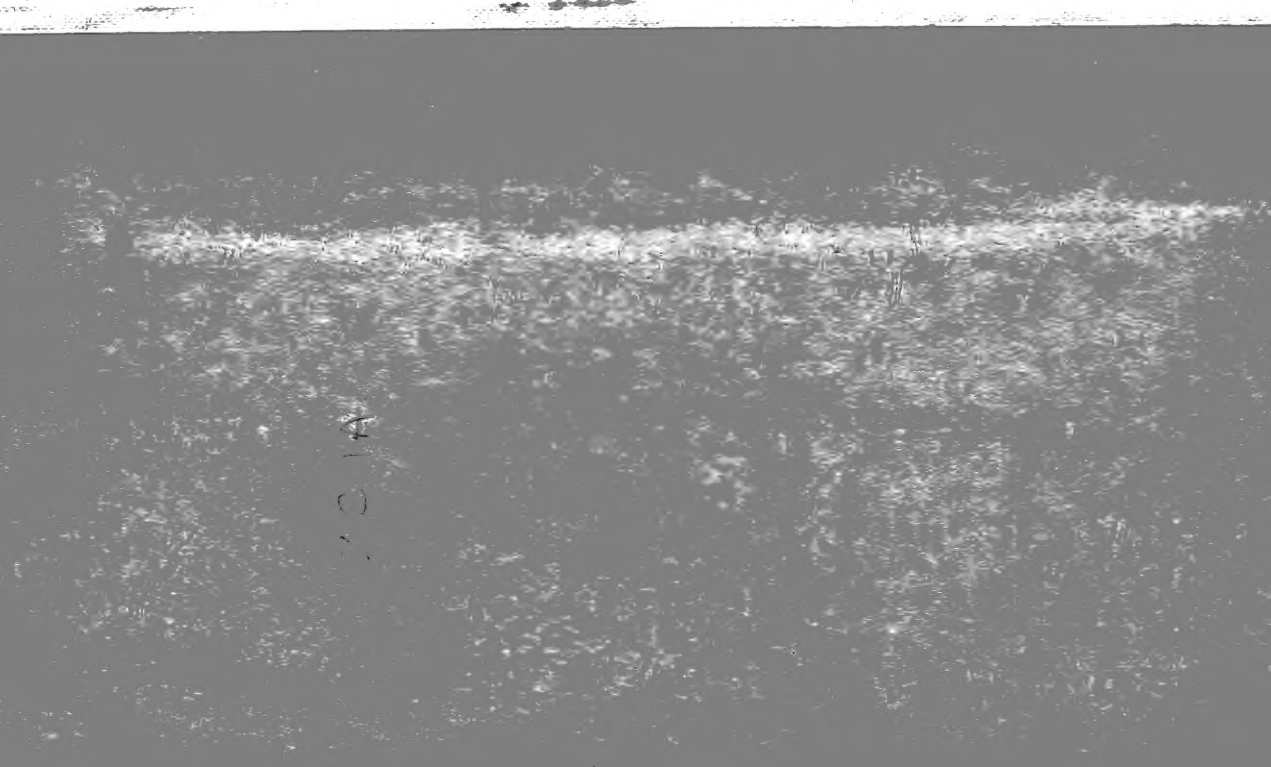

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY

OF LONDON.

PART I.

1833.

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LIST

OF

CONTRIBUTORS.

With References to the several Articles contributed by each.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 8, 1833.

Joseph Sabine, Esq., Vice-President, in the Chair.

The Chairman opened the business of the Meeting by referring to the By-laws under which it was held, and stated the anticipation of the Council that the General Meetings for the transaction of Scientific Business, of which the present was the first, would be productive of great advantage to science. He adverted to the known abilities and industry of many of the Members of the Society, who have contributed to the Proceedings of the Committee of Science and Correspondence, (the meetings of which have now ceased,) and dwelt on the certainty of much important information being communicated by their continued labours. There were also other Members equally in possession of facts of interest, and equally capable of imparting the knowledge of them, to whom the Society might look with confidence for contributions. He trusted that these experienced zoologists would be continually excited to fresh discoveries, by the acquisition of additional subjects of investigation in the Society's Menagerie and Museum, and that others would be stimulated by their example to pursue similar inquiries with equal zeal, and with all the increased facilities for successful study afforded by more extensive collections. The result of such researches would, he hoped, be freely brought before the Society at the Meetings which had now commenced, and which would thereby be rendered at once interesting to the Members, and important to the advancement of knowledge.

The Secretary then read the By-laws referred to in the Chairman's address.

The Vice-Secretary called the attention of the Meeting to a stuffed specimen of the *M'horr Antelope*, which was exhibited on the table. He remarked that it belonged to that form of the genus to which the name of *Antilope Dama* has been given, on account of the horns being curved forwards; a character mentioned by Pliny as belonging to the animal which he designated *Dama*, and which was also of transmarine origin. By references, however, to other classical authors, Mr. Bennett was induced to infer that the same name was used by them to designate another animal which was subservient to the chase in Europe, and not improbably the *Fallow Deer*.

The earliest distinct mention in modern times of an *Antelope* of the form of *Dama* was by Buffon, who described under the name of *Nanguer*, an animal brought by Adanson from Senegal: on this description is founded the *Ant. Dama* of Pallas. Under the same name M. Lichtenstein and M. Ruppel have severally described an *Antelope* with procurved horns, the *Addra* or *Leddra* of Nubia and Upper Egypt. These differ, however, in colouring from each other, and also from the *M'horr* of Tafileht; and Mr. Bennett was therefore disposed to regard them as distinct races of the same form of *Antelope*, (a form for which the name of *Damæ* may be retained,) and to consider them provisionally as the representatives of three species, equivalent probably in value to the *Corinne* and *Kevel* recently distinguished by M. F. Cuvier from the *Gazelle*, *Ant. Dorcas*, Pall. He characterized them respectively under their local names as follows:—

Genus ANTILOPE, Pall.

Sectio, DAMÆ. Cornua reflexa, annulata; versus apicem insigniter procurva, lævia. Collum elongatum, maculâ mediâ anticâ transversâ albâ.

ANTILOPE MHORR. *Ant. obscurè badius; facie albidâ vittis tribus griseis, vel nigrescentibus; prymnâ lineâque latâ utrinque inde antrorsum ductâ, caudâ, ventre, artubusque internè anticè posticèque albis; coloribus abruptis.*

ANTILOPE NANGUER. *Ant. suprà fulva; infrà, prymnâ, clunibusque totis albis.*

ANTILOPE ADDRA. *Ant. collo dorsoque medio dilutè fulvis; infrà, prymnâ, dorso posteriore, lateribusque albis.*

The individual of the *M'horr Antelope* exhibited was one of the two recently presented, while living, to the Society by E. W. A. Drummond Hay, Esq., Corr. Memb. Z.S., His Majesty's Consul General at Tangier, for whom it had been procured by the exertions of W. Willshire, Esq, Corr. Memb. Z.S., Vice-Consul at Mogadore. The characters of the animal were further illustrated by reference to an imperfect skin, also presented to the Society by Mr. Drummond Hay.

Mr. Bennett's detailed description of the *M'horr Antelope* will be published, with a figure, in the Society's Transactions.

At the request of the Chairman Mr. Spooner read the following Notes of the *post mortem* examination of the *M'horr Antelope*:—

"The external conformation of the animal exhibited great emaciation. On laying open the abdominal cavity it was remarked that the peritoneal secretion was more abundant than is usual in health, and the membrane exhibited marks of chronic inflammation throughout its extent, but more particularly in the portion reflected over the small intestines. Several hydatids were adherent to the mesentery and *omentum*. The latter *viscus* was extremely thin and transparent, and did not possess the slightest portion of *adeps*, which is somewhat singular in the *Ruminantia*, among which an accumulation of *adeps* is generally observed in this *viscus*, even where great

emaciation has been present in other parts. The anatomical structure of the abdominal *viscera*, for the most part, agreed with the same in the tribe of *Antelopes* in general.

" The kidneys were healthy, and were rather larger than is usual, while the bladder was very small. The renal capsules were of an oblong figure, and situated about half an inch anterior to the kidneys.

" The tendinous portion of the diaphragm was very extensive, and most beautifully developed, having nearly the appearance in colour of the *tapetum lucidum* of the eye. The substance of the lungs was hepatized, and there were in many parts adhesions to the inward surface of the ribs. The right lung consisted of four lobes, the left of three. The right side of the heart was peculiarly flaccid, and the blood found in both sides was very dark in colour, and had not undergone coagulation. The *vena azygos* passed upon the left side of the spine, and terminated in the anterior *cava*. I have observed a similar disposition in the *Sheep* and *Chamois*, but in the latter animal the termination was in the posterior *cava*."

A stuffed specimen was exhibited of a female of the *harnessed Antelope*, *Antilope scripta*, Pall., which had lived for some months in the collection of the Zoological Society of Dublin, by whom it was presented to the Society.

Preparations were exhibited of the *trachææ* of the *Penelope Guan* of M. Temminck, and of the *Anas Magellanica*, Auct., and Mr. Yarrell read the following short descriptions of them.

" The *trachea* of the *Guan* is uniform in size and substance throughout its whole length. After descending by the neck in the usual way, it is extended and passes downwards under the skin, but over the outer surface of the pectoral muscle on the right side, to the extent of 2 inches beyond the angle formed by the junction of the two portions of the *os furcatorium*. The tube of the *trachea* is then reflected, and ascending to the cavity of the *thorax*, again turns to be carried to the lungs as in other *Birds*, and is provided with one pair of true muscles of voice, which have the usual origin and insertion. The loop or fold of the tube formed on the surface of the pectoral muscle is imbedded in cellular tissue, and further retained in its place by a strong ligament, which firmly adhering to the loop, passes backwards to be first attached to the posterior angle of the *sternum*, and afterwards dividing once, and passing still further backwards, the two slips are inserted on the two elongated pubic points of the *pelvis*.

" This structure in the *Guan* has been noticed and figured by M. Temminck, in his ' Histoire des Pigeons et Gallinacés,' but this is the first opportunity that has occurred of exhibiting a preparation from the bird on the table of the Society.

" The *trachea* of the male *Magellanic Goose* is furnished with a large hollow bony protuberance on the left side, near the bottom of the tube, at the point of divarication, similar in character to those observed in the *wading Ducks*, but differing in its form. The dorsal

surface is flat, the external surface convex, the lateral circumference rounded.

" The male of the *Egyptian Goose* possesses also a bony enlargement at the same part; but as much difference exists between the appendages in these two *Geese*, as is known to prevail in the form of the enlargements of the *tracheæ* in the various species of *Ducks*.

" The protuberance in the *Egyptian Goose* is much broader than it is high, its greatest measurement being in the line of its transverse diameter; that of the *Magellanic Goose* is, on the contrary, higher than it is broad, and its line of greatest measurement is from before backwards.

" As in all those *Ducks* possessing tracheal enlargements of bone only, the stomach of the *Magellanic Goose* is a true muscular gizzard, with a small internal cavity having a dense and strong cuticular lining; the intestines are long and furnished with two cæcal appendages, each 9 inches in length. This bird has also one pair of true muscles of voice. It and the *Egyptian Goose* are the only species of *Anser*, as far as I am aware, in which any bony enlargements have been noticed. They bear considerable general resemblance to each other in the colour of their plumage, and both exhibit a brilliant *speculum* on the wing, like those observed in the *Ducks*."

Specimens were exhibited of numerous *Mollusca* and *Conchifera*, hitherto undescribed, which form part of the collection made by Mr. H. Cuming, during a voyage undertaken by him in 1827, 1828, 1829, and 1830, for the purpose of obtaining subjects in Natural History on the western coast of South America, its adjacent islands, and many of those which form the Archipelago of the South Pacific Ocean. Nearly three hundred new species of these classes have been already brought under the notice of the Committee of Science and Correspondence, at various meetings during the past year, and characters of them from the pens of Mr. Broderip and Mr. G. B. Sowerby, have been published in the Proceedings of that Committee. The remaining species Mr. Cuming proposes to lay before the Society from time to time, as the descriptions of them are completed. The intention of publishing coloured figures of them was again announced.

The new species exhibited at the present Meeting were accompanied by characters by Mr. Broderip. They are as follow :—

Genus Spondylus.

Spondylus Princeps. *Spond. testâ rotundatâ, 6-costatâ, rubrâ, spinosâ, spinis lingulatis, latis; costis interstitialibus 5 spinosis, spinis brevioribus; intùs albâ, limbo lato profundè plicato, rubro: long.* 5⅛, *alt.* 5, *lat.* 3 *poll.* (*spinis haud inclusis*).

Hab. ad Insulam Platam Columbiæ Occidentalis.

Found attached to coral rocks at the depth of seventeen fathoms. In old specimens the interior is of a brownish hue, especially at the hinge.—W. J. B.

Spondylus dubius. *Spond. testâ subrotundatâ, croceâ, 6-costatâ,*

costis interstitialibus numerosis, spinis frequentibus, brevibus, subarcuatis; intùs albâ, limbo lato plicato croceo, plicis numerosis: long. 4⅞, *alt.* 4⅛, *lat.* 2⅛ *poll.* (*spinis inclusis*).
Hab. in Americâ Centrali. (Gulf of Tehuantepec).
Obs. Varietas forsan *Spond. Principis.*
Dredged up from ten fathoms attached to shells.—W. J. B.

Spondylus Leucacantha. *Spond. testâ rotundatâ, 6-costatâ, spinosâ, subcroceâ, spinis sublingulatis, subreflexis, longioribus, albis; interstitiis striatis; costis interstitialibus 3 (mediâ maximâ) spinosis, spinis brevioribus; intùs albâ, limbo angusto pallidè subcroceo: long.* 2⅛, *alt.* 2⅛, *lat.* 1⅛ *poll.* (*spinis haud inclusis*).
Hab. ad Insulam Platam.
Obs. Spinis infrà subcanaliculatis.—W. J. B.

Spondylus aculeatus. *Spond. testâ rotundatâ, planiusculâ, albâ, spinis aculeatis, subrecurvis, frequentibus, gracilibus horridâ: long.* 1, *alt.* 1, *lat.* ⅝ *poll.* (*spinis haud inclusis*).
Hab. in Oceano Pacifico. (Lord Hood's Island.)
Found attached to a piece of coral on the reefs.—W. J. B.

Genus Triton.

Triton lignarius. *Trit. testâ globoso-pyriformi longitudinaliter subplicatâ, transversim granuloso-striatâ, flavâ striis saturatioribus; columellâ excavatâ, aperturæ limbo luteo-sanguineo, dentibus albis; labro lato, crasso; caudâ mediocri subrecurvâ; epidermide fuscâ, reticulatâ, ad labrum villosâ: long.* 1⅛, *lat.* ⅞ *poll.*
Hab. ad Portum Protrero et Panamam.
The elevated *striæ*, especially the two middle ones of the body whorl, are of a much darker colour than the ground of the shell, which is reddish yellow, here and there mottled with whitish on the longitudinal plaits, and on the ledge of the lip. The teeth of the outer lip are very large, and there is one very large one at the upper angle of the inner lip. The reticulated *epidermis* is villous at the outer lip, and the villous edges mark the stages of growth in young specimens. Found in sandy mud at a depth of from seven to twelve fathoms.—W. J. B.

Triton constrictus. *Trit. testâ fusiformi, valdè distortâ, transversim noduloso-striatâ, subcancellatâ, subfulvâ; spirâ elongatâ, attenuatâ; canali brevissimâ, subrecurvâ; aperturâ coarctatâ, limbo castaneo, granuloso, granulis albidis: long.* 2⅛, *lat.* 1⅜ *poll.*
Hab. ad Montem Christi et Xipixapi.
Another species of those shells called *grimaces*. It differs materially both from *Trit. Anus* and *Trit. clathratus*, is a heavier shell than the latter, and has a much longer spire and shorter canal than either of those species, while it wants the laminated border that so remarkably surrounds the aperture of *Trit. Anus*, and is even more distorted.
Mr. Cuming dredged it up from sandy mud from seven to ten fathoms below the surface.—W. J. B.

