shape, the colouring matter, here again, instead of stopping short just above the outer lip, where it begins to expand, as is the case with *Bul. fictilis,* is carried on and over the external expanse of the outer lip, so as to constitute a coloured rim on its lower external edge. In other respects there is much similarity between the two. General length about $1\frac{1}{2}$ inch; breadth across body-whorl rather more than half an inch.—W. J. B.

Following is the continuation of Mr. G. B. Sowerby's paper:—

Helix decipiens. *Hel. testâ globosâ, tenuis, lævis, haud nitens, striis incrementi subtilissimè striata, plerumque pallescens, non-*

nunquam unicolor, sæpius zonis duabus nigris ornata; anfractibus quatuor, rotundatis, ultimo maximo; aperturâ subcirculari; peritremate reflexo, albo, columellâ albâ, subincurvâ, rectiusculâ.

Long. 1·2, lat. 1·35.

Hab. supra folia arborum ad insulam Marinduque, Philippinarum.

The appearance of the different varieties of this species might lead to the supposition that they were distinct species, in consequence of the peculiarities of the outer portion of the epidermis. The whole epidermis of this species seems worthy of particular notice: it consists of an inner coat, which is rather thick, horny, apparently strongly adhesive, and of a greenish brown yellow colour; and of an outer partial coat, which is white and hydrophanous, and which does not entirely cover the inner coat, but is variously arranged upon it in the different varieties. The following are the most remarkable varieties:—

a. Shell brown, with two very dark-brown spiral bands, a lighter antesutural band, and a very dark columellar band. Lip white at the back as well as in front. From the island of Marinduque.

b. Shell coloured similarly to the last, but having its outer surface slightly rugulose. From the same locality.

c. Shell coloured similarly to the two former, but with an external white epidermis disposed in slightly interrupted spiral bands. Found on the leaves of trees in Tayabas, in the province of Tayabas, Island of Luzon.

d. Shell light brown, with a dark-coloured antesutural band, and very dark columellar band; external white epidermis disposed as the last. From the same locality.

e. Shell brown, not banded, with the white external epidermis disposed in irregular and interrupted lines, nearly following the direction of the lines of growth, but increasing in width so as to form an interrupted band at the circumference of the shell. Found on the leaves of small trees on the island of Capul.

f. Shell pale brownish yellow, with the white external epidermis similarly disposed, but forming two rather broader and less interrupted bands, one at the circumference and the other anterior. From the same locality.

g. Shell white, with alternating light and dark brown bands; antesutural line and band round the columella dark brown. From Ligao, South Camarenis, island of Luzon: found on the leaves of trees.

h. Similar to *g*, but the alternating bands are dark brown and black; the antesutural line and the band round the columella also are black. From Pasacao, South Camarenis: found on the leaves of trees.

i. Similar to the last, only destitute of the central brown band. From the same locality as *h*.

k. Shell white, with three brown bands; antesutural line and columellar band of the same colour. From Ligao.

l. Shell white, with two brown bands; antesutural line and columellar band of the same colour. From Ligao.

m. Shell white, with a single brown band at its circumference. From Ligao.

n. Shell white, with alternately very pale and dark brown bands; antesutural line and columellar band dark brown. From Ligao.

o. Shell very pale brown, with a very thin epidermis; two dark brown bands, the one before and the other behind the light brown circumferential band; antesutural line and columellar band dark brown. From Ligao.

p. Shell totally white. Also from Ligao.

Helix opalinus. *Hel. testa pyramidalis, conica, obtusa, hyalina, tenuis, albido-viridescens, lævis, nitida, striis incrementi tenuissimis solùm sculpta; anfractibus senis, subconvexis, ultimo anticè obtusè subcarinato; suturâ distinctâ, anticè linea albâ angustissimâ; aperturâ obliquâ, subrotundatâ, supernè basi ultimi anfractûs ferè planâ modificatâ; peritremate subreflexo, propè columellam subincrassato; columellâ albâ, subincurvâ, sulco subobsoleto circumdatâ.*

Long. 1·25, lat. 0·8.

Hab. supra folia fruticum propè St. Jaun, Provinciam Cagayan Insulæ Luzonicæ.

A remarkably delicate species, having nearly the form of *Helix pileus*; it is, however, narrower in proportion to its height, its volutions are less numerous, and rather more convex. This elegant species has the usual colour and semitransparency of the *Semi-Opal*, which, however, becomes rather greener towards the base.

Helix cincinnus. *Hel. testa ovato-pyramidalis, tenuis, lævis, plerùmque nitida, subhyalina; epidermide albo fuscoque variâ, haud nitidâ nonnunquam induta; spirâ elatiusculâ, obtusâ; anfractibus senis, convexiusculis, solùm striis incrementi tenuibus indutis; suturâ distinctâ; aperturâ subovali, posticè acuminatiusculâ, supernè basi anfractûs ultimi rotundatâ modificatâ, sinistrorsùm sinuatâ; peritremate angusto, reflexo; columellâ albâ, anticè perobliquè subtruncatâ.*

Long. 1·8, lat. 1·1.

Hab. supra folia arborum ad Insulas Philippinas.

Another very variable species, particularly in its colouring and in the characters dependent upon its epidermis. Numerous, however, as its varieties are, and abundant as the species is, it does not appear to have been described either by Lamarck or De Férussac; indeed, I have not been able to find any species nearly approaching it, except *Helix ventricosa*, De Fér., which is figured in Chemn. vol. ix. f. 1007, 1008, and which somewhat resembles the banded variety of our shell. The following varieties have been brought by Mr. Cuming:—

a. Shell white, last volution pale green, which is darker in its anterior part. From the island of Rumblon.

b. The same as *a*, but having a dark brown band surrounding the columella. On some specimens of this variety the remains of a dark

brown epidermis is to be seen about the anterior part of the last volution. From the island of Burias.

c. Shell white, with a pink band surrounding the columella, and scattered remains of a dark brown epidermis on the last volution. From Temple Island.

d. Shell white, with a dark brown band surrounding the columella, and scattered remains of a dark brown epidermis on the last volution. From the island of Burias.

e. Shell rose-colour, with scattered remains of a dark brown epidermis about the anterior part of the last volution. From Temple Island.

f. Shell red-brown, with a dark brown band surrounding the columella, and scattered remains of a dark brown epidermis about the anterior part of the last volution. From Temple Island.

g. Shell light red-brown, with a dark brown band surrounding the columella, and mottled with a nearly white, hydrophanous and a dark brown epidermis, which becomes altogether darker coloured toward the anterior part of the last volution. From the island of Burias.

h. Shell pink, epidermis as in *g*. From the island of Burias.

i. Shell white, with the dark brown columellar band and epidermis as in *g*. From the island of Burias.

k. Shell white, very pale greenish toward the anterior part of the last volution, with a broad dark brown columellar band, a narrow brown band at the circumference of the shell, and a pale antesutural brown band. From the island of Burias.

l. Coloured as *k*, but with broader and darker bands. From the same locality.

Bulinus ovoideus, Brug. *Bul. testa ovato-oblonga, ovoidea, alba, lævis, striis incrementi exilissimis obliquis solùm sculpta, zonis nigris variis plerumque ornata; anfractibus quinque subventricosis, ultimo spiram ferè duplo longiori, aperturâ subovatâ, posticè subacuminatâ, intùs albâ, zonas exhibentibus; peritremate reflexo, albo; columellâ rectiusculâ, labio columellari subincrassato, anticè reflexo, ad labium externum adjuncto.*

Hab. ad insulam Ticao Philippinarum.

This species has been inadvertently figured in the 'Conchological Illustrations' under the name of *Luzonicus*, having previously been figured by De Férussac in his 'Hist. Nat. des Mollusques terrestres et fluviatiles,' tab. 112. f. 5, 6, and described in the 'Encycl. Méthod., by Bruguière* under the name of *ovoideus*, which name must of course be retained. Bruguière's specimen was quite white; those figured by Lister and De Férussac had a single dark band. Mr. Cuming has brought the following varieties:—

a. White, the anterior part of the first three volutions light brown. From the island of Masbate, on leaves of trees.

b. White, with three broad brown bands close behind the suture.

* Hist. Nat. des Vers, tome vi. p. 335.

c. The same as the last, with an additional black band in front of the postsutural band.

d. White, with a narrow brown band behind the suture.

e. Brownish white, with perfectly white antesutural band, and three very broad dark brown bands.

f. White, with two dark brown bands, both anterior to the circumference of the shell.

g. White, with a single dark brown band. This is the variety that has been figured in 'Conch. Illustr.,' Bulinus, f. 53, under the name of *B. Luzonicus*; it is also given in Guérin's 'Magazin de Conchyliologie' (1838), tab. 116. f. 2. under the name of *B. Costerii*: of course both these names must be abandoned in favour of the older name of Bruguière.

h. Entirely white. This variety is of smaller size than most of the others.

i. Apex reddish brown, ground-colour white; anterior part of the last volution pale brown, with three dark brown bands.

k. Apex white or pale reddish, antesutural band white; then two broad dark brown bands, nearly confluent; then a lighter brown band, sometimes nearly white; then a broad dark brown band; and finally, the circumference of the columella white.

l. White, with two dark brown bands in front, and a very narrow light brown band behind the circumference.

HELIX ALBAIENSIS. *Hel. testa subglobosa, depressiuscula, tenuis, lævis, alba, plerumque fusco-zonata, lineis incrementi tenuissimis solùm insculpta; spirâ subdepressâ, anfractibus $3\frac{1}{2}$ subconvexis, ultimo maximo inflato; aperturâ extùs rotundatâ; peritremate albo, rotundato, reflexo, mediocri; intùs sinuatâ, sinu profundo, anticè per columellam, latiusculam, albam, posticè per modificationem anfractûs penultimi efformato; suturâ subinconspicuâ.*

Long. 1·2; lat. 1·5 poll.

Hab. supra folia fruticum apud Matnog, Provinciam Albaiensem insulæ Luzonicæ.

The following three varieties of this new species have been discovered by Mr. Cuming, viz.:—

a. White, with a little light brown at the apex and outside the columellar lip.

b. White, with two brown bands, one anterior to, and the other posterior to, the circumference of the shell; a dark brown antesutural line and a dark brown band outside the columellar lip.

c. The same as *b*, with the two brown bands nearly meeting over the circumference.

HELIX AURATA. *Hel. testa depressiusculo-subglobosa, tenuis, lævis, subnitens, flava, apice roseo; spirâ rotundato depressâ; anfractibus $3\frac{1}{2}$ convexis, ultimo maximo; aperturâ semilùnari, latâ, posticè basi ultimi anfractûs gibbosâ modificatâ; labio externo posticè paululùm coarctato, deinde subreflexo, albo, crassiori, rotundato; columellâ albâ, latâ, subincrassatâ; suturâ distinctâ.*

Long. 0·9; lat. 1·4 poll.

Hab. in foliis arborum ad St. Jaun Provinciam Cagayan Insulæ Luzonicæ Philippinarum.

Two varieties of this remarkable and beautiful species have been found by Mr. Cuming. The similarity of the young shell to *Helix picta* is very great: the full-grown shell differs, however, very much in shape from that species. Both varieties are remarkable for a bright red apex.

Var. *a*. Bright yellow, with a scarlet band placed just before the suture, beginning at the second volution and increasing in breadth with the growth of the shell: this var. has also a blue line on the outside a little in front of the scarlet band, which is black within.

Var. *b*. Upper half of the shell bright yellow; lower half white.

Helix Roissyana, De F. *Hel. testa subglobosa, crassiuscula, lævis, coloribus plerumque albo, nigroque fasciata, et ut assolent epidermide obscurâ, haud nitente, obtecta; spirâ obtusissimâ; anfractibus $4\frac{1}{2}$, rotundatis, subventricosis, ultimo maximo, cæteris quadruplo longiori; suturâ distinctâ; aperturâ sublunari, intùs albâ, labii externi margine arctè revolutâ, nigrâ, columellari albâ; columellâ rectiusculâ, planulatâ, albâ s. albicante.*

Helix Roissyana, De Fér. 'Hist. Nat. générale et particulière des Mollusques terrestres et fluviatiles,' tab. 104. f. 2, 3.

Long. 1·2; lat. 1·4 poll.

Hab. propè Puerto Galero ad Insulam Mindoro, Philippinarum.

Five principal varieties of this species are remarkable; one alone has been represented, though not described by De Férussac. If the colours alone were to be depended upon as specific characters, two of these varieties would be considered distinct species. Deshayes has omitted to mention or to describe this species in his second edition of Lamarck (Anim. sans Vert.); I am therefore much gratified by having the opportunity afforded me of pointing out its characters and making known its several varieties.

Var. *a*. White, with a yellowish epidermis, a very dark brown, almost black, antesutural band, and a rather broad, black band surrounding the columella.

Var. *b*. The same as the last, with an additional broad intermediate anterior black band.

Var. *c*. Similar to the last, with the addition of a black band anterior to the sutural band, and with the anterior intermediate band much wider.

Varieties *a*, *b*, *c*, are all found at Puerto Galero.

Var. *d*. Nearly black all over, and only showing more or less distinct remains of white on the three first volutions; epidermis very thin and nearly colourless. Found at Calapan, in the Island of Mindoro.

Var. *e*. Of a dark chestnut-brown colour, with the same arrangement of colour as the last, but covered with a thickish, brown, opake, hydrophanous epidermis. From Puerto Galero.

I am compelled to regard as a variety of this species a shell which Mr. Cuming has brought from the island of Tablas, whose spire is

more elevated, having nearly five volutions; it is of a dark colour, with more or less distinct lighter bands, and the same thickish, brown, opake, hydrophanous epidermis as the last: its columella, and the columellar lip, are of a brownish purple. I designate this as Var. *f.*

The figure given by De Férussac represents a rather dwarf variety, of which I have seen a specimen in Mr. Metcalfe's collection.

Helix (Cochlogena, De F.) ignobilis. *Hel. testa subglobosoconica, tenuis, albicans, subhyalina, fasciis duabus castaneis ornata; spirâ subconoideâ; anfractibus 4½, lævibus, nitidis, subplanulatis, striis incrementi tenuissimis solùm sculptis; suturâ distinctâ; aperturâ subrotundâ, intùs albâ, fasciis duabus conspicuis; peritremate reflexo, rotundato, albo; columellâ rectiusculâ continuo.*

Long. 1·2; lat. 1·2 poll.

Hab. ad insulam Romblon, Philippinarum.

The subconical form of the spire, with very slightly ventricose volutions, distinguish this from all its most nearly-related species. When young it is slightly carinated. The anterior part of the last volution is usually coloured of a pale yellowish tint.

Helix (Cochlogena, De F.) tenera. *Hel. testa subglobosa, tenuis, alba, subhyalina; spirâ subacuminatâ, obtusâ; anfractibus 4½, lævibus, subventricosis, striis incrementi tenuissimis solùm insculptis, ultimo fasciâ angustâ, viridi picto; suturâ distinctâ; aperturâ subrotundâ, intùs albâ fasciâ solitariâ subinconspicuâ; peritremate tenui, reflexo, albo; columellâ latiusculâ, rectiusculâ, albâ, extùs anticè subangulatâ.*

Long. 1; lat. 1 poll.

Hab. propè Mansalai ad insulam Mindoro, Philippinarum.

Var. b. *fasciis duabus castaneo-nigris.*

Nearly related to the last (*H. ignobilis*): it may be distinguished by being rather smaller, by having its volutions rather more convex, its peritreme thinner, its columella straighter, and angular in front externally. A variety occurs with two dark brown, nearly black, bands, the one above and the other below the ordinary green band. The posterior of these is seen nearly up to the apex.

Helix (Cochlogena, De F.) collodes. *Hel. testa subglobosa, tenuiuscula, nitida, alba; epidermide lutescente induta, apice roseo; spirâ subelatâ, obtusâ; anfractibus quinque, ventricosis, ultimo ad basin paululùm planulato; suturâ distinctâ, anticè castaneâ; aperturâ subrotundâ, intùs albâ; peritremate reflexo, nigricante; columellâ albicante, paululùm recurvâ.*

Long. 1·2; lat. 1·2 poll.

Hab. ad insulam Tablas, Philippinarum.

I have named this species *collodes*, in consequence of the remarkable appearance of the epidermis, like a coat of glue covering all the outer surface except the apex. In form this species is much like *H. ignobilis*; its spire is not, however, so much acuminated, and the

apex is much more obtuse than in that species: its peritreme, moreover, is thinner, and although reflected, it is not rounded as in that species.

Helix (Cochlostyla, De F.) Orbitulus. *Hel. testa subglobosa, crassiuscula, lævi, obliquè lineis incrementi tenerrimè insculpta; anfractibus $4\frac{1}{2}$ ad 5, subventricosis, ultimo maximo, ventricosiori; suturâ distinctâ, anticè albâ; aperturâ subrotundâ, intùs albâ; peritremate latiusculo, rotundato, reflexo, albo; columellâ albâ, rectiusculâ, paululùm inflexâ.*

Long. 1·1; lat. 1·1 poll.

Hab. propè Mansalai ad insulam Mindoro, Philippinarum.

Var. *a*. Shell nearly globular; spire very obtuse, white, base dull yellowish; two spiral green bands commence at about the third volution, and increase in width and strength of colour until they reach the back of the outer lip; of these the lower is by much the broader.

Var. *b*. Shell *oblong*, and coloured in the same manner as the last; but the last volution is green above (the anterior side of the suture being always pure white), increasing in intensity from its commencement: in this variety the dull yellowish colour of the anterior or basal part of the last volution is much deeper than in var. *a*.

Var. *c*. Shell larger; its volutions rather more ventricose, similar to the last in colouring, but having two additional dark brown, nearly black bands, which are distinctly seen within. This is by far the largest and handsomest variety of the three.

Note.—"M. Valenciennes informs me that this species was brought in 1830 by the officers of the "Favourite," and placed in the galleries of the Museum of Paris, under the name of *H. chlorogrammica*, Val.; but as it does not appear that he has published either the name or any description of the species, I continue to use the name which I have given it above."

Helix (Cochlostyla, De F.) Oomorpha. *Hel. testa ovato-oblonga, crassa, obscura, spiraliter tenuitèr substriata, lineis incrementi decussata; anfractibus quinque subventricosis; suturâ distinctâ; aperturâ suborbiculari, intùs obscurâ; peritremate ferè continuo, albo, reflexo, rotundato; columellâ subundatâ, labio columellari extenso, ad umbilicum fere velato; umbilico mediocri.*

Long. 1·1; lat. 0·7 poll.

Hab. ad insulam Tablas dictam, Philippinarum.

Mr. Cuming has obtained only a single specimen of this species: it is very different from all the others, its peritreme being continuous nearly all round, the only interruption being about a seventh where it is intersected by the last volution; colour dull light brown, with a dark brown band in front of the suture; the greater part of the last volution dark brown, and having a light narrow band near the umbilicus in addition to the light band near the suture.

Helix incompta. *Hel. testa ovata, tenuiuscula, obscura; epidermide fuscâ, haud nitente induta, obliquè tenuiter lineis incrementi striata; anfractibus quinque subconvexis, ultimo majori; suturâ*

distinctâ, anticè posticèque fuscâ; aperturâ subrotundâ, posticè subacuminatâ; peritremate tenuiter reflexo, rotundato, anticè subtruncato, albo; columellâ rectâ, albâ, anticè subtruncatâ.

Long. 1·1; lat. 0·66 poll.

Hab. ad insulam Tablas dictam, Philippinarum.

Nearly resembling the last in shape and in its dull surface, but differs in having no umbilicus, and in its peritreme not being nearly so continuous. The last volution has its suture brown, a brown band in the middle and another round the columella. A single specimen only was found.

Helix stabilis. *Hel. testa ovoidea, solidiuscula, lævis, nitidiuscula, alba; anfractibus senis, paululùm convexis, anticè castaneis, nigro-fasciatis, obliquè lineis incrementi striatis; aperturâ obliquâ, subovatâ, intùs albâ, peristomate albo, incrassato, rotundato, anticè subeffuso; columellâ albâ, inconspicuâ, labio columellari paululùm expanso.*

Long. 1·35; lat. 0·8 poll.

A species which in general appearance bears some resemblance to *Bulinus ovoideus* of Brug. and De F., tab. 112. f. 5, 6. (the same as *B. Luzonicus*, 'Conch. Illustr.' Bulinus, f. 53.); this species, however, increases more rapidly toward the anterior part; it has, moreover, one more volution. The aperture is placed very obliquely, so that the shell stands firmly when placed upon it. The dark burnt colour of the anterior part of this shell is seen in every volution in the form of a spiral postsutural band. It has a thick light-coloured epidermis, of which some traces have not been entirely effaced.—G.B.S.

A curious variety of the Dog, from Malta, presented by Her Royal Highness the Duchess of Kent, was exhibited.

September 8, 1840.

James Whishaw, Esq., in the Chair.

An extensive series of new species of the genus *Cardium* was exhibited by Mr. Cuming, and the following account by Mr. G. B. Sowerby, Jun., of their characters, was read.

Cardium Sinense, Conch. Illustr. f. 35. *Card. testâ rotundatâ, posticè subrostratâ paulò ringente, ad marginem subexpansâ, omninò (anticè præcipuè) minutissimè granulatâ, pallidè fulvâ; costis 23 validis, rotundatis, quarum 8 postremis angustioribus, posticè subangulatis, fimbriatis; margine dorsali inflato; ventrali internè fortissimè dentato.*

Long. 1·55; lat. 1; alt. 1·40 poll.

Hab. ad mare Sinense, et ad insulas Philippinas, invenit H. Cuming.

Slightly resembling *C. Asiaticum*, from which it is distinguished by having larger and fewer ribs, and a small fringe on the posterior ribs. Found in sandy mud.

Cardium striatulum, Conch. Illustr. f. 16. 45. *Card. testâ tenui, rotundatâ, posticè subrostratâ minutissimè radiatim striatâ; pallidè fulvâ rubro radiatim fasciatâ; intùs albâ, fasciis binis rubris radiatâ; striis postremis denticulatis; epidermide fuscâ.*

Long. 1· ; lat. 0·60; alt. 0·90 poll.

Hab. ad Australiam et ad Novam Zelandiam. G. Bennett legit.

The pink-striped bands which give so much brilliancy to this shell when in a young state, are scarcely to be traced in the older specimens. The doubt as to their identity, which this circumstance at first created, was only removed by the most careful comparison.

Cardium Australe, Conch. Illustr. f. 12. *Card. testâ obliquè ovatâ, tenui, albâ, purpureo-rubro fuscoque præcipuè ad umbones maculatâ, purpureo ad latera fasciatâ; umbonibus lævibus; lateribus marginibusque tenuissimè sulcatis; cicatrice ab apice ad marginem posticum decurrente.*

Long. 1·20; lat. 0·85; alt. 1·30 poll.

Hab. ad Australiam, et ad mare Sinense.

This species differs from *C. tenuicostatum* and *C. papyraceum* in its proportions, being longest from the apex to the ventral margin; and also from the latter in the narrowness of the posterior ribs, and in having a distinct groove on the posterior side. Since the application of the above name, specimens have been met with in Mr. Cuming's Collection, named *C. sauciatum* by Dr. Beck, who, however, to the best of our knowledge, has not published it.

Cardium ringiculum, Conch. Illustr. f. 11. *Card. testâ longitudinaliter ovali, tenui, utrinque hiante; posticè elongatâ, subaspersâ; costis anterioribus angustis, inconspicuis; tribus centralibus latis, planulatis ad marginem valdè dentatis; decem postremis angustioribus, paulò elevatis, ad marginem dentatis.*
Var. *testâ pallidè flavidâ.*
Var. *testâ ad latus posticum rubro tinctâ.*
Hab. ad insulam Ceylon.

A pretty little species, differing from *C. bullatum* in the strongly toothed posterior margin.

Cardium Siculum, Conch. Illustr. f. 31. *Card. testâ tenui, subquadratâ, ventricosâ, anticè angustâ, posticè latâ, subangulatâ; albâ, fusco maculatâ; costis numerosis, planulatis, 5 anticis crenulatis; interstitiis angustis.*
Long. 0·50; lat. 0·40; alt. 0·45 poll.
Hab. ad mare Siculum.

Cardium Arcticum, Conch. Illustr. f. 26. *Card. testâ ovali compressâ, subæquilaterali; costis 27, angulatis, subcrenulatis; epidermide crassâ, olivaceo-fuscâ, ad umbones ætate erosâ; ligamento elongato; cardine dentibus centralibus obsoletis, lateribus distantibus.*
Long. 1·55; lat. 0·90; alt. 1·40 poll.
Hab. ad mare Arcticum.

Differing from *C. Gröenlandicum*, in having ribs, and from *C. Icelandicum*, in being less ventricose and in the ribs being angular.

Cardium paucicostatum, Conch. Illustr. f. 20. *Card. testâ rotundatâ, ventricosâ, subæquilaterali, tenui; albido-flavicante, fusco undatâ; costis 16, planulatis, lævibus, distantibus, tuberculis acutis in medio armatis; interstitiis planulatis.*
Long. 1·30; alt. 1·30; lat. 1 poll.
Hab. ad mare Adriaticum (Malta).

This species differs from *C. echinatum* in being comparatively smooth, and having very few ribs, with wide interstices.

Cardium multispinosum, Conch. Illustr. f. 38, 38 *a*. *Card. testâ rotundatâ, ventricosâ, tenui, posticè paulò hiante, pallidè fulvâ, ad margines roseâ, intùs albâ; costis 33 lævibus, utrinque angulatis; spinis numerosis, acutis; interstitiis granulatis, ad marginem elongatis; margine dorsali tumidâ.*
Long. 2·10; lat. 1·70; alt. 2·20 poll.
Hab. ad insulam Mindanao, Philippinarum. H. Cuming legit.

In shape and general appearance, this beautiful shell resembles *C. Asiaticum*, from which, however, it differs widely, in having small spines on the ribs instead of the fringe. Found in sandy mud, at 25 fathoms.

Cardium exasperatum, Conch. Illustr. f. 37. *Card. testâ ventri-*

cosâ, rotundato-subquadratâ, albâ, ad margines roseo-tinctâ; tenuiter sulcatâ; inter sulcos spinis numerosis acutis ornatâ.

Long. 1· ; lat. 0·70; alt. 0·95 poll.

Hab. ad oras Australiæ (Swan River).

An extremely delicate and beautifully wrought shell, and quite distinct from others of the group to which it belongs.

Cardium variegatum, Conch. Illustr. f. 57. *Card. testâ ovali, subventricosâ, roseâ, aurantiaco, rubro-fusco-albo-que maculatâ; costis* 48, *quarum anticis rotundatis, crenulatis; posterioribus valdè angulatis, lævibus; postremis subplanulatis, tuberculis obliquis ornatis.*

Long. 1·70; alt. 1·80; lat. 1·20 poll.

Hab. ad insulam Leyte, Philippinarum. H. Cuming legit.

The ribs are much more numerous and close than in *C. muricatum*, and *C. Radula* is described as having the ribs angular on both sides, which is not the case with this species.