Triton tigrinus. *Trit. testâ fusiformi, lævi, subcostatâ, anfrac-*

tibus subangulatis, hinc et hinc subnodosis, anfractu basali ventricoso, lato, et suturam juxta carinato; spirâ elongatâ, attenuatâ; croceo-fuscâ, varicibus et labri limbo externo, nigro vel castaneo maculatis; aperturâ expansâ, aurantiacâ, strigis et maculis nigro-castaneis pictâ; epidermide fuscâ, subfoliaceâ: long. 6⅝, *lat.* 4 *poll.*

Hab. in Americâ Centrali. (Guacomayo.)

This fine shell bears some distant resemblance to *Trit. femoralis*, and there was a specimen in the Tankerville collection marked No. 1718. a. in the Catalogue as a variety of that species in these terms: "Var. notabilis, latissima, aperturâ expansâ." This resemblance is greater in dwarfs than in well-grown individuals, but the length and shape of the spire, the comparative smoothness, the breadth of the ventricose body-whorl, the expanded aperture with its rich orange mouth, variegated towards the border of the outer lip with dark chestnut stripes in pairs, and the shortness of the canal, indicate that *Trit. tigrinus* is very distinct from *Trit. femoralis*; and Mr. Sowerby, who drew up the Tankerville Catalogue, is now of that opinion. The throat or internal part of the aperture is of a blueish white, and, as in the rest of the species, the outer lip, and, consequently, the *varices*, acquire a greater thickness as the shell advances in age. The *epidermis* is particularly foliaceous upon the *varices* and edge of the outer lip.

Mr. Cuming dredged up this species at Guacomayo from a bottom of sandy mud at the depth of eleven fathoms.—W. J. B.

TRITON RUDIS. *Trit. testâ ovato-fusiformi, fulvâ, transversim lineatâ, longitudinaliter unduloso-nodosâ; aperturâ albâ, labro intùs denticulato; epidermide fuscâ, rugosâ: long.* 1⅝, *lat.* 1⅜ *poll.*

Hab. ad Peruviam. (Iquiqui.)

The aperture of this shell has the appearance of white porcelain, and the internal denticles, placed about the eighth of an inch from the margin of the lip, are ranged in a line. There are a few obscure plaits towards the bottom of the pillar, and the canal is open, very short, and somewhat recurved. This species approaches *Buccinum* very closely.

Found in mud and sand at a depth of from six to ten fathoms, and in coarse gravel at the depth of nine fathoms.—W. J. B.

TRITON LINEATUS. *Trit. testâ sub-fusiformi, undulato-nodulosâ, subcancellatâ, pallidè flavâ lineis transversis crenulatis, fusco-castaneis, frequentibus vittatâ; anfractibus subventricosis, varicibus crassis; aperturæ ovatæ margine albo, denticulato, fauce atro-purpureâ: long.* 2⅜, *lat.* 1⅛ *poll.*

Hab. ad Insulas Gallapagos.

In young shells the rich dark purple of the throat, with its denticulated white border, is absent, but in these the *varices* are thick and large. In a young shell of this species I found the remains of a very beautiful *Pagurus*, which is new to me. The legs, two of which are the only visible remnants, are of a brownish black, and the feet are tipped with red. The body whorl of *Trit. lineatus* (in-

cluding the canal which is moderate,) is twice the length of the spire, and much more ventricose than the other whorls.

Found in coral sand, in six fathoms.—W. J. B.

TRITON GIBBOSUS. *Trit. testâ sub-fusiformi, subfulvâ vel sub-fuscâ, subnodulosâ, transversim creberrimè lineatâ; anfractibus subtrigonis; aperturâ subrotundâ, albâ, labri expansi radiati margine interno dentato: long.* $1\frac{1}{7}$, *lat.* $\frac{1}{1\frac{1}{2}}$ *poll.*

Hab. ad Panamam et ad Montem Christi.

This shell approaches *Trit. lineatus*, but differs from it in many points.

Found in coarse sand at the depth of seven fathoms.—W. J. B.

TRITON SCALARIFORMIS. *Trit. testâ fusiformi, sordidè albâ, subcancellatâ, lineis transversis elevatis, crassiusculis, crenulatis, crebris vittatâ; labri limbo subfimbriato; canali brevi, subrecurvâ: long.* $\frac{7}{8}$, *lat.* $\frac{4}{8}$ *poll.*

Hab. in sinu Montijano.

This elaborately wrought species has the *varices*, in well-grown specimens, placed with a regularity that almost entitles it to a situation among the *Ranellæ*. It was found in coarse sand at the depth of ten fathoms.—W. J. B.

TRITON CONVOLUTUS. *Trit. testâ fusiformi, spirâ elongatâ, albidâ, lineis elevatis, subacutis, creberrimis vittatâ; labri margine crenulato: long.* $1\frac{1}{8}$, *lat.* $\frac{1}{2}$ *poll.*

Mus. Sowerby.

This species approaches *Trit. scalariformis*, but differs materially from it. The lines which gird *Trit. convolutus* are much finer, much more frequent than those of *Trit. scalariformis*, and are without the crenulations that distinguish the coarser ridges of the latter. There are also other points of difference, and the *varices* are irregular and not arranged in a nearly lateral direction as they are in the last-mentioned species.

Mr. Sowerby, who sent me this shell, does not know its locality. —W. J. B.

Genus TURBINELLA.

TURBINELLA TUBERCULATA. *Turb. testâ fusiformi-turritâ, transversim tuberculato-costatâ, et insterstitialiter striatâ, anfractibus angulatis, angulis noduliferis, albidâ costis nodulisque nigro-castaneis; aperturâ albâ, columellâ* 3—4-*plicatâ: long.* $1\frac{1}{8}$, *lat.* 1 *poll.*

Hab. ad Insulas Gallapagos.

Found under stones.

This shell, in its general appearance, approaches some of the *Pleurotomata*, which have a short canal.—W. J. B.

TURBINELLA ARMATA. *Turb. testâ fusiformi, transversim striatâ, tuberculis spinisque fortibus muricatâ, griseo castaneoque fasciatâ et maculatâ; aperturâ albâ; columellâ* 6—7-*plicatâ, labro sinuato, intùs striato et dentato, dentibus castaneis: long.* $2\frac{2}{8}$, *lat.* $1\frac{3}{8}$ *poll.*

Hab. ad Insulam Elizabethæ.

The tubercles and strong spines are disposed in transverse series. The angle of the body whorl is coronated with spines, and then follows, after an interstitial transversely striated space, a band of large tubercles; this is followed by an intermediate space transversely ribbed and striated, and towards the base is an elevated transverse ridge, armed with stout but rather blunt spines; the other whorls have one row of spines only, and no tubercles.

Found on the coral reef.—W. J. B.

TURBINELLA CÆSTUS. *Turb. testâ subrhomboideâ, crassissimâ, ponderosissimâ, albâ, anfractu basali longitudinaliter subplicato, angulato et transversim sulcato, angulo tuberculis conico acutis, maximis, armato, sulcis maximis; cingulis basalibus tuberculatis, penultimo maximo; columellâ quadriplicatâ; labro sinuato; epidermide crassâ, longitudinaliter striatâ; umbilico magno: long.* $3\frac{7}{8}$, *lat.* $3\frac{1}{8}$ *poll.*

Hab. ad Caraccas.

This species approaches nearest to *Turb. pugillaris*, but the difference of shape, the extreme thickness and weight of the shell, the smaller number but increased size of the furrows, the immense bulk of the conical tubercles, the reduced number of the plaits on the pillar, and the enlarged *umbilicus*, point it out as distinct,—to say nothing of the *epidermis*, which is much thicker and coarser, and not unlike that of *Pyrula patula*, nobis. *Turb. Cæstus* varies much in size, but not in character.

It was found in soft mud among the rocks of the bay.—W. J. B.

Genus PURPURA.

PURPURA XANTHOSTOMA. *Purp. testâ ovato-acutâ, ventricosâ, tuberculiferâ, longitudinaliter subplicatâ, transversim costatâ et interstitialiter striatâ, anfractibus angulatis; aperturâ flavâ, nitente; labro intùs substriato et denticulato, striis distantibus, dentibus intermediis; long.* $3\frac{1}{8}$, *lat.* $2\frac{1}{8}$ *poll.*

Hab. ad Valparaiso.

The angulated body-whorl, which is nearly thrice as long as the spire, is crowned by waved tubercles. The aperture is of a shining yellow, and the denticles, which are whitish, are generally placed in pairs between the internal *striæ* of the outer lip.

Dredged up from gravel and sand at a depth of from seven to twenty-five fathoms.—W. J. B.

A paper was read by Dr. Grant, "On the Nervous System of *Beroë Pileus*, Lam., and on the Structure of its *cilia*."

Dr. Grant having obtained, in September last, on the coast of Sheppey, a specimen of this animal, examined it with great care; and from this examination he describes it in detail as regards its external form, its alimentary canal, its ovaries, and its two lengthened *tentacula*, which latter organs distinguish it from the group comprehending *Beroë ovatus;* and mark it as the type of a genus designated by Péron *Eucharis*, and by Dr. Fleming *Pleurobrachia*.

At a short distance above the mouth a double transverse filament, resembling in colour the abdominal nerves of *Pectinaria*, surrounds the body: it swells out in each space intervening between the bands of *cilia* into a *ganglion*; and from each of these *ganglia* there pass on each side two nerves to the adjoining band, while a larger filament proceeds upwards to beyond the middle of the body, having two or three smaller ganglionic enlargements, from which filaments are detached to the *viscera*. The whole of this system is seated near the surface of the body. In the circular disposition of the central filaments and *ganglia*, and in the regular radiation of nerves from that centre, it resembles the nervous system of *Holothuria* and *Asterias* among the *Echinodermata*.

The comparatively large size of the *cilia* on the *Beroë Pileus*, enabled Dr. Grant to observe their structure more satisfactorily than in the microscopic animals on which they have previously been particularly noticed. In the latter they appear like flat tapering filaments prolonged from the homogeneous cellular tissue of the body to which they are attached. But in the *Beroë* it is evident that they are not single fibres, but consist of several straight, short, transparent filaments placed parallel to each other in a single row, and connected together by the skin of the animal, like the rays supporting the fin of a fish. These fins are of the same breadth with the band to which they are attached, and extend from the mouth to the *anus*, there being about forty on each band. Under a lens the parallel fibres appear like transparent tubes, sometimes a little detached from each other at their extremities, by injury done to the connecting membrane, and at these parts the isolated spines project stiffly outwards. When the *cilia* are in active vibration, there is observed along the middle of each band to which they are attached, a motion like the continued undulations of a fluid. Connecting this with the analogy which may be deduced from the motion produced in the tubular feet of *Asterias* and *Echinus* by the entrance and exit of water sent into them by vessels destined for that office, it seems highly probable that the motions of the *cilia* of *Beroë* are intimately connected with the streams passing along the bands, and that hence an explanation may be obtained of one of the most remarkable phænomena of animal motion, which is at the same time one of the most frequent occurrence among the less highly organized of animated beings.

Dr. Grant's paper will be published entire, with a figure of the animal, in the Society's Transactions.

Mr. Yarrell detailed some observations on the changes of plumage in *Birds*; which he illustrated by Notes on several species in the Society's Gardens made by James Hunt, one of the Keepers.

In his observations Mr. Yarrell pointed out three modes by which changes in the appearance of the plumage of birds are produced: 1. By the feather itself becoming altered in colour. 2. By the bird's obtaining a certain portion of new feathers without shedding any of the old ones. 3. By an entire or partial moult, in which

the old feathers are thrown off, and new ones produced in their places. The first two of these modes of change are observed generally in the spring, indicating the approach of the breeding season; the third is usually partial in the spring, and entire in the autumn.

The Keeper's notes furnish some remarkable instances of change of plumage, observed by him on birds in the Society's Menagerie: —on the *Ruff, Tringa pugnax*, Linn., in which the spring moult is partial, and in which the ruff produced round the neck of the male preparatory to the breeding season is found to differ in colour in successive years; that of an individual which had it black in 1832 having been ash-coloured in 1831:—on the *Mandarin Duck, Anas galericulata*, Linn., which moults entirely in the spring, and undergoes a partial moult in the autumn, to assume his breeding plumage: —on the *Summer Duck, Dendronessa sponsa*, Swains., which resembles the preceding in its moult:—on the *Cormorant, Carbo Cormoranus*, Meyer, which acquires in the spring white feathers on the head and neck, and on the thighs, without parting with any of its old feathers: —on the immature *Herring Gull* and *lesser black-backed Gull, Lari argentatus* and *fuscus*, Brunn., which during two years have been undergoing a continued change of colour in their feathers, independent of moulting, which does not appear to influence the change of colour:—and on the *laughing Gull, Larus ridibundus*, Linn., in which the feathers of the head change in the spring from white to black, the colour alone being changed without a feather being shed, and the change being effected in four or five days; in the autumn the black feathers are moulted, and are replaced by white ones.

Mr. Yarrell stated his intention of entering more fully into the explanation of the laws which regulate the changes of plumage in Birds, in a paper which he is preparing to lay before an early meeting of the Society.

A Note by James Hunt, one of the Society's Keepers, was read. It related to the breeding of the *Passenger Pigeon, Ectopistes migratorius*, Swains., in the Society's Menagerie.

"A pair of these birds began to build their nest on the 25th of April, 1832, having been three or four days in selecting a proper place in a fir-tree in the inclosure appropriated at the Gardens to the *Pigeons*. The female was the nest-builder. The male bird performed the most laborious part of the work: he collected and conveyed to the spot all the materials, principally sticks and straw, of which the nest was composed. He alighted on the back of the female with each fresh supply, so as not to disarrange any part of the nest which she had formed. They began their task in the morning, and completed it the same evening. One egg was laid on the morning of the 26th, and the female commenced sitting immediately. A young bird was hatched in sixteen days. The male relieved the female during the period of incubation."

Another instance of the breeding in this country of the *Passenger Pigeon* occurred nearly at the same time in the Menagerie of the President.

January 22, 1833.

William Yarrell, Esq. in the Chair.

A letter was read, addressed to Charles Telfair, Esq., Corr. Memb. Z.S., as President of the Mauritius Natural History Society, by M. Goudot. It is dated at Tamatave (in the island of Madagascar), April 20, 1832, and contains an account of a remarkable phænomenon, connected with a tree of the genus *Morus*, which is not uncommon in the vicinity of that place. From the branches of this tree, which are covered with a thick coriaceous foliage, there is seen to fall, more especially towards mid-day, and under the influence of a burning and almost vertical sun, a copious and refreshing supply of limpid dew, or rather rain. On ascending the tree an explanation of this singular property is at once obtained. Around the vigorous shoots, loaded with leaves, and particularly at their ramifications, are found large clusters of *larvæ*, covered by a whitish froth, in constant agitation, and pressing eagerly upon each other in their attempts to apply themselves to the surface of the bark, from which they extract the sap in such quantity as to maintain their bodies in a state of saturated humidity. This sap is afterwards poured out, either through particular organs scattered over the surface of the body, or by means of the common excretory ducts, and forms drops of small size, which are gradually collected into larger drops, and appear to M. Goudot to escape from the bodies of the *larvæ* with a rapidity proportioned to the action of the solar rays. The activity of the *larvæ* is, in fact, increased in a corresponding degree with the increase in the atmospheric temperature. Towards evening, and when the influence of the solar rays is sensibly diminished, the production of the fluid, thus singularly secreted, is partially suspended, and the drops fall slowly; as night advances, a few rare and tardy drops are heard at distant intervals; until at last they altogether cease, to be again renewed with the first rays of the morning sun. When fifty or a hundred such clusters of *larvæ* are placed, as often happens, on the same tree, it may well be imagined that the secretion may become sufficiently copious to assume the appearance of actual rain.

Some idea of the rapidity with which it falls may be obtained from the mode in which M. Goudot collected a bottleful for transmission to the Natural History Society of the Mauritius. He states that in the beginning of February, he placed under one of the trees in question a vessel capable of holding about a *litre* (nearly equal to an English quart). The mass of *larvæ* selected as purveyors consisted of from sixty to seventy individuals, about half grown; and the sun being powerful, the drops were very large, and fell in quick succession. He estimates that, setting aside the loss by evaporation, and by the animals which drank from the vessel, he could have filled the bottle

in an hour and a half. The limpid character of the water encouraging the belief that it was free from any pernicious qualities, M. Goudot tasted it, and found no unpleasant flavour: he also gave it to some fowls, without producing any inconvenience. When exposed to the air, however, it speedily loses its transparency, and assumes a lemon-coloured tinge.

The insect by whose *larva* the fluid is secreted, is described at length by M. Goudot as a species of the genus *Cercopis* of Latreille, and nearly related to the *Cercopis spumaria* (*Cicada*, Linn.) of Europe; which latter recalls in miniature what takes place in the large Madagascar *larva*, secreting, like it, large quantities of white froth, and suspending itself, with its foamy mantle, from the blades of grass on which it feeds. It appears to be entirely new, and as M. Goudot had neglected to name it, Mr. Bennett stated that he embraced with pleasure the opportunity of dedicating it to its discoverer, under the name of *Aphrophora Goudoti*, the former name having been generically applied by M. Germar to that subdivision of Latreille's genus *Cercopis*, to which the insect in question belongs. He characterized it as follows:

Aphrophora Goudoti. *Aph. nigra; thorace flavescenti, punctis 4 nigris anticis transversim positis, duobus intermediis impressis; capite scutelloque flavis, hoc punctis 4 (2—2).*
Long. corp. 1 unc. 1 lin.

The size above given is that of the specimens communicated to the Society by Mr. Telfair; but M. Goudot states that the insect attains a length of 36 millimetres, which is little short of an inch and a half. He adds, that even after having attained its perfect state it remains upon the tree, fixed to the small branches, but in a state of isolation: and that, having observed several individuals in this condition, he perceived that they continued to emit, from time to time, minute drops of clear and limpid water. He describes the *larva* as being about 30 millimetres in length at its full period of growth, its colours consisting of an irregular mixture of dull grey, yellowish and black. The legs are entirely black, and the claws which terminate the *tarsi* very strong. It emits a disagreeable scent.

Mr. Bennett called the attention of the Society to a stuffed specimen of an *Antelope*, from the southern part of the peninsula of India, which had been presented to the Society several months since by Charles Telfair, Esq., Corr. Memb. Z.S. He remarked, that notwithstanding some discrepancies between the specimen exhibited and the description published by Pallas, he was disposed to regard it as the young of the *Indian Antelope*, *Antilope Cervicapra*, Pall. Its general colour is pale fawn, and it has a paler streak on each side, passing from the shoulders to the haunches; characters by which, as well as by the form of its horns, the pale circle surrounding the eyes, and the white patch under the tail, it agrees with the young of the *Indian Antelope*: but it differs by the fawn colour extending down the sides to the under parts of the body, which are

merely of a lighter shade than the upper, and are not pure white; and by the length of the ears, which does not exceed 4 inches, while in no specimen of the *Indian Antelope* possessed by the Society, is the length of these organs less than 5 inches. The latter circumstance is so remarkable, as to suggest the necessity of further inquiries into the history of the race from which this individual was derived. Its age may be conjectured from the size of its horns, which have made two nearly complete turns, and are surrounded by eighteen rings.

Specimens were exhibited of the adult male of the *lineated Pheasant*, *Phasianus lineatus*, Lath., and of two immature birds of the same species: for the whole of these the Society is indebted to George Swinton, Esq., Corr. Memb. Z.S. The immature birds died on their passage to this country; the adult skin was obtained from the Tennasserim coast.

At the request of the Chairman, Mr. Gould made some observations on these specimens. The adult bird differs in some particulars from the description published by Dr. Latham. "Its total length is 2 feet 8 inches; the length of the wings, from the shoulder to the end of the longest feather, 9 inches; of the beak, from the gape to the tip, $1\frac{1}{2}$ inch; of the *tarsus*, $3\frac{1}{4}$ inches; and of the tail, 1 foot 2 inches.

"The beak is strong, and considerably arched; the naked space round the eye bright red, and covered with numerous *papillæ*; the head crested with long glossy blue-black feathers; the back of the neck, and whole of the upper surface, delicate grey, very numerously barred with fine zigzag lines of black, which are broader on the quill feathers; the throat, breast, and belly, black; the sides of the breast and flanks having white lanceolate feathers with black edges; the tail, of eighteen feathers, very much graduated, and arched, as in the *Silver Pheasant*, *Phasianus Nycthemerus*, Linn., the outer edge of the two centre feathers, and the tips of the two next, being white; the remainder are alternately marked with irregular lines of black and white, the black predominating; and the legs strong, of a reddish flesh colour, furnished with conical sharp spurs.

"The two immature birds are alike in colouring, and appear to be male and female. They differ very materially from the adult, and very much resemble the female or the young male of the *Silver Pheasant*. They are about 18 inches in length; wing, $8\frac{1}{2}$ inches; *tarsus*, $2\frac{3}{4}$; beak, $1\frac{1}{2}$; tail, 10. The head is crested with feathers nearly 2 inches long, of a reddish brown, obscurely marked with minute zigzag lines of black; the naked skin round the eye is not so much developed as in the adult male; the neck, throat, breast, and under parts are brown, each feather having a lancet-shaped mark of white; the whole of the back and shoulders brown, minutely sprinkled with a darker colour; the quill-feathers brown, having the outer edges barred with yellowish white; the secondaries brown, with oblique, irregular, and narrow lines of a lighter colour; the

tail irregularly barred, and dotted with rich brown and yellowish white; the legs and feet reddish brown."

Dr. Grant exhibited numerous specimens of *Ianthina vulgaris*, Lam., and of *Velella limbosa*, Lam., both animals of rare occurrence on the English coast, and chiefly met with floating in tropical or warmer seas. They were obtained by him at the beginning of September last, in Whitsand Bay, close to the point of the Land's End, Cornwall, where they were thrown in great numbers on the sands, after a storm, of three days' continuance, from the north-west: they must consequently have been floating, before they were directed to the coast by the storm, in latitudes at least as high as that in which they were found. Dr. Grant regards it as probable that neither of these animals is capable of discharging at will the gaseous fluid by which they are supported on the surface of the sea; otherwise in such a violent and continued tempest as that which stranded them, they would have emptied their vesicles, and have sunk to the stiller bottom. He suspects also that *Physalia* is equally incapable of emptying its air-bag.

In the *Velellæ* of our coast, Dr. Grant remarked, as in those of tropical seas, the perpendicular crest crosses obliquely the horizontal disc of the base; in both, the margin of the mantle, destitute of *tentacula*, hangs free over the circumference of the disc; in both, the outer ranges of *tentacula* are long and filiform, and the inner ranges of *tentacula*, immediately surrounding the mouth, are short, thick, tubular, and much resembling the fleshy tubular feet of *Echinodermata*; and in both, the mouth forms a projecting fleshy tube in the centre of the base of the body. The tubular mouth in the centre, much resembling in form the short tubular feet around it, leads to an oval stomach, occupying a concavity in the middle of the lower surface of the thick basilar plate. But in the *Indian Velella* the perpendicular crest is proportionally very strong and thick, and presents a beautifully serrated margin, and that margin takes a zigzag course, which he has not observed in our specimens, and which must add much to its effects in decomposing the sun-beams, while swimming on the calm surface of tropical seas.

The specimens of *Velella* cast on the shore of Cornwall were generally much injured, and many of them had lost all their fleshy substance. Nearly a hundred of them were collected, and were exhibited to the Society. On lifting them, the deep blue matter of their surface came easily off, and tinged the fingers, like the yellow matter of decaying *Asteriæ*, or the colouring matter of the surface of almost all the *Echinodermata*, when their vitality has ceased.

The *Velella* probably feeds on the myriads of microscopic *Crustacea*, which abound in every part of the sea; and the *Ianthina*, a predaceous *Gasteropod* thus accompanying the *Velella*, may prey upon it, and acquire from it the blue colouring matter of its shell.

February 12, 1833.

William Yarrell, Esq., in the Chair.

A letter from M. Geoffroy-Saint-Hilaire, For. Memb. Z.S., was read, consisting of reflections on the communication respecting the *Ornithorhynchus*, made by Dr. Weatherhead to the Committee of Science and Correspondence, on September 11, 1832, and published in the Proceedings, Part II. p. 145. With this communication M. Geoffroy-Saint-Hilaire was only partially acquainted, by the extracts from it given by Mr. Owen (with some observations upon them,) as an Appendix to his Paper on the Mammary Glands of the *Ornithorhynchus paradoxus*, published in the Philosophical Transactions for 1832: he requests to have a literal copy of the communication.

He recalls attention to the history of our knowledge of the sexual organs of *Ornithorhynchus*; refers to M. Meckel's discovery of a gland, situated under the integuments of the *abdomen* of the female, and considered by him as mammary, and to his own subsequent observations on this subject, in which these glands are regarded as analogous to the structure that surrounds the true mammary glands of the *Shrews*; and hints at the probability that M. Meckel may not, in 1833, entertain the same ideas which he expressed in 1826. M. Geoffroy-Saint-Hilaire repeats some of the most striking peculiarities of the organs of reproduction: 1, the existence of a *uterus* and *vagina* in a state of atrophy, which he has repeatedly represented under the name of a little indistinct organ, the utero-vaginal canal; 2, the non-continuity of the urinary bladder to the ureters; 3, the interposition, when in action, of the genital organ between the folds, &c.; and, referring to his published accounts of the sexual anomaly in all its details, reproduces the conclusion to which he has been led by his observation of these parts. The organization, he finds, is that of a *Reptile*; now, such as the organ is, such must be its function; the sexual apparatus of an oviparous animal can produce nothing but an egg.

The statement that a milky fluid has been observed is one which especially attracts M. Geoffroy-Saint-Hilaire's attention: he is anxious to know the details of this observation. Supposing it established, rather than believe in a secretion of real milk from long cellular *cæca*, of which Meckel's gland is composed, (whereas, he states, it can be secreted only from lactiferous *ganglia*,) he would be disposed to think that this gland might secrete carbonate of soda [lime ?], the earthy matter of which egg-shells are composed. This would be extraordinary, he admits; but what is there about the organization of the *Monotremata* that is not extraordinary, or, in other words, different from what we find in the *Mammalia*? This additional anomaly seems to lead to its necessary consequence, he remarks, and an hypothesis which suggests the necessity of further

examination is far better, in his opinion, than an assimilation to normality, founded on strained and mistaken relations, which invites indolence to believe and slumber.

M. Geoffroy-Saint-Hilaire concludes by repeating his request for a literal copy of the whole of the letter addressed by Lieut. the Honourable Lauderdale Maule to Dr. Weatherhead. If the facts contained in it, he remarks, should make him change his opinion, so much the better: he would rather be put right, than indulged in any views formed *à priori*; in this way he learns more; and it is to him always more gratifying to get rid of an error in science than to introduce into it an additional observation.

The Vice-Secretary stated, that the request of M. Geoffroy-Saint-Hilaire for a copy of the letter in question had been complied with. He also referred to the Proceedings of the Committee of Science and Correspondence, Part II. p. 179, for an account of the glands discovered in *Echidna* by Mr. Owen, who, in his observations there published, briefly adduces several reasons why little difficulty should be experienced in the consideration of the *Monotremata* as oviparous or ovoviviparous, and at the same time as mammiferous animals.

A letter was read from William Willshire, Esq., Corr. Memb. Z.S., H. M.'s Vice-Consul at Mogadore, giving an account of a *Reptile*, known by the Arabs under the name of *el Dub*. A living specimen of the animal, presented to the Society by Mr. Willshire, accompanied the letter. It is the *Uromastyx acanthinurus*, described and figured by Mr. Bell in the first volume of the 'Zoological Journal,' from specimens brought from Fezzan by Capt. Lyon. The *Dub* is noticed by Marmol, Capt. Lyon, and other travellers; but the precise species to which the reptile so named was referrible had not, previously to the arrival of Mr. Willshire's specimen, been satisfactorily ascertained.

A note from Col. Hallam was read, accompanying drawings of the *Mango-fish*, *Polynemus paradisæus*, Linn.; and of two individuals of a race of *pigs* with only two legs, the hinder extremities being entirely wanting. The latter, Col. Hallam states, were observed "at a town on the coast in the Tanjore country, in the year 1795: they were from a father and mother of a similar make, and the pigs bred from them were the same."

The exhibition was resumed of the collection of *Shells* formed by Mr. Cuming on the western coast of South America, and among the islands of the South Pacific Ocean. The new species brought on the present evening under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby.

Genus Byssoarca, *Swains.*

Byssoarca Lithodomus. *Byss. testâ elongatâ, cuneiformi, subcylindraceâ, (utplurimum erosâ,) concinnè decussato-striatâ; latere antico breviore, obliquè truncato, postico elongato, declivi, rotundato-acuminato; areâ ligamenti profundâ, ligamento an-*

ticè in angulum obtusum desinente; epidermide denticulatâ, ad angulum anticum subfoliaceâ, conspicuâ: long. 3·5, *lat.* 0·9, *alt.* 1· *poll.*

Hab. ad Montem Christi.

Found in holes in stones, pierced by *Pholades?* at low water.

This is a very remarkable species, decidedly appertaining to Mr. Swainson's genus *Byssoarca*. Its hinge line is entirely posterior, very straight, and the teeth are very numerous, very small, and much interrupted.—G. B. S.

Byssoarca pacifica. *Byss. testâ oblongâ, pallidâ, brunneo variè strigatâ; radiatim costatâ; medio coarctato, costis minoribus; umbonibus remotissimis; latere antico breviore, supernè acuminato, costis plerumque majoribus, rugosis, margine ventrali declivi; latere postico maximo, posticè emarginato, carinâ obtusâ ex umbone ad marginem ventralem decurrente; aream ligamenti maximâ, marginibus latis; margine ventrali hiatu byssi magno: long.* 4·, *lat.* 2·5, *alt.* 2·3 *poll.*

Hab. ad Sanctam Elenam.

Found on rocky ground, in from six to eighteen fathoms, adhering to each other in large bunches.—G. B. S.

Byssoarca alternata. *Byss. testâ oblongâ, subcylindraceâ, pallidè brunneâ, radiatim striatâ, anticè posticèque profundè sulcatâ; latere antico brevissimo, supernè obtusè angulato, infrà rotundato; postico elongato, costis duabus validis ex umbone ad marginem ventralem posticam decurrentibus, costis posticis validis rugosis; dentibus marginalibus posticis alternantibus; areâ ligamenti angustâ, anticè latiore: long.* 1·4, *lat.* 0·7, *alt.* 0·6 *poll.*

Hab. in Columbiâ Occidentali.

Found attached to stones, on a rocky bottom, in twelve fathoms.—G. B. S.

Byssoarca maculata. *Byss. testâ oblongâ, subrhomboideâ, obliquâ, decussatim striatâ, pallidâ; areâ posticâ fusco-maculatâ; latere antico parvo, supernè angulato, latere postico longiore, supernè angulato, carinâ validâ ex umbone ad marginem inferam et posticam decurrente; areâ ligamenti latâ; umbonibus incurvis: long.* 1·35, *lat.* 0·75, *alt.* 0·8 *poll.*

Hab. ad insulas Oceani Pacifici.

Found attached to *Mother-of-pearl Shells* at Lord Hood's Island.

A thin pale-coloured *epidermis* covers the shell, which is conspicuous on the edge of the posterior ridge, where it forms lengthened plumose *setæ*.—G. B. S.

Byssoarca mutabilis. *Byss. testâ oblongâ, pallidè fuscâ, decussatim striatâ; latere antico plerumque breviore, nonnunquam subæquali, supernè angulato, subtùs rotundato; postico longiusculo, supernè angulato, carinâ ex umbone ad marginem inferam et posticam decurrente; areâ posticâ sulcis majoribus decussatis: long.* 1·9, *lat.* 1·1, *alt.* 0·9 *poll.*

Hab. in Columbiâ Occidentali.
Found under stones at the Isle of Plata.—G. B. S.