Cardium Unicolor, Conch. Illustr. f. 29. 42. *Card. testâ ovali ventricosâ, posticè subelongatâ, paulò emarginatâ, albâ, purpureo obscurè maculatâ, epidermide fuscâ tenui indutâ; costis numerosis, anticis, mediis, et posterioribus rotundatis, minutè crenulatis; extremis planulatis.*

Long. 1·50; lat. 1·10; alt. 1·70 poll.

Hab. ad ins. Ticao. H. Cuming legit.

Found in sandy mud, at five fathoms. A slightly mottled variety is brought from the Brazils.

Cardium impolitum, Conch. Illustr. f. 6. 66. *Card. testâ crassâ, cuneiformi, snbæquilaterali ad marginem dorsalem angustiore, ad ventralem rotundatâ; albâ, fusco obscurè maculatâ, posticè purpureo-fasciatâ; costis* 35 *impolitis, subcrenulatis; epidermide fuscâ.*

Long. 1·50; lat. 1·10; alt. 1·90 poll.

Hab. ad mare Sinense.

Remarkable for its wedge-like, nearly equilateral shape.

Cardium oxygonum, Conch. Illustr. f. 9. *Card. testâ ovali, subventricosâ, ad umbones angustâ; albâ, rubro fuscoque maculatâ, intùs albâ; costis* 35, *quarum* 18 *anterioribus validis, acutangulatis, ad latera antica atque ad angulos crenulatis; deinde* 9 *posterioribus acutangulatis ad angulos crenatis, ad latera lævibus; extremis angustis, lævibus, tuberculis obliquis ornatis.*

Long. 1·20; lat. 0·90; alt. 1·40 poll.

Hab. ad mare Sinense.

This species resembles *C. maculosum* of Wood in form, but in sculpture it more nearly approaches *C. angulatum* of Lamarck, from which, however, it is distinguished by being narrower towards the umbones, less ventricose, and having the ribs more distinctly angulated.

Cardium subelongatum, Conch. Illustr. f. 61. *Card. testâ ovali, subventricosâ, elongatâ, crassâ, posticè paulò hiante; albâ, fusco rubroque maculatâ, epidermide flavicante indutâ; costis* 32, *quarum anticis biangulatis, crenulatis; mediis lævibus, biangulatis; posticis rotundatis, lævibus, tuberculis obliquis ornatis.*

Long. 1·85; lat. 1·40; alt. 2·35 poll.

Hab. ad Sanctæ Thomæ insulam (Ind. occidentalis).

The above name has been given, to indicate the near alliance between this species and the true *C. elongatum* of Brug., with which it has been confounded. Our shell resembles some of the figures to which Lamarck refers for his *C. marmoreum*, and which Bruguière quotes for *C. elongatum*. It is much longer and smoother than the former, and does not agree with the description. The true *C. elongatum* is described by Brug., from a specimen in the collection of M. de Lamarck, as an elongated, ventricose shell of 39 or 40 ribs, and attaining a large size. It seems to have been a matter of dispute between the two conchologists, whether the above-named species were identical. We were unable to meet with a shell agreeing with Bruguière's description, until the arrival of Mr. Cuming with fine specimens sufficiently characteristic to set the matter at rest. The present species has fewer ribs and is less ventricose.

Cardium enode, Conch. Illustr. f. 51. *Card. testâ ovali, ventricosâ, posticè subexpansâ, fortissimè dentatâ; pallidè fulvâ roseo fasciatâ, intùs albâ, sub umbonibus flavidâ, ad marginem purpureâ; costis* 38, *planulatis, anticis levitèr crenatis; interstitiis angustissimis.*

Long. 2·30; lat. 1·60; alt. 2·60 poll.

Hab. ad insulam Ceylon.

Much more spread than *C. elongatum*, with the ribs flatter, and terminating in very strong overwrapping teeth.

Cardium subrugosum, Conch. Illustr. f. 34. 71. *Card. testâ crassâ ovali ventricosâ, ætate posticè subacuminatâ; costis* 33, *quarum* 25 *anterioribus rotundatis, crenulatis; extremis lævibus vix elevatis; epidermide fuscâ.*

Var. *testâ albâ, purpureo maculatâ.*

Var. *testâ posticè albâ, anticè flavidâ.*

Long. 2·30; lat. 1·70; alt. 2·40 poll.

Hab. ad insulam Ceylon.

The ribs are not so deep as in *C. rugosum*, and the eight posterior ones are so little raised as to leave the surface nearly smooth.

Cardium alternatum, Conch. Illustr. f. 64. *Card. testâ obliquè ovali, compressâ, posticè subexpansâ, albâ, luteo vel fusco-flavescente fasciato-maculatâ; epidermide fusco indutâ; costis* 32, *anticis crenulatis, subangulatis; deindè posterioribus angulatis anticè lævibus; extremis muricatis; interstitiis convexis, utrinque sulcatis.*

Long. 2·40; lat. 1·30; alt. 2·60 poll.

Hab. Ticao, Philippinarum. H. Cuming legit.

A beautiful pale-coloured specimen of this species has existed for some time in the well-selected cabinet of Miss Saul, who, however, possesses no information as to its locality. With this we have been supplied by Mr. Cuming, who collected some richly coloured individuals from the above-mentioned island: they were found in coral sand, on reefs, at low water.

Cardium attenuatum. *Card. testâ lævi, cuneiformi, compressâ, obliquè elongatâ, posticè subcomplanatâ, omninò obscurè striatâ, ad marginem dentatâ; flavâ, rubro maculatâ, maculis posterioribus validis; intus albâ.*

Long. 1·80; lat. 1·20; alt. 2·60 poll.

Hab. ad insulam Ceylon.

A good figure of this species is found in Wood's 'General Conchology,' accompanied by the following erroneous statements: first, that it is *C. biradiatum* of Brug.; and second, that *C. biradiatum* of Brug. is only a variety of the British species (*C. serratum*), which is improperly named *C. lævigatum* by him and some other authors. From the apex to the ventral margin, it measures longer in proportion than any other species.

Cardium Elenense, Conch. Illustr. f. 58. *Card. testâ tenui, lævi, ovali, posticè subacuminatâ pallidè fulvâ, fusco et purpureo minutè maculatâ, intùs fuscâ rubro fasciatâ; umbonibus inconspicuis, purpureo maculatis.*

Long. 0·75; lat. 0·50; alt. 0·75 poll.

Hab. ad Sanctam Elenam. H. Cuming legit.

Very nearly resembling *C. Brasilianum*, but not coloured in radiating lines, as in that species, and not so much elongated at the posterior ventral margin. Found in sandy mud, at seven fathoms.

Cardium lyratum, Conch. Illustr. f. 40. *Card. testâ ventricosâ, rotundatâ, subæquilaterali, pallidè fulvâ, epidermide rubro-purpureâ indutâ, intùs aureâ; anticè decussatim plicatâ; costis numerosis; anticis tenuissimis; mediis validioribus; posterioribus distantibus, angulatis.*

Long. 1·70; lat. 1·40; alt. 1·70 poll.

Hab. Dumaguete, ins. Negroes, Philippinarum.

The *C. Æolicum* of Born (*C. pectinatum*, Linn., according to Brug.) has a space on the posterior side of the shell entirely free from ribs in either direction. Bruguière describes it as characterised by "trois faces distinctes," of which the first (*the posterior*) is "lisse, sans côtes ni striés," and the figures in Chemnitz represent the same peculiarity. In the shell before us, the whole of the posterior side is covered with radiating ribs, no space being left smooth. In other respects it exactly resembles the "Janus" celebrated by ancient naturalists, and it is now almost as frequently met with in cabinets. The difference between the two species has been long observed, although they have not hitherto been separately described. Mr. Cuming has

taken specimens of this species in sandy mud, at the depth of seventeen fathoms.

CARDIUM PARVUM, Conch. Illustr. f. 33. *Card. testâ ovali, subquadratâ, posticè subangulatâ, anticè rotundatâ, pallidè fulvâ, fusco rubescente angulatim maculatâ; costis numerosis, subplanulatis; sulcis angustis.*
Long. 0·50; lat. 0·40; alt. 0·43 poll.
Hab. ——— ?

CARDIUM FORNICATUM, Conch. Illustr. f. 50. *Card. testâ subquadratâ, posticè angulatâ, anticè rotundatâ; albâ, purpurco-maculatâ, intùs aurantiacâ, ad margines purpureo-rufescente maculatâ: costis* 35, *quarum anteriorum* 23 *biangulatis, imbricatis, ad latera minutissimè spinoso-crenulatis.*
Long. 1· ; lat. 0·75; alt. 1· poll.
Hab. ——— ? Mus. F. J. Stainforth.

A very beautiful shell, in some respects resembling *C. medium*, but not so angular, and having the ribs richly ornamented by vaulted imbrications in the centre, and very minute crenulations raised into points at the sides. Unfortunately, we possess no information respecting the locality.

CARDIUM IMBRICATUM, Conch. Illustr. f. 48. *Card. testâ crassâ, ventricosâ, anticè rotundatâ, posticè subquadratâ, angulatâ; albâ, intus aurantiacâ, purpureo maculatâ: costis* 28, *quarum* 19 *anterioribus valdè imbricatis, postremis sublævibus, subangulatis; imbricatis propè umbones, angulatis, fornicatis, propè marginem ventralem obtusis.*
Long. 1·20; lat. 1·05; alt. 1·30 poll.
Hab. ad oras Australiæ (Swan River).

Like *C. medium* in general form, but having vaulted imbrications on the ribs. These are much thicker and larger than in *C. fornicatum*, and the sides of the ribs are not crenulated as in that species.

CARDIUM SUBRETUSUM, Conch. Illustr. f. 24. *Card. testâ albâ, obliquè subquadratâ, ventricosâ, posticè subcarinatâ, acuminatâ, anticè subrotundatâ; post angulum complanatâ, levitèr sulcatâ; costis ante angulum sex, tuberculatis; interstitiis punctatis; ante umbones cavernulâ cordiformi, intùs levitèr callosâ.*
Long. 0·90; lat. 1·20; alt. 1·30 poll.
Hab.

Thus we have three species presenting the character in common, of having a callosity within a heart-shaped cavity, close under the *umbones*, namely, the true *C. retusum*; the var. "(2.) testâ punctis sanguineis pictâ" of Lam., which has been named *C. auricula* by Forskäll, and the present species, which resembles the original *C. retusum* in general appearance, but it is more elongated and smoother behind the angle, the cavity is not so deep, and the callosity is more strongly marked.

Cardium fragile, Conch. Illustr. f. 68. *Card. testâ rotundatâ, tenui, lævi, subequilaterâ, posticè paulò inflatâ, albâ, fusco-lineatâ, epidermide fulvâ indutâ; intùs albâ ad marginem rubescente; ad umbones flavâ; margine levitèr sulcato.*

Long. 1·05; lat. 0·65; alt. 1· poll.

The only specimen at present known is in the collection of the Rev. F. J. Stainforth. We have no information as to its locality.

Cardium foveolatum, Conch. Illustr. f. 65. *Card. testâ subrotundato-ovali, compressâ, albâ, costis* 43, *quarum* 25 *anterioribus rotundatis, crenulatis, deinde posterioribus* 10 *lævibus, subangulatis, extremis concavis, ad latera crenulatis.*

Long. 1·45; lat. 0·90; alt. 1·55 poll.

Hab. ad oras Australiæ (Swan River).

The last ribs on the posterior side are hollow, with crenulations crossing them so as to form little pits. This species belongs to the same section as *C. muricatum*, but it is much flatter and has a greater number of ribs.

Mr. Gould then read a paper on that most singular and anomalous bird, the Brush Turkey (*Talegalla Lathami*) of New South Wales. The author began by giving the opinions of various ornithologists as regards its affinities, and especially quotes Mr. Swainson's account, in which that author attempts to prove, that the bird in question is a vulture. Mr. Gould proceeded to detail, from his own observations, some interesting facts connected with its habits. The most remarkable circumstance connected with the bird is, that it does not hatch its own eggs, but employs for that purpose similar means to those now in use for artificial incubation. For some weeks prior to the period of laying, the Brush Turkey collects together an immense mass of vegetable matter, varying from two to four cartloads, with which it forms a pyramidal heap; in this heap it plants its eggs, about eighteen inches deep and from nine to twelve inches apart. The eggs, which are always placed with the large end upwards, being carefully covered, are then left to hatch by the heat engendered by the decomposition of the surrounding matter. The heaps are formed by the labours of several pairs of birds, and frequently contain as many eggs as would fill a bucket. The eggs are white, about three inches and three quarters long by two and a half in diameter, and, having an excellent flavour, are eagerly sought after. A specimen of the Brush Turkey, which Mr. Gould had an opportunity of observing in Mr. MacLeay's garden at Sydney, had formed a heap in a shrubbery similar to that which it would have made in its native woods. Around and over this heap the bird was seen to strut in the same way as the domestic cock; at the same time frequently uttering a clucking noise. The flesh is of a pale salmon colour, juicy and tender. After all he had seen of the bird in a state of nature, he had no hesitation in assigning it a place among the Gallinaceæ, among which it has a nearer alliance to *Cracidæ* than to any other group; at all events, it is in no way allied to the *Vulturidæ*, and is

equally distant from *Menura*, with which it has been classed by some writers. Mr. Gould's paper was illustrated by five skins, an egg, and also a skeleton of the bird.

A skeleton of the *Talegalla* was exhibited, and Prof. Owen drew attention to its peculiarities.

"On comparing the osteology of the *Talegalla* with that of other birds," says Prof. Owen, "it exhibits all the essential modifications which characterise the Gallinaceous type, and among the Rasores it most nearly resembles the genera *Penelope* and *Crax*.

"In all the main points the skeletons of these birds agree; their differences are those of proportion only; whereas in the Raptores, and especially in the *Vulturidæ*, the following important differences present themselves. The spines of the dorsal vertebræ are detached; the upper transverse processes of the sacrum are separated by oblique elliptical vacuities; the plough-share bone, which terminates the coccyx, has double the relative vertical extent; the cervical vertebræ are shorter and broader; twice the number of the ribs, as compared with *Talegalla*, give off vertical processes, and these are longer and stronger: but the most striking and decisive differences occur in the sternum; this important bone, in the *Talegalla*, very closely corresponds with that of the two Gallinaceous genera above mentioned; the chief difference occurs in the greater breadth which separates the costal from the external posterior notch. In the Vultures the contiguous margin of the sternum forms part of the same nearly straight line with the rest of the lateral margin of the sternum behind it. In the *Cathartes*, which has the least complete sternum in the tribe of *Raptores*, to which some Quinarian Zoologists have assigned the *Talegalla*, there is a shallow notch and a small foramen in each half of the posterior margin of the sternum; the whole sternum is broader and more convex; the coracoid grooves, and the corresponding extremities of the bones adapted to them, have twice the breadth of those in the *Talegalla*. The *furculum* presents more than six times the thickness of that bone in the *Talegalla* and allied *Gallinacea*; its space is wider, and its superior extremities much more recurved. Equally striking are the differences which the bones of the wing present: in *Cathartes Aurea*, in which the costal and sacral regions of the vertebral column measure five inches, the length of the humerus is five inches and a half, that of the ulna is six inches eight lines, and the bones of the hand are nearly six inches in length: the strength of all these bones is proportionate to their length. The produced angle of the lower jaw is a character which is most conspicuous in the Gallinaceous birds, in some of the species of which, as in the Wood-grouse, it is excessive. Now this process is altogether wanting in the Raptorial birds, and consequently in the *Vulturidæ*; its presence in the *Talegalla* (where its form and size closely agree with those in *Penelope* and *Crax*) coincides with the decisive Gallinaceous characters which are pointed out in the sternum, vertebral column, and bones of the anterior extremity.

"The presence of the *broncho-tracheales*, which alter the length

and tension of the bronchial tubes, widen the lateral diameter of the lower larynx, and influence its position, coincides with the observations which Mr. Gould has made respecting the voice of the *Talegalla*; and at the same time establishes another important structural difference between this bird and the *Vulturidæ*, which are precisely those Raptorial birds in which there are no true vocal muscles.

"From all the *Raptores* the *Talegalla* essentially differs, in its gizzard and elongated cæca: in the one we have all the characters of the Gallinaceous structure of that important part of the digestive system: in the form and proportions of the lower appendages—the cæca, the *Talegalla* most closely corresponds with the genera *Crax* and *Penelope*."

Mr. Gould then exhibited some new species of birds about to be figured in the forthcoming part of his work on the "Birds of Australia;" and characterised a new and beautiful *Cinclosoma*, from the belts of the Murray, as

CINCLOSOMA CASTANOTUS. *Cincl. lineâ albâ à mandibulæ inferioris basi per genas excurrente: guld pectoreque nigris; humeris et uropygio castaneis.*

Total length, 9 inches; bill, 1; wing, $4\frac{1}{4}$; tail, $4\frac{1}{2}$; tarsi, $1\frac{1}{4}$.

A new Halcyon, as

HALCYON PYRRHOPYGIA. *Hal. plumis capitis viridibus, angustè albo marginatis; humeris tectricibusque alarum majoribus cæruleis, uropygio, tectricibusque caudæ flavescenti-rubris.*

Crown of the head dull green, intermingled with white, giving it a striated appearance; a broad black stripe commences at the base of the bill, passes through the eye, and encircles the back of the head; upper part of the back and scapularies green; remainder of the wings bluish green; lower part of the back, rump, and upper tail coverts red; tail green, tinged with blue; throat, a broad collar encircling the back of the neck, and all the under surface white; bill black, the base of the lower mandible flesh white; irides blackish brown; feet dark olive brown.

Total length, unc. 8; bill, 2; wing, 4; tail, $2\frac{1}{2}$; tarsi, $\frac{1}{2}$.

Hab. Interior of New South Wales.

A new species of *Rhipidura*, which has hitherto been confounded with the *Motacilla flabellifera* of Latham, Mr. Gould proposed to characterise as

RHIPIDURA ALBISCAPA. *Rhi. nigrescenti-fusca; rectricibus caudæ ad apices, et per scapos albis.*

All the upper surface, ear-coverts, and a band across the chest, sooty-black, slightly tinged with olive, the tail and crown of the head and pectoral band being rather the darkest; stripe over the eye, lunar-shaped mark behind the eye, throat, tips of the wing coverts, margins of the secondaries, shafts, outer webs and tips of all but the two middle tail feathers, white; under surface buff; eyes black; bill and feet brownish black.

Total length, 6 inches; bill, $\frac{3}{8}$; wing, 3; tail, $3\frac{1}{2}$; tarsi, $\frac{5}{8}$.
Hab. Van Diemen's Land and the southern coast of Australia.

A new and highly interesting Pigeon as

COLUMBA (PERISTERA) HISTRIONICA. *Col. capite nigro; fronte, spatio circum plumas auriculares necnon notâ semilunari apud gulam albis; corpore supernè e cinnamomino fusco; subtùs cærulescenti-cinereo.*

Forehead, a stripe from behind the eye forming a circle round the ear coverts, and a crescent-shaped mark across the throat, snow-white; the remainder of the head, throat and ear coverts, jet black; all the upper surface, wing coverts, flanks, and two centre tail feathers, deep cinnamon brown; edge of the shoulder dull white; spurious wing bluish grey, slightly margined with white; primaries brownish grey, margined on their outer webs with rufous, at the base of the inner web largely marked with the same, forming a conspicuous patch on the under surface of the wing; and with an oval spot of white at the tip of each feather; secondaries by a beautiful band of deep crimson-bronze on the outer webs near the tip; lateral tail feathers bluish gray at the base, passing into black toward the extremity, which is white; breast and centre of the abdomen bluish gray; under tail coverts light buff; nostrils and bill black; irides dark brown; frontal scales of the legs and feet lilac-red; hind part of the legs flesh-red.

Total length, $10\frac{1}{2}$ inches; bill, 1; wing, 8; tail, $3\frac{1}{2}$; tarsus, 1.
Hab. Plains of interior of Australia.

And a Rasorial bird of an entirely new form, about half the size of a Quail, and which, were it not for the presence of a hind toe, might be taken for a diminutive bustard.

Mr. Gould proposed to make it the type of a new genus, with the following appellation and characters:

Genus PEDIONOMUS.

Gen. Char.—*Rostrum* tàm longum qùam caput, apicem versus compressum, ferè rectum, naribus valdè elongatis, in foveâ basali positis. *Alæ* valdè concavæ, remigibus primo, secundo, et tertio, inter se fère æqualibus, remigibus tertiariis perlongis, et primarios transeuntibus. *Tibiæ* super suffraginem nudæ. *Tarsi* mediocritèr elongati, scutis undiquè tecti, his, reticulis minutis, sejunctis. *Digiti* quatuor; horum posticus, debilis, et apud partem internam tarsi, sursùm positus.

PEDIONOMUS TORQUATUS. *Ped. vertice et pectore rufis, singulis plumis prope apicem lunulâ nigrâ notatis; collari lato, albo, crebrè maculis nigris guttato.*

Crown of the head brown speckled with black, sides of the head and the neck light buff speckled with black; neck surrounded by a broad band of white thickly spotted with black; all the upper surface reddish brown, each feather having several narrow, transverse, crescent-shaped marks in the centre and margined with buff; tail buff, crossed by numerous narrow brown bars; centre of the breast

rufous, the remainder of the under surface buff; the feathers on the breast marked in a similar manner to those on the upper surface, and the flanks with large irregular spots of black; irides straw-yellow; bill yellow, passing into black at the point; feet greenish-yellow.

Total length, 7 inches; bill, $\frac{3}{4}$; wing, $3\frac{5}{8}$; tail, $1\frac{3}{8}$; tarsi, $\frac{7}{8}$.

Hab. The plains of the interior of South Australia.

September 22, 1840.

William Yarrell, Esq., V.P., in the Chair.

The following paper was read, in which Mr. G. B. Sowerby proceeds with his descriptions of the new species of Shells collected by H. Cuming, Esq., in the Philippine Islands.

Helix Iloconensis. *H. testâ obovatâ, crassiusculâ, lævi, coloribus variis variè pictâ; spirâ elevatiusculâ, obtusâ; anfractibus quinque, rotundatis, ultimo maximo; aperturâ rotundato-subtrapezoidali, intùs albâ; peritremate lato, incrassato, rotundato, reflexo, albo; labio columellari lato, albo, subplanulato, posticè emarginato.* Long. 1·3, lat. 0·9, poll.

Hab. in foliis arborum prope Sanctum Nicolam, Provinciæ Iloconis septentrionalis ad Insulam Luçon, Philippinarum.

The varieties of this species, in colour and size, are very numerous; many of them are remarkable for an apparent interruption of their growth, shown by a band of colour darker than the general ground-colour of the individual across the second, third, or fourth volution; the recommencement after which suspension is marked by an apparent want of colouring matter to produce the usual spiral bands.

The following is the enumeration of the varieties which have occurred:—

a. Apex reddish brown, softened down into a greenish yellow ground-colour, which becomes more intense, and is speckled with brown on the last volution, particularly toward the aperture; posterior edge of each volution brown, softened down with pink; circumference of the shell with a greenish brown narrow band behind a brownish pink band; columellar band and back of the lip reddish brown. From St. Nicolas.

b. Nearly similar to *a.*; anterior circumferential band yellowish. Found on Pandanus Palms at Curimao, in the province of North Ilocos.

c. Apex pale reddish brown; ground-colour greenish yellow, speckled on the last volution; antesutural band light reddish brown; posterior circumferential band greenish brown, anterior circumferential band pale yellow; columellar band rose-colour; back of the lip brownish red. From St. Nicolas.

d. Apex reddish brown; ground-colour grayish rose; antesutural band and back of the lip reddish brown; posterior circumferential band pale olive-brown, anterior circumferential band pinkish yellow; circumference of the *columella* rose softened into the ground-colour. From St. Nicolas.

e. Apex dark brown; ground-colour gray-brown; suture white or yellowish; antesutural band red-brown; circumferential band white at its commencement, but becoming yellowish, and yellowish

pink upon the last volution; posterior circumferential band indistinct, olive-brown; circumference of the *columella* red-brown; back of the lip dull red. The lip of this variety has a slight reddish tinge. From St. Nicolas.

f. Apex brownish black; ground-colour yellowish olive-brown; posterior circumferential band darker; suture pale, yellowish, or nearly white; anterior circumferential band pale yellowish at its commencement, increasing in intensity until it is nearly lost in the ground-colour near the aperture; columellar band blackish, suffused with pinkish; back of the lip yellowish brown. From Sinait, in the province of South Ilocos.

g. Apex brownish black, softened down into the gray-brown ground-colour; sutural band yellow-brown; posterior circumferential band olive-brown; anterior circumferential band whitish at its commencement, then yellowish, and at length grayish; back of the lip yellow; border of the *columella* brownish yellow. From Sinait.

h. Nearly similar to *g*, but smaller, and the circumferential bands nearly obsolete toward the back of the aperture. From Sinait, in the province of South Ilocos.

i. Apex blackish, softened down into a pale greenish gray; suture white; antesutural band dull and pale yellow-brown; posterior circumferential band of the same colour, and very narrow; anterior circumferential band dull yellowish white; back of the lip pale yellow.

k. Apex pale reddish brown; ground-colour pale fawn-colour; sutural band rather obsolete, reddish; circumferential band yellowish white; columellar band rose-colour, and back of the lip duller; last volution speckled. From Saint Nicolas.

l. Apex pale reddish brown; ground-colour yellow; antesutural band yellow-brown, pink in front; a very narrow dull greenish band near the circumference; back of the lip brownish red; columellar band rose-colour. This is a small variety from Curimao, in the province of North Ilocos.

m. Apex and circumference of the *columella* rose-colour; ground-colour dull yellow, suffused at the posterior part of each volution and toward the mouth with pink; antesutural and circumferential bands yellow-brown. A very pretty small variety from Sinait, in the province of South Ilocos.

n. Apex pink; ground-colour yellow-brown, increasing in intensity, darker toward the suture; columellar circumference pink. A small, somewhat lengthened variety from near Sinait.

o. Apex nearly black, soon softened down to nearly colourless, and then gradually into the pale grayish green ground-colour; antesutural band rather indistinct, brownish yellow; posterior circumferential band brownish yellow, very slight and indistinct at its commencement, but becoming gradually more and more distinct: the reverse is the case with the anterior circumferential band, which is distinct and nearly white at its commencement, but becomes gradually darker, until it is nearly lost in the ground-colour; back of the lip dull yellow; last volution speckled. From Saint Nicolas.

p. Apex very pale pink; circumference of the *columella* rose-colour;

ground-colour pale yellow, darker towards the front; antesutural band yellowish brown. A small and very pale variety from Curimao.

q. Apex white; ground-colour pale yellow, darker toward the front; antesutural and circumferential bands yellow-brown. Another small variety from Curimao.

r. Colours the same as *q*, but altogether paler. This is a large variety, from St. Nicolas.

s. Apex white, softened down into a pale yellow ground-colour; antesutural band yellow-brown.

A paper by E. Lewis, Esq., entitled "Desultory Observations on Subjects having relation to Zoology," was also read.