BYSSOARCA DIVARICATA. *Byss. testâ oblongâ, albicante, longitudinaliter sulcatâ et radiatim decussatâ; latere antico supernè subangulato, postico carinâ ex umbone ad marginem ventralem posticam decurrente spiniferâ, sulcis divaricatis, eleganter decussatis conspicuo; areâ ligamenti angustâ: long.* 1·, *lat.* 0·5, *alt.* 0·55 *poll.*
Hab. ad littora insularum Maris Pacifici. (Annaa or Chain Island.)
Found attached to stones.—G. B. S.

BYSSOARCA DECUSSATA. *Byss. testâ oblongâ, albâ, decussatim striatâ, epidermide squamoso-setosâ indutâ; latere antico breviore, supernè subangulato; postico supernè rotundato-angulato, infrà rotundato; margine ventrali rectiusculâ; areâ ligamenti angustâ: long.* 2·, *lat.* 1·, *alt.* 1·2 *poll.*
Hab. ad littora insularum Oceani Pacifici.
Found attached to *Mother-of-pearl Shells* at Lord Hood's and Chain Islands.—G. B. S.

BYSSOARCA ILLOTA. *Byss. testâ ovatâ, albâ, radiatim costatâ, costis numerosis, decussatis; epidermide fuscâ, foliaceâ indutâ; latere antico breviore, rotundato, postico declivi; areâ ligamenti angustâ, brevi: long.* 1·5, *lat.* 0·75, *alt.* 1· *poll.*
Hab. in Americâ Centrali.
Found under stones in the Gulf of Nocoiyo.—G. B. S.

BYSSOARCA VELATA. *Byss. testâ ovatâ, compressiusculâ, radiatim costatâ et decussatâ; dorso biangulato; epidermide fuscâ, squamosâ, squamis acuminatis; areâ ligamenti angustâ: long.* 3·1, *lat.* 1·8, *alt.* 1· *poll.*
Hab. ad littora insularum Oceani Pacifici.
Found attached to *Mother-of-pearl Shells* at Lord Hood's and Chain Islands. One specimen is 6 inches long.—G. B. S.

BYSSOARCA SOLIDA. *Byss. testâ ovato-quadratâ, crassâ, solidâ, æquilaterali, radiatim striatâ, minutissimè decussatâ; latere antico rotundato, postico supernè obtusè angulato, obsoletè carinato; areâ ligamenti elongatâ, ligamento rhomboideo, centrali: long.* 0·6, *lat.* 0·5, *alt.* 0·4 *poll.*
Hab. ad Paytam, Peruviæ.
Found under stones.—G. B. S.

BYSSOARCA PUSILLA. *Byss. testâ ovato-subrhomboidali, albidâ, decussatâ; latere antico breviore, rotundato, postico longiore, declivi; margine dorsali posticâ angulatâ; areâ ligamenti angustâ; ligamento brevi, ad posticam areæ partem solùm adjuncto; carinâ obtusâ ex umbone ad marginem posticam inferiorem decurrente: long.* 0·45, *lat.* 0·2, *alt.* 0·25 *poll.*

Hab. ad Iquiqui, Peruviæ.
Found attached to stones at low water.—G. B. S.

Byssoarca truncata. *Byss. testâ oblongâ, naviculiformi, fuscâ, parte mediand anticâque radiatim striatis, striis granosis; carinâ obtusâ ex umbone ad marginem posticam inferiorem decurrente; parte posticâ radiatim costatâ, costis interstitiisque obtusis, rugosis; latere antico brevissimo, supernè angulato, infrà rotundato, postico elongato, abruptè truncato; areâ ligamenti elongatâ, latâ, ligamento quadrangulari, prope anticam areæ partem solùm adjuncto: long. 2·3, lat. 1·1, alt. 1·2 poll.*
Hab. ad Insulas Gallapagos, saxis adhærens.
This species has also been found at Lord Hood's Island attached to *Mother-of-pearl Shells*.—G. B. S.

Byssoarca lurida. *Byss. testâ ovato-oblongâ, decussato-striatâ, castaneâ, epidermide fuscâ fimbriato-laceră indutâ; latere antico rotundato, postico obliquè truncato; margine dorsali posticè angulatâ, ventrali posticè rotundato-angulatâ: long. 1·5, lat. 0·75, alt. 0·8 poll.*
Hab. ad Sanctam Elenam.
Found attached to stones, at a depth of twelve fathoms, in rocky ground.
This species varies in its proportions.—G. B. S.

Byssoarca parva. *Byss. testâ oblongâ, parvâ, pulcherrimè decussato-striatâ, castaneâ; latere antico brevi, rotundato, postico elongato; areâ ligamenti breviusculâ, angustâ: long. 0·8, lat. 0·35, alt. 0·4 poll.*
Hab. ad littora insularum Oceani Pacifici.
Found in coral rock, and attached to *Mother-of-pearl Shells*, at Ducie's Island.—G. B. S.

Genus Arca.

§ Æquivalves.

Arca tuberculosa. *Arca testâ ovali, turgidâ, obliquâ, subauritâ, radiatim costatâ, costis numerosis, sparsim tuberculiferis, anticè præsertim; umbonibus proximis; areâ ligamentiferâ angustâ; latere antico breviore: long. 2·8, alt. 2·2, lat. 2·1 poll.*
Hab. ad Real Llejos.
Found at low water at the roots of the Mangrove trees.
The shell is covered, except the *umbones*, with a thick dark-brown *epidermis*.—G. B. S.

Arca Nux. *Arca testâ obliquâ, turgidâ, inæquivalvi, radiatim costatâ; valvæ dextralis costis anticis graniferis, sinistralis costis omnibus graniferis; umbonibus distantibus, prominentibus; epidermide fuscâ, corneâ, tenui, ad posticam costarum partem setigerâ: long. 0·7, lat. 0·6, alt. 0·65 poll.*

Hab. ad Xipixapi.

Found in sandy mud at a depth of twelve fathoms.—G. B. S.

ARCA REVERSA. *Arca testâ obliquâ, turgidâ, radiatim costatâ, costis rugulosis; latere postico longiore, rotundato, antico breviore, obliquè truncato; umbonibus approximatis; aream ligamentiferâ angustâ, omninò posticâ; epidermide fuscâ, crassâ, hirsutâ: long.* 1·15, *lat.* 0·8, *alt.* 0·9 *poll.*

Hab. in Peruviâ.

Found in soft mud, at a depth of seven fathoms, at Tumbez.

Named by Mr. Gray from a specimen in Mr. Foy's cabinet.—G. B. S.

ARCA CONCINNA. *Arca testâ oblongâ, inæquivalvi, albâ, radiatim costatâ, costis anticis rugulosis, interstitiis decussatis; latere antico breviore, supernè angulato; latere postico pone angulum inconspicuum productiore; aream ligamenti angustâ, anticè utrinque crenulatâ; ligamento postico; epidermide olivaceâ, ad sulcos anticè posticèque spiniferâ: long.* 1·15, *lat.* 0·5, *alt.* 0·65 *poll.*

Hab. in Americâ Centrali.

Found in coarse sand, at a depth of twelve fathoms, in the Gulf of Nocoiyo.—G. B. S.

ARCA EMARGINATA. *Arca testâ oblongâ, subcylindraceâ, inæquivalvi, albâ, radiatim costatâ; latere antico brevi, costis angustioribus, rugulosis; latere postico elongato, costis latioribus, lævibus; margine posticâ superiore emarginatâ; aream ligamenti angustâ; epidermide fuscâ, ad sulcos setosâ: long.* 1·6, *lat.* 0·7, *alt.* 0·8 *poll.*

Hab. ad littora Maris Pacifici.

From Atacamas, Real Llejos, Xipixapi, Panama, and the Gulf of California.—G. B. S.

ARCA FORMOSA. *Arca testâ oblongâ, subcylindricâ, albicante, radiatim costatâ, epidermide fuscâ squamoso-setosâ obtectâ; costis numerosis, planulatis, anterioribus duplicatis; margine cardinali utráque angulatâ; latere antico breviore; aream cardinali elongatâ, latiusculâ: long.* 4·8, *lat.* 2·3, *alt.* 2·3 *poll.*

Hab. in Americâ Centrali. (Gulf of Tehuantepec.)

This very fine species of *Arca* most nearly resembles the *Arca Scapha*, but is much longer in proportion to its breadth and height. It is covered, in the interstices of the ribs, with long, pointed scales, which become longer bristly hairs at the posterior side.—G. B. S.

ARCA AURICULATA. *Arca testâ oblongâ, albâ, radiatim costatâ, epidermide fuscâ squamoso-setosâ obtectâ; margine cardinali utráque, præcipuè posticè, auriculatâ: long.* 1·2, *lat.* 0·6, *alt.* 0·65 *poll.*

Hab. ad Sanctam Elenam.

Found, at a depth of ten fathoms, in a muddy bottom.—G. B. S.

ARCA BIANGULATA. *Arca testâ oblongâ, ventricosâ, albâ, radiatim costatâ, epidermide fuscâ setosâ indutâ; margine dorsali anticè acutè, posticè obtusè angulatâ; latere antico breviore, altiore, postico subacuminato, margine laterali declivi; areâ ligamenti elongatâ, anticè latiore, planâ: long.* 2·, *lat.* 1·2, *alt.* 1·3 *poll.*

Hab. ad littora Columbiæ Occidentalis. (Atacamas.)

A single specimen was dredged at a depth of seven fathoms.—G. B. S.

ARCA MULTICOSTATA. *Arca testâ ovato-rhombeâ, albâ, radiatim multicostatâ, epidermide fuscâ subvelutinâ indutâ; latere antico supernè angulato, subtùs rotundato, postico supernè angulato; margine laterali declivi; carinâ rotundatâ ex umbone ad marginem inferam posticam decurrente; costis rotundatis, minutissimè decussatis, anticis subgranosis; sulcis rotundatis; areâ ligamenti latiusculâ: long.* 2·8, *lat.* 2·1, *alt.* 2·4 *poll.*

Hab. ad oras Americæ Centralis.

Dredged from a depth of twelve fathoms in the Gulf of Tehuantepec.—G. B. S.

§§ Inæquivalves.

ARCA OBESA. *Arca testâ ovatâ, ventricosâ, albâ, radiatim costatâ, epidermide fuscâ squamosâ obtectâ; costis numerosis, confertis, planulatis, lævibus; latere antico breviore, postico subangulato; areâ cardinali breviusculâ, angustâ: long.* 1·55, *lat.* 1·1, *alt.* 1·1 *poll.*

Hab. in Columbiâ Occidentali.

A few specimens only were dredged, in seven fathoms, at Atacamas.—G. B. S.

ARCA LABIATA. *Arca testâ brevi, quadrato-globosâ, albâ, radiatim costatâ; costis anticis, valvæ majoris præcipuè, rugulosis, posticis latioribus lævibus, omnibus planulatis; latere antico breviore, rotundato, postico longiore, subangulato; areâ ligamenti latâ, rhomboideâ; epidermide fuscâ: long.* 1·2, *lat.* 1·, *alt.* 1·1 *poll.*

Hab. ad Real Llejos et ad Tumbez.

Dredged among sandy mud at a depth of seven fathoms. The *epidermis* at the posterior edges of the ribs is setose.—G. B. S.

ARCA LABIOSA. *Arca testâ brevi, quadrato-globosâ, albicante, radiatim costatâ, costis anticis, valvæ majoris præcipuè, granosis, posticis lævibus; latere antico breviore, supernè angulato, infrà rotundato; postico longiore subangulato; areâ ligamenti angustâ; epidermide tenui, fuscâ: long.* 1·45, *lat.* 0·9, *alt.* 1·15 *poll.*

Hab. ad Tumbez, Peruviæ.

A few specimens only were dredged, in soft mud, at a depth of seven fathoms.—G. B. S.

ARCA QUADRILATERA. *Arca testâ quadrangulari, ventricosâ, albicante, radiatim costatâ, epidermide olivaceâ indutâ; lateribus supernè angulatis, antico suprà rotundato, postico infrà obtusè angulato; costis rotundatis; aream ligamenti angustâ: long.* 1·, *lat.* 0·7, *alt.* 0·85 *poll.*

Hab. ad Real Llejos.

Dredged in sandy mud at eight fathoms depth.—G. B. S.

ARCA BREVIFRONS. *Arca testâ oblongâ, radiatim costatâ, albâ, epidermide fuscâ, interstitiorum setosâ, indutâ; latere antico brevi, postico latiore, longiusculo; margine dorsali posticè angulatâ; costis planulatis; aream ligamenti obsoletâ: long.* 1·25, *lat.* 0·6, *alt.* 0·75 *poll.*

Hab. ad Tumbez, Peruviæ.

Dredged among soft mud at seven fathoms depth.—G. B. S.

ARCA CARDIIFORMIS. *Arca testâ subovali, ventricosâ, albidâ, radiatim costatâ, costis anticis rugulosis, cæteris lævibus, interstitiis valvæ majoris angustissimis, minoris latiusculis; latere antico rotundato, postico subtùs angulato; margine laterali declivi; aream ligamenti parvâ, subæquali: long.* 2·, *lat.* 1·5, *alt.* 1·7 *poll.*

Hab. in Sinu Californiensi.

Found on the sands at San Blas. At first glance it has the appearance of, and might easily be mistaken for, a *common Cockle*.—G. B. S.

At the request of the Chairman, Mr. Martin read the following notes of his dissection of a *slender Loris*, *Loris gracilis*, Geoff., which had recently died at the Society's Gardens. It was presented by Captain Faith.

"The animal was a female, and its admeasurements were as follow:

"Total length of the body, $8\frac{3}{4}$ inches; of the arm, 5 (the *humerus* measuring 2, the fore-arm 3 inches); of the inferior extremities, $5\frac{1}{4}$ inches (exclusive of the foot; the *femur* being $2\frac{1}{4}$, and the leg 3 inches long).

"On laying open the *abdomen*, the liver, the stomach, a portion of spleen, and the convolutions of the small intestines were presented to view. The liver was tripartite; the left lobe was single; the middle lobe divided into two portions, on the right of which, in a *sulcus*, on the under or convex side, was situated the gall-bladder; and the right lobe was also divided, the *lobulus Spigelii* existing as usual. The spleen was of a dark colour, long and narrow, being barely half an inch broad, but 2 inches in length, and attached pretty closely to the convex portion of the *cardium*. The gall-bladder was oval, its duct entering half an inch below the *pylorus*; the length of the duct was nearly half an inch. The pancreatic duct terminated with it, that gland being long and slender, running an inch and a half along the curve of the *duodenum*, to which, beginning at the *pylorus*, it was closely attached.

"The stomach was simple, the cardiac portion half an inch beyond the entrance of the *œsophagus*. The intestines were slender, and exhibited very great difference of circumference between their large and small portions. The length of the small was 21 inches, of the large 8 inches. The distance from the cardiac to the pyloric opening, following the small curve of the stomach, was little more than half an inch. The greater curve of the stomach measured $3\frac{1}{4}$ inches. The *cæcum*, of considerable size, extended $3\frac{1}{4}$ inches beyond the entrance of the *ileum*.

"The kidneys were large, and almost oval; the cortical substance being thin, but very distinct; the right was situated somewhat the highest. The urinary *tubuli* entered the *pelvis* of the kidney by one large conical *papilla*. The bladder was small, and oval, the ureters entering half-way between the *fundus* and the neck.

"Between the *anus* and the external parts of generation a distance of 3 or 4 lines intervened; the *clitoris*, projecting like a *penis*, depended from the inferior edge of the *vagina*, and at its extremity the *urethra* opened, the length of that canal being an inch and a half; the *urethra* passed down the *clitoris*, as in the *penis* of the male. The *uterus* was very small and bifid; the *vagina* was 2 inches long, the *urethra* running attached to its surface. The bones of the *pubes* were not in contact at the *symphysis* for nearly a quarter of an inch.

"The chest was next opened.

"The lungs had two lobes on the left, and three on the right side, with a small posterior one on the posterior *mediastinum*. The heart itself presented nothing remarkable; its right cavities were, however, gorged with blood.

"The tongue, an inch and a half long, tapering and smooth, exhibited three *papillæ* on its basal portion, disposed so as to form the three points of a triangle.

"The *epiglottis*, arising from the root of the tongue, had its edges curled forwards, so as to form three parts of a cylinder, the tip or extremity being bifid. Beneath the *epiglottis* the *rima* opened, rather widely at its commencement, but narrowing to a mere slit.

"The *aorta* gave off at its arch three branches, viz. the *arteria innominata*, whence the right carotid and right subclavian sprung; the *left carotid*; and the *left subclavian*.

"With reference to the distribution of the arteries in the limbs of slow-moving animals, as discovered by Sir A. Carlisle, the course of the subclavian and of the femoral arteries was examined, with a view to observe the subdivisions noticed in the *slow Lemur* and the *Sloth* by that eminent anatomist. Both were injected with mercury, but the femoral most successfully. This latter artery, on leaving the *aorta*, subdivided into a number of tubes, running a parallel course in contact, intertwined together, and communicating freely with each other. This lengthened *plexus* of vessels, giving off the *profunda* in a single large trunk, was found to run the usual course down the thigh, the distinct tubes uniting more and more into one, until it became popliteal, and then divided as usual into the anterior and posterior tibial arteries. During the course of this *congeries*,

several very small arteries were given off to the muscles;—it is to be observed, that, divided as it is, this femoral *plexus* bore a great relative proportion to the bulk of limb it was destined to serve. The subclavian artery exhibited precisely the same character as the femoral. This *plexus*, as it passed over the first rib, sent off several minute arteries to the adjacent muscles, and entered the *axilla*, where it gave off similar *radii*, and continued its course, decreasing to the elbow; but the injection not having well succeeded in this part, it was impossible to trace the character of its subdivisions. As was the case with the femoral *plexus*, the present bore a large relative volume to that of the limb: indeed, it strongly impressed the observer with the idea, that, however impeded by this arrangement of vessels, an unusual quantity of blood would be habitually conveyed to the extremities. This arterial structure may perhaps be more connected with tenacity of grasp, and endurance of muscular contraction, than with mere slowness of motion. The present animal, although on its first arrival very torpid and inanimate, was, when warmed before the fire and secluded from a direct light, very lively, and as active as its cage permitted, becoming, however, dull and inanimate the moment it was removed from the influence of the exciting and genial temperature.

"The results of this dissection agree generally with those of Daubenton and Sir A. Carlisle, as regards the several particulars observed by them.

"The disease of which the animal died was *peritonitis*; the peritoneal membrane having a universal and deep blush of inflammation."

The specimen of the *Apteryx Australis*, Shaw, which was figured in the 'Naturalist's Miscellany,' plates 1057 and 1058, was exhibited. This specimen, hitherto unique, forms part of the collection of the President, Lord Stanley, by whom it was purchased at the sale of Dr. Shaw's effects. Doubts having been expressed by some continental writers as to the existence of such a bird, it was communicated by His Lordship for exhibition; the materials with which it was stuffed having been previously removed from it by his directions, so as to permit of the skin being closely examined.

Mr. Yarrell called the attention of the Meeting to its several parts in detail, which he described fully, with reference to the illustration of a paper "On the *Apteryx Australis*, Shaw." He dwelt particularly on the singular combination of characters presented by this bird, which render it so remarkable and so highly interesting to the ornithologist. With the strong feet and claws of a *Rasorial* bird, it has *tarsi* so short as to incapacitate it from running with speed, a movement apparently required as a compensation for the absence of the power of flight occasioned by its merely rudimentary wings. The absence of any tendency to palmation between the toes equally unfits it for progression in the water. Hence must result a peculiarity of habits, respecting which it is much to be regretted that we are at present entirely without information. Its long and slender bill, resembling in

form that of an *Ibis* but somewhat more straight, is singular on account of neither of the mandibles presenting any concavity on their inner or opposed surface, except close to the base: it is scarcely less extraordinary in the position of its nostrils, which are seated close to the *apex*, and through which a bristle may be passed freely along the whole length of the beak, $6\frac{3}{4}$ inches, to the head.

The position of the nostrils, the short *tarsi*, and the decidedly rasorial character of the toes and claws, indicate the necessity of its food being obtained on dry land; and Col. Sykes having found beetles, grasshoppers, seeds, and vegetable fibres, in the stomachs of some of the Indian species of *Ibis*, Mr. Yarrell conjectures that the food of the *Apteryx* is probably similar.

Mr. Yarrell concluded by stating his impression that a second representation of the bird might be acceptable to zoologists, the figures in the 'Naturalist's Miscellany,' besides being but little known, being deficient in two or three particulars which he enumerated.

February 26, 1833.

Richard Owen, Esq., in the Chair.

A specimen was exhibited of a *Seal*, presented to the Society by Mr. Henry Reynolds. It was obtained by that gentleman from a native of New Holland, who stated that he brought it from the interior of the country adjoining the settlement of New South Wales. The marine habits of the animal (a species of *Arctocephalus*, and most probably the *Otaria Peronii*, Desm.) render this statement problematical. Should it be correct, it would seem to indicate the existence of salt water in large masses at a distance remote from the coast.

A specimen was exhibited of the *Carolina Cuckoo*, *Coccyzus Carolinensis*, Bon., which was killed in the last autumn in the preserves of Lord Cawdor in Wales: it was communicated for exhibition by His Lordship. Two instances of the occurrence of a bird of the same species in Ireland have been recorded.

Dr. Grant called the attention of the Society to a specimen of a *Cephalopod*, forming part of his own collection, which he exhibited in illustration of a paper "On the Zoological Characters of the Genus *Loligopsis*, Lam., and Account of a New Species from the Indian Ocean."

In his introductory remarks Dr. Grant refers to the history of the genus *Loligopsis*, of which no specimen appears to have been hitherto submitted to the inspection of European naturalists. It was founded by Lamarck on a drawing, made by Péron and Le Sueur, of a specimen obtained by them in the South Sea. A drawing of another specimen from the South Pacific Ocean, forms the type of the genus *Leachia* of M. C. A. Le Sueur, a genus evidently, as it has been considered by M. Sander Rang, synonymous with *Loligopsis*. But in neither of these instances had the specimen been brought home, and in the absence of subjects for observation the genus has been regarded as of doubtful existence by Cuvier, by the Baron de Férussac, and by M. Blainville, who gives little credence to the combination on the same animal of the eight arms of an *Octopus*, and the caudal fin of a *Loligo*.

Dr. Grant's specimen presents this combination of characters, and may therefore be regarded as establishing the existence of the genus *Loligopsis*. It has, moreover, two very small cylindrical peduncles between the outer pair of arms, which have not been noticed by previous observers: it constitutes a third species of *Loligopsis*, distinguishable from the others by the comparative length of its arms. In the *Lol. Peronii*, Lam., the arms are all of equal length; the *Lol. cyclura*, (*Leachia cyclura*, Le S.), has the superior pair of arms equal

in length to the inferior pair; in the *Lol. guttata*, Grant, the upper pair are shorter than the lower.

Dr. Grant described in detail the new species represented by his specimen, and noticed some particulars of its anatomy. The trivial name of *guttata* is applied to it on account of the existence on the lower half of the mantle, and chiefly on its back part, of about fourteen large round dark spots, which are remarkably distinguished from the speckled appearance of the mantle generally.

The paper was accompanied by a drawing of the animal. It will be published in the Transactions of the Society.

Mr. Yarrell read a Paper "On the Laws which regulate the Changes of Plumage in Birds."

In this paper Mr. Yarrell embodied with greater developement the observations on the same subject, which he communicated to the Society on January 8th (see page 9). He also entered into some details of the origin and growth of the feather. He referred particularly to the labours of Montagu in our own country as having cleared away many difficulties in tracing specific identity, that persevering ornithologist having by a long series of observations distinguished and recorded various periodical appearances.

Age, sex, season, and disease were enumerated as the principal causes of changes in plumage, and the various modes by which these changes were effected in the appearance of the birds were severally alluded to. The laws by which the assumption of plumage in young birds appears to be governed were also stated, with numerous references to particular families of birds in which the operation of these laws was most apparent. The moulting and its consequences were also pointed out.

Some of the principal facts detailed in this communication were illustrated by observations and notes made on the changes in various birds at the Gardens of the Society, and the changes in plumage from youth to age, as well as the assumption of particular colours at the approach of the breeding season, were shown by a series of feathers of different birds, arranged on cards in the order in which the extent of change appeared most obvious.

Mr. Yarrell stated his belief that most of the conspicuous changes observed in birds were induced by an altering or altered state of the sexual organs.

March 12, 1833.

The President, Lord Stanley, in the Chair.

A letter was read, addressed to the Vice-Secretary by M. Geoffroy-Saint-Hilaire, For. Memb. Z. S., and dated Paris, March 5, 1833. It acknowledges the receipt of the copy of the letter of Lieut. the Honourable Lauderdale Maule to Dr. Weatherhead respecting the *Ornithorhynchus*, and states that the writer has proposed a system calculated to put an end to the controversy respecting these animals. This system is contained in a "Memoir on the Abdominal Glands of the *Ornithorhynchus*, falsely presumed to be mammary, but which secrete, not milk, but mucus, destined for the first nutriment of the young, when newly hatched," published in the 'Gazette Medicale,' under the date of Feb. 18th. A copy of the Memoir was laid on the table, and an abstract of it was read.

M. Geoffroy-Saint-Hilaire translates the whole of Lieut. Maule's letter, and quotes also Mr. Owen's observations on the Mammary glands of *Echidna*, from the Proceedings of the Committee of Science and Correspondence. He then enters into some details on the history of our knowledge of the *Monotremata*, and on the various opinions which have been held respecting their mode of generation, and the nutrition of their young. Recurring to the very curious observation of Lieut. Maule, he admits the effusion of a fluid of a milky appearance, but he doubts that this fluid was actually milk. "To arrive so rapidly at this decision," he proceeds, "many impossibilities must have been forgotten. You have not the function, nor the result of the function which characterizes the *Mammalia*, if the organs that produce it are truly wanting. Now this is what I think I can demonstrate; and what I undertake to do in the following remarks.

"For this purpose I seek for analogous facts; and they have long since been furnished to me by the *Shrews*. There are on each side of the bodies of these animals two kinds of glands arranged parallel to each other. 1st, Internally, conglobate and truly lactiferous glands, of the known structure: 2ndly, Externally, an apparatus formed of *cæca*, furnished with some membranous and diaphragmatic *fræna*, and with many cellulosities. This apparatus, in the young state and during the inactivity of the sexual organ, consists only of a longitudinal projection without distinct characters; but during the season of sexual excitement, this projection becomes enlarged and is visibly surmounted on its internal surface by a multitude of small parallel *cæca*, disseminated over and attached to the glandular body, like the bristles upon a brush. These *cæca* open on the projection made by the gland, which on its tegumentary surface has but a single excretory orifice. The secretion consists of a *mucus* possessing a very powerful odour.

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"The epigastric artery is divided into two principal branches; one passing towards the median line to supply the mammary glands; the other ramifying externally and performing the same function with regard to the odoriferous glands. The same structure exactly is presented by the ventral glands of the *Ornithorhynchus*, two characters excepted, which do not militate against the determination and analogy assigned to them: viz. a much more extensive development, and two secretory orifices instead of one, as in the *Shrews*. I explain this difference by the atrophy and entire suppression of the internal epigastric branch. This branch being annihilated, there is no formative vessel, and consequently no apparatus produced,—no mammary gland; but, on the other hand, the whole arterial alimentation passing more excentrically by means of the single terminal branch, the apparatus to which this branch is distributed is proportionally enlarged. This shows why and how the odoriferous glands have reached, in the *Monotremata*, their maximum of development. Where the apparatus becomes more considerable, the function is so much the more powerful, and the mucus secreted must in fact exist in such quantity in the *Monotremata*, that its effusion may become a fact susceptible of observation.

"I should not be surprised, if this mucus, more abundant and more substantial in the *Monotremata*, became the nutriment of the young after their hatching. The *Monotremata* would act, in this respect, like some aquatic birds which conduct their young after hatching to the water, and assist them in their substantation. The maternal instinct would lead the female *Ornithorhynchus* to effect the contraction of the gland, which is possible by the efforts of the *panniculus carnosus* and the great oblique muscle, between the fibres of which the gland is seated, and thus to procure for the young, at several periods of the day, by way of nutriment, an abundant supply of mucus. If this education is carried on in the water, where we know, by the history of the generation of frogs and the nutrition of their tadpoles, that the mucus combines with the ambient medium, becomes thick, and supplies an excellent nutriment for the early age of these reptiles, we shall understand the utility of the ventral glands of the *Ornithorhynchus*, as furnishing a source of nutriment for the young of these animals,—for young *ovipara* newly hatched. When we meet with such curious organic conditions, we do not attempt, by a truly retrograde march, to throw back well averred differential facts, decidedly acquired to science, by means of a forced assimilation, among other facts peculiar to the class of *Mammalia*; but on the contrary we are under the necessity of placing the *Monotremata* further within the limits of oviparous animals.

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"At the other extremity of the scale of beings, where the fishes are placed, we meet with a gland secreting mucus, extending along the sides from the head to the tail. Ascending the scale, we see it separate into fractions; some *Reptiles*, and among others the *Salamanders*, have it large and forming a continuous band, as in *Fishes*: we have said in what state it is found in the *Monotremata*."

In a postscript, dated February 19th, M. Geoffroy states that at a Meeting of the Academie des Sciences on the previous day, M. de

Blainville had read a paper, in which he maintained his former opinions on the subject of the *Monotremata*, and supported the views of Mr. Owen. He states that some contradictions and physiological impossibilities contained in it had been noticed by MM. Duméril and Serres, in the course of the discussion, but does not enter into any details.

The reading having been concluded of the abstract of the views proposed by M. Geoffroy-Saint-Hilaire in the memoir submitted, Mr. Owen addressed the Society on its subject. The following is an outline of his observations.

When the glands in question were first detected by M. Meckel, that eminent anatomist at once regarded them as mammary. M. Geoffroy-Saint-Hilaire objected to this mode of viewing them, that their structure is not conglomerate, like that of mammary glands, but lobed and consisting of numerous *cæca*, resembling the structure which he has described as existing in the odoriferous glands which surround the *mammæ* of the *Shrews*; hence he concluded that their function is similar to that of the corresponding organs, as he considered them, in these little animals, namely, to secrete an odorous substance for the purpose of attracting the other sex in the season of heat. M. von Baer subsequently proved that it is incorrect to assume that a mammary gland must necessarily be conglomerate, by showing that these organs in the *Cetacea* consisted of simple *cæca*, a structure even less complicated than that demonstrated in *Ornithorhynchus* at a later period, by Mr. Owen. During his investigation of the structure of these glands Mr. Owen proved, by comparing their condition with the state of the sexual organs in several individuals which he examined, that they correspond in the phases of their development with the true mammary glands, their greatest size being attained when the ovaries appear to have recently parted with their contents. The fact of their development being at its maximum at about the time of the birth of the young, evidently indicating the connexion of their function with this period, M. Geoffroy-Saint-Hilaire at first conjectured that they might secrete the earthy matter of the egg-shell, with which he conceives the young to be provided when brought into the world; but this may be regarded as improbable, the tubes, (upwards of a hundred and fifty in number and opening by as many orifices,) which convey the secretions from the glands being so very slender and elongated as to be evidently adapted for carrying fluids. M. Geoffroy-Saint-Hilaire's subsequent and most recent opinion is that they secrete mucus, which being squeezed out by the mother in the water, becomes thereby thickened, and adapted for the aliment of the young; but Mr. Owen remarked that as he had shown that similar glands exist in *Echidna*, animals inhabiting sandy places, and unfitted for going into the water, such cannot be their use in *Echidna* at least, and it may therefore be concluded that such is not their use in *Ornithorhynchus*.