The author in this paper comments on the different systems of classification, and proposes that the various groups of animals should be defined with more simplicity than they at present are; he is of opinion, that although the members of a group may resemble each other in many characters, yet one of these characters should be selected, and used for distinction; "and it is hoped," observes Mr. Lewis, "that divisions thus formed will be found practicable, precise and sufficient; because, as each is formed from a single common character, the necessity of admitting subfamilies and subgenera is obviated; for it is evident the necessity for forming those divisions has arisen from the family or genus from which they have been deducted having been formed from the notice and combination of too many particulars. It may be mentioned as a recommendation of the proposed method of using one character, as essential for distinction of divisions, that it has been in part virtually, if not expressly used, by many eminent zoologists. Linnæus makes use of the organs of manducation for generic distinctions in the class *Mammalia*, and in so doing is followed by most naturalists. The Rev. W. Kirby, in his enumeration of the characters of *Apis* and *Melitta*, mentions the form of the tongue as the one essential character." The cells of the wings has been selected by Jurine in the Hymenopterous insects; and numerous other instances of a single peculiarity having been selected for the definition of a group are mentioned by the author, who asks, "Will it not therefore be better, if only for the sake of uniformity and the advantage of fixing a character, which, from its singleness, can be easily retained in the memory, and therefore always be ready for application, to adopt the same plan throughout?

"The *Vertebrata* and *Invertebrata* may be divided into four stirps; the first will contain the *Hæmatherma* (Latr.), or warm-blooded animals, as the *Mammifera* and *Aves*, and the *Hæmacryma*, or cold-blooded animals, such as the Reptiles and Fishes. The *Invertebrata* may be divided into the *Cephalidea*, containing the Insects and Mollusca, or *Palliata* (Latr.), and the *Acephala* (Latr.), which last are the *Vermes Zoophyta* and *Infusoria* of Linnæus, or '*les Animaux Apathiques*' of Lamarck."

Mr. Gould exhibited a Drawing of the Brush Turkey of New South Wales.

October 13, 1840.

James Whishaw, Esq., in the Chair.

A paper by W. J. Broderip, Esq., was read. In this paper the author resumes his descriptions of the new species of shells collected by H. Cuming, Esq. in the Philippine Islands.

Bulinus Fulgetrum. *Bul. testâ ovato-pyramidali, anfractibus* 5 *subventricosis, ultimo longè maximo, labio et aperturâ ovatâ albis; columellâ callosâ basi subsinuatâ.*

Var. *a. Cinereo-flavescens strigis longitudinalibus albis, nunc rectis, nunc sinuatis, nunc angulatis pulcherrimè strigata.*

Hab. ad insulam Negros.

Legit H. Cuming in sylvis.

Var. *b. Castaneo-brunnea, lineis parvulis brevibus haud frequentibus a suturis albo-lineatis anfractûs ultimi et penultimi descendentibus.*

Hab. cum præcedente.

Legit H. Cuming.

Var. *c. Tota cinereo-fusca, obscurè et rarò albido-strigata, apice subrubro.*

The brown under covering appears to be overlaid with a dull pale ashy *epidermis*, which sometimes presents the appearance of oblique obscure stripes in the direction of the lines of growth. On the lower part of the penultimate whorl the brown and shining under covering is exposed, so as to produce a basal fillet. The sutural line of the last or body-whorl is obscure white.

Hab. ad insulam Guimaras.

Legit H. Cuming in sylvis.

Var. *d. Albida, strigis longitudinalibus sub-flavescentibus, nunc rectis, nunc sinuatis, nunc angulatis, ornata.*

Hab. cum præcedente.

In this variety the shining subflavescent under covering appears to be overlaid with a dull chalky-white *epidermis*, through intervals of which the lightning-like stripes of the ground-colour appear. A somewhat obscure deep brown stripe borders the outside of the *columella.*

Var. *e. Brunneo-flavescens, strigis vividè albis conspicua, fasciis suturalibus anfractuum superiorum rubro-brunneis submicantibus, fasciâ suturali anfractûs ultimi albo suturam versus limbatâ fasciâque submediâ haud micantibus.*

Hab. ad insulam Negros.

Legit H. Cuming in sylvis.

In this variety the white lightning-like stripes passing over the

transverse red-brown bands of the body-whorl have a striking effect. A deep-brown stripe borders the outside of the *columella*.

Var. *f. Flavescens, strigis (in anfractu ultimo frequentibus) albis.*
Hab. cum præcedente.

On the penultimate whorl the rudimentary longitudinal stripes are but obscurely seen; on the body-whorl they gradually increase from lines to irregular stripes of a full white. A blackish stripe borders the *columella*.

Var. *g. Brunneo-flavescens albo latè strigata et albido-fucata.*
Hab. ad insulam Guimaras.
Legit H. Cuming in sylvis.

Var. *h. Flavescens, albo-strigata, fasciis suturalibus et fasciâ anfractûs ultimi transversâ subpurpureis.*
Hab. ad insulam Negros.
Legit H. Cuming in sylvis.

The white stripes passing over the sutural bands give them a tessellated appearance, but these lightning-like stripes are much more widened where they pass over the transverse band of the body-whorl, which is seen through the shell on looking at the aperture. A reddish brown stripe borders the *columella*.

Var. *i. Productior, subflava, fasciis suturalibus rubro-brunneis, strigis irregulariter longitudinalibus latis valdè angulatis albidis, subflavo-limbatis.*
Hab. in insulâ Pannay ad Ilo Ilo.
Legit H. Cuming in sylvis montanis, Igbaras dictis.

This mountain-variety, which is longer in proportion, is dashingly marked: in the intervals between the zig-zag stripes an ashy pellicle covers the ground-colour. A reddish stripe borders the *columella*.

Var. *k. Productior, subflava cinereo co-operta, fasciis suturalibus rubro-purpureis; fasciâ suturali et submediâ latis, obscuris; strigis longitudinalibus irregularibus, albis, sparsis.*
Hab. cum præcedente.

A purplish red stripe borders the *columella* of this curious variety, and the bands of the body-whorl may be seen faintly through the shell on looking into the aperture.

This beautiful and greatly varying species ranges from about 2 inches in length and $1\frac{1}{4}$ in breadth, to very nearly $2\frac{1}{2}$ by $1\frac{4}{8}$ inches.

They were all found by Mr. Cuming on the leaves of trees, and he informs me that they lay soft eggs. Variety *a* was most abundant, and the mountain-varieties *i* and *k* are the longest and largest.

Bulinus Pictor. *Bul. testâ ovato-productâ, anfractibus sex, ultimo cæteros æquante; aperturâ ovatâ, cæruleo-albente, labio rubro-brunneo limbato; columellâ graciliori subrectâ.*
Var. *a. Brunnea strigis longitudinalibus latis vividè albis picta.*
Hab. in insula Pannay.
Legit H. Cuming in sylvis.

This beautiful variety will remind the observer of the colouring of *Achatina Zebra*.

Var. *b. Albida, strigis longitudinalibus brunneis.*

Hab. cum præcedente.

Both varieties were found by Mr. Cuming at Dingle, in the province of Ilo Ilo.

The length ranges from about $2\frac{4}{8}$ by $1\frac{2}{8}$ inch to $2\frac{3}{8}$ inches in length, and 1 in breadth.

Bulinus nimbosus. *Bul. testâ productâ, elongato-pyramidali, lineis incrementi striatâ, anfractibus sex, gradatim majoribus, ultimo maximo sed haud valdè ventricoso, anticè subangulato, columellâ subrectâ, subgracili.*

Var. *a. Brunnea, strigis latis undulato-angulatis, ochraceo-albis nubilosa.*

Var. *b. Brunnea, sparsim lineis ochraceo-albis a lineâ suturali præcipuè descendentibus picta; fasciâ sub-basali nigricante obscuriore.*

Var. *c. testâ totâ brunneâ.*

Hab. ad insulam Negros.

Legit H. Cuming in sylvis.

The throat of this species is bluish white, and the lip is bordered with dull pinky-brown.

The largest specimen which I have seen (var. *a.*) is about 3 inches long and $1\frac{1}{2}$ broad.

Var. *d. Subflava, epidermide quasi cretaceâ, lineis angulatis subflavis inscriptâ.* Long. 3 unc. circiter: lat. $1\frac{1}{2}$ unc.

Hab. ad Ilo Ilo insulæ Pannay.

Legit H. Cuming in sylvis.

Through the chalky *epidermis* which covers this shell, appear the irregular angulated lines of the light amber ground-colour. An old shell.

Helix (Cochlostyla) sarcinosa. *Hel. testâ ovato-rotundatâ, subdiaphanâ, productâ, anfractibus $4\frac{1}{2}$ ventricosis, ultimo cæteros longè superante, lineis incrementi obliquis frequentissimè substriatâ, columellâ incrassatâ, callosâ, subrectâ, aperturâ albâ.*

Var. *a. Ochraceo-alba fasciis frequentibus castaneo-nigris cincta, labii limbo subrosaceo.* Long. $2\frac{7}{8}$; lat. $2\frac{5}{8}$ unc.

Hab. in montibus Tanhay insulæ Negros.

Legit H. Cuming in sylvis.

Var. *b. Brunneo-virescens, fasciis subnigricantibus cincta, albido-ochraceo interruptè tessellato-maculata, labii limbo pallidè subrosaceo.*

Hab. ad insulam Negros.

Legit H. Cuming in sylvis.

The size of this variety is about the same as that of the last. Mr. Cuming found it on bamboos as well as on the leaves of trees.

Var. *c. Viridi-brunnea fasciis interruptis ochraceo-albis et nigro-brunneis alternis cincta, labii limbo pallidè subrosaceo.* Long. $2\frac{5}{8}$; lat. $2\frac{3}{8}$ unc.

Hab. ———?

A sutural band of ochreous-white, interrupted by the greenish-

brown stripes, ornaments the upper part of the penultimate and last whorl.

Var. *d. Flavo-virescens, strigis latis ochraceo-albis longitudinaliter obliquis picta et fasciis brunneo-virescentibus cincta, labii limbo albo.* Long. $2\frac{4}{8}$; lat. $2\frac{3}{8}$ unc.
Hab. ad insulam Guimaras.
Legit H. Cuming in sylvis.

Var. *e. Brunneo-virescens, anfractu basali fasciâ obscurè subrubrâ tæniâ subalbidâ tessellatim interruptâ infernè limbatâ cincto, labii limbo subrosaceo.* Long. 3; lat. $2\frac{4}{8}$ unc.
Hab. in insulâ Masbate.
Legit H. Cuming in sylvis.

Var. *f. Virescens, anfractu basali fasciâ supernè subrubrâ infernè albido-tessellatâ cincta, columellâ subrosaceâ, labii limbo subrosaceo vix tincto.* Long. 3; lat. $2\frac{4}{8}$ unc.
Hab. cum præcedente.

This fine variety is blotched with irregular, obscure, ochraceous-white markings, through which pass narrow greenish fillets. On turning up all the varieties, the space polished by the animal strongly contrasts with the rest of the shell, and in all, the reddish band which girds the body-whorl may be traced at the bottom of the upper whorls. In the two varieties last described this band may be clearly seen through the shell on looking into the aperture. In all the varieties the two first whorls are plain, and not much differing in colour, viz. brownish or yellowish white.

The banded varieties, when deprived of the *epidermis* (in which the other variations of colour reside in all the varieties), appear to me to be *Helix* (*cochlostyla*) *sarcinosa* of Férussac. This species is not noticed in the last edition of Lamarck, by M. Deshayes, and indeed I can find no description of it in Férussac, excepting "No. 323, *sarcinosa, nobis; a. spira conica. Hab.* L'Amerique? Com. D'Orbigny." If the habitat be correctly stated, there would be some ground for supposing that the Philippine shells which we have described are of a different species; but the locality is named with a mark of doubt, which the form itself strengthens, whilst the upper figures in Férussac's work (Pl. 109), though the bands are much narrower and paler than in those skinned specimens which I have seen, bear so strong a resemblance to them, that I have preferred the retention of Férussac's name. In Mr. Cuming's skinned specimens the rich reddish-brown, broad, transverse band of the body-whorl, and the basal band of the same colour at the base of the other whorls, contrast strikingly with the pure white which is the ground-colour of the shell. A small rosy fillet runs along the upper edge of the body-whorl, near the suture.

At the bottom of the same plate Férussac has figured another variety with a uniform brown *epidermis*. These appear to have been all the materials upon which Férussac founded his *Helix sarcinosa*.

The latter will form a sixth variety, which I have never seen, but which may be thus characterized:

Var. *g. Tota brunnea* (*Fér. Hist. Nat. Moll. Terr. et Fluv.* Pl. 109. f. 3.).

Mr. Cuming, who found all the shells which I have described, and am about to describe in this paper, on the leaves of trees, informs me that *Helix sarcinosa* deposits a great number of small eggs on the leaves of the trees in the dark forests where he found all the varieties. After the eggs are deposited on the leaf chosen, the animal wraps it round them subconically, so as to resemble in a degree the small paper wrappers in which grocers hand their wares to their customers.

Obs. Though it perhaps may be considered that *Helix sarcinosa* may come within the section named *Cochlostyla* by De Férussac, there appears to me to be almost a sufficient difference in the form of the aperture, the shape and termination of the *columella*, and the ventricose character of all the whorls, to justify a separation. The animal I have not seen, and I wait for further information before I decisively make that separation, being anxious to prevent the multiplication of names, which already involve the student in a sufficiently entangled labyrinth. For the present, therefore, I shall merely observe, that if future observations confirm my present suspicions, I would propose for the group the name of *Helico-bulinus*.

Helix turbinoides. *Hel. testâ subrotundâ, subproductâ, diaphanâ, lineis incrementi obliquè longitudinaliter striatâ; apice rubente; aperturâ effusâ magnâ, cæruleo-albente, labii limbo nigro-purpurascente, lato, recurvo.*

Var. *a. Viridis, anfractu penultimo et ultimo tæniis albis nunc tenuibus nunc latioribus cinctis.* Long. $2\frac{1}{8}$; lat. $2\frac{5}{8}$ unc.

Var. *b. Ochraceo-brunnea lineis tæniisque nigris vittata, anfractu basali fasciâ viridi-nigrâ latâ cincto.*

The green colour is beautifully seen where the animal has polished the shell, on turning it up; but when it is in its natural position it would be difficult to suppose that there were any other colours than the obscure ochraceous or whitish brown and the black lines, fillets and band. On holding the shell between the eye and the light, the green hue becomes perceptible on the back of the shell, and the bands seen transparently through it on holding the aperture toward the eye and against the light, have a very pretty effect.

Var. *c. Tota viridis.*

Hab. ad Albay in insulâ Luzon.

Legit H. Cuming in sylvis.

All the varieties of this noble *Helix* are about the same size, and at first sight bear no distant resemblance to a *Turbo*. The apex and two upper whorls in the first and last varieties are reddish-brown, and pale brown in var. *b*.

Helix Harfordii. *Hel. testâ rotundatâ, diaphanâ, anfractibus valdè ventricosis, superioribus apiceque complanatis, lineis incrementi frequentissimè striatâ, pallidè brunneâ, anfractu penultimo maculis strigisque angulato-nubilosis vario, anfractu ultimo su-*

pernè subalbido maculis nigro-brunneis suturam versus ornato, dehinc usque ad fasciam subcentricam obscurè albidam medio brunneo-tæniatam creberrimè nigro-brunneo tæniato et maculato, infra fasciam brunneo nigricante obscurè albido maculato et tæniato; aperturâ subeffusâ, cæruleo-albidâ, labii limbo angusto subrecurvo, flavicanti-subrosaceo. Long. $1\frac{6}{8}$; lat. $2\frac{1}{2}$ unc.

Hab. in insulæ Negros montibus.

Legit H. Cuming in sylvis.

In honorem Viri Reverendi Augusti Harfordii hæc species nomen obtineat.

It is almost impossible to describe the varied markings of this fine *Helix*. Only the two last whorls are spotted and striped, the rest being pale brown. The cloudy markings of the penultimate whorl become more distinct, and the colouring becomes deeper as the body-whorl is approached, and there the spots and fillets become more crowded and intense as they approach the subcentral band, till just above it they form a dark-brown zone. The part polished by the animal is of a bright amber hue.—W. J. B. Oct. 12, 1840.

M. Le Baron de la Fresnaye then read his observations on the situation which the genus *Upupa*, in his opinion, should occupy in the classification of Birds, judging from the form of the feet, and from the habits of the species.

Following is a translation of this author's observations:—

"It is surprising, now it is generally known that the classification of species and genera, based solely upon the form of the beak, is often unnatural and vicious, that modern authors should have continued to reunite, as did the old authors, the genus *Upupa*, with that of *Epimachus* or *Promerops*, and that they should constitute with these genera a little family under the name of *Promeropidæ*.

"It is evident that authors have been guided solely by the structure of the beak in such an association; and if the feet of these genera be compared, we are struck with the enormous difference which exists in their conformation, and consequently, of necessity, with the habits of the species.

"The Hoopoe, in fact, in the shortness of its fore toes, in the almost straight form of the claws, and particularly in the claw of the hind toe, we perceive has evident affinities with the Larks (*Alauda*) and other conirostral ground birds. Like them, also, the Hoopoe seeks its food on the ground, and especially on humid and newly disturbed land. It is often seen in grazing lands, where it seeks its food in the excrement of cattle, in which coprophagous insects abound. Its long and very slender beak is well adapted for pulling out the larvæ of these insects from the small holes in which they live and undergo their transformations: it serves well likewise to divide and disperse the excrement when dried by the sun.

"It is seen that the Hoopoe, with its feet formed like those of the larks, also essentially resembles those birds in its cursorial habits, but that it seeks its nourishment only on the ground, and in humid lands, such as pasture land.

"If, on the other hand, we consider the form of the feet of the

species of *Promerops*, with which the Hoopoe is usually associated, it will be seen that there exists a very essential difference in these organs. The feet of the *Promerops* are as remarkable for their thickness as those of the Hoopoe (though fitted for walking) are for their slenderness. In the first of these genera the toes are strong; the external toe is elongated, as well as the back toe, as in all those birds which are essentially perchers and which procure their food upon trees, whether it be in the manner of the species of *Melliphaga*, *Paradisea*, or *Dendrocolaptes*.

"As in these genera likewise, the claws in *Promerops* are very strong and much arched. The birds of this genus, in fact, appear to us to be *Cinnyridæ*, but on a large scale.

"The genus *Upupa*, as at present constituted, consists only of two or three species,—one from Europe, an African species, and one from India: in these there is so great a similarity in form, colouring and habits, that upon a cursory view they might be mistaken for one species.

"This genus, therefore, does not, as in most other genera, present certain species which recede from the type and form a transition between it and other genera, with which it is then natural to group them.

"From these considerations, the genus *Upupa* appears to us to be one of those isolated genera, like many others in the class, which cannot be naturally placed in any other group, but which ought to be regarded as constituting by itself a family or subfamily, under the name of *Upupidæ* or *Upupinæ*, its situation being in the section *Tenuirostres*; and if it be only regarded as a subfamily, it is with another subfamily of the cursorial *Tenuirostres* it should be grouped, which division should contain the genera *Upucerthia* of M. Isidore Geoffroy St. Hilaire, and some other genera peculiar to Chili, described by Killitz, and by Mr. Gould in the Voyage of the Beagle, and the species of which, in the form of their beak and feet as well as in their cursorial habits, afford a positive analogy with our genus *Upupa*, from which the genus *Promerops* is so isolated."

Mr. Gould, after reverting to the account given by him at the Meeting on the 8th of September, of that singular bird the Brush Turkey of New South Wales, proceeded to state that he had since received from Swan River another bird, having similar habits and a similar mode of nidification, but from which it differs in inhabiting the open sandy plains, instead of dense and gloomy glens, and in forming the mound for the reception of the eggs of sand, dead grasses and boughs, depending as much upon the sun's rays as upon the heat produced by decomposition to develope the young.

Mr. Gould added, that a most interesting note, detailing these facts, accompanied the specimens, and that an equally important sketch of its range, &c., had been furnished him by Capt. Grey, who has just returned from the north-west coast of Australia. The acquisition of this new species, and the notes here alluded to, are more than ordinarily acceptable, since they materially tend to clear up the

long-disputed point as to what group the Brush Turkey should be referred. Mr. Gould further stated, that the views of those naturalists who have considered it to be closely allied to the *Megapodii*, were perfectly correct, and that the Brush Turkey and the new species now exhibited would in fact form part of a large and singular family of birds inhabiting Australia and the Indian Islands, all of which assimilate in their habits and mode of nidification. This new species differing considerably in several of its characters from the Brush Turkey (*Talegalla*), Mr. Gould proceeded to characterize it as a new genus, under the name of *Leipoa*, signifying 'a deserter of its eggs.' The specific term of *ocellata* was suggested by the ocellated character of many of the spots with which its body is adorned.

Genus Leipoa.

Gen. Char.—*Rostrum* ferè tàm longum qùam caput; gracile, ad basin tumescens, tomiis undulatis et ad basin incurvatis, naribus amplis, oblongis, operculo tectis, et in foveâ centrali positis. *Caput* subcristatum. *Alæ* amplæ, rotundatæ, concavæ; e remigibus primariis quinto longissimo; tertiariis quàm remiges primarii ferè tàm longis. *Cauda* rotundata, rectricibus quatuordecem. *Tarsi* mediocres, robusti, anticè scutis, posticè squamis rotundatis haud æqualibus, tecti. *Digiti* subbreves; digitis lateralibus inter se ferè æqualibus.

Leipoa ocellata. *Lei. pectore per medium plumas lanceolatas nigras, strigâ centrali albâ ornatas, præbente, plumis corporis supernè albescenti-cinereis, ad apicem guttâ penè ocellatâ, rufâ, nigro marginatâ, notatis.*

Head and crest blackish brown; neck and shoulders dark ash grey; the fore part of the former, from the chin to the breast, marked by a series of lanceolate feathers, which are black with a white stripe down the centre; back and wings conspicuously marked with three distinct bands of grayish white, brown and black near the tip of each feather, the marks assuming an ocellate form, particularly on the tips of the secondaries; primaries brown, their outer webs marked with zigzag lines of darker brown; rump and upper tail-coverts brownish gray, the feathers of the latter transversely marked with two or three zigzag lines near their tip; all the under surface light buff, the tips of the flank feathers barred with black; tail blackish brown, broadly tipped with buff; bill black; feet blackish brown.

Total length, 24 inches; bill, $1\frac{1}{2}$; wing, 12; tail, $8\frac{1}{2}$; tarsi, $2\frac{1}{2}$.

Hab. Western Australia.

Mr. Gould next proceeded to characterize the two following new birds:—The first (*Cracticus argenteus*) is from the collection of Capt. Gray, and the second, a new species of *Amadina*, is from the collection of Mr. Dring, of H.M.S. Beagle.

Cracticus argentèus. *Cra. gulâ corporeque subtùs albis; humeris nigris; dorso argenteo-cinereo.*

Crown of the head, ear-coverts, shoulders, primaries, and all the

tail-feathers for three-fourths of their length from the base, black; back silvery gray; throat, all the under surface, sides of the neck, some of the wing-coverts and the margins of several of the secondaries, rump, and tips of the tail-feathers pure white; bill horn-colour; feet blackish brown.

Total length, 11 inches; bill, $1\frac{5}{8}$; wing, 6; tail, $4\frac{1}{2}$; tarsi, $1\frac{1}{4}$.

In size this species is directly intermediate between *Cracticus cinereus* and *C. varius*.

Hab. North-west coast of Australia.

AMADINA PECTORALIS. *Am. gulâ nitidè nigrescenti-purpureo; pectore plumis ad basin nigris, ad apicem albis, fasciato; corpore supernè cinereo-fusco, alarum tectricibus crebrè guttulis albis adspersis.*

Crown of the head and all the upper surface and wings, delicate grayish brown; the tips of the wing-coverts very minutely spotted with white; tail blackish brown; throat and ear-coverts glossy blackish purple; chest crossed by a band of feathers black at the base, strongly tipped with white; abdomen and under tail-coverts vinous grey; the flanks ornamented by a few feathers, similar to those crossing the breast; bill bluish horn-colour; feet flesh-colour.

Total length, $4\frac{1}{2}$ inches; bill, $\frac{1}{2}$; wing, $2\frac{1}{4}$; tail, $1\frac{3}{4}$; tarsi, $\frac{5}{8}$.

Hab. North-west coast of Australia.

Mr. Gould next exhibited and characterized two new species of Kangaroos from Swan River; the first of these is rather less than the *Macropus Bennettii*, and is remarkable for the perfect black colour of the fore part of all the feet, which appear as if they had been dipped in ink or some other black liquid, the black not blending, as usual, with the pale colour of the hind part of the feet, but terminating in an abrupt line. The general tint of the upper parts of the body is deep gray, a tint produced by the admixture of black and white, the hairs being black at the tip, and annulated with white near the tip; the sides of the body, as well as the under parts, are of paler gray, and are tinted with buff-yellow; this yellow tint is almost pure on the abdomen between the hind legs, on the feet and inner side of the ears: the upper surface of the head and muzzle are of a soot-like colour, and the *occiput* and back of the ears, as well as the apical portion in front, are pure black; a yellowish white line is observable on each side of the muzzle, commencing at the tip, and running backwards beneath the eye; the fore half of the hands and feet are pure black, and the greater portion of the tail (which is well clothed with harsh hairs) is of the same colour; at the base, however, it is coloured as the body, and on the upper surface, for a considerable distance from the base, the black hairs are more or less annulated with whitish, producing a grizzled appearance. On the chin is a small black patch.

Mr. Gould gave to this species the specific name *manicatus*: its principal characters may be thus expressed:—

MACROPUS (HALMATURUS) MANICATUS. *Macr. obscurè griseus; vel-*

lere apud partes inferiores pallidiore et flavescente; capite suprà fuliginoso, occipite necnon auribus externè nigris; utráque genâ lineâ flavescente notatâ; tarsis antipedibusque flavescentibus, anticè nigris; caudâ nigrâ ad basin griseâ.

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	30	0
——— *caudæ*	26	0
——— *tarsi digitorumque* (sine unguibus)..	8	10
——— ab apice rostri ad basin auris	5	0
——— *auris*	2	6

The second species of Kangaroo to which Mr. Gould drew the attention of the members, is nearly allied to the *Macropus penicillatus* of Mr. Gray, but differs in being of a smaller size, paler colour, in having no black mark on the sides of the body, and the tail less bushy; the ears, moreover, are smaller in proportion, and more pointed. The general colour is gray-brown; the under parts of the body are dirty white, obscurely tinted with yellowish: on each side of the body, near the base of the fore leg, is a dusky patch; a dirty white mark is observable on each side of the head, and there is an indistinct mark on the base of the thigh. The tail is moderately bushy, coloured at the base like the body, but the apical third is dusky black.

Mr. Gould gave to this species the name

Macropus (Petrogale) brachyotis. *Macr. vellere e fusco cinereo, apud partes inferiores albescente; caudâ floccosâ ad apicem nigrâ; utráque genâ lineâ albescente notatâ.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin....	21	0
——— *caudæ*	16	6
——— *tarsi digitorumque* (sine unguibus)..	5	0
——— ab apice rostri ad basin auris	3	8
——— *auris*	1	11

Various specimens presented since the last Meeting were exhibited. These donations consisted of a collection of Birds from Australia, presented by L. Chandler, Esq., and some specimens of Birds and Zoophytes from Gibraltar, presented by Mr. Frembly, R.N., Corresponding Member.

October 27, 1840.

William Yarrell, Esq., V.P., in the Chair.

In consequence of the lamented death of N. A. Vigors, Esq., one of the founders of the Society, and during the first years of its existence its active and zealous Secretary, whose reputation and influence had materially increased its numbers, as his liberality augmented its collections, the Society adjourned to November 10th.

November 10, 1840.

William Yarrell, Esq., Vice-President, in the Chair.

A letter from the Rev. R. T. Lowe, dated Madeira, August 8, 1840, was read. It stated that Mr. Lowe had forwarded for the Society's Museum two specimens of Snakes from Demerara, and a specimen of the *Ausonia Cuvieri* of Risso, from Madeira. "The *Ausonia*," observes Mr. Lowe, "I scarcely need remark, is one of the most interesting and valuable of my acquisitions, from the obscurity attending it, and its supposed identity with Rafinesque's *Luvarus imperialis*. It has been altogether passed over by Cuvier and Valenciennes in their *Histoire des Poissons*, though the former had previously taken it up in a note in his second edition of his *Règne Animal*."

A letter from Mr. J. Frembly, R.N., dated Gibraltar, September 23, 1840, was read. In this letter Mr. Frembly states that he had forwarded for the Society a living specimen of a Brazilian Pheasant (*Penelope pileata* of Wagler), and also a skin of the same species from Para. He had likewise forwarded some specimens of Marine Corallines and other Zoophytes, recently obtained during the prosecution of a coral fishery on the coast of Barbary.

A letter from J. Wardrop, Esq., dated Oct. 29, 1840, was next read. It refers to a Fowl brought by W. Wardrop, Esq., from the Island of Lemurs, and presented to the Society. In this Fowl the spur had been removed from its proper place, and engrafted on the head. The letter moreover states, that the natives of the island mentioned often cause the spurs of the cock bird to grow upon its head, and the comb upon its legs.

The following paper, by G. Gulliver, Esq., F.R.S., entitled "Observations on the Blood Corpuscles of the *Crocodilidæ*," was read.

"According to the observations of MM. Prevost and Dumas, Wagner, Schultz, and others, the long diameter of the oval blood corpuscles of the vertebrate animals is never more than one and a half or twice the short diameter; and M. Mandl states that this accords with his experience, except in regard to the blood corpuscles of the *Crocodilidæ*, of which he says that the long diameter is between two or three times greater than the short diameter.

"M. Mandl's observations are published in the *Annales des Sciences Naturelles*, séconde série, tome xii., in which the following remarks occur: 'En prenant dans les globules des chameaux*, oiseaux, rep-

* M. Mandl says in a note, "Nous avons examiné le sang du Dromadaire, de l'Alpaca, et du Chameau." I may add that I have examined the blood

tiles et poissons, le petit diamètre pour unité, le grand varie entre $1\frac{1}{2}$ à 2; on en rencontre une exception dans les *Crocodiliens*, dont le grand diamètre est 2 à 3 fois plus grand que le petit.'

"It appears that this conclusion was deduced from an examination of the blood of a single species only, the *Crocodilus Lucius* of Cuvier.

"In a short paper 'On the Blood Corpuscles of the Snowy Owl and Passenger Pigeon,' read before the Society on the 9th of June, 1840, I showed that the corpuscles of these birds, particularly of the former, were so very long, in relation to their breadth, as to present a peculiarity in this respect which I had not seen in the corpuscles of any other vertebrate animal; and, however singular it might appear, it was shown in the same communication that the blood-discs might differ remarkably in two nearly allied species of the same genus. Hence it will not appear surprising that I have failed to find the same peculiarity in the figure of the blood corpuscles of two other species of the *Crocodilidæ*, as M. Mandl did in the *Crocodilus Lucius*. In the following measurements the common-sized corpuscles are first noted, then those of extremely small and large dimensions, and lastly the average deduced from a computation of the whole; and they are all expressed in fractional parts of an English inch.

"1. Sharp-nosed Crocodile (*Crocodilus acutus*).

Long Diameter.		Short Diameter.	
1·1333	Common sizes.	1·2286	Common size.
1·1231		1·2666	Extremes.
1·1145		1·2000	
1·1600	Extremes.		
1·1000			
1·1231	Average.	1·2286	Average.

"The average thickness of the discs was about $\frac{1}{8000}$th of an inch.

"The animal was young, and the blood was obtained from the heart after death.

"2. An Alligator from South America (*Champsa fissipes*, Natterer).

Long Diameter.		Short Diameter.	
1·1455	Common sizes.	1·2666	Common sizes.
1·1333		1·2400	
1·1200		1·2286	
1·1143		1·2000	
1·1600	Extremes.	1·3000	Extremes.
1·1000		1·1895	
1·1259	Average.	1·2315	Average.

"The animal was young and lively. The blood was obtained from a prick of the foot.

of the *Vicugna* and *Guanaco*, and found their corpuscles also of an oval shape, thus completing the history of the singular red particles of the *Camelidæ*. See 'Dublin Med. Press,' November 27, 1839, and 'Trans. of the Royal Med. and Chirurgical Society,' vol. 23.

"Thus, as is commonly the case in the oval blood corpuscles of the vertebrate animals, in these two examples the long diameter is not equal to twice the short diameter, and it may therefore be concluded that M. Mandl's remarks on the blood corpuscles of the *Crocodilidæ* are not applicable to the corpuscles of all the species of this family. So far, however, from doubting the accuracy of this physiologist's observation on the blood of the *Crocodilus Lucius*, I am disposed to regard the result of my observations, in connexion with the one which he has made, as establishing a remarkable difference in the blood corpuscles of one family of Reptiles, similar to the peculiarity which I have found in the red particles of the Linnæan genus *Strix*, as well as in those of the *Columbidæ*."

A collection of Birds from Tangiers, presented to the Society by G. W. H. Drummond Hay, Esq., was exhibited, and Mr. Hay furnished the following list, accompanied with observations on the species, which was read.

Vultur fulvus, Linn. Arabic name, *Nezer*.

"I shot this bird as he rose heavily from the top of a high rock, near Cape Spartel, on the north coast of Africa, where he had been gorging himself with the body of a dead kid. The species is rare in these parts."

Neophron Percnopterus, Sav. Arabic name, *Erhama*. "Common."

Aquila Chrysaëtos, Vigors. Arabic name, *El Oukab*.

"Very rare, but two specimens having been obtained for many years past."

Pernis apivorus. Arabic name, *Bourreh*.

"This species passes over the country about the beginning of the spring in immense numbers, but is rare at other times."

Falco subbuteo, Linn. Arabic name, *Tier el Hor*.

"A very daring little bird, used by the Sultan for hawking: it is common in the high lands."

Falco Tinnunculus, Linn. Arabic name, *Bouamira*. "Very common."

Circus rufus, Bechst. Arabic name, *Hedia*. "Rare."

Alcedo ispida, Linn. Arabic name, *Tier Teberni*. "Common about the rivers."

Caprimulgus Europæus, Linn. Arabic name, *Terref el Aiyal*.

"Very common."

Merops Apiaster, Linn. Arabic name, *Liamon*.

"In the grape season this bird is exceedingly abundant; as many as twenty or thirty have been shot at one time from a tree: it is good eating, builds in holes in the ground, and sometimes uses rabbit-burrows for the purpose: feeds upon bees, flying ants, wasps, &c.; has an undulating flight, and does not flap the wings much. Disappears in the winter months."

Coracias garrula, Linn. Arabic name, *Characrac*,—a name which has reference to the noise which it makes.

"It is rather rare; comes generally in the spring, and remains about three months."

Lanius rufus, Linn. Arabic name, *Raich el Rra*. "Rare."

Oriolus Galbula, Linn. Arabic name, *Teir Sofar*.

"Rare: makes its appearance in the beginning of the spring, and leaves at the end of the spring."

Ixos obscura. Arabic name, *Chouchou*.

"Very common, especially in the orange plantations; destroys much of this fruit. Seen throughout the year."

Curruca melanocephala. Arabic name, *Chorrir*. "Rare."

Curruca atricapilla, Bechst. Arabic name, *Chorrir el Quebir*. "Rare."

Phœnicura Tithys, Jard. and Selby.

Phœnicura ruticilla. "Common."

Sylvia cisticola, Savi. Arabic name, *Boussiou*.

"Rather uncommon: builds near hedges."

Saxicola Stapazina. "Uncommon."

Saxicola aurata, Temm. "Common."

Saxicola Rubicola, Bechst. "Common."

Anthus arboreus, Bechst. Arabic name, *Koba*. "Common."

Anthus pratensis, Bechst. Arabic name, *Koba*. "Common."

Emberiza Hortulana, Linn. "Common."

Serinus flavescens, Gould. Arabic name, *Chimerees*. "Rare."

Sturnus unicolor, Temm. Arabic name, *Garzor Quehal*.

"Rather rare: generally settles in the mosques, where it probably builds."

Upupa Epops, Linn. Arabic name, *Hadhud*. "Common: generally seen about dunghills."

Glareola torquata, Briss. Arabic name, *Harrak Diad*.

"Lays on the ground in barren situations, and does not build a regular nest, but merely places a few straws, &c., loosely together."

Cursorius isabellinus, Meyer. Arabic name, *El-Gueta*.

"Very rare: builds in the desert, in the sand. From the great resemblance between the colour of this bird and that of the sand, it is with difficulty seen, even when flying, since it then keeps very close to the ground."

Ciconia nigra, Ray. Arabic name, *Geringa*.

"Rare. The Moors believe evil spirits to exist in this bird, it being black, whilst the good spirits are supposed to inhabit the white birds."

Platalea Leucorodia, Linn. Arabic name, *Boucarcaba*. "Rare."

Ardea purpurea, Linn. Arabic name, *Said el Meresh*, or Hunter of the Marsh. "Rare."

Botaurus stellaris, Linn. Arabic name, *Seba el Meresh*, the Lion of the Marsh.

"Both the *Ardea purpurea* and the *Botaurus stellaris* are exceedingly pugnacious in their habits, and will not allow any other bird

to approach them. Even the female dare not approach the male excepting in the breeding-season."

Ardea Garzetta, Linn. Arabic name, *Boubliga*. "Very rare."

Ardea Verany, Temm. Arabic name, *Tier Abgar*. "Exceedingly rare."

Ardea Ralloïdes, Scops. Arabic name, *Grnok el Serreh*. "Rather uncommon."

Ibis Falcinellus, Temm. Arabic name, *Maiza del Wad*. "Very rare."

Limosa melanura, Leisl. Arabic name, *Chibib*. "Not uncommon."

Squatarola cinerea, Gould. Arabic name, *Dorreis*. "Common."

Charadrias Hiaticula, Linn. Arabic name, *Couba*. "Common."

Strepsialis collaris, Temm. Arabic name, *Charno*. "Rare."

Totanus fuscus, Leisl. "Rare."

Totanus hypoleucos, Temm. "Rare."

Tringa variabilis, Mey. "Rare."

Tringa subarcuata, Temm. "Rare."

Tringa minuta, Leisl. "Very rare."

Tringa carunculata. Arabic name, *El Gor*. "Common."

Undina leucocephala, Gould. Arabic name, *Bugarein*.
"Exceedingly rare. A very excellent diver; will remain under water a long time."

Anas leucophthalmus, Temm. Arabic name, *Bourk el Serrer*.
"Rare: a good diver."

Anas marmorata, Temm. Arabic name, *Bourk el Biad*. "Rare: a good diver."

Podiceps cristatus, Lath. Arabic name, *Bourk el Wad*. "Rare."

Alca Torda, Linn. Arabic name, *Bourk del Bahar*. "Rare."

A paper, in which Mr. G. B. Sowerby continues the descriptions of the shells collected by H. Cuming, Esq., in the Philippine Islands, was next read.

HELIX ANNULATA. *Hel. testâ obovatâ, crassiusculâ, lævi, plerumque flavâ, fusco-cinctâ; spirâ elevatiusculâ, obtusâ, anfractibus quinque rotundatis, ultimo maximo; aperturâ rotundato-subtrapezoidali; peritremate lato, incrassato, albo roseo tincto; labio columellari lato, crasso, planulato, posticè subemarginato, anticè suprà columellam expanso.* Long. 1·0; lat. 0·8 poll.

Hab. in foliis Pandani propè Banqui, provinciæ Iloconis septentrionali ad insulam Luçon, Philippinarum.

This beautiful species bears considerable resemblance to *H. Iloconensis*, but may be distinguished by the dark chocolate colour of the back of the outer lip, which is also narrower, and much less reflected. Five varieties have been found by Mr. Cuming, viz.

a. Bright yellow, with a blood-red antesutural band, which becomes darker, and nearly chocolate-brown on the last volution: back of the lip and circumference of the *columella* dark chocolate-brown.

b. Bright yellow: antesutural band narrow, blood-red; circumferential band blackish brown: in other respects similar to *a*., and from the same locality.

c. Nearly similar to the last, but having a broader circumferential brown band, and a very narrow brown line between it and the antesutural band. From the same locality.

d. Pale yellow: antesutural band nearly obsolete: in all other respects like *b*.

e. Shell white: no antesutural band; circumferential band broad, and nearly black; last volution suffused with rose-red near the back of the lip.

HELIX BALTEATA. *Hel. testâ subglobosâ, crassiusculâ, lævi, coloribus variis cinctâ; spirâ elevatiusculâ, obtusâ, anfractibus quinque, subplanulatis, ultimo maximo; aperturâ semilunari, intùs albicante; peritremate incrassato, angusto, levitèr reflexo, extùs nigro; labio columellari latiusculo, obliquo, planulato, crasso.* Long. 1·0; lat. 0·8 poll.

Hab. in foliis fruticum ad provinciam Ilocos septentrionalis insulæ Luçon, Philippinarum.

In general form and size and colouring this species somewhat resembles our *H. Orbitulus*, from which it may be at once distinguished by its narrow, scarcely reflected, dark-coloured lip. The ground-colour of this species is usually whitish, or lemon-yellow, and the varieties are banded with dark green, gray, nearly black, and light green, and the columellar lip is commonly purplish black, with a crimson tinge. The following is an indication of the varieties:—

a. Apex dull red; ground-colour lemon-yellow; antesutural band dark green; post-circumferential band light greenish gray; columellar lip purplish black, with rose-coloured edges; columellar circumference green. From Banqui, in the province of North Ilocos.

b. Apex dull red; ground-colour pale lemon-yellow; antesutural band dark green; post-circumferential band greenish gray close to the broad circumferential band, which is reddish black; *columella* purplish black, its circumference green. From Banqui.

c. Apex dull red; ground-colour pale lemon-yellow; antesutural band green, darker in front; post-circumferential band greenish gray, also darker in front; *columella* and its immediate circumference purplish black, around which is a rather broad green band. From Sinait. Found on the leaves of trees.

d. Apex dull red; ground-colour lemon-yellow; antesutural band broad, dark green, composed of several narrow bands, next to which is a broad, pale, greenish gray band; circumferential band dark green, nearly black; *columella* purplish red, its circumference with a broad green band. From Banqui.

e. Apex dull pale red; ground-colour pale lemon-yellow: antesutural band broad, dark green; post-circumferential band very broad, greenish gray, with a very narrow nearly black band in front; then comes a narrow band of the ground-colour, and the remainder is green to the circumference of the *columella*, which is blackish; the

columella itself is purplish black. From Piddig, in the province of North Ilocos.

f. Apex pale dull red; ground-colour pale lemon-yellow; antesutural band very narrow, dark green; post-circumferential band very broad, greenish gray, united in front to the blackish circumferential band; *columella* blackish, its circumference with a very narrow green band. From Piddig.

g. Apex grayish white; ground-colour bright lemon-yellow; antesutural band narrow, dark green; post-circumferential band grayish green; circumferential band nearly black; *columella* crimson, its circumference green.

h. Apex and ground-colour white; bands as in *g*.; *columella* blackish; its immediate circumference black, around which is a dull green band; the antesutural band in this variety is very narrow, and of a dull colour, and two nearly black bands are distinctly seen within the aperture. From Sinait.

Helix fenestrata. *Hel. testâ subglobosâ, crassiusculâ, lævi, castaneo-nigrâ, epidermide fuscâ albicante-bifasciatâ; anfractibus quinque rotundatis, ultimo maximo, posticè prope suturas fenestratis (attritione epidermidis); aperturâ subrotundâ; peritremate lato, albo, reflexo; labio columellari lato, crasso, subplanulato.* Long. 1·0; lat. 0·85 poll.

Hab. supra foliis arborum ad montes Caravallo, provinciæ Cagayan, insulæ Luzon Philippinarum.

There are two varieties of this pretty species, which in general form resemble *H. Iloconensis* and *H. annulata*: they are

a. Anterior intermediate band dark brown.

b. Anterior intermediate band light brown.

The next paper read was from Mr. G. B. Sowerby, Jun., and is entitled "Descriptions of some new species of *Murex*, principally from the collection of H. Cuming, Esq."

Murex Occa, Conch. Illustr. f. 45. *Mur. testâ clavatâ, ventricosâ, fulvo-glaucescente; spirâ mediocri; caudâ longissimâ, rectâ, ad terminum subexpansâ, subrecurvâ; anfractibus angulatis transversè leviter sulcatis; varicibus tribus, spinis dorsalibus tribus brevibus falcatis, tribusque minutissimis alternantibus, deindè ad caudam tribus ad quatuor subrectis, interstitiis bituberculatis; aperturâ ovatâ, rotundatâ, posticè subangulatâ; labio crenulato, dente unico magno lato marginali; canali ferè clauso.*

Long. 3; lat. extra varicibus, 1 poll.

Hab. ad insulas Nicobaricas.

The comparative smoothness of the whorls, and the short, curved character of the dorsal spines, are sufficient to distinguish this from other clavate species.

Murex Messorius, Conch. Illustr. f. 93. *Mur. testâ clavatâ, subventricosâ, fulvo-rubescente, griseo, rubro, fuscoque maculatâ; spirâ brevi; caudâ elongatâ, rectâ, angustâ, minimè recurvâ; va-*

ricibus tribus, crassis, costatis, antè crenulatis, ponè foveolatis, ad angulum posticum spinâ brevi rectâ, ad caudam spinâ falcatâ, subelongatâ, deindè unâ breviore, rectâ; interstitiis duobus ad tribus costis noduliferis; aperturâ ovali, posticè subcanaliferâ; labio interno posticè tumido, intùs crenulato; labio externo denticulato, anticè paululum extante; canali ferè clauso.

Long. 2·40; lat. ex. var. ·90 poll.

Hab. ——? Mus. Cuming, Stainforth.

Distinguishable by the thickened varices, and the spine at the base of the caudal canal, shaped like a reaper's hook.

Murex rectirostris, Conch. Illustr. f. 95. *Mur. testâ clavatâ, subventricosâ, transversè costatâ, pallidè fulvâ, fusco-rubescente bifasciatâ; spirâ mediocri, anfractibus octo, rotundatis; suturis excavatis: caudâ elongatâ, angustâ, rectâ; varicibus tribus, crassis, antè crenulatis, ponè excavatis, ad angulum posticum spinâ crassâ, brevi, propè caudam tribus minutis proclivis, ad caudam duabus seu tribus tenuibus, rectis: interstitiis tricostatis; aperturâ ovali, peritremate extanti, labio externo crenulato; canali ferè clauso.*

Long. 2·80; lat. ex. var. 1 poll.

The spire is more elongated, the caudal canal is longer and more straight than in *M. recurvirostris*, Brod.

Murex nigrescens, Conch. Illustr. f. 98. *Mur. testâ subclavatâ, subrhomboideâ, transversè leviter costatâ, griseâ, nigro bifasciatâ, ad apicem fusco-rubescente: spirâ subproductâ, anfractibus septem, subangulatis, inter varices trifariàm tuberculiferis; suturis validis: caudâ elongatâ, rectâ, tenui; varicibus tribus, validis, rotundatis, noduliferis, ponè subexcavatis, ad angulum tuberculo subspinoso, ad basin caudæ spinis duabus: aperturâ ovali, labio interno albo, posticè tumido, anticè extante, crenulato, labio externo denticulato, intùs crenulato; canali clauso.*

Long. 2; lat. ex. var. ·80 poll.

Hab. ad Xipixapi. H. Cuming legit.

More ventricose and less clavate than *M. recurvirostris*, Brod., with a larger aperture, thinner varices, and straighter caudal canal. The sutures of the spire are not excavated, and the varices are very slightly so. Sandy mud, 11 fathoms.

Murex pliciferus, Conch. Illustr. f. 102. *Mur. testâ elongatâ, subfusiformi, subventricosâ, atrâ, albâ, pallidè fusco-subfasciatâ; transversè lineis moniliformibus striata spirâ productâ, anfractibus novem, subangulatis, suturis validis, subexcavatis; caudâ subelongatâ, rectâ, paulo exfoliatâ, leviter recurvâ: varicibus tribus, post angulum trifariàm spinoso-fimbriatis, ad angulum posticum spinâ crassâ, subelongatâ, rectâ, deindè quinque, brevioribus apertis, quarum primis duabus et ultimâ brevissimis, ad caudam duabus subelongatis, unâ brevi: aperturâ magnâ, ovali; labio interno lævi, paululùm extante; labio externo levitèr crenulato, canali recto, aperto; interstitiis varicum tuberculo valido, tum costâ elongatâ, plicatâ, deindè costâ elongatâ angustiori subplicatâ.*

Long. 3·40; lat. ex. var. 1·50.

Hab. ——? Mus. Cuming.

There is no danger of confounding this fine species with any other. It is intermediate between the clavate and the fusiform groups.

Murex plicatus, Conch. Illustr. f. 6. *Mur. testâ clavatâ, ventricosâ, pallidè violaceâ, fulvo tinctâ et lineatâ: varicibus tribus, costatis crassis, ad latus marginale crenatis, ponè excavatis, ad angulum anfractuum spinâ crassâ brevi, deindè quinque alternatis, ad caudam tribus, subrectis, subelongatis; interstitiis tribus ad quatuor costis noduliferis; spirâ breviusculâ; aperturâ ovali, posticè canaliferâ; labio crenato; caudâ rectâ, crassâ, subelongatâ; canali ferè clauso.*

Long. 3·0; lat. ex. var. 1·30.

Hab. ad sinus Nocoyo. H. Cuming legit.

Found in coarse sand, at twelve fathoms. Distinguished from other species with elongated caudal canals by its width, and the thickness of the varices, which are deeply excavated at the back, and armed with short thick spines. *M. recurvirostris*, Brod., is the nearest approach, but is not so wide nor so spinose, and the caudal canal is recurved.

Murex formosus, Conch. Illustr. f. 91. *Mur. testâ subclavatâ, transversè leviter costatâ, scabrosâ, fulvo purpurascente: spirâ subproductâ, aculeatâ; anfractibus novem rotundatis; suturis validis; caudâ elongatâ, obliquâ, tenui, recurvâ, validissimè exfoliatâ: varicibus tribus à tergo subexcavatis, spinâ ferè elongatâ ad angulum posticum, deindè tribus apertis subelongatis, cum parvis quinque ad sex proclivis alternantibus, ad caudam duabus mediocribus ferentibus; interstitiis trifariàm noduloso-costatis; aperturâ ovali posticè subcanaliferâ, labio interno anticè vix minimè extante; labio externo denticulato, anticè extante; canali aperto.*

Long. 3·15; lat. ex. var. 1·05 poll.

Hab. ad Loay, Ins. Bohol. Mus. Cuming, Sowerby, Stainforth.

This belongs to the group of which *M. Motacilla* forms the type. It is an extremely elegant shell; the caudal canal is gracefully curved and exfoliated. Sandy mud, 7 fathoms.

Murex mindanaensis, Conch. Illustr. f. 92. *Mur. testâ subclavatâ, subventricosâ, transversè sulcatâ, pallidè fusco-rufescente; spirâ productâ, anfractibus octo rotundatis, suturis validis; caudâ elongatâ, subrecurvâ, exfoliatâ: varicibus tribus, validis, rotundatis, ponè subexcavatis; ad angulum posticum spinâ unicâ brevi; deindè spinis quinque brevioribus, parvisque quinque proclivis alternantibus: interstitiis tricostatis; aperturâ ovali; labio externo crenulato, margine dentato; labio interno lævi, paulo extante; canali ferè clauso.*

Long. 3; lat. ex. var. ·85; *cauda*, 1·5.

Hab. prope Cagayan, provinciæ Misamis ad insulam Mindanao Philippinarum. H. Cuming legit.

This beautiful and very distinct species presents a medium between

the groups of which *M. Motacilla* and *M. ternispina* may be taken as the types. It was dredged at Cagayan in sandy mud, at a depth of 25 fathoms.

Murex elegans, Conch. Illustr. f. 84. *Mur. testâ clavatâ, ventricosâ, rhomboideâ, lævi, transversè costatâ, albâ, costis fusco-lineatis; varicibus tribus, crassis, rarissimè subspinosis; interstitiis bituberculatis; aperturâ ovali, labio externo crenulato; caudâ elongatâ, recurvâ, anticè latâ, angulatâ.*

Long. 2·15; lat. ex. var. 1 poll.

Hab. ——? Mus. H. Cuming.

A much smoother shell than *M. Motacilla*, and having two large tubercles between the varices, instead of three. It has been named as above by Dr. Beck in collections, but we believe has never been described.

Murex similis, Conch. Illustr. f. 69, 70. *Mur. testâ subfusiformi, subventricosâ, transversè interrupto-costatâ, pallidè fulvâ, transversè bifasciatâ vel interrupto lineatâ: varicibus tribus, costatis; ad angulum anfractuum unâ spinâ brevi, deindè quatuor ad quinque anterioribus minimis, ad caudam unâ spinâ brevi; interstitiis trifariàm noduloso-costatis: caudâ recurvâ longiusculâ posticè latâ, angulatâ exfoliatâ; aperturâ ovali; labio extante, intùs leviter crenulato; labro crenulato.*

Long. 1·90; lat. ·8.

Hab. ——? Mus. Saul.

The spire is much more elongated, the varices more spinose and less thickened, and the caudal canal less elevated than in *M. Motacilla*, which, in general characters, it much resembles.

Murex scabrosus, Conch. Illustr. f. 73. *Mur. testâ subturbinatâ, ventricosâ, crassâ, corrugatâ, transversè lineis elevatis, scabrosis, distantibus, costatâ, pallidè fulvâ, fusco-maculatâ; spirâ brevi, obtusâ, anfractibus sex ventricosis, suturis validis; caudâ longitudine aperturam æquante, rectâ, crassâ, latâ, exfoliatâ, ad basin sub-coarctatâ; varicibus tribus, validis, costatis, posticè excavatis; costarum, unâ ad angulum posticum subspinosâ, tribus ad partem anticam anfractus anticè fimbriatis, tribus ad caudam, validis, subspinosis, subfimbriatis; interstitiis tuberculis tribus corrugatis anticè ad basin caudæ læviusculis; aperturâ magnâ, albâ, rotundatâ; labio interno lævi, decumbente, purpureo; labio externo crenulato; canali aperto.*

Long. 2·20; lat. ex. var. 1·10 (*spira*, $\frac{1}{3}$; *apertura*, $\frac{1}{3}$; *cauda*, $\frac{1}{3}$).