Mr. Owen added, that he had purposely limited his observations on the present occasion to the theories propounded by M. Geoffroy-Saint-Hilaire respecting the uses of the abdominal glands of *Orni-*

thorhynchus. Lest, however, it should be inferred from his silence as to the other views advanced by that distinguished zoologist in the two communications recently laid before the Society, that he coincided in them, he thought it necessary to remark that he was by no means disposed to admit their general correctness.

Extracts were read from a letter addressed to the Secretary of the Society, by Charles Telfair, Esq., Corr. Memb. Z.S., and dated Port Louis (Mauritius), November 8th, 1832. It accompanied some skins of *Mammalia* and *Birds*, and a collection of *Fishes*, *Mollusca*, and *Crustacea*, presented to the Society by its writer. It also announces it as probable that specimens of the *Tendraka* and *Sokina* of Madagascar, will shortly be obtained for the Society. Mr. Telfair has recently had opportunities of making some researches about the buried bones of the *Dronte* or *Dodo*, found in the island of Rodriguez. The result of these researches he communicates, and incloses letters addressed to him by Col. Dawkins, Military Secretary to the Governor of the Mauritius, and by M. Eudes, resident at Rodriguez.

Col. Dawkins, in a recent visit to Rodriguez, conversed with every person whom he met respecting the *Dodo*, and became convinced that the bird does not exist there. The general statement was that no bird is to be found there except the *Guinea-fowl* and *Parrot*. From one person, however, he learned the existence of another bird, which was called *Oiseau-bœuf*, a name derived from its voice, which resembles that of a cow. From the description given of it by his informant, Col. Dawkins at first believed that this bird was really the *Dodo*; but on obtaining a specimen of it, it proved to be a *Gannet*. It is found only in the most secluded parts of the island.

Col. Dawkins visited the caverns in which bones have been dug up, and dug in several places, but found only small pieces of bone. A beautiful rich soil forms the ground-work of them, which is from six to eight feet deep, and contains no pebbles. No animal of any description inhabits these caves, not even bats.

M. Eudes succeeded in digging up in the large cavern various bones, including some of a large kind of bird, which no longer exists in the island: these he forwarded to Mr. Telfair, by whom they were presented to the Society. The only part of the cavern in which they were found was at the entrance, where the darkness begins; the little attention usually paid to this part by visitors, may be the reason why they have not been previously found. Those near the surface were the least injured, and they occur to the depth of three feet, but nowhere in considerable quantity; whence M. Eudes conjectures that the bird was at all times rare, or at least uncommon. A bird of so large a size as that indicated by the bones has never been seen by M. Gory, who has resided forty years on the island.

M. Eudes adds, that the Dutch who first landed at Rodriguez left cats there to destroy the rats which annoyed them: these cats have since become very numerous, and prove highly destructive to poultry; and he suggests it as probable that they may have destroyed the large kind of bird to which the bones belong, by devouring the

young ones as soon as they were hatched,—a destruction which may have been completed long before the island was inhabited.

The bones procured by M. Eudes for Mr. Telfair have been presented by that gentleman to the Society. They were laid on the table. They include, with numerous bones of the extremities of one or more large species of *Tortoise*, several bones of the hinder extremity of a large bird, and the head of a *humerus*. With reference to the metatarsal bone of the bird, which was long and strong, Dr. Grant pointed out that it possessed articulating surfaces for four toes, three directed forwards and one backwards, as in the foot of the *Dodo* preserved in the British Museum, to which it was also proportioned in its magnitude and form.

The *Gannet*, designated in Rodriguez as the *Oiseau-bœuf*, was also exhibited. It was apparently referrible to the *lesser Gannet* of Dr. Latham, the *Sula candida*, Briss., and *Pelecanus Piscator*, Linn.

The *Fishes* presented by Mr. Telfair were exhibited. They include specimens of about fifty species, among which the following were pointed out by Mr. Bennett as apparently hitherto undescribed.

Apogon vittiger. *Ap. brunnescenti-rufescens; vittâ laterum mediâ rectâ anticè productâ rostrumque cingente, maculâque parvâ rotundatâ ad basin pinnæ caudalis, nigris.*

D. 7, $\frac{1}{8}$. A. $\frac{1}{7}$.

Gobius semicinctus. *Gob. oculis lateralibus: pinnâ caudali subrotundatâ: brunneus, infrà pallidior, semicingulis sex ventralibus argenteis nigro-marginatis; genis operculisque cæruleo-guttatis lituratisque; guttâ nigrâ ad basin pinnæ caudalis; pinnâ anali ad basin cæruleo punctatâ.*

D. 6, 16. A. 14. C. 17. P. 18. V. 6—6.

Clupea Mauritiana. *Clup. pinnâ dorsali vix pone æquilibrium positâ; ventralibus subdorsalis medio; anali subelongatâ: dorso vittâque supra lineam lateralem iridescenti-plumbeis, ventre flavicante-argenteo.*

D. 19. A. 19. V. 9. P. 16.

Muræna molendinaris. *Mur. dentibus rotundatis; maxillæ superioris utrinque uniseriatis, vomerinis numerosissimis confertis irregulariter* 10—12-*seriatis; maxillæ inferioris utrinque* 5—6-*seriatis: corpore brunnescenti-nigro, lineis albidis ultra centenis circumdato.*

A *Muræná Zebrâ*, Shaw, satis differt numero et ordinatione dentium: cæterum colore picturâque simillima, lineis tamen albidis circularibus magis numerosis. Longitudo circiter 4-pedalis.

Ophisurus crocodilinus. *Oph. pinnis pectoralibus parvis: maxillâ inferiore longiore: dentibus acutis; maxillæ superioris parvis subapproximatis, palatinis majoribus distantibus, vomerinis* 4—5 *maximis; maxillæ inferioris utrinque* 8—10, *intermediis distantibus maximis: oculis rhinario proximis, cristâ ossed posticè supereminente: suprà fusco-cinerascens, infrà pallidior; pinnis pallidis; lineâ laterali serie stigmatum nigrorum distinctâ.*

At the request of the President, Mr. William Thompson of Belfast exhibited a specimen of a *Tern* shot by him in June last on one of the three Copeland Islands, which are situated a few miles off the north-east coast of the county Down, Ireland. Mr. Thompson stated that the bird was evidently identical with those described as the young of the *Arctic Tern, Sterna Arctica*, Temm., in the Appendix to Capt. Parry's Voyage in 1819-20, page 203. In a detailed description of the specimen, which was read, Mr. Thompson pointed out various differences of proportions and colouring between it and the adult *Arctic Tern*, specimens of which, as well as of *Sterna Hirundo* and *Sterna Dougalii*, were shot by him on the same day, thus affording opportunity for comparison of these several species in a recent state and at precisely the same season.

Mr. Thompson availed himself of the opportunity to exhibit also specimens of the *black-headed Gull, Larus capistratus*, Temm., and of the *Sandwich Tern, Sterna Cantiana*, Temm., which were shot in the neighbourhood of Belfast. It is believed that no previous instance of the occurrence of these birds in Ireland has been recorded.

Specimens were exhibited of the *woolly* and *hairy Penguins* of Dr. Latham. They form part of the collection of the President, by whom they were communicated for exhibition. Mr. Yarrell briefly described them.

"*Woolly Penguin* of Dr. Latham's 'General History of Birds,' vol. x, page 392. Length of the beak, 2¾ inches; from the point to the gape, 3¾ inches; length of the beak and head, 6¼ inches; from the top of the head to the end of the *tarsus*, 31 inches; length of the foot and claw, 6¾ inches; length of the wing, 12¾ inches; girth of the body, 34 inches; beak black towards the point, slightly curved; basal third of the upper mandible, dusky brown; basal half of the lower mandible, orange.

"The terms *woolly* and *hairy Penguins* appear somewhat inappropriate, the covering of both these birds being only different modifications of those tufts of down which in young birds precede the first true feather. The colour of the covering in this specimen is a uniform light brown; the tail is cuneiform, composed of numerous dark-coloured feathers, narrow and bristly, the longest of which are 3 inches; the feet and part of the toes yellow; the ends of the toes, webs and claws, black. The fourth toe of each foot, in both these birds, appears to have been overlooked by the original describer: it is small, articulated to the inner side of each inner toe, and the birds may consequently be considered as having four toes, all pointing forward. From the length of the wing in this specimen, and the orange colour of the base of the lower mandible, this bird is probably the young of the *Patagonian Penguin*.

"*Hairy Penguin* of Dr. Latham's work before quoted, the same volume and page. Length of the beak, 2½ inches; from the point to the gape, 3¼ inches; length of the beak and head, 5 inches; from the crown of the head to the end of the *tarsus*, 27½ inches; length

of the foot and claw, 4¾ inches; length of the wing 10¼ inches; girth of the body, 23 inches. Beak black, slender and slightly curved towards the point; covering in this bird uniform dark brown; right wing wanting: no appearance of tail-feathers; toes vermilion, webs orange, claws brown. It is probably the young of a large-sized *Penguin*, of which several species are described by authors as having red legs and feet. All that is known of this specimen is, that it was brought to England by the master of a South Sea Whaler, and formed part of an exhibition of subjects in natural history."

The exhibition was resumed of the new species of *Shells* collected by Mr. Cuming on the western coast of South America and among the islands of the South Pacific Ocean. They were accompanied by characters from the pen of Mr. G. B. Sowerby.

CUMINGIA, nov. gen.

Testa bivalvis, inæquilateralis, æquivalvis, latere antico rotundato, postico subacuminato; dentibus, cardinali, in utráque valvá, unico, parvo, antico, lateralibus in alterá valvá ad utrumque latus uno, valido, in alterá nullo; ligamento interno foveolæ sub-cochleariformi affixo; impressionibus muscularibus duabus, lateralibus, distantibus, anticá irregulari, oblongá, posticá subrotundatá; impressione musculari pallii sinu maximo.

An interesting new genus of *Bivalves*, which should be placed near to *Amphidesma*. It is remarkable for the dissimilarity of the hinge of the two valves, one having a strong lateral tooth on each side of the ligament, and the other being entirely destitute of lateral teeth. Having only met with a single small West Indian species, I did not venture to consider this genus established until Mr. Cuming showed me several species in his rich collection of South American and Pacific shells, one of which is sufficiently large to show the characters distinctly.—G. B. S.

CUMINGIA MUTICA. *Cum. testá ovatá, minutissimè decussatá, anticè rotundatá, posticè acuminatiusculá; latere postico breviusculo, margine dorsali declivi: long.* 1·2, *lat.* 0·5, *alt.* 0·85 *poll.*

Hab. prope littora Maris Pacifici.

This species has been obtained at the following places; at Conception in seven fathoms, sand and mud; at Iquiqui in nine fathoms, gravel and mud; at Payta in hard clay at low water; and at Muerte.—G. B. S.

CUMINGIA LAMELLOSA. *Cum. testá ovatá, concentricè lamellosá, latere antico rotundato, postico subacuminato; lamellis distantibus: long.* 0·7, *lat.* 0·35, *alt.* 0·55 *poll.*

Hab. prope littora Oceani Pacifici.

Found at Payta in hard clay at low water; and at Panama in deep water.—G. B. S.

CUMINGIA COARCTATA. *Cum. testá ovali, concentricè lamellosá;*

latere antico altiore, rotundato; postico subacuminato, infrà coarctato, margine dorsali declivi; lamellis confertis: long. 0·6, *lat.* 0·3, *alt.* 0·4 *poll.*

Hab. ad Sinum Caraccensem.

Dredged from a sandy muddy bottom in seven fathoms water in the Bay of Caraccas.—G. B. S.

CUMINGIA TRIGONULARIS. *Cum. testâ orbiculato-subtrigonâ, concentricè lamellosâ; latere antico rotundato, postico acuminato, margine dorsali declivi: long.* 0·8, *lat.* 0·4, *alt.* 0·7 *poll.*

Hab. ad Sanctam Elenam.

Found among stones in deep water.—G. B. S.

GENUS CORBULA.

CORBULA NUCIFORMIS. *Corb. testâ ovatâ, crassâ, ventricosâ, anticè rotundatâ, posticè rostratâ, obtusâ; margine ventrali valvæ sinistralis posticè coarctatâ, transversim sulcatâ: long.* 0·55, *lat.* 0·35, *alt.* 0·3 *poll.*

Hab. in Americâ Centrali.

Found at a depth of six fathoms in sandy mud at Real Llejos. The same species is also found in a fossil state near Guayaquil.—G. B. S.

CORBULA BICARINATA. *Corb. testâ ovatâ, depressiusculâ, subæquilaterali, anticè paullò longiore, posticè bicarinatâ; carinis ex umbone ad marginem posticam ventralem decurrente: long.* 0·45, *lat.* 0·3, *alt.* 0·35 *poll.*

Hab. ad littora Columbiæ Occidentalis.

Found in sandy mud at from seven to seventeen fathoms at Panama, Real Llejos, Caraccas and St. Elena.—G. B. S.

CORBULA BIRADIATA. *Corb. testâ ovato-oblongâ, longitudinaliter striatâ, pallidâ; margine dorsali posticâ subcarinatâ, rufâ, anticâ breviore, rufo maculatâ; radiis binis intermediis albis: long.* 0·6, *lat.* 0·3, *alt.* 0·4 *poll.*

Hab. ad Chiriqui et ad sinum Caraccensem.

Found in mud and sand in from three to six fathoms at Chiriqui, and in seven fathoms in the Bay of Caraccas. The species varies much in thickness and in the colour of the inside, where some specimens are of a dark blood red colour.—G. B. S.

CORBULA NASUTA. *Corb. testâ ovatâ, gibbosâ, anticè altiore, rotundatâ, posticè rostratâ, acuminatâ, valvis subcarinatis: long.* 0·7, *lat.* 0·35, *alt.* 0·35 *poll.*

Hab. ad Xipixapi.

Found in sandy mud at a depth of ten fathoms. Some small specimens which I suppose to be the young of this species were found in the gulf of Nocoiyo.—G. B. S.

CORBULA OVULATA. *Corb. testâ ovatâ, albicante, interdum roseo tinctâ, anticè subproducto-rotundatâ, posticè subrostratâ; extùs longitudinaliter sulcatâ: long.* 1·, *lat.* 0·5, *alt.* 0·55 *poll.*

Hab. ad littora Americæ Meridionalis.

Found in sandy mud at various depths, from seven to seventeen fathoms, at Xipixapi, and in the Bays of Montijo and Caraccas. Detached valves of a beautiful pink colour were picked up on the sands at Real Llejos and Mazatlan.—G. B. S.

CORBULA RADIATA. *Corb. testâ subtrapeziformi, albidâ, prope marginem ventralem sanguineo radiatâ; latere antico brevi, postico longiore, bicarinato; intùs sanguineâ: long.* 0·35, *lat.* 0·17, *alt.* 0·25 *poll.*

Hab. ad Acapulcam.

A single specimen was picked up on the sands.—G. B. S.

CORBULA TENUIS. *Corb. testâ oblongâ, albicante, tenui; latere antico supernè declivi, anticè rotundato; latere postico longiore, bicarinato, posticè biangulato; margine posticâ declivi; umbonibus subincurvis; margine dorsali posticâ subexcavatâ: long.* 0·9, *lat.* 0·4, *alt.* 0·5 *poll.*

Hab. in Americâ Centrali.

One specimen was dredged among sandy mud at a depth of twelve fathoms in the Bay of Montijo.—G. B. S.

Genus BULINUS.

BULINUS CHILENSIS. *Bul. testâ ovali, cinerascenti-fulvâ, albido variegatâ; anfractibus quatuor, minutissimè rugulosis, ultimo maximo; suturâ crenulatâ; aperturâ ellipticâ; peritremate reflexo, albente: long.* 1·4, *lat.* 0·75 *poll.*

Conchological Illustrations, by G. B. Sowerby, jun.

Hab. ad Coquimbo, sub lapidibus.—G. B. S.