Hab. ——? Mus. Saul.

We have only seen one specimen of this shell, which resembles, in some degree, the young of *M. pomum*; but the varices are narrower, the tubercles smaller, and there is a smooth space just below the ventricose part of the last whorl. The caudal canal is larger and straighter.

Murex Banksi, Conch. Illustr. f. 82. *Mur. testâ fusiformi,*

transversè scabroso-sulcatâ, fulvâ, fusco-maculatâ, ad varices nigrescente; spirâ productâ, anfractibus septem, rotundatis, suturis validis, subundatis; caudâ elongatâ, latâ, nisi ad extremitatem rectâ, paululum recurvâ: varicibus tribus, ramis breviusculis acutofrondosis, subrectis, ad caudam quatuor compressis, quorum duobus elongatiusculis: interstitiis tuberculis tribus subpliciformibus: aperturâ albâ, ovali, posticè canaliferâ; labio externo acutissimè denticulato; canali aperto.

Long. 2·80; lat. ex. var. 1·15 poll.

Hab. ad Mollucas.

The above name, although, we believe, never published, has been applied to this species in several cabinets. The compressed character of the fronds on the caudal canal bring it near to *axicornis*, but the other fronds are much shorter.

Murex Saulii, Conch. Illustr. f. 77. *Mur. testâ fusiformi, transversè lineis elevatis striatâ, pallidè fulvâ, fusco-rubescente vel nigricante lineatâ: spirâ elongatâ; anfractibus novem, rotundatis, gradatim crescentibus; suturis validis: caudâ subelongatâ ad basin planâ, exfoliatâ, rectâ; extremitate obliquâ, recurvâ: varicibus tribus obliquiter continuis, crassis, rotundatis ad angulum posticum; ramo crassiusculo, ad basin subcomplicato, extremitate frondoso, recurvo, roseo; deinde quatuor apertis, angustioribus, roseis, frondosis, cum quinis minoribus proclivibus alternantibus, tum tribus ad caudam subcompressis, roseis, frondosis: interstitiis tuberculis duobus, uno majore, uno minore: aperturâ ovali, posticè canaliferâ, angulatâ; labio interno lævi; labio externo dentibus duodecim acutis; canali aperto, subsinuoso.*

Long. 2·80; lat. ex. var. 1 poll.

Hab. ad insulam Capul, Philippinarum. H. Cuming legit. Mus. Saul, Stainforth, Reeves.

It is somewhat surprising that this species should not have been distinguished ere this from *M. Palmarosæ*, from which it differs in having a smooth inner lip, and in having small projecting fronds on the varices between the larger ones.

Murex torrefactus, Conch. Illustr. f. 110, 111. *Mur. testâ subfusiformi, subventricosâ, transversè costis subscabrosis striatâ: spirâ elongatâ; anfractibus novem, rotundatis, subgradatim crescentibus; suturis subvalidis: caudâ mediocri, latâ, palmatâ, exfoliatâ, ad basin rectâ, ad extremitatem obliquâ, recurvâ: varicibus tribus, crassis; ramis dorsalibus quinque, frondosis, brevibus (uno ad angulum posticum crassiusculo), cum parvis quinque proclivibus alternantibus, ad caudam tribus subcompressis: interstitiis tuberculis duobus, uno majore: aperturâ flavidâ ovali, posticè canaliferâ, subangulatâ; labio interno lævi; labio externo dentibus duodecim acutis; canali aperto, subsinuoso.*

Long. 3·70; lat. 1·60 poll.

Var. *Testâ pallidè fulvâ, fusco-nigricante, lineatâ; frondibus fuscis.*

Var. *Testâ ferè adustâ.*

Var. *Testâ flavido-rufescente, fusco-lineatâ.*

Hab. ad insulam Ticao, Philippinarum. H. Cuming inter alios legit.

Much more ventricose, with a wider caudal canal, and much shorter fronds than *M. Saulii*. Found on coral reefs.

MUREX PALMIFERUS, Conch. Illustr. f. 99. *Mur. testâ subfusiformi, transversè scabroso-sulcatâ, fulvo-roseo tinctâ: spirâ elongatiusculâ, acutâ; anfractibus octo, subangulatis: caudâ mediocri, exfoliatâ, obliquâ, paululùm recurvâ: varicibus tribus; frondibus palmatis, ad angulum posticum duobus subelongatis, subconnexis, tum duobus singularibus, deindè duobus connexis, cæteris parvis, proclivibus, ad caudam tribus singularibus, quarum ultimo brevissimo: interstitiis bituberculatis: aperturâ ovali, posticè subangulatâ; labio externo crenulato; canali aperto.*

Long. 1·70; lat. ex. var. ·80 poll.

Hab. Red Sea.

MUREX CORRUGATUS, Conch. Illustr. f. 72. *Mur. testâ subrhomboideâ, transversè costatâ, corrugatâ, scabrosâ, albo-lutescente: spirâ productâ; anfractibus septem, subangulatis: caudâ mediocri, exfoliatâ, ad basin latâ: varicibus tribus, tenuibus, costatis; frondibus sub-palmiferis, ad angulum duobus confertis, tum duobus singularibus, deinde tribus confertis, ad caudam duobus seu tribus singularibus: interstitiis bituberculatis: aperturâ magnâ; labio interno lævi; labio externo maximè extante, crenulato; canali aperto.*

Long. 1·30; lat. ex. var. ·60 poll.

Hab. —— ? Mus. Cuming, Watson.

MUREX LAQUEATUS, Conch. Illustr. f. 78. *Mur. testâ rhomboideâ, transversè costatâ, crassâ, albâ: spirâ mediocri; anfractibus septem, subangulatis: caudâ breviusculâ, rectâ, crassâ: varicibus tribus obliquiter spiram decurrentibus, à tergo tumulosis, fimbriâ laqueatâ carinatis, ad caudam subspinosis: interstitiis tuberculo magno costatis: aperturâ parvâ, ovali; labio externo crenulato; canali aperto.*

Hab. —— ? Mus. Saul.

A much thicker shell than *M. tripterus*, Born., and moreover having the caudal canal spinose.

MUREX CANALIFERUS, Conch. Illustr. f. 74. *Mur. testâ parvâ, crassâ, subfusiformi, sublævi, albo-lutescente: spirâ productâ; anfractibus sex ad septem, subplanis: caudâ breviusculâ, subrectâ, ad terminum minimè recurvâ: varicibus tribus, fimbriatis, antè inciso-fimbriatis, ponè lævibus, costatis; ramis uncinatis, planis, tubiformibus, ad angulum posticum uno valido, subelongato, ad medium anfractûs uno brevi, tum duobus minimis, obsoletis, ad caudam duobus parvis: interstitiis obscurè quadrifariam nodulosis: aperturâ integrâ, parvâ, ovali; peritremate lævi; canali nisi ad extremitatem clauso.*

Long. 1; lat. ex. var. ·35 poll.

Hab. —— ? Mus. Stainforth, Sowerby.

Differing from *M. cancellatus*, in being more fusiform, thin and

smooth, in the caudal canal being longer and straighter, and in the sutures of the whorls being simple.

Murex cancellatus, Conch. Illustr. f. 75. *Mur. testâ parvâ, crassiusculâ, fusiformi, cancellatâ, albo-lutescente: spirâ subproductâ; anfractibus quinque; suturis foveolatis: caudâ brevi, crassâ, latâ, ad terminum tortuosâ, minimè recurvâ: varicibus tribus, fimbriatis, crassis, costatis, utrinque foveolatis; ramis tubulatis, uno ad angulum crasso, valido, ad medium anfractûs, uno brevissimo, cæteris obsoletis: interstitiis trifariam noduloso-costatis: aperturâ parvâ, integrâ, ovali; peritremate lævi; canali nisi ad extremitatem clauso.*

Long. ·75; lat. ex. var. ·31 poll.

Hab. ——? Mus. Stainforth.

A small white fimbriated shell, with the canal and a frond open only at the extremities.

Murex Capensis, Conch. Illustr. f. 76. *Mur. testâ parvâ, subfusiformi, lævi, fulvo-rubescente: spirâ productâ, caudam æquante: varicibus tribus, digitato-alatis; spinis quinque planis, subtubulatis, fimbriâ membranaceâ connexis, unâ ad angulum anfractuum falcatâ: aperturâ ovali, posticè subangulatâ; canali nisi ad extremitatem clauso.*

Long. 1; lat. ·40 poll.

Hab. ad Bonæ Spei promontorium. Mus. Cuming, Sowerby, &c.

A pretty little species, with nearly tubular digitations connected by a fringe. The posterior digitation of each varix is hooked.

Murex trialatus, Conch. Illustr. f. 18. *Mur. testâ rhomboideâ, lævi, subventricosâ, fulvâ, fusco-nigrescente fasciatâ: varicibus tribus, alatis, ad marginem undatis, posticè subelongatis, subaculeatis, ad latus marginale fimbriatis, subcanaliculatis, à tergo lævibus, ad terminum exfoliatis: apertura ovali; labio undato: caudâ brevi, latâ: canali clauso: spirâ elongatâ.*

Hab. ——? Mus. Saul.

Murex emarginatus, Conch. Illustr. f. 64. *Mur. testâ rhomboideâ, sublævi, pallidè fusco-rubescente: spirâ brevi; anfractibus quinque, prope suturas angulatis; suturis undatis: caudâ angustâ, obliquiter rectâ, exfoliatâ, leviter recurvâ: varicibus tribus, crassis, angulatis, anticè dente unico subextanti, unico minore à tergo undato-costatis, supernè fimbriâ anticè dilatatâ, canaliferâ, subitò ad caudam truncatâ carinatis: interstitiis tuberculo magno: aperturâ magnâ, ovali; labio externo undato, extante, anticè dente unico armato; canali nisi ad extremitatem clauso.*

Long. 2; lat. ex. var. 1 poll.

This species presents a near approach to *M. Monoceros, nobis*, but the canal is closed, and it is also longer and narrower. The varices are fimbriated. The fringe near the canal is suddenly terminated, being in a manner drawn in.

Murex monoceros, Conch. Illustr. f. 65. *Mur. testâ rhom-*

boideâ, irregulari, transversè minutè striatâ, griseâ, lineis albis inter fasciis fuscis cinctâ: spirâ mediocri; anfractibus septem, subangulatis: caudâ brevi, latâ, exfoliatâ: varicibus quatuor ad quinque subdecumbentibus, paululùm rotundatis, antè quadrifariam denticulatis, uno dente magno prope caudam subextante, uno minore: interstitiis tuberculo magno: aperturâ magnâ, posticè subangulatâ; labio externo, dente magno prope canalem extante, intùs denticulato, canalifero; canali aperto.

Long. 2·25; lat. ex. var. 1·20 poll.

Hab. —— ? Mus. Norris.

A very remarkable shell in the collection of J. Norris, Esq., with a large tooth on the anterior part of the outer lip, resembling that in *Monoceros*.

Murex fasciatus, Conch. Illustr. f. 86. *Mur. testâ rhomboideâ crassâ, transversè costatâ, albâ, vel pallidè fulvâ, fusco-bifasciatâ: spirâ breviusculâ; anfractibus sex, subrotundatis, paululùm angulatis: caudâ brevi, crassâ, compressâ, subumbilicatâ: varicibus tribus, rotundatis crassis, costatis: interstitiis tuberculo valido, elongato: aperturâ ovali, posticè subcanaliferâ; labio interno lævi; labio externo crenulato, intùs dentato; canali nisi ad extremitatem clauso.*

Long. 1·20; lat. ex. var. ·65 poll.

Hab. ad oras Africanas (River Gambia).

Murex varius, Conch. Illustr. f. 57, 104. *Mur. testâ crassâ, subrhomboideâ, ventricosâ, subscabrosâ, pallidè fulvâ, fusco-fasciatâ; rubro-lineatâ, lineis extantibus submoniliformibus transversè sulcatâ: spirâ mediocri; anfractibus septem, primis angulatis, ultimâ subrotundatâ: caudâ brevi, latâ, crassâ, exfoliatâ: varicibus quinque ad septem, decumbentibus, prope angulum posticum à tergo tumulosis; tuberculis subspinosis, uno ad angulum brevi, crasso, subcrispato, tum aliquando tribus minutis, deinde tribus majusculis, ad caudam uno subelongato: aperturâ magnâ, subrotundatâ, posticè subangulatâ; labio interno lævi, crasso; labio externo crenulato; canali aperto.*

Long. 2·35; lat. ex. var. 1·50.

Hab. Gambia. Mus. Cuming.

Murex tumulosus, Conch. Illustr. f. 71. *Mur. testâ clavatâ, ventricosâ, pallidè fulvâ, fusco-bifasciatâ, transversè scabroso-sulcatâ: spirâ brevi; anfractuum suturis excavatis: varicibus septem, validis, crassis, costatis, antè crenulatis, ponè excavatis, ad suturas tumulosis; ad medium anfractuum spinis duabus subelongatis, rectis; ad caudam spinis tribus: caudâ elongatâ: aperturâ magnâ, ovali, posticè subangulatâ; anticè margine sub-producto, intùs crenulato.*

Long. 3·60 (*caudæ*, 2·3); lat. ex. var. 1·30.

Hab. —— ? Mus. Stainforth.

This species differs from *M. cornutus*, in the thickness of the varices, which are excavated behind. The sutures of the spine are also excavated.

Murex varicosus, Conch. Illustr. f. 49. *Mur. testâ subclavatâ, transversè sulcatâ, albâ, ad varices fusco-nigricante : varicibus sex, tumidis, subfrondosis, anticè inciso-fimbriatis, pone frondes lævibus, integris, posticè ad anfractum proximum dilatatis, ultimo magis expansâ, digitatâ : spirâ breviusculâ ; suturis anfractuum excavatis : caudâ subelongatâ, latâ : aperturâ rotundatâ, albâ ; canali ferè clauso : caudâ subelongatâ, latâ.*

Long. 1·70 ; lat. ex. var. ·80.

Hab. ——? Mus. Stainforth.

This species differs from *M. secundus*, in being much less oblique, in not having the labial varix so much larger than the rest, in having a greater number of varices and a somewhat longer spire and in attaining a larger size.

Murex digitatus, Conch. Illustr. f. 79. *Mur. testâ pyriformi, transversè costatâ, roseo-fulvâ : spirâ breviusculâ ; anfractibus quinque, ventricosis, angulatis, supernè complanatis ; suturis excavatis : caudâ longiusculâ, ad basin latâ, gradatim angustiore : varicibus octo, costatis, digitatis, posticè usque ad medium proximi anfractûs prolatis ; digitis numerosis, nigrescentibus, subproclivibus, rugosis, palmatis, minoribus alternantibus : aperturâ ovali ; labio externo crenulato ; laminâ canalis latâ.*

Long. 1·55 ; lat. ex. var. ·80 poll.

Hab. ad insulam Messonam. Mus. Cuming.

In general form resembling *M. Scorpio*, *M. secundus* and *M. varicosus*, but differing from them in being much straighter, having many more varices, the digitations being less connected, and in their being continued across the body of the shell in the form of interstitial ribs.

Murex megacerus, Conch. Illustr. f. 18. *Mur. testâ rhomboideâ, subventricosâ, fulvo-rufescente, intùs albâ, transversè scabroso-sulcatâ : varicibus quinque, ad caudam exfoliatis ; frondibus subrectis, crassis, ad terminum foliatis, unâ ad angulum anfractuum magnâ, deinde tribus mediocribus, cum quatuor parvis, proclivibus, alternantibus ; ad caudam tribus mediocribus : interstitiis costâ quinquefariam tuberculiferâ : aperturâ ovali, posticè canaliferâ, subangulatâ, margine dentato, undato ; canali aperto : caudâ longitudine spiram æquante, latâ, subrecurvâ.*

Long. 3·45 ; lat. ex. var. 1·90 poll.

Hab. ad mare Pacificum.

Distinguished by the thick, straight, prominent frond on each of the five varices.

Murex falcatus, Conch. Illustr. f. 31. *Mur. testâ fusiformi, tenui, albâ, fulvo-fasciatâ ; anfractibus angulatis, apicem versus cancellatis : varicibus quinque ad septem, alatis, lævibus, posticè elongatis, falcatis, ad marginem posticum plicâ involutis, ad caudam exfoliatis : interstitiis in medio uni-plicatis : caudâ elongatâ, subrecurvâ : aperturâ ovali, posticè angulatâ ; margine externo perelevato, subcrenato ; canali clauso.*

Long. 1·55; lat. ex. var. ·65.

Hab. ad insulam Japan. Mus. H. Cuming.

A beautiful species with five to seven broad, smooth, foliated varices in each whorl. Found in deep water.

Murex inermis, Conch. Illustr. f. 87. *Mur. testâ fusiformi, transversè leviter costatâ, albâ: spirâ elongatâ, acutâ; anfractibus septem, rotundatis, ultimo pyriformi; suturis validis, foveolatis: caudâ elongatiusculâ, tortuosâ: varicibus sex, levitèr noduliferis, posticè paululùm prolatis, ultimo latiore, crassiore: aperturâ ovali; labio interno, extante, lævi; labio externo crasso, intùs levitèr crenulato; ad basin canalis tuberculo valido; canali aperto.*

Long. 1; lat. ex. var. ·40 poll.

Hab. ad mare Japonicum. Dr. Sibbald legit.

This singular shell has some of the characters of *Triton*.

Murex balteatus, Conch. Illustr. f. 83. *Mur. testâ parvâ, crassâ, subrhomboideâ, albo-rubescente, ad varices fusco-nigricante: spirâ subproductâ; anfractibus sex, angulatis: caudâ breviusculâ, exfoliatâ, recurvâ: varicibus sex, anticè inciso-fimbriatis, à tergo costatis; spinis brevibus, paululùm crispatis, unâ ad angulum posticum, deinde brevioribus quatuor, ad caudam duabus minutis, rectis: aperturâ ovali; labio interno posticè prolato, anticè valdè extante; labio externo crenulato, extante; canali ferè clauso.*

Long. ·95; lat. ex. var. ·47 poll.

Testâ juniore: caudâ elongatâ, validè ascendente.

Var. Testâ breviore: varicibus validioribus: aperturâ roseâ.

Hab. ad insulam Masbate, Philippinarum. H. Cuming legit.

The name given above has been applied to this shell by Dr. Beck, who, however, has not described it. Found in coral reefs.

Murex cyclostoma, Conch. Illustr. f. 100. *Mur. testâ rhomboideâ, subventricosâ, pallidè griseo-fulvâ: spirâ longitudine aperturam et canalem æquante; anfractibus quinque, exiguis, rotundatis, transversè costatis; suturis validis, excavatis: caudâ brevi, latâ, recurvâ, exfoliatâ: varicibus sex, angulatis, crassis, magnis, utrinque costatis, anticè inciso-fimbriatis, posticè foveolatis, supernè subspinosis: aperturâ ovali rotundatâ, ferè integrâ; labio interno lævi, extante; labio externo extùs crenulato; canali ferè clauso.*

Variat caudâ elongatâ, valdè recurvâ: varicibus spinis crispis armatis.

Long. ·75; lat. ex. var. ·40; lat. var. incl. ·50.

Hab. ad insulam Bohol Philippinarum. H. Cuming legit.

The elongated, slender, elevated caudal canal, as well as the more distinct spines of the smaller shell, must be considered as a variation resulting partly from difference of age, partly from locality, and other circumstances. Sandy mud, 7 fathoms. —Loay.

Murex breviculus, Conch. Illustr. f. 37. *Mur. testâ rhomboideâ, brevi, ventricosâ, albâ, fulvo-fasciatâ: varicibus quatuor, crassis, nodulosis, inter nodulos utrinque foveolatis: spirâ brevi; anfrac-*

tibus rotundatis: aperturâ rotundatâ, ad marginem crenatâ: caudâ brevi, subitò recurvâ; canali ferè clauso.

Long. ·90; lat. ex. var. ·55.

Hab. —— ? Mus. G. B. S. Sen., H. Cuming, Stainforth.

Differing from *M. tetragonus, Brod.*, in the shortness of the shell, and in the caudal canal, which is turned abruptly over the back of the last whorl.

Murex Peruvianus, Conch. Illustr. f. 116. *Mur. testâ fusiformi, subventricosâ, pallidè fulvâ, transversè costis fuscis, numerosis cingulatâ: varicibus novem; spinis numerosis ad angulum posticum crispatis, ad caudam duabus subelongatis, falcatis: spirâ elongatâ; anfractibus septem, rotundatis, posticè subplanatis: caudâ subelongatâ, exfoliatâ: aperturâ magnâ, posticè subangulatâ.*

Long. 1·20; lat. ·60.

Hab. ad Peruviam. Mus. H. Cuming.

Murex noduliferus, Conch. Illustr. f. 101. *Mur. testâ subrhomboideâ, crassâ, lævi, albo-lutescente: spirâ elongatâ; anfractibus sex, subangulatis; suturis inconspicuis, undatis: caudâ brevi, subexfoliatâ: varicibus sex, crassis, striatis, posticè obsoletis, lævibus; tuberculis nigrescentibus, ad angulum posticum uno subfrondoso, crasso, recurvo, crispato, minore anticè annexo, in medium anfractûs uno angusto, angulato, minore anticè annexo, ad caudam uno parvo: aperturâ luteâ subquadratâ; labio interno vix extante, lævi, anticè subcrenulato; labio externo angulato, intùs denticulato; canali latè aperto.*

Long. 1·10; lat. ex. var. 55 poll.

Hab. ad insulam Masbate. H. Cuming legit.

Found in coral reefs.

Mr. Gould commenced the exhibition of fifty new species of Birds from his Australian collection, and proposed to bring forward the remainder of them at the succeeding meetings of the Society; those now exhibited were three new species of small Grass Parrakeets (*Euphema* of Wagler); for these he proposed respectively the names *Eu. splendida, aurantia,* and *petrophila.*

Euphema splendida. *Euph. facie et plumis auricularibus intensè cæruleis: pectore rufescenti-aurantiaco: humeris et alarum tectricibus lazulino-cæruleis.*

Face and ear-coverts deep indigo-blue, becoming lighter on the latter; all the upper surface grass-green; shoulders above, and wing-coverts beautiful lazuline blue; shoulders beneath deep indigo-blue; primaries and secondaries black, the former margined externally with blue, the latter with green; two centre tail-feathers dark brown; the remaining feathers black on the base of the internal webs, green on the base of external webs, and largely tipped with bright yellow; chest rich reddish orange; under surface yellow, becoming green on the flanks.

Total length, 8 inches; wing, $4\frac{1}{2}$; tail, $4\frac{1}{2}$; tarsi, $\frac{1}{2}$.

Hab. Western Australia.

Euphema aurantia. *Euph. vittâ frontali lazulino-cæruleâ; loris viridibus: abdomine maculâ grandi splendidè aurantiacâ ornato.*

Male.—Frontal band blue, margined before and behind with a very faint line of greenish blue; crown of the head and all the upper surface deep grass-green; shoulders, many of the secondaries, and outer edges of the primaries deep indigo-blue; lores, cheeks and breast yellowish green, passing into greenish yellow on the abdomen and under tail-coverts, the centre of the abdomen being ornamented with a large spot of rich orange; two centre tail-feathers green; the next, on each side, blackish brown on the inner, and green on the outer webs; the remainder blackish brown on their inner, and green on their outer webs, and largely tipped with bright yellow; irides very dark brown, becoming lighter on the under side; legs and feet dull brown.

Female.—Possesses the orange spot, but in her it is neither so extensive nor so brilliant.

Total length, $8\frac{1}{2}$ inches; wing, $4\frac{1}{4}$; tail, $4\frac{1}{4}$; tarsi, $\frac{1}{2}$.

Hab. Van Diemen's Land and the Actæon Islands in D'Entrecasteaux Channel.

Euphema petrophila. *Euph. vittâ frontali intensè cæruleâ; loris et spatio circum oculos sordidè viridibus.*

Frontal band deep indigo-blue, bounded before and behind with a very narrow line of dull verditer-blue; lores and circle surrounding the eye dull verditer-blue; all the upper surface yellowish olive-green; under surface the same, but lighter, and passing into yellow, tinged with orange on the lower part of the abdomen; under surface of the shoulder indigo-blue; a few of the wing-coverts greenish blue; primaries brownish black on their inner webs, and deep indigo-blue on the outer; two centre tail-feathers bluish green; the remainder of the feathers brown at the base on the inner webs, green at the base on the outer webs, and largely tipped with bright yellow; irides dark brown; bill blackish brown; feet flesh-brown.

Total length, 8 inches; wing, $4\frac{1}{4}$; tail, $4\frac{1}{2}$; tarsi, $\frac{1}{2}$.

Hab. Western Australia.

Two new and highly interesting species of *Climacteris* were characterized as *Climacteris erythrops* and *C. rufa*; and Mr. Gould observed that four species of this genus now formed part of the Australian fauna.

Climacteris erythrops. *Clim.* Mas: *loris et spatio circum oculos rufescenti-castaneis; gulâ albidâ: pectore cinereo.*

Fœm. *plumis pectoris ferrugineis, singulis lineâ albâ centrali notatis, distinguenda.*

Male.—Crown of the head blackish-brown, each feather margined with grayish brown; lores and a circle surrounding the eye reddish chestnut; back brown; sides of the neck, lower part of the back, and upper tail-coverts, gray; primaries blackish brown at the base, and light brown at the tip, all but the first crossed in the centre by a broad band of buff, to which succeeds another broad band of black-

ish brown; two centre tail-feathers gray, the remainder blackish brown, largely tipped with light gray; chin dull white, passing into grayish brown on the chest; the remainder of the under surface grayish brown, each feather having a broad stripe of dull white, bounded on either side with black running down the centre; the lines becoming blended, indistinct, and tinged with buff on the centre of the abdomen; under tail-coverts buffy white, crossed by irregular bars of black; irides brown; bill and feet black.

The *female* differs in having the chestnut marking round the eye much richer, and in having, in place of the grayish brown on the breast, a series of feathers of a rusty red colour, with a broad stripe of dull white down their middles, the stripes appearing to radiate from a common centre: in all other particulars her plumage resembles that of the male.

Total length, 5 inches; bill, $\frac{7}{8}$; wing, $3\frac{1}{2}$; tail, $2\frac{5}{8}$; tarsi, $\frac{3}{4}$.

Hab. New South Wales.

CLIMACTERIS RUFA. *Clim. gutture plumis auricularibus, et abdomine ferrugineis.*

Male.—Crown of the head and all the upper surface and wings, dark brown, tinged with rufous on the rump and upper tail-coverts; primaries brown, all but the first crossed by a broad band of rufous, to which succeeds a second broad band of dark brown; two centre tail-feathers brown, indistinctly barred with a darker hue; the remainder pale rufous, crossed by a broad band of blackish brown, and tipped with pale brown; line over the eye, lores, ear-coverts, throat, and under surface of the shoulder rust-brown; chest crossed by an indistinct band of rufous brown, each feather with a stripe of buffy white, bounded on each side with a line of black down the centre; the remainder of the under surface deep rust-red, with a faint line of buffy white down the centre of each feather, the white line being lost on the flanks and vent; under tail-coverts light rufous, with a double spot of blackish brown at intervals along the stem; irides dark reddish brown; bill and feet blackish brown.

Female rather less in size; in colour the same as the male, but much lighter, without the bounding line of black on each side of the buff stripes on the breast, and having only an indication of the double spots on the under tail-coverts.

Total length, 6 inches; bill $\frac{7}{8}$; wing, $3\frac{1}{2}$; tail, $2\frac{5}{8}$; tarsi, $\frac{7}{8}$.

Hab. Western Australia.

And a new and beautiful *Ocypterus*, by far the best-marked species of the genus, as

OCYPTERUS PERSONATUS. *Ocypt. gulâ et plumis auricularibus nigris: corpore subtùs in toto cinereo.*

Face, ear-coverts and throat jet black, bounded below with a narrow line of white; crown of the head sooty black, gradually passing into the deep gray which covers the whole of the upper surface, wings and tail; the latter tipped with white; all the under surface very delicate gray; thighs dark gray; irides blackish brown; bill blue at

the base, becoming black at the tip; legs and feet mealy bluish gray. Total length, $6\frac{1}{2}$ inches; bill, 1; wing, 5; tail, 3; tarsi, $\frac{3}{4}$. About the size and having much the contour of *Ocypt. superciliosus*. It is one of the finest and best-marked species of the genus, the jet black colouring of the face and throat distinguishing it from every other. The sexes are nearly alike in colour.

Hab. Southern and Western Australia.

PTILOTIS PLUMULUS. *Ptil. loris nigris: plumis auricularibus fuscis, infra has penicillis duobus, uno angustissimo et nigro, altero lato et nitidè flavo.*

Crown of the head and all the upper surface olive-yellow, approaching to gray on the back; lores black; ear-coverts, throat and under surface yellowish gray, faintly striated with a darker tint; behind the ear two tufts, the upper of which is narrow and black, the lower more spread over the sides of the neck, and of a beautiful yellow; primaries and tail-feathers brown, margined with bright olive-yellow; irides very dark reddish brown; bill black; legs and feet apple-green.

Total length, $4\frac{3}{4}$ inches; bill, $\frac{3}{4}$; wing, $3\frac{1}{4}$; tail, $2\frac{3}{4}$; tarsi, $\frac{3}{4}$.

Hab. Western Australia.

HEMIPODIUS VELOX. *Hem. gutture, pectore et lateribus pallidè arenaceo-fuscescentibus; facie, vertice, et plumis auricularibus castaneo-rufis.*

Female.—Head, ear-coverts, and all the upper surface, chestnut-red; crown of the head with a longitudinal buff mark down the centre; feathers of the back, rump, scapularies, and sides of the chest, margined with buff, within which is a narrow line of black running in the same direction; the feathers of the lower part of the back also crossed by several narrow irregular bands of black; primaries light brown, margined with buff on their internal edges; throat, chest, and flanks sandy buff, passing into white on the abdomen; bill horn-colour; irides straw-white; legs and feet yellowish white.

Total length, $5\frac{1}{2}$ inches; bill, $\frac{1}{2}$; wing, 3; tarsi, $\frac{3}{4}$.

Hab. Interior of New South Wales.

The males are much smaller.

HEMIPODIUS PYRRHOTHORAX. *Hem. gutture, pectore et lateribus arenaceo-rufis, faciei plumis, nec non aurium tectricibus, albis, nigro-marginatis.*

Female.—Crown of the head dark brown, with a line of buff down the centre; feathers surrounding the eye, ear-coverts, and sides of the neck, white, edged with black; back and rump dark brown, transversely rayed with bars and freckles of buff and black; wings paler, edged with buff, within which is a line of black; primaries brown, margined with buff; throat, chest, flanks, and under tail-coverts sandy red, passing into white on the centre of the abdomen; bill horn-colour; irides straw-yellow; feet yellowish white.

Total length, $5\frac{1}{2}$ inches; bill, $\frac{9}{16}$; wing, 3; tarsi, $\frac{3}{4}$.

Hab. Interior of New South Wales.
Males are much smaller.

Mr. Gould also exhibited at this Meeting certain specimens of *Dasyurus*. The *D. Maugei* and *D. viverrinus* of authors, he stated, were the same species, a fact which he ascertained by finding in the same litter both the black and grey varieties: he then proceeded to point out the characters of a new species of *Dasyurus*, which he proposed to name

Dasyurus Geoffroii. *Das. fuscus, flavo lavatus; caudâ elongatâ, dimidio apicali nigro; corpore subtùs albescente, supra et ad latera albo maculato; pedibus posticis halluce parvo instructis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin. . . .	15	0
——— *caudæ*	11	6
——— *tarsi digitorumque*	2	6
——— ab apice rostri ad basin auris.	2	7
——— *auris*	1	2

Hab. Liverpool Plains.

Like the *D. macroura*, the present species possesses a small thumb to the hind foot, a character which serves to distinguish these species from the *D. Maugei*. The *D. Geoffroii* is intermediate in its colouring between the *D. Maugei* of Geoffroy and the *D. macroura*; it resembles the latter in having a long and not very bushy tail, but is distinguishable by there being no spots on this part: the white spots on the head and body are smaller than in either of the species mentioned.

A small Rodent, supposed to be identical with the *Dipus Mitchellii*, was exhibited by Mr. Gould, as well as a skin and skeleton of the *Hapalotis albipes* of Lichtenstein.

Mr. Ogilby, referring to his paper on these two animals in the 18th volume of the Transactions of the Linnæan Society, pointed out the general conformity of reasoning there adduced in support of the rank and affinities of the latter species with the characters of the specimen exhibited by Mr. Gould. The dentition and structure of the skull, indeed, approach more nearly to that of the typical Rats (and closely agrees with *Hapalotis*) than the Jerboas; but the animal is a true Rodent, and from the conformation of the extremities and other influential external organs, appears, as there stated, to represent in Australia the Jerboas and Gerbilles of the Old World.

The eyes are apparently rather large; the ears are very large, broad at the base, and somewhat attenuated at the apex; the fore-legs are proportionately small; the fore-feet are furnished with four toes, and a rudimentary inner toe having a small rounded nail; the hind-legs and tarsi are long; there are five toes to the feet, of which the three central ones are very long; the outer and inner toes are small, especially the latter; the metatarsal bones are evidently not consolidated, as in the Jerboas: the tail exceeds the head and body

in length (the latter being measured in a straight line), and exhibits scales and minute interspersed hairs at the base, like the Rats; but the apical third is furnished with long hairs, averaging rather more than half an inch in length; those which spring from the upper surface are of a brown-black colour, but on the under surface they are white: the fur of the animal is rather long, and very soft; the general colour of that of the upper surface of the head and body is brownish yellow, freely pencilled with black; on the sides of the body a yellowish hue prevails; the whole of the under parts, as well as the feet, are white; the hairs on both the upper and under parts of the body are of a deep slate-grey at the base. The dimensions of this interesting little animal are as follows:—

	inches.	lines.
From nose to root of tail	5	6
——————— ear	1	2
Length of tail	5	7
——————— ear.....	0	10
——————— *tarsus*	1	2

It was procured by Mr. Gould from Western Australia.

November 24, 1840.

William Yarrell, Esq., Vice-President, in the Chair.

A Letter from Mr. Frembly, R.N., Corresponding Member Z.S., dated Gibraltar, November 13th, 1840, was read. In this letter Mr. Frembly states that he had forwarded for the Society's Museum a species of Petrel, rarely met with at Gibraltar, and that he is in expectation of a collection from Brazil, from which he will select some specimens to present to the Society.

In a letter from Charles Clarke, Esq., dated Colwich Molesley, November 2nd, 1840, which was read, that gentleman, at the request of the Curator, furnishes an account of the habits of a bird recently presented by him to the Society. The bird alluded to "is a native of the mountain-forests of Cuba, never being seen nor heard in the plains. It is named the 'Musician' by the coffee-planters, who invariably, in the south-eastern parts of the island, select the mountains for the site of their plantations, from the well-known fact, that the higher the elevation, *cæteris paribus*, the better the coffee; and this rule may be said to hold good in Cuba, to the height of 3000 feet above the level of the sea.

"The presence of this bird, in land intended to be cleared, is always hailed as highly satisfactory, as indicative of a cool temperature, and therefore of a climate suited for the production of high-priced coffee.

"The specimen presented to the Society was shot in a mountain-halt of forest named 'Brazos de Cauto,' varying perhaps from 1500 to 2500 feet of elevation, and it is found in all parts of that range. The thermometer rises in the lowest parts to 80° Fahrenheit in the summer heats (whilst it will stand in Santiago de Cuba at the same time at 90°); below this, and of course in a higher temperature, the bird is not known to exist.

"It confines itself exclusively to the woods, and takes its name of 'Musician' from its notes being very similar to those of the flute: it possesses only a few notes, and repeats nearly an exact repetition of its rather melancholy pipe at intervals, when in song, of two or three minutes.

"It is very rarely seen, although not a rare bird in many spots; repeatedly have I spent five to ten minutes along with my attendants, fellows of the most piercing vision, in vain efforts to discover the little dusky warbler piping above our heads, and that at no great height; but securely hidden, perhaps designedly, in its tangled and leafy covert.

"I never shot any other specimen, and never have seen more than one or two others during a residence in the Cuba woods of eighteen months.

"In conclusion I may observe, that I have always understood this

bird to exist in the highest parts of the mountains of Cuba, estimated to reach 3500 feet; and when the thermometer falls in winter during the northern, to a degree little elevated, I should imagine, above the freezing-point. I have seen the thermometer, at an elevation of perhaps 1800 or 1900 feet, fall to 47° during a heavy northern last January."

The following memoir, "On the Blood-corpuscles of the common Paradoxure (*Paradoxurus Bondar**)," by G. Gulliver, Esq., was next read.

"Referring to my notes concerning the red particles of this animal, I was rather surprised to find that they appeared to be quite peculiar in size, when compared with the particles of the other species of the order *Feræ*. Hence I have been led to examine again the blood-corpuscles of the common Paradoxure, and those of two other species of the genus. The result confirms the general accuracy of my first observations, and as the subject appears to me both novel and interesting, I am induced to bring it briefly before the Society.

"The following measurements are expressed in fractional parts of an English inch. The common-sized corpuscles are first noted, then those of small and large size, and lastly the average deduced from a computation of the whole.

"1. Common Paradoxure (*Paradoxurus Bondar*).

	1·5665
	1·6000
	1·7110
	1·4570
Average . .	1·5693

"2. Two-spotted Paradoxure (*Paradoxurus binotatus*, Temm.).

	1·4572
	1·4800
	1·5052
	1·6000
	1·3555
Average . .	1·4660

"3. White-whiskered Paradoxure (*Paradoxurus leucomystax*, Gray).

	1·4500
	1·4365
	1·4000
	1·6000
	1·3200
Average . .	1·4236

* The animal in question is marked at the Zoological Gardens *P. typus*, F. Cuv.; and by this name I have previously mentioned it. But I have lately been informed that it is the *P. Bondar* of authors.

"From a comparison of these measurements with the notes of numerous others, published in the Philosophical Magazine for January, February, March and August, 1840, it will appear that, although the corpuscles of the Two-spotted and of the White-whiskered Paradoxure are not very remarkable for minuteness, yet the corpuscles of the common Paradoxure are not only smaller than the red particles, which have yet been examined, of any other carnivorous animal, but so minute as to approach to those of the goat in size.

"The blood-corpuscles of the latter animal were the smallest known to physiologists previously to my announcement in the Dublin Medical Press for November, and in the Philosophical Magazine for December 1839, of the singularly minute size of the corpuscles of the Napu Musk Deer (*Moschus Javanicus*); and I may notice, that another examination of the very remarkable blood-discs of this little ruminant has fully confirmed the accuracy of my former observations.

"It has long since been observed, that the size of the blood-corpuscles does not seem to be influenced by that of the animal. Thus Hewson figures them of the same magnitude in the ox, cat, ass, mouse, and bat. If, however, we compare a great number of measurements, taken from the corpuscles of different animals of the same order, it will appear generally that the larger species have comparatively large blood-corpuscles, and *vice versâ*. For numerous confirmations of this rule, if it may be so called, it will be sufficient to refer to my measurements in the Philosophical Magazine before quoted. Compare, for example, among the Rodents, the blood-corpuscles of the Capybara, the Coypu and Hoary Marmot, with those of the Squirrels; and among the Ruminants the large corpuscles of the Sambur, Wapiti, and Moose Deer, with the small corpuscles of the Napu Musk Deer, Sheep, and Goat. Many exceptions, however, will be found to the rule, particularly in the order *Feræ**; but as I propose, on a future occasion, to treat more at length on the subject, it is merely mentioned now with the view of suggesting what may appear to be a curious and interesting inquiry."

A paper by W. J. Broderip, Esq., was read, in which the author proceeds with his descriptions of the new species of shells collected in the Philippine islands by H. Cuming, Esq.

Helix (Cochlostyla) Ticaonica. *Hel. testâ subpyramidali, truncatâ, anfractibus 5 ventricosis, ultimo longe maximo, apice subcomplanato, lineis incrementi subobliquis, levissimè striato; aperturâ modicâ.*

Var. *a. Brunnea, strigis obliquè longitudinalibus latis albis picta; apice subpurpureo; aperturâ albidâ; labii limbo subpurpureo.*

Var. *b. Brunnea, strigis obliquè longitudinalibus albis creberrimis fucata; fasciâ basali latâ obscurâ; labii limbo subpurpureo.*

In this variety the broad white stripes of the body-whorl are so frequent, that they run into each other, leaving only brown interstices here and there.

* Vide Proc. Zool. Soc., May 25, 1841.

Var. *c. Brunneo-nigricans, strigis latis et maculis irregularibus albis rarioribus ornatis; labii limbo subpurpureo.*

In this variety, the stripes, so far as they go, are very distinct; but on the last part of the body-whorl they are broken up and interrupted so as to form spots. The ground-colour of the body-whorl is very dark chestnut-brown, with a darker, but very obscure, broad basal band.

Var. *d. Flavescens strigis albis fucata, fasciâ latâ basali brunneo-nigricante; labii limbo purpureo-nigricante.*

Var. *e. Ex albido flavescens seu subvirescens; anfractibus 2 ultimis strigis latis albis ornata; anfractu basali lineis transversis basalibus interruptis subobscuris vittato; aperturâ albâ; labii limbo ochraceo-rubro; apice roseo.*

Var. *f. Ex albido flavescens seu virescens; anfractu ultimo strigis latis albis interdum subangulatis ornato; fasciâ basali brunneo-lineatâ, latâ; aperturâ albâ; labii limbo vix ochraceo-rubescens.*

In this variety hardly any stripes are visible, except upon the body-whorl.

Var. *g. Ex albido pallidè et obscurè virescens, fasciâ basali lineatâ latâ; aperturâ albâ; columellâ violaceo-subpurpureâ; labii limbo vix pallidissimè rubente.*

Var. *h. Sordidè virescens lineis transversis obscuris vittata; fasciâ basali sordidè brunneâ latâ; aperturâ albâ; columellâ violascente; labii limbo pallidè rubente.*

Var. *i. Cinerascens; fasciâ basali latâ, lineatâ, brunneâ; aperturâ sordidè albâ; labii limbo brunneo-nigricante.*

The ground-colour beneath the epidermis is rich brown, which is exposed where the epidermis is abraded.

Habitant varietates a, b, c, d, e, f, g, h, et *i,* in insulâ Ticao.

Legit H. Cuming in sylvis.

Var. *k. Grandior, ex albido cinerascens lineis transversis obscurè brunneis cincta; fasciâ basali lineato-vittatâ brunneâ latâ; aperturâ albidâ; labii limbo purpurascente.*

In this variety the ground-colour is brown: the riband-like, broad basal band is dark brown.

Var. *l. Productior, e brunneo cinerascens, vittis brunneo-nigricantibus cincta; fasciâ basali latâ brunneo-nigricante; aperturâ obscurè purpurascente; labii limbo nigricante.*

The ground-colour of this variety is brown, which becomes deeper on the lower whorls, and is exposed where the epidermis is abraded.

Habitant varietates k, et *l,* in insulâ Masbate.

Legit H. Cuming in sylvis.

In none of the varieties do the markings appear before the third whorl, and in several only on the two last.

This species varies in size from about $2\frac{5}{4}$ inches long by 2 broad, to $1\frac{6}{8}$ inch long by $1\frac{1}{2}$ inch broad. (W. J. B.)

Bulinus Guimarasensis. *Bul. testâ obovatâ, nitidè glabrâ, anfrac-*

tibus 5 subventricosis; lineis incrementi obliquè longitudinalibus striatâ; aperturâ et labii limbo albis.

Var. *a. Ex-albido-subvirescens; fasciâ basali obscuriore; apice subroseo.*

Var. *b. Anfractibus superioribus, fasciâ suturali, ultimo fasciâ subbasali castaneo cinctis; apice castaneo-roseo.*

This species is nearly allied to *Bulinus citrinus*, but differs from it in many points. *B. Guimarasensis* is without transverse striæ, and the whorls are comparatively ventricose. In *B. citrinus* all the striped varieties which I have seen are marked longitudinally.

The var. *b.* of *Bul. Guimarasensis* has a narrow chestnut transverse line very near the suture of the body-whorl, the base of which body-whorl, below the transverse band, becomes greenish. A brown stripe adjoins and borders the columella.

Var. *a.* is $2\frac{1}{8}$ inches long by $1\frac{1}{8}$ inch broad.
Var. *β.* is less.
Hab. in insulâ Guimaras.
Legit H. Cuming in sylvis. (W. J. B.)

Bulinus camelopardalis. *Bul. testâ productâ, gracili, subpupiformi, subdiaphanâ, anfractibus 6 haud ventricosis, ultimo cæteris longiore; aperturâ subovatâ, mediocri; lineis incrementi creberrimè substriatâ; ex albido flavescente, strigis fulvis, distinctis sublongitudinalibus ornatâ; aperturâ albidâ, labii limbo nigro-castaneo.*

Long. 2 poll. circiter; lat. $\frac{7}{8}$ poll.
Hab. ad Sibonga in insulâ Zeba.
Legit H. Cuming dumis adhærentes. (W. J. B.)

Bulinus Diana. *Bul. testâ valdè productâ, subdiaphanâ, anfractibus 7 haud ventricosis, ultimo cæteros interdum haud æquante, pallidè flavâ strigis albidis creberrimis fucatâ; aperturâ et apice albis.*

Var. *a.* long. $2\frac{2}{8}$; lat. 1 poll.
Var. *b. Flava haud strigata, aperturâ et apice albis.*
Legit H. Cuming.

The first variety was found by Mr. Cuming on the leaves of bushes at Tanhay in the isle of Negros.

The second or unstriped variety was taken by him in the island of Siquijor on leaves of trees. Among the latter, some faintly-striped individuals show the transition from one variety to the other. The young of the striped variety have stripes; but the young of the unstriped variety are of a uniform pale yellow. (W. J. B.)

Bulinus Calista. *Bul. testâ diaphanâ, anfractibus 7 subventricosis pallidè flavâ albido strigatâ; apice subroseo vel roseo-castaneo; labii limbo castaneo-purpurascente.*

Var. *a.* long. $2\frac{1}{8}$; lat. $1\frac{1}{8}$ poll.

Intervals in the whitish epidermis leave the yellow ground-colour in sufficiently well-defined longitudinal irregular stripes, which are often zigzagged. Found on bushes.

Var. *b. Gracilior, nana.* Long. $1\frac{7}{8}$; lat. $\frac{5}{8}$ poll.

The shell of this variety is rather thicker. Among them some occur with the lip barely tinged with ochraceous red and a white apex. Found on the leaves of trees.

Var. *c. Flava; apice roseo, labii limbo castaneo.*

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

Found on the leaves of bushes. Some have an obscure narrow transverse band on the body-whorl.

Var. *d. Subflava, epidermide albo-cinerascente; fasciâ basali nitidè flavâ; apice et labii limbo albis.*

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

Found on the leaves of bushes. Among these some occur which still retain the coloured lip and tinged apex. In the very young state the shell is perfectly transparent.

Hab. ad Tanhay in insulâ Negros.

Legit H. Cuming.

The last variety bears a strong resemblance to *Bulinus Diana*; nor should I be at all surprised to see some intervening varieties that would lead to the conclusion that *Bulini Diana* and *Calista* belong to the same species. (W. J. B.)

Bulinus Calypso. *Bul. testâ diaphanâ, subventricosâ, subpyramidali, anfractibus* 5, *lineis incrementi levissimè striatis; columellâ subangulatâ, albidâ, tæniis virescentibus cinctâ; apice et labii limbo roseo-purpurascentibus.*

Long. $1\frac{1}{2}$; lat $\frac{7}{8}$ poll.

Hab. ad Tanhay insulæ Negros.

Legit H. Cuming in sylvis.

A dark rosy-purplish stripe borders the columella, which is itself tinged with red. I have seen but two specimens, one with an injured lip, and in that the columella is not subangulated as it is in the more perfect one. (W. J. B.)

Bulinus Dactylus. *Bul. testâ valdè productâ, attenuatâ, anfractibus* 7, *ultimo cæteros æquante, brunneâ, epidermide cinerascente; aperturâ ovatâ, carneâ vel albidâ; labii limbo castaneo-purpurascente.*

Long. $2\frac{7}{8}$; lat. $1\frac{1}{8}$ poll.

Hab. in montibus Tayabas insulæ Luzoniæ.

Legit H. Cuming foliis arborum adhærentes.

Through the ashy epidermis the brown ground-colour appears in most of the specimens in the shape of obscure longitudinal stripes: in very old specimens scarcely any striping is apparent. The brown ground-colour is well shown near the aperture, where the attrition of the animal has exposed it. Very old shells are all but opake: younger ones are subdiaphanous. There is in all that I have seen an obscure brown fillet towards the base of the body-whorl. (W. J. B.)

Bulinus Boholensis. *Bul. testâ elongatâ, graciliore, subdiaphanâ; anfractibus* 6, *lineis incrementi obliquè striatis; ochraceo-cine-*

rascente strigis longitudinalibus angulatis distinctis ornatâ; labii limbo castaneo-nigricante.

Var. *a. Gracilis strigis valdè distinctis anfractuum parte superiore suturam juxta castaneo-nigricante punctatâ.*

Long. $1\frac{5}{8}$; lat. $\frac{7}{8}$ poll.

Hab. ad Loon insulæ Bohol.

Var. *b. Gracilior, strigis creberrimis valdè angulatis.*

Long. $1\frac{5}{8}$; lat. $\frac{6}{8}$ poll.

Hab. cum præcedente.

Var. *c. Ventricosior, strigis valdè distinctis, subangulatis.*

Long. $1\frac{6}{8}$; lat. 1 poll.

Hab. ad Loboc insulæ Bohol.

Var. *d. Strigis rarioribus obscurioribus.*

Long. $1\frac{7}{8}$; lat. $\frac{5}{8}$ poll.

Hab. ad Baclayon insulæ Bohol.

Legit H. Cuming arborum foliis adhærentes.

The brown ground-colour appearing through the ochraceous-cinerascent epidermis produces the stripes of this elegant shell. A small portion only of the ground-colour is exposed by the attrition of the animal near the mouth of the shell, which is whitish or bluish-white, bordered with the dark chestnut of the lip. (W. J. B.)

Bulinus Bullula. *Bul. testâ ovato-rotundatâ, diaphanâ, albidâ, anfractibus 4 ventricosis, lineis incrementi obliquè striatis; aperturâ magnâ, subumbilicatâ.*

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

Hab. in insulâ Mindoro.

Legit H. Cuming.

A milk-white line runs round the sutures. (W. J. B.)

Mr. Gould resumed the exhibition of his new species of Australian birds, and characterized the following species:—

Ephthianura tricolor. *Ephth. vertice, pectore, tectricibusque caudæ coccineis; gutture albo.*

Male.—Crown of the head, upper tail-coverts, breast and abdomen bright scarlet; lores, line above and beneath the eye, ear-coverts, occiput and back dark brown; wings brown, each feather margined with brownish white; tail dark brown, each feather having a large spot of white on the inner web at the tip; chin, throat and under tail-coverts white; irides straw-white; bill and feet blackish brown.

Female similar in colour, but having only a slight wash of the scarlet colouring, except on the upper tail-coverts, where it is as brilliant as in the male.

Total length, $3\frac{1}{4}$ inches; bill, $\frac{9}{16}$; wing, $2\frac{3}{4}$; tail, $1\frac{1}{2}$; tarsi, $\frac{3}{4}$.

Hab. ——?

Myzantha obscura. *Myz. fronte flavescente-olivaceo; gutture, uropygio, et corpore subtùs cinereis,—plumis pectoralibus lunulâ apicem versus notatis, et ad apicem pallidè cinereis.*

Forehead yellowish olive; lores, line beneath the eye and ear-coverts black; head and all the upper surface dull grey, with an indistinct line of brown down the centre of each feather, giving the whole a mottled appearance; wings and tail brown, margined at the base of the external webs with wax-yellow, the tail terminating in white; throat and under surface dull grey, becoming lighter on the lower part of the abdomen and under tail-coverts; the feathers of the breast with a crescent-shaped mark of light brown near the extremity, and tipped with light grey; irides dark brown; bare skin round the eye, bill, and bare patch on each side of the throat, bright yellow; legs and feet dull reddish-yellow; claws dark brown.

Total length, $9\frac{1}{2}$ inches; bill, $1\frac{1}{4}$; wing, $5\frac{1}{2}$; tail, $4\frac{5}{8}$; tarsi, $1\frac{1}{8}$.

Hab. Western Australia.

Ptilotis sonorus. *Ptil. loris et strigâ per oculos ductâ, ad colli latera, nigris plumis auricularibus flavis,—et ponè has, notâ sordidè albâ;—gutture et abdomine pallidè flavescenti-cinereis, fusco-striatis.*

Crown of the head and all the upper greyish olive; wings and tail brown, margined on their external webs with greenish yellow; lores, space around the eye and broad line down the sides of the neck black; ear-coverts pale yellow, behind which is an obscure spot of greyish white; throat and under surface pale yellowish grey striated with light brown; irides dark brown; bill black; legs and feet greenish grey. The female like the male in colour, but smaller in all her dimensions.

Total length, $7\frac{1}{2}$ inches; bill, 1; wing, $3\frac{3}{4}$; tail, $3\frac{1}{2}$; tarsi, 1.

Hab. South and Western Australia.

Ptilotis cratitius. *Ptil. vertice cinereo,—loris, strigâ superoculari, et plumis auricularibus nigris,—infrà et ponè has, penicillo angusto, et flavo; a rictu per gulæ latera ducta appendice nudo, corneo, ad marginem inferiorem libero, et bellè e gilvo cærulescente.*

Crown of the head grey; all the upper surface olive-green; wings and tail brown, margined with greenish yellow; lores, a large space surrounding the eye and the ear-coverts black, below which is a narrow line of bright yellow; from the gape, down each side of the throat for five-eighths of an inch, a naked fleshy appendage, free at the lower end, of a beautiful lilac colour and very conspicuous in the living bird; anterior to this is a tuft of bright yellow feathers; throat and under surface olive-yellow; irides and eyelash black; bill black; feet blackish brown tinged with olive.