BULINUS PUNCTULIFER. *Bul. testâ ovato-oblongâ, subacuminatâ, albidâ, minutissimè rugulosâ, epidermide tenuissimâ flavicante indutâ; punctulis nigricantibus, seriatim dispositis, sparsim ornatâ; anfractibus quinque, ventricosiusculis, suturâ sub-impressâ; aperturâ ellipticâ, supernè acuminatâ, peritremate tenui: long.* 1·5, *lat.* 0·75 *poll.*

Hab. in Chili, sub lapidibus.

From the Questa Prado.—G. B. S.

BULINUS RUGIFERUS. *Bul. testâ turrito-pyramidali, brunneâ; anfractibus octo, longitudinaliter rugulosis; suturâ distinctâ; aperturâ subovali; labio externo tenui, irregulari; umbilico parvo: long.* 0·5, *lat.* 0.2 *poll.*

Hab. ad Insulam Jacobi, inter Gallapagos Insulas.

Found under scoriæ.—G. B. S.

BULINUS PRUINOSUS. *Bul. testâ ovato-oblongâ, tenui, corneâ, albo variâ; anfractibus quinque, ventricosis; suturâ profundâ; aperturâ ellipticâ, supernè acuminatâ; umbilico parvo; labio tenui: long.* 0·55, *lat.* 0·3 *poll.*

Hab. in Peruviâ.

Found on dead leaves in the clefts of rocks in the mountains of Cobija.—G. B. S.

Bulinus Laurentii. *Bul. testâ ovato-pyramidali, tenui, albicante, transversim fusco fasciatâ; anfractibus quinque, lævibus, ventricosis, gradatim majoribus; suturâ distinctâ; aperturâ ferè circulari; umbilico mediocri; labio tenui: long.* 0·55, *lat.* 0·3 *poll.*

Hab. in Peruviâ.

Var. β. testâ omnino albicante.

Found on stones on the top of the mountain in the Island of San Lorenzo, Bay of Callao, Peru, about 2500 feet above the level of the sea.—G. B. S.

Bulinus unifasciatus. *Bul. testâ ovato-subpyramidali, tenui, pellucidâ, brunneâ, fasciâ unicâ albidâ; anfractibus* 5—6, *ventricosis, longitudinaliter striatis, nitidis; aperturâ ellipticâ, supernè acuminatâ; labio tenui; umbilico parvo: long.* 0·8, *lat.* 0·45 *poll.*

Hab. ad Insulas Gallapagos.

Found under detached pieces of lava on Charles's Island, one of the Gallapagos.—G. B. S.

Bulinus bilineatus. *Bul. testâ ovato-oblongâ, tenuiusculâ, pallescente, lineis duabus brunneis transversis, interstitio albo; anfractibus* 6—7, *lævibus, ventricosis, longitudinaliter striatis; suturâ distinctâ; aperturâ ovatâ; labio tenui; umbilico parvo: long.* 0·65, *lat.* 0·25 *poll.*

Hab. ad Sanctam Elenam et in Columbiâ Occidentali.

Variat coloribus saturatioribus vel pallidioribus.

Found under stones at St. Elena, and buried in the earth under bushes in the Island of Plata on the coast of West Columbia.—G. B. S.

Bulinus corneus. *Bul. testâ ovatâ, obtusâ, tenui, pellucidâ, corneâ; anfractibus* 5—6, *ventricosis, longitudinaliter striatis, lævibus; suturâ distinctâ; aperturâ ovatâ; labio tenui; umbilico mediocri: long.* 0·6, *lat.* 0·3 *poll.*

Hab. in Americâ Centrali.

Found under decayed grass at Real Llejos.—G. B. S.

Bulinus erythrostoma. *Bul. testâ ovato-subglobosâ, albâ; spirâ obtusâ, conicâ; anfractibus quinque, ventricosis, minutissimè granosis; aperturâ ellipticâ, intùs rubente; labio tenui; umbilico magno: long.* 0·8, *lat.* 0·6 *poll.*

Hab. apud Huasco, Chiliæ.

One young specimen is covered with longitudinal streaks of reddish brown; and one adult shell has its lip thickened, but not reflected. Found under bushes.—G. B. S.

Bulinus chrysalidiformis. *Bul. testâ ovato-oblongâ, medio ventricosiore, tenui, lævigatâ, albâ, suturâ labioque externo reflexo brunneis; anfractibus* 6—7, *rotundatis; aperturâ longiusculâ; umbilico minimo: long.* 2·9, *lat.* 1·1 *poll.*

Hab. in Americâ Meridionali.

Mr. Cuming brought a single specimen of this shell, of which he does not know the locality, it being a dead shell and not having been found by himself.—G. B. S.

At the request of the President, Mr. Gould exhibited a specimen of a *Toucan*, remarkable for the peculiar form of the feathers on the back part of the head and cheeks. They are without barbs towards their extremities, the shafts being widely expanded; those of the crown of the head are curled and horn-like, and, being of a jet black colour, bear some resemblance to fine ebony shavings; as they proceed along the neck they become straighter, narrower, and spatulate: the feathers of the cheeks have the latter form, and are straw-coloured slightly tipped with black. Mr. Gould proposed for it the name of

PTEROGLOSSUS ULOCOMUS. *Pter. plumis capitis, genarum, nuchæque foliiferis, illius crispis nigris, harum spatulatis, genarum stramineis nigro apiculatis; cervice, dorso, pectorisque lateribus coccineis; alis, caudâ, femoribusque olivaceis; remigibus brunneis; guld, pectore, abdominis medio crissoque flavescentibus, pectoris plumis coccineo marginatis.*

Long. 18 unc.; *rostri* a rictu ad apicem mandibulæ superioris, 4; *alæ*, 5¾; *caudæ*, 7½; *tarsi*, 2¼.

The beak is lengthened, and both mandibles are edged with thickly set white serratures; the upper has the *culmen* orange, bordered by a narrow longitudinal stripe of dull blue extending nearly to the tip, below which the sides of the mandible are fine orange red; a white line surrounds the apertures of the nostrils; the under mandible is straw-coloured, becoming orange at the tip; a narrow band of rich chestnut encircles both mandibles at their base. The bare space surrounding the eyes is of a blueish lead colour, as are also the *tarsi* and toes.

March 26, 1833.

Lieut.-Col. Sykes in the Chair.

Specimens were exhibited of numerous *Mammalia* recently obtained by the Society from that part of California which adjoins to Mexico. They comprehended several species hitherto apparently undescribed, to which the attention of the Meeting was particularly called by Mr. Bennett.

MEPHITIS NASUTA. *Meph. naso prominente, rhinario supernè producto; vellere denso, pilis elongatis, rigidiusculis, setaceis; plantis omninò nudis.*

Long. *corporis* cum capite, 16½ unc.; *caudæ*, 5¼; *caudæ* cum pilis, 9½; *pedis postici*, 2¾.

By its robust form; the shortness and strength of its limbs; the greater production of its nose; the denseness, firmness, and resistance of its strong hairs, and the entire nakedness of its soles, this animal differs from the *Common Skunk* of America. In the dried skin exhibited the nose extends an inch beyond the line of the upper incisors, a hairy space of half an inch in width intervening between the upper lip and the soft muzzle. On its upper surface the muzzle is produced backwards seven eighths of an inch in an elliptical form. The fur of the body is composed of an under coat of crisped fine hairs, and of an outer coat of strong, somewhat rigid hairs, which, however, have little of harshness, although they offer to the touch a marked difference in the resistance they oppose to pressure, as compared with the equally long but silky and soft hairs of the *Common Skunk*. The soft feel exists in two specimens, apparently referrible to the latter, which are contained in the collection, and the difference in the quality of the fur can therefore scarcely be attributed to locality. This difference is, moreover, combined with characters of form, especially about the nose, which authorize the consideration of the *long-nosed Skunk* as a distinct species.

The colouring, which in the genus *Mephitis* is evidently but little fitted to afford characters on which reliance can be placed, consists, in the individual exhibited, of a single broad white band, extending from behind the eyes along the middle of the back, where it is more dilated, and passing continuously to the tail, the whole of which it occupies: with this exception the entire fur is black. The claws, remarkably strong on the anterior feet, are, as usual, horn-coloured.

The hinder *tarsi* of the *Meph. nasuta* are destitute of hair on their under surface, and the nakedness extends even beyond the heel. In one of the specimens before alluded to, the hinder third is slightly, and in the other densely, hairy. These may, perhaps, help to furnish specific characters, but without further and more extensive observation

Mr. Bennett hesitated in having recourse to them, or to the comparative length of the tail, which in one individual equals, without the hairs, that of the body.

Didelphis Californica. *Did. vellere lanato ad apicem nigro, setis longis omnino albis exstantibus; facie pallidè brunneo-nigrescente, maculâ præoculari saturatiore; labiis genisque albis.*

Long. *corporis* cum capite, 12 unc.; *caudæ*, 16; a naso ad auris marginem posticam, 4¼.

Didelphis breviceps. *Did. capite breviore; vellere lanato ad apicem nigro, setis longis omnino albis exstantibus; facie pallidè brunneo-nigrescente, fasciâ oculari a naso ad aures extensâ nigrâ; labiis genisque albis.*

Long. *corporis* cum capite, 12 unc.; *caudæ*, 12; a naso ad auris marginem posticam, 3.

Of the former of these *Opossums* two specimens were exhibited; of the latter, one. They are distinguished from each other at first sight by the comparative length of their heads, the ears in *Did. breviceps* being rather more than an inch nearer to the tip of the nose than those of *Did. Californica*. They both belong to that section of the genus which has long bristles intermingled with and projecting far beyond the woolly undercoat; and in both, as in the *Virginian* and *Brasilian* species, *Didd. Virginiana*, Cuv., and *Azaræ*, Temm., the bristles are white throughout their whole length. From the *Virginian Opossum* they are distinguished by the darker colour of the face, and by the much greater length of the tail. From *Did. Azaræ* they differ by the last-mentioned character, and by the absence from the face of the four spots, one over each eye and one near each ear, which give to the head of that animal some resemblance to that of *Did. Opossum*.

Spermophilus spilosoma. *Sperm. auriculis nullis; brunneo-rufescens, dorso parùm nigro tincto alboque creberrimè guttato; labiis, mento, palpebrisque albis; ventre artubusque flavescentibus; caudâ prope apicem nigrâ, albo apiculatâ.*

Long. *corporis* cum capite, 5½ unc.; *caudæ*, 2½; *caudæ* cum pilis, 3.

This animal, of which two skins were exhibited, agrees in colour and markings with the description of the *American Souslik, Arctomys* (*Spermophilus*) *guttatus* ?, Rich., published in the 'Fauna Boreali-Americana,' vol. i. p. 162. But the length of the tail as compared with that of the body is so different both from Dr. Richardson's measurements of the *American*, and Pallas's of the *European* species, that it can scarcely be considered as a variety of either. If the dimensions of the *American Souslik* had been taken from one specimen only, it might have been suspected that its tail had been mutilated; but the measurements of two individuals are given, in only one of which does the length of the tail exceed in a trifling degree one sixth of that of the body and head taken together. In the *Californian Souslik* its length considerably exceeds one third of that of the head

and body. The markings of its tip are peculiar: a black spot occupies the fur covering the end of the caudal *vertebræ*, and about one half of the space beyond their termination, the remaining half being pure white.

The specimens are young, and have probably not attained their full growth. The crowns of their molar teeth are not at all worn.

SPERMOPHILUS MACROURUS. *Sperm. auriculis mediocribus; niger, albo subfasciatim creberrimè irroratus; capite nigro, pilis albis ad faciem parcè sparsis; palpebris albis; labiis mentoque ferrugineis; ventre ferrugineo nigro vario; caudâ longâ nigro alboque varid.*

Long. *corporis* cum capite, 11¼ unc.; *caudæ*, 7; *caudæ* cum pilis, 8½.

The black head, on which a very few white hairs exist, and the purely white eye-lids, are very conspicuous marks of this species, which is nearly related to *Spermm. Franklinii, Beecheyi*, &c., by the length of its tail, the similar markings on all sides of this organ, and the laxness and length of the hairs which cover it. The hair on the body is short, adpressed, and firm but not harsh. The markings on the back and sides consist of white, undulating, interrupted and frequent transverse white stripes on a black ground; the black predominating along the middle line of the back, and the white on the sides.

SCIURUS NIGRESCENS. *Sci. niger, albo arenoso-varius; subtùs pallidior, grisescens; maculâ post-auriculari albidâ; caudâ nigro alboque varid.*

Long. *corporis* cum capite, 11½ unc.; *caudæ*, 10½; *caudæ* cum pilis, 14.

The hairs of the upper surface are rather long, soft and smooth; each of them is tipped with white, occasioning, when viewed in certain lights, an iron-grey colour: on the under surface the black is less deep, and the white tips are longer than on the upper surface. The colour of the limbs corresponds with that of the adjoining surfaces, except on the upper part of the *tarsus*, where it is black; on the toes, however, the hairs are again freely tipped with white. The long hairs of the tail are nearly all terminated by white, occupying the terminal fourth or fifth part of their length; hence the sides and extremity of that organ are nearly white, the black being most conspicuous along its middle, and for about the first quarter of its length.

The pale spot behind each ear, if permanent in the species, will furnish a ready distinguishing mark.

LEPUS NIGRICAUDATUS. *Lep. vellere mollissimo, pilis raris elongatis sericeis intermixtis; suprà nigrescenti flavidoque varius, infrà et ad clunes artusque albus; nuchâ caudâque supernè nigris; gutture flavescente; tarsis saturatè rufis; auriculis ad apices albis.*

Long. *corporis* cum capite, 23 unc.; *capitis* ante aures, 4; *auriculæ*, 5; *tibiæ*, 4½; *pedis postici*, 4½.

The softness and general appearance of the fur resemble those of a *Rabbit* rather than of a *Hare*. The colouring of the under surface is separated from that of the upper by a distinct line about the middle

of the side, which slopes upwards over the haunches to the middle line of the back. Behind this point, the white passing backwards along the middle line becomes more and more blended with black, until the colour of the upper surface of the tail is entirely black.

The ears, which are longer than the head, are closely covered with short adpressed hairs. These are in front mixed black and yellow, giving a grizzled appearance; on the hinder part they are entirely ochraceous for about two thirds of the length of the ear, the terminal third, as well as the tip and the hinder fringe, being white, and furnished with much longer hairs. The long hairs fringing the anterior edge are ochraceous, excepting for a short distance immediately below the tip, along which space they are black.

Mr. Bennett concluded by calling the attention of the Society to two skins forming part of the same collection, which, notwithstanding their marked difference in fur and colour from an arctic specimen of the *Meles Labradoria*, Sabine, he felt disposed to consider as referrible to that species. The general form is the same; the colour of the legs similar; and the light markings on a dark ground on the head and face correspond precisely; the ground colour being, however, much darker, of a blackish brown, and grizzled with white on the hinder part of the head. The middle white line shows itself indistinctly in two or three places along the back, where the hairs are long, silky, and soft, but without any intermixture or woolly appearance. Towards their base they are slightly crisped; their colour is here tawny; it then becomes black; and the tips are white. Hence results a grizzled white and black with only an occasional tinge of tawny on the back; a somewhat undulated appearance of white and black, with a considerable mixture of tawny, on the sides, where the white strongly predominates; the black then disappears altogether, the sides of the belly being tawny and its middle white. The tawny colour extends across the chest; but the throat and chin are pure white. The tail is tawny on both surfaces, and becomes much darker at the tip. From this description it will be seen that the animal accords sufficiently with the *Tlacoyotl* of Hernandez. The difference in the adpressed and firmer character of its fur from the lax and almost woolly nature of the fur of the arctic *Badger*, may be accounted for by its being less exposed to cold, and consequently not requiring the additional protection of a much warmer covering; in the arctic specimen, too, it is probable that the pale grey colour, scarcely varied except about the head, is merely a result of that general law which gives to animals of snowy countries a white winter fur.