The female is similar to the male, but smaller.

Total length, 7 inches; bill, $\frac{7}{8}$; wing, $2\frac{1}{2}$; tail, $3\frac{1}{2}$; tarsi, $\frac{7}{8}$.

Hab. Interior of South Australia and Kangaroo Island.

Glyciphila albifrons. *Glyc. facie albâ; gutture nigro, albo minutè adsperso; vertice nigro, plumis albo angustè marginatis.*

Forehead, lores and a narrow ring round the eye, and a narrow line running from the angle of the lower mandible white; crown of the head black, each feather slightly margined with white; ear-

coverts silvery blackish gray, behind which an irregular line of white; all the upper surface brown, irregularly margined with white, producing a mottled appearance; wings and tails brown, the primaries margined externally with yellowish green; chin and throat brownish black, the former minutely speckled with white; under surface of the wing buff; chest and abdomen white, striped with blackish brown on the flanks; irides dark brown; bill black; feet blackish brown.

The female is like the male in plumage, but smaller in size.

Total length, $5\frac{3}{4}$ inches; bill, $\frac{3}{4}$; wing, $3\frac{1}{4}$; tail, $2\frac{3}{4}$; tarsi, $\frac{7}{8}$.

Hab. Western Australia.

MELIPHAGA MYSTACALIS. *Mel. vertice et gutture nigris; strigâ superoculari angustâ, albâ; plumis auricularibus densis, albis, et penicillum posticè acutum efficientibus.*

Head, chin and throat black; over the eye a narrow line of white; ears covered by a conspicuous tuft of white feathers, which are closely set and terminate in a point towards the back; upper surface brownish black, the feathers edged with white; under surface white, with a broad stripe of black down the centre of each feather; wings and tail blackish brown, conspicuously margined with bright yellow; irides brown; bill black; feet blackish brown.

Total length, $6\frac{1}{2}$ inches; bill, 1; wing, 3; tail, $2\frac{3}{4}$; tarsi, .

Hab. Western Australia.

Nearly allied to *Meliphaga sericea.*

PLATYCERCUS ADELAIDÆ. *Plat. vertice, pectore, abdomine medio, crissoque coccineis; lateribus viridescenti-flavis; uropygio sordidè olivaceo-flavo.*

Fully adult male.—Crown of the head, lores, sides of the neck, breast and all the under surface scarlet, passing into pale greenish yellow on the flanks; cheeks and wing-coverts light lazuline blue; primaries deep blue, passing into black at the extremity; back of the neck yellowish buff; back black, each feather broadly margined with greenish yellow, some of these marginations tinged with blue, others with scarlet; rump and upper tail-coverts dull greenish yellow, the latter tinged with scarlet; two centre tail-feathers greenish blue; the remainder deep blue at the base, gradually becoming lighter until almost white at the tip; irides brown; bill horn-colour; feet grayish brown.

Total length, $13\frac{1}{2}$ inches; wing, 7; tail, 8; tarsi, $\frac{3}{4}$.

Hab. South Australia.

This species is subject to great change from youth to maturity; during the first few months it is almost wholly green, and this gradually gives place to scarlet on the head, rump, under surface and the margins of the back-feathers.

AQUILA MORPHNOÏDES. *Aq. capite cristâ suboccipitali brevi, ornato; facie nigrescente: corpore subtùs rufo: plumis et pectoris et abdominis strigâ centrali nigrâ notatis.*

Face, crown and throat blackish brown, tinged with rufous, giving

it a striated appearance, bounded in front above the nostrils with whitish; feathers at the back of the head, which are lengthened into a short occipital crest, back of the head, back, and sides of the neck, all the under surface, thighs and under tail-coverts rufous, all but the thighs and under tail-coverts with a stripe of black down the centre of each feather; back, rump and wings brown, the centre of the wing lighter; primaries brownish black, becoming darker at the tip, and barred throughout with grayish buff, which is conspicuous on the under surface, but scarcely perceptible on the upper, except at the base of the inner webs; under surface of the wing mottled with reddish brown and black; tail mottled grayish brown, crossed by seven or eight distinct bars of blackish brown, the tips being lighter; cere and bill lead-colour, passing into black at the tip; eye reddish hazel, surrounded by a narrow blackish brown eyelash; feet and toes very light lead-colour.

Total length, 21½ inches; bill, 1¾; wing, 15; tail, 9½; tarsi, 2¾.

This species is very robust, and although but a small bird, is in every respect a true *Aquila*. It is nearly allied to, but much stouter than *Aquila pennata*.

Hab. Yarrundi on the Upper Hunter, New South Wales.

Buteo melanosternon. *B. rostro grandi, et elongato: guld, pectore et abdomine nigris; primariis ad basin subtùs albis; caudâ cinereâ.*

Crown of the head, face, chin, chest and centre of the abdomen, deep black, passing into chestnut-red on the flanks, thighs and under tail-coverts; back of the head chestnut-red, becoming black in the centre of each feather; shoulders whitish buff; all the upper surface deep brownish black, margined with chestnut-red; primaries white at the base, deep black for the remainder of their length; cere and base of the bill purplish flesh-colour, passing into black at the tip; irides wood-brown; feet white tinged with lilac.

Total length, 22 inches; bill, 2½; wing, 19½; tail, 8½; tarsi, 2⅝.

This species is nearly allied to the Red-tailed Hawk of North America, and the *Buteo Jackal* of South Africa, but from both of these it may be distinguished by the jet-black colouring and by its more lengthened bill. During flight the white at the base of the primaries is very conspicuous, and is strikingly contrasted with the black of the chest and the brown of the other part of the wings.

Hab. Interior of New South Wales.

Falco hypoleucos. *Fal. corpore supernè cinereo-fusco: singulis plumis margine dilutiore cinctis: corpore subtùs albo; plumis strigâ fuscâ apud apicem in maculam latam desinente, ornatis.*

Head and all the upper surface grayish brown, the feathers of the head having a fine stripe of black down the centre, the remainder dark brown in the centre; chin and all the under surface white, with a fine line of black down the centre, passing into a spatulate form near the tip; outer webs and tips of the primaries brownish black, the extreme ends being whitish; their inner webs whitish, crossed by numerous narrow bars, fading into a point as they approach the

edge; tail gray, obscurely barred with brown, and tipped with buff.

Total length 17 inches; bill, $1\frac{1}{4}$; wing, $12\frac{1}{2}$; tail, $7\frac{1}{2}$; tarsi, $1\frac{3}{4}$.

Considerably smaller, but closely allied to the Jerfalcon, *Falco Islandicus*.

Hab. Western Australia.

PODARGUS BRACHYPTERUS OR MACRORHYNCHUS. *Pod. rostro præ-grandi (ad magnitudinem corporis ratione habitâ) et producto; colore corporis obscuro, et minutè punctulato.*

Crown of the head and all the upper surface finely freckled gray and brown, with a stripe of black down the centre of each feather, the light colour predominating on the scapularies; feathers between the eyes and the nostrils chestnut-brown, sprinkled with black and tipped with white; shoulders and lesser wing-coverts deep reddish brown; some of the feathers tipped with a white spot, freckled with red in the centre; greater coverts and secondaries mingled gray and reddish brown, the former tipped like the lesser coverts; primaries reddish brown, regularly barred with buffy-white on their outer webs, and with interrupted tawny bands on their inner webs; tail light-brown, freckled with black and gray, and crossed by numerous irregular, narrow, dark-brown bands, freckled with gray; all the under surface grayish white, each feather crossed by numerous fine and irregular bars of tawny and with a stripe of brown down the centre, the latter colour becoming chestnut and forming a semilunar mark down each side of the neck; thighs black; irides light yellow; bill and feet brown.

Total length 15 inches; bill, 25; wing, 9; tail, 7; tarsi, $1\frac{1}{8}$.

In its general appearance this bird closely resembles the *Podargus humeralis*, but is even smaller in size than *P. Cuvieri*, while at the same time the bill is fully equal in size to that of the former species; it also projects much farther from the face than in any other species inhabiting Australia.

Hab. Swan River, Western Australia.

MALURUS MELANOTUS. *Mal. vertice, gulâ, abdomine, humeris, caudæque tectricibus lazulino-cæruleis; loris, nuchâ, vittâ pectorali et dorso imo nigris.*

Male.—Crown of the head, crescent-shaped mark on the back, upper tail-coverts, throat and under surface rich metallic lazuline blue; ear-coverts metallic verditer-blue; lores, collar round the back of the neck, line from the base of the lower mandible down the sides of the neck, band across the breast and lower part of the back jet-black; wings brown, margined with pale green; tail greenish blue, tipped with grayish white; irides, bill and feet black.

Female.—Lores rufous; head and all the upper surface rufous brown; all the under surface brownish white; tail bluish green, tipped with grayish white; bill rufous; irides blackish brown; feet brown.

Total length, $4\frac{3}{4}$ inches; bill, $\frac{1}{2}$; wing, 2; tail, $2\frac{1}{2}$; tarsi, $\frac{7}{8}$.

This beautiful species may be distinguished from the *Malurus*

pectoralis by its rather smaller size, and by the black band across the back.

Hab. Western belts of the Murray in Western Australia.

COLLURICINCLA BRUNNEA. *Coll. corpore supernè fusco; sic et corpore subtùs, at colore multo dilutiore; rostro nigro.*

All the upper surface pale brown; primaries and tail the same, but somewhat lighter; all the under surface brownish white, becoming almost pure white on the vent and under tail-coverts; thighs grayish brown; bill black; feet blackish brown.

Total length, $9\frac{1}{2}$ inches; bill, $1\frac{1}{8}$; wing, $4\frac{3}{4}$; tail, $4\frac{1}{4}$; tarsi, $1\frac{1}{4}$.

The sexes are alike in plumage.

This species rather exceeds in size the *Colluricincla cinerea*, Vig. and Horsf., and has a more curved, longer and stouter bill.

Hab. The north-west coast of Australia.

COLLURICINCLA RUFIVENTRIS. *Coll. corpore supernè intensè cinereo, olivaceo leviter tincto; abdomine imo, crissoque rufis.*

Lores grayish white; crown of the head and all the upper surface deep gray, slightly tinged with olive; primaries and tail dark brown, margined with brownish gray; throat and under surface darkish gray, passing into buff on the vent and under tail-coverts; all the feathers of the under surface have a narrow dark line down the centre; thighs gray; irides dark brown; bill black; feet dark brown.

Total length $8\frac{1}{2}$ inches; bill, 1; wing, 5; tail, $4\frac{1}{4}$; tarsi, $1\frac{1}{4}$.

The sexes are alike in colour.

About the size of *Colluricincla cinerea*, Vig. and Horsf., from which it may be distinguished by the uniform colouring of the back and the buffy tint of the lower part of the abdomen and under tail-coverts.

Hab. Swan River, Western Australia.

PACHYCEPHALA RUFOGULARIS. *Pach. mas: corpore supernè fusces-centi-cinereo; gulâ et corpore subtùs rufis; pectore vittâ fusces-centi-cinereâ obscurè notatâ.*

Fœm. a mare differt corpore subtùs albescenti-cinereo haud rufo.

Male.—Crown of the head and all the upper surface deep brownish gray; wings and tail dark brown, the feathers margined with grayish brown; lores, chin, throat, under surface of the shoulder and all the under surface reddish sandy brown, crossed on the breast by a broad irregular band of grayish brown; irides reddish brown; bill black; feet blackish brown.

Female.—Differs from the male in having the throat and under surface grayish white, the chest being crossed by an obscure mark of grayish brown and with a line down the centre of each feather.

Total length, 7 inches; bill, $\frac{3}{4}$; wing, $4\frac{1}{4}$; tail, $3\frac{1}{2}$; tarsi, 1.

This species is somewhat allied to *P. pectoralis*, but may be distinguished from it by the rufous colouring of the throat, and by the band across the chest being grayish brown instead of black.

Hab. South Australia.

PACHYCEPHALA INORNATA. *Pach. olivaceo-fusca, abdomine palli-*

diore; plumis corporis inferioris strigâ fuscâ centrali leviter notatis.

All the upper surface grayish olive; wings and tail brown, the feathers of the former broadly margined with lighter brown; all the under surface brownish gray, becoming nearly white on the vent and under tail-coverts, with a fine stripe of pale brown down each feather; irides dark brown; bill blackish brown, fleshy towards the base; feet blackish brown.

Total length, 7 inches; bill, $\frac{3}{4}$; wing, $3\frac{3}{4}$; tail, $3\frac{1}{2}$; tarsi, 1.

This bird has somewhat the appearance of the young or female of *P. gutturalis*, but its larger size and shorter and more robust bill distinguish it from that species.

Hab. Belts of the Murray in South Australia.

Zosterops chloronotus. *Zos. dorso olivaceo-viridi; gutture et crisso virescenti-flavis.*

Lores black; crown of the head and all the upper surface olive-green; primaries and tail feathers brown, margined with olive-green; throat and under tail-coverts light greenish yellow; breast and under surface gray, tinged with brown on the abdomen and flanks; irides wood-brown; bill brown, lighter on the under mandible; legs and feet dark-gray.

Total length, $4\frac{1}{4}$ inches; bill, $\frac{9}{16}$; wing, $2\frac{1}{8}$; tail, $1\frac{3}{4}$; tarsi, $\frac{5}{8}$.

Hab. Western Australia.

December 8, 1840.

W. H. Lloyd, Esq., in the Chair.

A paper by G. B. Sowerby, Esq., was read, in which the author continues his descriptions of the new Shells collected in the Philippine Islands by H. Cuming, Esq.

Helix Monticula. *Hel. testâ suborbiculari, subconicâ, tenui, pallescente, lævi; spirâ brevi, subpyramidali, obtusâ; anfractibus quatuor tenerrimè (lineis incrementi) striatis, depressiusculis, ultimo magno, obtusissimè angulato, anticè depressiusculo, viridi; aperturâ subtrapeziformi, ungulis posticis acutiusculis; peritremate angusto, tenuitèr reflexo, albo; columellâ albâ.*

Long. 0·9; lat. 0·9 poll.

Hab. supra foliis arborum apud Lallo, provinciæ Cagayan insulæ Luzon, Philippinarum.

All the varieties of this pretty species are green in front, and the *apex* appears to be always colourless. The following six varieties occur:—

a. Yellow above; circumference orange-yellow; front green. From Lallo.

b. Yellow above; circumference orange-yellow, with a dark brown slightly interrupted band; green in front. From St. Jaun, in the province of Cagayan.

c. Yellowish white above, with a narrow dull yellowish green circumferential band; green in front. From Gattarang, in the province of Cagayan.

d. Volutions banded in the following order: band next to the suture yellowish white; then a pale green broader band; then a yellowish white band; then a dark brown circumferential band, with jagged edges; then another yellowish white band, and then green in front. From Lallo.

e. Small; pale yellowish, with a light band, consisting of short dark brown lines near to the suture; a dark brown circumferential band; front dull yellowish green. From St. Jaun.

f. Antesutural band consisting of irregular dark brown lines arranged side by side; then a yellowish white band; then a broad, dark brown, somewhat mottled and interrupted band; then another yellowish white band, and then the green front. From Abulug, in the province of Cagayan.

Helix Coccomelos. *Hel. testâ subglobosâ, tenuiusculâ, lævi, anfractibus quatuor rotundatis, lævigatis, striis incrementi solùm insculptis, ultimo maximo; aperturâ suborbiculari, peritremate reflexo; labio columellari albo, declivi, obtuso, depressiusculo.*

Long. 1·3 ; lat. 1·4 poll.

Hab. supra foliis arborum ad insulam Tablas dictam Philippinarum.

In general this species bears a great resemblance to a plum, for which reason I have called it *H. Coccomelos*. Several varieties may be distinguished.

a. *Apex* dark brownish red, softened off gradually to a pale yellow-green, which becomes gradually darker, until the body of the last volution is of a fine dark green : lip white.

b. Similar to *a*, only dark brown instead of green.

c. Of a uniform very dark chocolate-brown, except the second and third volutions, which have a rather paler central band : lip chocolate.

d. *Apex* dark chocolate-brown ; upper part of the spire of a pale dull yellowish colour, becoming darker and greener toward the last volution, where the ground-colour is olive-green ; an antesutural dark red-brown broad band ; a circumferential band of a rather darker colour, but rather narrower, and the columellar lip surrounded by a broad dark band, which is softened off into the dark olive-green ground-colour.

e. Of an uniform pale yellow-brown, becoming very dark near the back of the lip, where it is nearly black : lip chocolate. From Calbayog, island of Samar : found on leaves of trees.

f. Similar to *e*, but having two narrow dark brown bands : lip nearly black behind ; white in front. From Calbayog.

HELIX INTORTA. *Hel. testâ suborbiculari, subdepressâ, tenui, lævi, anfractibus* $4\frac{1}{2}$, *ventricosis, tenuissimè striatis, plerumque pallescente-flavidis, fasciis tribus castaneis ornatis ; aperturâ sublunari, peritremate tenui, tenuiter reflexo ; labio columellari rectiusculo, extùs inclinato, obtuso.*

Long. 1 ; lat. 1·5 poll.

Hab. Supra foliis fruticum ad Loboc, insulæ Bohol, Philippinarum.

Several varieties of this beautiful species occur ; most of them are marked with two brown bands, and have the circumference of the *columella* of the same colour ; one is of an uniform pale brownish colour, and another is almost entirely of a very dark chocolate colour : a white line may be observed close to the suture in most of the varieties. The following are the most distinct varieties :—

a. Ground-colour pale yellowish ; antesutural band very dark chestnut-brown ; circumferential band of the same colour, and a broad band of the same surrounding the *columella*. From Loboc.

b. Similar to *a*, but considerably larger, and having a broader circumferential band. From Loboc.

c. Ground-colour of a pale brown hue ; bands the same as in *a*.

d. Smaller than *a.* : ground-colour pale greenish brown ; bands nearly the same, but very dark and brilliant. From Loboc.

e. Ground-colour pale yellowish brown ; antesutural band softened off in front ; in other respects like *a*.

f. Ground-colour pale yellowish ; bands pale chestnut-brown. From Loboc.

g. Ground-colour pale yellow; bands increasing in width toward the back of the mouth, where they unite, and where the brown colour extends from front to back of the shell: the peritreme is entirely white, and the circumference of the *columella* also. Found on leaves of trees on the island of Siquijor.

h. Ground-colour very pale yellowish; antesutural band very narrow and indistinct; circumferential band broad, pale, and rather irregular; lip and circumference of the *columella* white. From the island of Siquijor.

i. Shell entirely of a pale lemon-yellow, except only a narrow antesutural dark brown band, which becomes broader towards the lip. Found on leaves of bushes at Tanhay, in the Isle of Negros.

k. Ground-colour very pale yellow-brown; a brown circumferential band, which is only perceptible on the latter half of the last volution. From Loboc.

l. Shell of an uniform pale brownish colour. From Loboc.

m. *Apex* reddish-brown; upper part of the shell pale yellowish brown, increasing rapidly in intensity, so that nearly the whole of the last volution is of a dark chocolate-brown; *columella* white; lip nearly black. From Loboc.

Mr. Gould completed the exhibition of his fifty new species of Australian birds, and characterized the following new species :—

A new *Entomyza* interesting as being the second species of that form. Mr. Gould received this bird from Port Essington, and believes that it there supplies the place of *E. cyanotis*, which is common on the eastern coast. Its distinguishing characteristics are its rather larger size, the markings of its throat being more strongly defined and the basal half of the primaries being white; for which reason he proposes to characterize it as

ENTOMYZA ALBIPENNIS. *Ent. corpore suprà et alis e viridi aureo-olivaceis; primariis fuscis; pogoniis internis per dimidium basale niveis.*

Crown of the head and back of the neck black; lower part of the face, chin and centre of the chest slaty black; a crescent-shaped mark at the occiput, a line from the lower mandible passing down each side of the neck and all the under surface pure white; upper surface and wings greenish golden olive; primaries brown, the basal half of their inner webs snow-white; tail feathers brown, tinged with golden olive, all but the two centre ones tipped with white; bill, bare space surrounding the eye and feet in all probability the same as in *E. cyanotis*.

Total length, 12 inches; bill, $1\frac{1}{2}$; wing, 6; tail, $4\frac{3}{4}$; tarsi, $1\frac{3}{8}$.

Hab. Port Essington on the northern coast of Australia.

Nearly allied to *E. cyanotis*, but always distinguishable from that species by the white basal half of the primaries.

A new *Myzomela* differing from all the other members of the genus in its pied colouring and the black band across the chest, which suggests the specific name of

Myzomela pectoralis. *Myz. gutture et corpore subtùs albis, pectore fasciâ angustâ nigrâ transversìm notato.*

Forehead, crown of the head, the upper surface, wings, tail and a narrow band across the chest, black; throat, upper tail-coverts and all the under surface white; bill and feet black.

Total length, $4\frac{1}{2}$ inches; bill, $\frac{5}{8}$; wing, $2\frac{5}{8}$; tail, $1\frac{3}{4}$; tarsi, $\frac{5}{8}$.

Hab. North-west coast of Australia.

A second example of the genus *Dasyornis*, inhabiting Swan River, which I propose to call

Dasyornis longirostris. *Das. colore ut in D. Australi; differt autem staturâ corporis minore, rostro grandiore.*

All the upper surface brown; wings, tail-coverts and tail rufous brown, the latter indistinctly barred with a darker tint; under surface gray, gradually passing into the brown of the upper surface; irides bright reddish brown; bill and feet dark horn-colour.

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

Hab. Western Australia.

This is a somewhat smaller bird, but has a longer bill than *D. Australis*.

An entirely new form, belonging to the family *Saxicolinæ*, and nearly allied to *Petroïca*, I propose to make the type of a new genus, *Drymodes*, signifying a lover of woodland places:—

Genus Drymodes.

Characteres generici.—*Rostrum* rectum, ad latera apicem versus paulò compressum, ferè longitudine capitis, apice levitèr denticulato, basi vibrissis parcè instructâ. *Alæ* mediocres, rotundatæ, remigum primo brevissimo, quinto longissimo. *Cauda* mediocritèr elongata, paulò rotundata. *Tarsi* longi, graciles, anticè superficie integrâ. *Digiti* mediocres, externus horum quàm internus paulò longior, posticus cum ungue quàm digitus intermedius cum ungue brevior.

Drymodes brunneopygia. *Dry. fusca; primariis apud pogonia interna albo transversìm striatis; uropygio tectricibusque caudæ rufo-fuscis.*

Head and all the upper surface brown, passing into rufous brown on the upper tail-coverts; wings dark brown, the coverts and primaries edged with dull white; primaries and secondaries crossed near the base on their inner webs with pure white; tail rich brown, all but the two middle feathers tipped with white; under surface grayish brown, passing into buff on the under tail-coverts; irides bill and feet blackish brown.

Total length, 8 inches; bill, $\frac{7}{8}$; wing, $3\frac{7}{8}$; tail, $4\frac{1}{4}$; tarsi, $1\frac{1}{2}$.

Hab. Belts of the Murray in South Australia.

This bird, although of a large size and so sombre in colouring, is nearly allied to *Petroïca*.

The next is an extraordinary form among the *Muscicapidæ*, differ-

ing from all the other known members of that group in having the bill compressed laterally, for which reason I propose to constitute it the type of a new genus, with the following name and characters.

Genus Piezorhynchus.

Characteres generici.—*Rostrum* quàm caput longius, altius plusquàm latum, ferè cylindraceum, lateralitèr compressum, apicem versus denticulatum. *Nares* parvæ, rotundatæ, basales. *Alæ* breves, remige primo mediocri, quarto longissimo. *Cauda* aliquantò brevis et rotundata. *Tarsi* mediocriter elongati et paulò debiles. *Digitus* externus et medius inter se connexi usque ad articulum primum, externus longissimus.

The only specimen I possess was forwarded to me by E. Dring, Esq., surgeon of H.M.S. Beagle, by whom it was procured on the north-west coast of Australia. From the glossy nature of its plumage I propose to name it

Piezorhynchus nitidus. *Piez. fulgidè viriscenti-niger.*

All the plumage, including the wings and tail, rich deep glossy greenish-black; bill and feet black.

Total length, $7\frac{1}{4}$ inches; bill, $1\frac{1}{8}$; wing, $3\frac{1}{4}$; tail, $3\frac{1}{4}$; tarsi, $\frac{3}{4}$.

Hab. North-west coast of Australia.

This very curious bird belongs, I conceive, to the *Muscicapidæ*, and is somewhat allied to *Seisura*.

A new *Praticola*, common on the plains round Adelaide, and forming the second example of the genus, is

Praticola campestris. *Prat. fronte et plumis auricularibus rufis; gutture albescente; corpore subtùs et lateribus ex arenaceo luteolis fusco striatis.*

Forehead rufous, passing into the reddish brown of the crown and upper surface, with a stripe of blackish brown down the centre of each feather; wings sandy brown; internal webs of the primaries dark brown; two centre tail-feathers reddish brown, the remainder reddish brown at the base, crossed towards the extremity with a broad band of brownish black and broadly tipped with white; over the eye a line of white; ear-coverts mingled rufous and white; throat white, gradually passing into the buff of the under surface; all the feathers of the under surface with a stripe of brownish black down their centre; bill blackish, lighter at the base of the under mandible; irides rufous brown; feet blackish brown.

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

Hab. South Australia.

Closely allied to but much smaller than *Calamanthus striatus*.

A new *Acanthiza* as

Acanthiza inornata. *Acanth. corpore suprà, alis caudáque olivaceo-fuscis, hâc nigrescenti-fusco latè fasciatâ; corpore subtùs pallidè luteolo.*

All the upper surface, wings and tail olive brown; primaries dark brown; tail crossed by a broad band of brownish black; all the under surface light buff; irides greenish white; bill and feet black.

Total length, $3\frac{1}{2}$ inches; bill, $\frac{1}{2}$; wing, $1\frac{7}{8}$; tail, $1\frac{1}{2}$; tarsi, $\frac{11}{16}$.

Hab. Western Australia, particularly the neighbourhood of Swan River.

A new species from Swan River, which, with the *Muscicapa macroptera* of Messrs. Vigors and Horsfield, I propose to erect into a new genus under the name of *Micræca*.

Genus Micræca.

Characteres generici.—Rostrum quàm caput brevius, depressum, ad basin latum, gonyide recto, apice incurvo et levitèr denticulato. *Nares* rotundatæ, ad basin rostri vibrissis validis instructam positæ. *Alæ* longæ et fortes, remigum primo brevi, tertio longissimo. *Cauda* aliquantò brevis, et ferè quadrata. *Tarsi* mediocres, debiles. *Digiti* debiles; externus quàm internus valdè longior.

As the species now exhibited closely assimilates to the *M. macroptera*, I propose to designate it as

Micræca assimilis. *Mic. supernè, caudæ rectricum externorum pogoniis internis per partes tres longitudinis a basi fuscis.*

All the upper surface brown; primaries dark brown; tail brownish black, the tips and the terminal half of the external margins of the two outer feathers white, the three next on each side are also tipped with white, the extent of the white becoming less upon each feather as they approach the centre of the tail; the four middle feathers without the white tip; throat, centre of the abdomen and under tail-coverts white, passing into pale brown on the sides of the chest and flanks; irides reddish brown; bill and feet blackish brown.

Total length, $4\frac{5}{8}$ inches; bill, $\frac{9}{16}$; wing, $3\frac{3}{8}$; tail, $2\frac{1}{8}$; tarsi, $\frac{9}{16}$.

Hab. Western Australia.

Nearly allied to but much less in size than *Muscicapa macroptera*, Vig. and Horsf., and from which it may also be distinguished by the base of the outer tail-feather being brown.

Myiagra latirostris. *Myi. corpore suprà, alis caudâque intensè cæruleo-cinereis; capite et nuchâ fulgidè virescentibus; gutture et pectore arenaceo-luteolis; abdomine albo.*

All the upper surface, wings and tail dark blueish gray, with a shining greenish lustre on the head and back of the neck; throat and chest sandy buff; under surface white; bill much dilated laterally and black; irides blackish brown; feet black.

Total length, 6 inches; bill, $\frac{3}{4}$; wing, $2\frac{3}{4}$; tail, $2\frac{3}{4}$; tarsi, $\frac{5}{8}$.

Hab. North-west coast of Australia.

From the collection of Mr. Dring.

Hirundo leucosternus. *Hir. dorso medio, gutture et pectore albis; abdomine, uropygio, alis caudâque nigris et chalybeïo-cæruleo-nitentibus.*

Crown of the head brown, bounded with white; back of the neck brown; centre of the back, chin, throat and chest white; the remainder of the plumage black, slightly glossed with steel-blue; bill black; feet brown.

Total length, $7\frac{1}{4}$ inches; bill, $\frac{5}{16}$; wing, $3\frac{3}{4}$; tail, which is deeply forked, $2\frac{3}{4}$; tarsi, $\frac{7}{16}$.

Hab. Interior of Australia.

The only specimen of this bird that has ever come under my notice, was given me by Mr. Charles Coxen, who informed me it was shot by one of his men while flying in company with another over a small pool on the banks of the Namoi.

A small bird inhabiting the scrubs of the River Murray. It is a new form, nearly allied to *Acanthiza*. The generic term is suggested by the ruddy colouring of the throat.

Genus Pyrrholæmus.

Characteres generici.—*Rostrum* quàm caput brevius, ad latera paulò compressum, ad apicem denticulo vix notando, vibrissis parvulis ad basin, naribus linearibus et operculo tectis. *Alæ* breves, rotundatæ, remigum primo perbrevi, tertio longissimo. *Cauda* brevis, rotundata, concava. *Tarsi* mediocres; digitus externus quàm internus longior.

Pyrrholæmus brunneus. *Pyrrh. supernè brunneus; gutture rufo.*

Lores greyish white; all the upper surface and wings brown; tail brownish black, the three lateral feathers on each side largely tipped with white; centre of the throat rufous; the remainder of the under surface brownish grey, passing into sandy buff on the flanks and under tail-coverts; bill and feet blackish brown.

Total length, $4\frac{1}{2}$ inches; bill, $\frac{1}{2}$; wing, $2\frac{1}{4}$; tail, $\frac{7}{8}$; tarsi, $\frac{13}{16}$.

Hab. Belts of the Murray in South Australia.

The female differs in having no red on the throat.

A highly interesting Pigeon from the north-west coast, which, as it differs from all the other forms of its family, and is said to inhabit the rocks, I propose to make the type of a new genus, with the name of

Genus Petrophassa.

Characteres generici.—Ferè ut in Peristerâ. *Alæ* autèm et rotundatæ sunt et admodùm breviores; deest etiam color metallicè æneus. *Cauda* magìs rotundata.

Petrophassa albipennis. *Petr. supernè fusca; gutture albo-guttato; primariis ad dimidium basale albis.*

Crown of the head and neck grayish brown, margined with sandy brown; all the upper surface, chest and tail rufous brown, the centre of each feather inclining to gray; lores black; abdomen and under tail-coverts chocolate brown; throat clothed with small feathers white at the tip, black at the base; primaries dark brown at

their tips, the basal half pure white; bill and irides blackish brown; feet reddish brown.

Total length, $10\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $5\frac{1}{4}$; tail, 5; tarsi, $\frac{3}{4}$.

Hab. Western Australia.

Allied to the members of the genus *Peristera*.

Eudromius Australis. *Eudr. colore cervino vel luteolo; abdomine medio castaneo; parte inferiore nec non crisso albis.*

Forehead and all the upper surface light sandy buff, the centres of the feathers being brown; primaries brownish black with sandy buff shafts, and all but the first four broadly margined with the same; throat buffy white, below which a crescent-shaped mark of blackish brown; chest, flanks and under surface of the wing buff, passing into reddish chestnut on the abdomen, beyond which the vent and under tail-coverts are white; tail brownish black, the centre feather margined with buff, the outer ones with white; bill dark olive brown; feet yellowish brown.

Total length, $7\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $5\frac{1}{4}$; tail, $2\frac{1}{2}$; tarsi, $1\frac{3}{8}$.

Hab. Interior of South Australia.

This is a highly interesting species, since it is the only bird approaching the form of the British Dottrel found in any part of the world. This rare species has been sent me by my friend Captain Sturt, who procured it during his late expedition into the interior of Australia, behind Adelaide.

Rhipidura isura. *Rhip. corpore suprà sordidè fusco; caudæ rectricum utrinque externâ albo extrinsecùs marginatâ et latè terminatâ, proximâ albo ad apicem notatâ, iterumque proximâ apicem versus lineâ albâ tenuissimâ.*

All the upper surface dull brown; wings and tail darker brown, the outer feather of the latter on each side margined externally and largely tipped with white, the next having a large irregular spot of white at the tip, and the next with a minute line of white near the tip; chin and under surface buffy-white, with an indication of a dark brown band across the chest; bill and feet black.

Total length, 8 inches; bill, $\frac{5}{8}$; wing, $3\frac{3}{8}$; tail, $3\frac{1}{2}$; tarsi, $\frac{11}{16}$.

Hab. North-west coast of Australia.

In the collection of his Excellency Captain Grey and Mr. Dring.

Rather a large species, and is distinguished from the other members of the genus by the sombre hue of its plumage and the square form of its tail.

Psilopus culicivorus. *Psi. abdomine crissoque albis; rectricibus caudæ, duabus intermediis exceptis, albo ad basin latè fasciatis.*

All the upper surface olive-brown; wings brown margined with olive; two centre tail-feathers brown; the remainder white, crossed by an irregular band of black and tipped with brown, the band upon all but the external feathers, so blending with the brown at the tip that the white between merely forms a spot on the inner web; lores blackish-brown; line over the eye, throat and chest light gray, passing into buff on the flanks, and into white on the centre of the ab-

domen and under tail-coverts; irides light reddish yellow; bill and feet black.

Total length, $4\frac{1}{4}$ inches; bill, $\frac{1}{2}$; wing, $2\frac{1}{4}$; tail, $1\frac{3}{4}$; tarsi, $\frac{5}{8}$.

Hab. Western Australia.

A new species and new form, which I first saw in the streets of Adelaide, where it was hopping about and presenting the appearance of the Sparrow in London. For this new bird I propose the generic and specific terms *Xerophila leucopsis*.

Genus Xerophila.

Characteres generici.—Rostrum breve, semiconi instar, ad basin robustum, ad apicem haud denticulatum, basi vibrissis anticè ductis parcè instructâ; naribus rotundatis et plumis minutis obtectis. *Alæ* mediocres, remigum primo brevi, tertio et quarto longissimis, tertiariis latis et paulò elongatis. *Cauda* mediocris, ad apicem quadrata, et aliquantò concava. *Tarsi* robusti; digitus posticus validus, digiti antici debiles, horum externus longissimus.

Xerophila leucopsis. *Xer. facie albâ; corpore supernè fusco.*

Forehead and lores white; upper surface olive brown; wings and tail brown, the latter passing into black near the extremity and tipped with white; all the under surface pale buff; bill and feet black.

Total length, 4 inches; bill, $\frac{3}{8}$; wing, $2\frac{1}{2}$; tail, $1\frac{3}{4}$; tarsi, $\frac{3}{4}$.

Hab. South Australia.

Licmetis pastinator. *Lic. albus, loris coccineis; remigum pogoniis internis necnon caudæ rectricum sulphureis, colore quàm in L. nasico intensiore cui speciei magnitudine corporis L. pastinator magnoperè præstat.*

Lores scarlet; general plumage white; the base of the feathers of the head and front of the neck scarlet, showing through and giving those parts a stained appearance; the basal half of the inner webs of the primaries, the inner webs of all the other feathers of the wing and the inner webs of the tail-feathers beautiful brimstone yellow; naked space round the eye greenish blue; irides light brown; bill white; feet dull olive gray.

Total length, $17\frac{1}{2}$ inches; bill, $1\frac{5}{8}$; wing, 12; tail, 7; tarsi, 1.

Hab. Western Australia.

Nearly allied to *Licmetis nasicus* but of a much larger size.

Numenius uropygialis. *Num. vertice fusco, lineâ luteolâ angustâ et inæquali per medium currente; uropygio et tectricibus caudæ fusco alboque fasciatis.*

Crown of the head brown, with a narrow irregular stripe of buffy white down the centre; lores and line behind the eye brown; line over the eye, neck and breast buffy white, with a brown line down the centre of each feather, the brown colour predominating; centre of the back and scapularies dark olive spotted on their margins with light buff; wing-coverts the same, but lighter and presenting a mottled appearance; primaries blackish brown with white shafts; rump

and upper tail-coverts barred with brown and white; tail pale brown barred with dark brown; chin, lower part of the abdomen and under tail-coverts white; bill blackish horn-colour, fleshy at the base; feet grayish black.

Total length, 15 inches; bill, 3; wing, $9\frac{1}{2}$; tail, 3; tarsi, $2\frac{1}{4}$.

Hab. South coast of Australia.

Nearly allied to *N. Phæopus* but distinguished from that species by the brown colouring of the rump.

Numenius minutus. *Num. uropygio tectricibusque caudæ intensè fuscis; marginibus plumarum albo-guttatis; corpore subtùs luteolo.*

Forehead dark brown mottled with buff; lores and line behind the eye buff; back, sides and front of the neck buff, with a fine line of brown down the centre of each feather; all the upper surface blackish brown, with a series of triangular spots round the margins of the feathers of a sandy buff; shoulders, primaries and secondaries blackish brown, the latter with white shafts; rump and tail-coverts dark brown spotted with white on the margins; tail grayish brown barred with black; chin white; under surface light buff; flanks and under surface of the wing deep buff, regularly barred with arrow-shaped marks of brown; irides black; bill fleshy at the base, olive brown at the tip; feet blueish flesh-colour.

Total length, 12 inches; bill, $1\frac{3}{4}$; wing, 7; tail, 3; tarsi, $1\frac{3}{4}$.

Hab. New South Wales.

This is one of the smallest species of the genus. I never but once saw a flock of this bird; out of which I killed two, on the race-course at Maitland on the Upper Hunter.

Porphyrio bellus. *Porph. capite, collo et corpore subtùs intensè cæruleis; facie, gutture et pectore virescenti-cæruleis; dorso, alis caudâque e fusco nigris.*

Head, neck and all the under surface deep blue; sides of the face, front of the throat and chest greenish blue; back, wings and tail brownish black; shoulder and edge of the wing and outer margins of the primaries greenish blue; under tail-coverts white; irides bright red; bill red; legs grass-green, except the knees, lower part of the tarsi and inside of the feet, which are dark greenish gray.

Total length, 18 inches; bill, $1\frac{3}{4}$; wing $10\frac{1}{2}$; tail, $4\frac{1}{2}$; tarsi, $3\frac{1}{2}$.

Hab. Western Australia.

Otis Australasianus. *Ot. vertice et occipite nigris; capitis lateribus, collo et pectore e cinereo-albis fusco adspersis; singulis plumis crebrè lineis transversis fuscis et tortuosis vel fractis striatis; pectore fasciâ nigrâ haud æquali ornato.*

Crown of the head and occiput black; sides of the head, the neck and breast grayish white, each feather crossed by numerous fine zig-zag bands of brown, giving those parts a freckled appearance; wing-coverts black largely tipped with white; all the upper surface, wings and upper tail-coverts brown very minutely freckled with reddish brown; some of the feathers towards the hinder parts of the body tinged with gray; tail gray, crossed near the centre by an in-

terrupted band of white, minutely freckled with white, margined with brown and slightly tipped with white; chest crossed by an irregular band of black, beyond which the under surface is white; under tail coverts grayish black tipped with white; irides brownish buff, brown predominating near the pupil; eyelash pale olive yellow; bill straw-white with olive and black culmen; legs and feet straw-yellow.

Total length, 40 inches; bill, 4; wing, 25; tail, 10; tarsi, $7\frac{1}{2}$.

Hab. Plains of the interior of Australia generally.

Anas nævosa. *Anas intensè fusca, plumis albo irroratis et longitudinaliter notatis.*

The whole of the plumage dark brown, minutely freckled and spotted with irregular oblong marks of white in the direction of the feathers; the under surface the same, but lighter and tinged with buff; wings without a speculum; primaries plain brown; irides light brown; bill greenish gray, becoming much darker at the tip; legs bluish green.

Total length, 17 inches; bill, $2\frac{1}{2}$; wing, 9; tail, 3; tarsi, 2.

Hab. Western Australia.

The above is the description and measurements of a female.

Sula Australis. *Sula primariis alarum et secondariis necnon rectricibus caudæ duabus intermediis fuliginoso-fuscis; tarsis anticè digitisque viridi-flavis.*

Crown of the head and back of the neck beautiful buff; the remainder of the plumage white, with the exception of the primaries, secondaries and four centre tail-feathers, which are fuliginous brown with white shafts; irides olive white; bill brownish horn-colour slightly tinged with blue; space round the eye leaden blue; bare skin at the base of the beak and down the centre of the throat nearly black; front of the tarsi and toes sickly greenish yellow; webs brown.

Total length, 32 inches; bill, $5\frac{1}{2}$; wing, 19; tail, 10; tarsi, 2.

Hab. The Tasmanian Seas.

The specimen exhibited is from the River Derwent. Like the other members of its family, this species will allow of its being taken with the hand. Some of my specimens were so taken on a rock on the Actæon Islands.

The circumstance of being enabled to bring an entirely new Albatros before the notice of the Society is a source of great gratification to me, since the group to which it belongs had already been paid much attention to by our early voyagers and later naturalists. The present bird differs from all the other species in the extreme caution with which it avoids rather than approaches the neighbourhood of vessels at sea. It is rather abundant in Bass's Straits and in all the seas off Van Diemen's Land.

From its shyness, I propose to name this species

Diomedea cauta. *Diom. vertice albo; faciei colore e margaritâ*

cinereo ; dorso, alis caudâque cinereo-fuscis ; rostro pallidè vinaceo-cinereo ; culmine, ad basin præsertim, flavo.

Crown of the head, back of the neck, throat, all the under surface, rump and upper tail-coverts pure white ; lores and line over the eye grayish black, gradually passing into the delicate pearl-gray which extends over the face ; back, wings and tail grayish brown ; irides dark vinous orange ; bill light vinous gray, or blueish horn-colour, except on the culmen, where it is more yellow, particularly at the base ; the upper mandible surrounded at the base by a narrow belt of black, which also extends on each side the culmen to the nostrils ; base of the lower mandible surrounded by a belt of rich orange, which extends to the corners of the mouth ; feet blueish white.

Total length, 31 inches ; bill, $4\frac{1}{2}$; wing, $21\frac{1}{2}$; tail, 9 ; tarsi, 3.

Hab. Bass's Straits.

The above are the dimensions of a female ; the male is considerably larger.

Nearly allied to, but larger than *D. melanophrys*.

Thalassidroma Nereis. *Thal. gutture pectoreque fuliginoso-cinereis ; dorso, uropygio tectricibusque caudæ cinereis ; abdomine, lateribus et crisso albis.*

Head, neck and chest sooty gray ; lower part of the wing-coverts, back, rump and upper tail-coverts gray, each feather very slightly margined with white ; wings grayish black ; tail gray, broadly tipped with black ; under surface pure white ; irides, bill and feet black.

Total length, $6\frac{1}{2}$ inches ; bill, $\frac{9}{16}$; wing, $5\frac{1}{4}$; tail, $2\frac{1}{2}$; tarsi, $1\frac{1}{4}$.

Hab. Bass's Straits, on the south coast of Australia.

This beautiful fairy-like Storm Petrel is about the size of *Thal. Wilsoni*, and is remarkable as differing from most of the members of the group in having no white on the rump and in the pure white of the under surface.

Mr. Gould exhibited to the Meeting a new species of *Hypsiprymnus*, from Swan River, which he characterized under the name of

Hypsiprymnus Graii. *Hyps. fusco-cinereus ; corpore subtùs albescente ; caudâ mediocri, fuscâ, flavo lavatâ, ad apicem albâ ; pedibus pallidè fuscis ; auribus mediocribus rotundatis.*

	unc.	lin.
Longitudo ab apice rostri ad caudæ basin. . . .	18	0
——— *caudæ*	11	6
——— *tarsi digitorumque* (sine unguibus). .	4	3
——— ab apice rostri ad basin auris	2	4
——— *auris*	1	1

This species most nearly resembles the *Hypsiprymnus rufescens* of Mr. Gray, but differs in being of an ashy brown colour above, and in having the hairs which clothe the back of the ears of the same general colour as those of the head, instead of black, as in the species just mentioned. The fur is long, and soft to the touch ; the hairs both on the upper and under parts of the body are of a palish grey

colour at the base; those on the under parts are dirty white externally, and those on the back are dirty white (inclining to ash-colour) near the *apex*, and tipped with brownish black: on the sides of the head and body a very faint yellowish hue is observable. The ears are sparingly clothed within with small yellowish hairs; externally they are clothed with fur, like that on the head. The feet are of a very pale brown colour. The tail is brown, tinted with yellowish, excepting the apical third, which is covered with longish white hairs.

December 22nd, 1840.

William Yarrell, Esq., Vice-President, in the Chair.

A letter from Mr. Frembly, R.N., Corresponding Member Z.S., was read. It is dated Gibraltar, November 28th, and refers to two species of Shark which that gentleman had forwarded for the Society's Museum.

The following paper, being a continuation of Mr. Broderip's descriptions of Mr. Cuming's new shells, was read:—

Helix (Cochlostyla) Daphnis. *Hel. testâ ovato-pyramidali anfractibus* 5 *ventricosis, ultimo cæteros conjunctos excedente; labii limbo castaneo-nigricante, aperturâ albidâ vel purpurascente.*

Var. *a. Ochraceo-albida, anfractibus* 2 *ultimis vittis angustis serie duplice dispositis, nigricantibus, cinctis; fasciâ sub-basali vittis albido-ochraceis interruptâ nigricante; aperturâ cæruleo-albidâ.*

Var. *b. Sordidè albido-flava vittis fuscis creberrimè cincta; aperturâ albidâ.*

Var. *c. Sub-ochracea, vittis raris distantibus rubro-nigricantibus ornata, anfractu basali fasciâ latâ centrali, rubro-castaneâ ochraceo subinterruptâ cincto; aperturâ subcæruleo-albidâ.*

Habitant varietates *a, b, c,* ad Argao in insulâ Zebu.

Var. *d. Sordidè ochracea lineis* 3 *fuscis, medio maximo clariore, cincta; aperturâ albidâ.*

Hab. ad Sibonga in insulâ Zebu.

Var. *e. Albido-flava strigis obliquis fulvis creberrimis ornata, et fasciâ basali latiore cincta; aperturâ albidâ.*

Var. *f. Albens strigis obliquis creberrimis nigris ornata et maculis magnis nigris interdum fucata; fasciâ basali angustâ nigrâ; aperturâ cæruleo-albente.*

Habitant varietates *e,* et *f,* in insulâ Siquijod.

Var. *g. Sordidè ochracea, strigis obliquis raris castaneo-nigricantibus fucata; basi nigricante ochraceo sordidè fucatâ; aperturâ purpurascente.*

Var. *h. Anfractibus* 2 *primis albidis, tertio et quarto fuscis; ultimo sordidè albido strigis rarissimis obliquis nigricantibus vix notato; aperturâ rubro-purpurascente.*

Habitant varietates *g,* et *h,* ad Argao in insulâ Zebu.

The general size of this fine species is about $2\frac{1}{2}$ inches long by $1\frac{3}{4}$ broad. All the varieties were found by Mr. Cuming in deep forests, on the leaves of trees. In none of them hardly do the markings commence before the fourth whorl.—W. J. B.

Helix (Cochlostyla) Faunus. *Hel. testâ elongato-subpyramidali, fuscâ, anfractibus* 6 *subventricosis; labii limbo nigricante; aperturâ cæruleo-albidâ.*

Var. *a. Fusca, strigis obliquis e castaneo-nigricantibus creberrimis subobscurioribus ornata, lineis nigricantibus obscurioribus cincta; fasciâ latâ basali nigricante.*

Var. *b. Fusca, lineis creberrimis obscuris cincta, strigis brevibus raris subobliquis juxta suturam notata.*

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

Hab. ad Sanctum Nicolam in insulâ Zebu.

The variety *a.* is the shortest. The third specimen is deprived of its *epidermis*, or nearly so, and the ground-colour is exposed. The first four whorls are chestnut, gradually deepening in colour, and the last whorl is of a rich purple brown: the shell is obscurely banded, especially on the last whorl.

Mr. Cuming found this species on the leaves of trees.—W. J. B.

Helix (Cochlostyla) Satyrus. *Hel. testâ subpupiformi anfractibus 5 subventricosis, purpureo-castaneâ, epidermide fuscâ; aperturâ ovatâ, albidâ; labii limbo purpureo-castaneo.*

Long. 2; lat. $1\frac{1}{4}$ poll.

Hab. in insulâ Tablas.

Obscure oblique stripes and bands occur in some of the individuals of this species, which, though it approaches the last, differs from it in many points, especially in the form of the *apex* and the shape and structure of the aperture.

Found by Mr. Cuming on leaves of trees.—W. J. B.

Bulinus.

Bulinus Ægle. *Bul. testâ fulvâ; anfractu ultimo juxta suturam fasciâ angustâ et juxta basin fasciâ latâ medio pallidiore ornato; diaphanâ, lineis incrementi obliquis creberrimè striatâ; labii limbo castaneo-nigricante; aperturâ albente.*

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

Hab. ad Casan in insulâ Mindanao.

The first four whorls are very pale, but the last is deep fulvous: a white line runs round the suture of the body-whorl.

Mr. Cuming found this species in a dense forest, on the leaves of trees.

Bulinus partuloïdes. *Bul. testâ pyramidali, nitidâ, aperturâ ovatâ, columellæ basi subplicatâ, labii limbo complanato, latissimo, reflexo, albo.*

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

Var. *a. Flava, castaneo-vittata.*

In this pretty variety a single chestnut band borders the base of each whorl, and on the body-whorl there is in addition a broad, subcentral, chestnut band.

Var. *b. Castanea, albo vittata.*

In this variety the rich chestnut is relieved by a white band that borders the upper part of the last two whorls, near the suture.

Var. *c. Castanea, fusco vittata.*

In this variety the upper part of each whorl near the suture is banded with brown.

Hab. in insulâ Tablas.—W. J. B.

PLEKOCHEILUS.

PLEKOCHEILUS GRACILIS. *Pl. testâ elongatâ, gracili, anfractibus* 4, *ultimo longissimè maximo, subdiaphanâ, anfractu basali transversim corrugato, strigis angulatis irregularibus longitudinalibus creberrimè fucato; anfractibus cæteris subroseis; aperturâ subaureo-flavâ; labii limbo lato, reflexo, albo.*

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

Hab. in insulis Feejee dictis?

Hitherto this form has only been discovered in the Western World. Mr. Cuming received the specimen above described from a captain of a ship, who said he had got it from a native of one of the Feejee Islands. A glance at the western species will satisfy the observer that the species above described is distinct.—W. J. B.

Mr. Waterhouse exhibited two new species of Birds from the Society's collection, and pointed out their distinguishing characters. The first is a small species of *Picus*, believed to be from the north-west coast of South America, and is remarkable for the absence of spots and markings, and the brilliant red colour of the upper parts of its body and wings: this red colouring commences on the back of the neck, and is continued to the tail, as well as over the whole of the wings; that is, over the visible portion of each feather, the inner shafts being of a brown colour. The whole of the upper surface of the head is of a brown-black colour; the sides are pale brown; the throat is pure white; the chest and whole of the under parts of the body are of a dirty white colour, indistinctly tinted with yellowish. The tail is of an uniform blackish brown colour, with the exception of the two outer feathers on each side, which are pale brown; on the apical half of the external feather there is a very obscure indication of bands. The beak is of a very pale horn-colour.

The principal characters may be thus briefly expressed:—

PICUS CALLONOTUS. *Pi. capite pallidè fusco, suprà fuliginoso; corpore suprà alisque sanguineis; gulâ, pectore abdomineque albescentibus; caudâ obscurè fuscâ; rostro albescente.*

In size and general form this species agrees very closely with the *Picus minor* of Europe, but its beak is rather longer in proportion, being nine lines in length.

The second new species is one of the Icterine group, and in most of its characters agrees with that division to which the term *Cassicus* is applied: it has the same stout conical bill, the upper surface of which is broadly expanded at the base, and encroaches on to the forehead: the *apex* is pointed. This bird, however, differs from any other species of the group to which it belongs, in the great length of its wings, which extend considerably beyond the tip of the tail, which is of moderate length, broad, and slightly rounded. The colouring

of the plumage is also remarkable, and particularly the texture of the feathers, those of the body having a velvet-like appearance, whilst those of the wings have a distinct gloss, such as we see in the plumage of the Crows. No doubt, according to the views of many ornithologists, this bird would be regarded as a new genus or subgenus; the sectional name *Ocyalus* is therefore proposed, from Ωχυαλος, in allusion to the swiftness with which it is to be presumed a bird with such wings would move.

Subgenus Ocyalus.

Characteres ut in Cassico, *alæ autem longissimæ, et caudæ apicem transeuntes.*

Cassicus (Ocyalus) Popayanus. *Oc. niger, corpore purpureo relucente; alis nitore viridi; capite nuchâque suprà castaneo tinctis; caudâ flavâ, rectricibus quatuor intermediis in toto nigris, sic et apicibus reliquorum; rostro pallido.*

Long. tot. 11 unc.; *rostri*, $1\frac{1}{2}$; *lat. ad basin*, $6\frac{3}{4}$ lin.; *alæ*, $8\frac{1}{2}$ unc.; *caudæ*, 4.

Hab. Popayan.

INDEX.

The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of Species respecting which Anatomical Observations are made, in CAPITALS.

CORRIGENDA.

P. 30. Lines 19–20, *for* genera, *read* genus.

P. 163. Line 7, erase the words "BRACHYPTERUS or".

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