A specimen was exhibited of a species of *Sepiola* from the Mauritius, which had been presented to the Society by Charles Telfair, Esq., Corr. Memb. Z. S., and Dr. Grant explained its distinctive characters by comparison with a specimen of the *Sepiola vulgaris* of the Mediterranean, exhibited for that purpose. He showed that while the body of the Eastern species is four times the size of that of the European, its arms do not exceed in length those of the latter species. On account of this comparative shortness of its members he proposed

to designate it as the *Sepiola stenodactyla*, regarding it as the type of a new species distinguished from the single species previously known not merely by the important structural character just noticed, but also by the greater number of pedunculated suckers on its *tentacula*, and by the markings of the *tentacula* which are transversely banded, those of the European species having round spots.

Dr. Grant described the animal in detail, and exhibited a drawing in illustration of his description.

Dr. Grant subsequently gave a demonstration of the structure of the heart and of the distribution of the blood-vessels of the *large Indian Tortoise, Testudo Indica*, Linn., which died lately at the Society's Gardens. He pointed out the manner in which the quadrangular fold lying over the openings of the two auricles serves as a valve to these auricles during the contraction of the ventricle, and to direct the currents of venous and arterial blood to opposite sides of the ventricle during its dilatation. The remarkable spongy texture of the left chamber of the ventricle, formed by innumerable minute and separate fleshy columns which traverse it in every direction, to mingle thoroughly the two kinds of blood to be sent through the systemic arteries, was finely displayed in this large animal. The fleshy fold bounding the right chamber of the ventricle, ingeniously compared by M. Meckel (Vergleich. Anat. 1831, p. 223,) to the fleshy tricuspid valve of *Birds*, was also found largely developed, and might well assist in the separation of the venous blood of the right auricle, and in its propulsion through the *bulbus arteriosus* and pulmonary arteries. The two systemic *aortæ* were distinctly seen to commence by separate orifices from the ventricle, as in the aquatic *Chelonia*, and not by a single orifice as stated by Cuvier to occur in the *land Tortoises* (Leçons, iv. p. 221). All the orifices of the ventricle are provided with two valves of a semilunar form; even the auriculo-ventricular orifices are each provided with a semilunar valve besides the continuous fold extended over both their orifices. No trace of valves could be observed on the entrance of the pulmonary veins into the left auricle; but two very large semilunar folds protect the entrance of the systemic veins into the right auricle. The partitions of the interior of the ventricle are here but imperfectly developed, compared with those of the aquatic *Chelonia*.

He directed the attention of the Members to the size and condition of the two *ductus arteriosi*, one leading from each pulmonary artery to the descending *aorta* of the corresponding side, which in this adult animal were still obvious and strong cords, though with their canals almost obliterated. He observed that the *Chelonia* here exhibited as a permanent character what is found in *Birds* only at an early period of their life; the *ductus arteriosus* being double in birds in their fœtal state, and the one on the right side disappearing before that on the left, while in *Mammalia* the left only is present in the embryo.

The distribution of the great trunk sent to the upper parts of the body, the smallness of the communicating branch between the two

descending *aortæ*, the origin and distribution of the cœliac and superior mesenteric arteries, the subdivisions of the single abdominal *aorta*, the limited distribution of the *vena portæ*, and other parts of the circulating system of this large *Tortoise*, were also pointed out.

April 9, 1833.

Joseph Cox Cox, Esq., in the Chair.

Several extracts were read from a letter, addressed by Dr. A. Smith, Corr. Memb. Z.S., to Mr. Yarrell, and dated Port Elizabeth, Algoa Bay, December 22, 1832.

Dr. Smith states his belief that the *Hyæna vulgaris*, Cuv., does not inhabit South Africa; its place being occupied by the *Hyæna villosa*, Smith, which bears, when young, considerable resemblance to that species.

He also states that the *Eagle* from the Cape, which was presented to the Society by the Hon. J. T. Leslie Melville, and which is now living in the Menagerie, is not the young of *Aquila vulturina*, Daud., but of *Aq. Choka*, Smith, (*Falco rapax*, Temm.).

He remarks that *Vultur auricularis*, Daud., is not confined to the interior of South Africa, but is met with close to Cape Town, over which he has seen it flying. The belief that several pairs build their nests together (whence the appellation of *sociable Vulture* has been derived,) is erroneous; for Dr. Smith has never met with more than one nest actually occupied upon the same tree: the error has probably originated in a new nest being occasionally built adjoining to an old one, which had been deserted on account of its having become unserviceable. The bird seems but little disposed to sociability; rarely more than two are seen together, and if four occur in the vicinity of a carcass, the number is considered as great; while of *Vultur fulvus*, it is by no means uncommon to see a hundred, or even more, congregated together where carrion exists.

Dr. Smith adds that *Aquila Verreauxii*, Less., is synonymous with *Aq. vulturina*, which has recently been described by M. Lesson as a *Haliäetus*: it has, however, none of the habits of the *Fishing Eagles*. It inhabits the highest and most rocky mountains, preying chiefly on the *Cape Hyrax*. The error has probably arisen from the white back being concealed, in stuffed specimens, by the wings.

M. Lesson, in November 1830, founded two new genera, *Gymnogenys* and *Teratophius*, on the *Falco Gymnogenys*, Temm., and *Falco ecaudatus*, Shaw. These genera are respectively synonymous with *Polyboroides* and *Helotarsus*, proposed by Dr. Smith in the 'South African Journal' in April of the same year.

The *Circäetus pectoralis* and *Falco Chicqueroides* of Dr. Smith are respectively synonymous with *Circ. thoracinus*, Cuv., and *Falco biarmicus*, Temm.

Dr. Smith also states that the *Antelope* described by Mr. Woods in the 'Zoological Journal' as the *Antilope personata*, is the young of *Ant. pygarga*, Pall., the *Bonte Bok*.

An extract was read from a letter, addressed to the Secretary by Charles Telfair, Esq., Corr. Memb. Z.S., and referring to a Viverridous animal obtained by that gentleman from Madagascar, which lived for several months in his possession, and on its death was transmitted in spirit to the Society. Mr. Telfair states his belief that the animal is new to science; a belief in which Mr. Bennett participated. The specimen was exhibited, and Mr. Bennett pointed out, in reference to a "Description of a Viverridous Animal from Madagascar," its resemblance to the *Paradoxuri* in the plantigrade character of its feet; the webbing of its toes almost to their extremities; and the number and retractility of the claws, which on the fore-feet are sharp and resembling those of the *Cats*. Its general appearance also approaches that of *Paradoxurus*; but the fur is short, adpressed, and of uniform colour, and the tail is slender, cylindrical, and equally hairy all round, rendering it probable that this organ is not subject to being curled in the manner usual in that genus, from which it also differs in the possession of an anal pouch. In the young individual exhibited the dentary characters could not be ascertained, its teeth being only of the deciduous class. Its anatomical structure resembles, in the shortness of the intestines, the size and direction of the *cæcum*, the disposition of the superficial vessels of the kidneys, and in some other respects, that of the typical *Viverridæ*, and approaches nearly to the structure of the *Felidæ*.

Mr. Bennett stated his impression that the animal should be regarded as the type of a new genus, nearly allied to, but distinct from, *Paradoxurus*. He proposed for it the name of *Cryptoprocta ferox*.

Some remarks by Mr. Spooner on the *post mortem* appearances of the *Moose Deer*, which died suddenly, at the Society's Gardens, on the morning of the 28th of March, were read.

"Having been informed by the keeper that a copious ejection from the stomach took place a few minutes previous to dissolution, I was impressed with the idea that a rupture of that organ had taken place, or that the animal had taken some poisonous ingredient with its food. A careful investigation of the alimentary canal, however, did not tend to verify such opinion, as the whole of the organs composing it bore a healthy aspect, with the exception of a few hydatids, which were found to be adherent to the peritoneal tunic of the stomach. The kidneys were in a state of chronic disease, which was more particularly confined to their cortical substance. The structure of the liver was also much impaired by chronic inflammation.

"On examining the *viscera* of the *thorax*, the ravages of acute disease were sufficiently apparent to account for the sudden death of the animal. The heart and *pericardium* were highly inflamed, as were also the large vessels proceeding to and from that organ. The *liquor pericardii* was morbidly augmented, and of a sanguineous hue. The right side of the heart was hypertrophic, and the lungs

were more than usually congested. In conclusion I beg leave to state that, in my opinion, there can be no doubt that the immediate cause of death was the acute disease of heart, but that the chronic disease of kidneys and liver was the remote cause."

A specimen was exhibited of an *Antelope*, previously undescribed, which forms part of the collection of Mr. Steedman, by whom it was communicated to the Society. It was characterized by Mr. Ogilby as the

ANTILOPE ELLIPSIPRYMNUS. *Ant. cornubus maximis, elongatis, procurvis, annulatis: rhinario magno: scopis nullis: poris inguinalibus: caudâ longâ, floccosâ: pilis rigidis, floccosis, lineæ dorsalis cervicisque mediæ reversis: rufo-brunneo griseoque varius, metopio saturatè brunneo, maculâ longâ supraoculari, labiis, fasciâ indistinctâ gulari, maculâ jugulari, ellipsique prymnali, albis.*

Mr. Ogilby gave the following detailed description.

"This magnificent animal, which belongs to that section of the *Antelope* genus which Colonel Smith denominates *Ægoceri*, and which comprehends the *Ant. leucophæa* and *Ant. equina* of naturalists, measures 7 feet 3½ inches from the muzzle to the root of the tail, 3 feet 10 inches in height at the shoulder, and 3 feet 8 inches at the croup. The horns measure 30 inches along the curve, and the tail with the hair 21 inches.

"The ground colour, both above and below, is a mixture of grey and russet brown, the latter predominating on the back, croup, cannons and pasterns. The forehead and chaffron are uniform dark brown. The hair is uniformly harsh, and divided into separate locks, which lie in different directions. On the back, immediately above the loins, there is a little whorl or centre, from which the hair all along the back and neck is reversed or directed forwards. The hair of the neck is longer and more bristly than that of the body, reversed above, and directed transversely over the sides so as to form a lengthened ridge on the throat. There is no mane nor beard. A large white mark passes over each eye, extending 3 or 4 inches down on each side of the chaffron; the lips and interior of the ear are also white, and an indistinct band of the same colour crosses the throat, at the junction of the head and neck. The hair on the chest is also reversed, and directed upwards. The ears are large and broad like those of an *Ox*; they are covered on the outside with short hair of a pale red colour, having a white mark on the under edge, and marked with five longitudinal *striæ* within, as in the generality of the *Antelope* genus. The tail reaches nearly to the heel, and is covered with hair like that of the body, brown above, white beneath, and very slightly tufted. But the most extraordinary mark is a white ribband which passes over the croup, down each hip, and unites between the thighs, so as to form a perfect and regular ellipse, of which the root of the tail occupies the upper focus. This mark contrasts in a most remarkable manner with the deep russet colour of the surrounding parts, and is in itself so singular and cha-

racteristic of the animal, that I have judged it proper to commemorate it in the specific appellation.

"The horns are $2\frac{1}{2}$ inches distant at the base, and $22\frac{1}{2}$ at the points. They first point backwards and outwards, spreading widely and directed nearly in a straight line for the first 12 inches of their length, then bend forwards and slightly inwards with a uniform curvature, the concavity being in front, or just in the opposite direction from that which is observed in the *Ant. leucophæa* and *Ant. equina*. At first I was inclined to believe that this direction might have been given them by mistake in the stuffing of the specimen, but Mr. Gould assured me that they were attached to the *os frontis*, and could not possibly have been reversed. They are surrounded by twenty-four distinct and prominent *annuli*, nearly obliterated behind, and extending to within 6 inches of the points, which are smooth and blunt. Between the *annuli*, the horns are marked with deep and regular *striæ*, which run in a longitudinal direction. As far as the *annuli* extend they are of a light brown colour, but the smooth part is black, and they are almost of a uniform thickness from the root to the points. Their circumference at the base is 9 inches. The muzzle is large and naked; there are neither *crumenæ*, nor *scopæ* on the knees, but the inguinal pores are very distinct, and surrounded by a naked space of considerable extent.

"The locality from which Mr. Steedman procured this magnificent specimen, which at present forms one of the principal ornaments of his valuable collection of South African animals, lies about twenty-five days' journey north of the Orange river, between Latakoo and the western coast of Africa. That gentleman informs me that he never saw but one other specimen, which, however, was not perfect, but of much larger dimensions than the present individual, and with longer and stouter horns."

Mr. Ogilby subsequently called the attention of the Society to a specimen of a Mammiferous Quadruped, also communicated by Mr. Steedman for exhibition, which he described in detail with reference to a paper "On the Characters and Description of a new Genus of *Carnivora*, called *Cynictis*."

The new genus proposed by Mr. Ogilby connects the family of the *Civets* with that of the *Dogs*, participating with the one in its organs of mastication, and with the other in those of locomotion, and consequently ranging with *Proteles*, Isid. Geoff., as a second genus, intermediate between those two groups. *Proteles*, however, partakes in some degree of the characters of the *Hyænas*, while *Cynictis* is more immediately interposed between the *Dogs* and *Ichneumons*, to the latter of which it bears a pretty close resemblance in external form.

The generic characters may be thus expressed:

CYNICTIS.

Dentes primores, $\frac{6}{6}$; *laniarii*, $\frac{1-1}{1-1}$; *molares*, $\frac{6-6}{5-5}$, quorum utrinque

utrinsecus tres priores spurii, quartus carnarius, sequentes tuberculati.

Pedes digitigradi, digitis 5—4, unguibus falcularibus longis fossoriis.

Cauda longa, comosa.

Genus inter *Ryzænam* et *Herpestem* intermedium, et dentibus et digitorum numero.

Cynictis Steedmanni. *Cyn. rufus, dorso saturatiore; genis, collo, lateribus cauddque rufis griseo intermixtis; caudæ apice sordidè albo.*

Long. *corporis* cum capite, 1 ped. 6 unc.; *caudæ*, 1 ped.; *capitis*, a rostro ad auriculæ basin, $2\frac{1}{4}$ unc.; *auriculæ*, $\frac{3}{4}$; *auriculæ* latitudo, $1\frac{1}{4}$.

The general colour, as well as the whole external appearance of the animal, is that of a small *Fox*.

Mr. Ogilby described in detail the generic and specific peculiarities, and pointed them out on the preserved skin and on the *cranium*; in the latter, as in that of *Herpestes*, the bony ring surrounding the orbit is complete. He added also references to the Travels of Sparrman, for a notice apparently of this animal; and to those of Mr. Barrow, (vol. i. p. 185,) in which a brief, but perfectly intelligible account of it is contained: it is there said to be "known to the colonists under the general name of *Meer-kat*."

Mr. Steedman's specimen was obtained in the neighbourhood of Uitenhage, on the borders of Caffraria.

Lieut. Col. Sykes exhibited a fœtus of a *Panther*, preserved in spirit, and exhibiting all the markings of the adult; thus showing that the animals of this species do not undergo the changes in markings in their progress towards maturity which are generally found to occur in the genus *Felis*. Col. Sykes's chief object in bringing it before the Society, was to call attention to certain subcuticular appearances, involving questions on the vascularity and colouring principle of hair, and, by analogy, of feathers also. The body of the fœtus is covered with the tawny hair and numerous black rings of the adult, and of an equally brilliant colour: on the limbs, however, there is not any hair, but where the future spots are to appear there exists a black circle or blotch, indicating an arrangement of the colouring matter, or a textural arrangement for the reflection of this particular colour, at a period antecedent to the access of light.

In the Paper in which Col. Sykes described these appearances, he considered the growth of hair and of feathers, and the causes of the changes of colour observed in them, quoting largely from various authorities. He also adduced remarks made by himself in support of the probability that, although their existence has not yet been demonstrated, these assumed extra-vascular parts are provided with vessels and with nerves. His principal arguments were deduced from the deep attachment of some feathers and quills; the

multitude of vessels in the roots, and the nerves traceable to the bulbs of hair; the direct action of the will upon hair and feathers in certain animals; the fact of hair becoming an organ of sensation in *plica Polonica*; the effect of impressions of the mind and of disease upon the hair in man; the internal preparatory process for reflecting particular colours; and the changes produced by sexual periods. He further inquired whether, as hair grows from the *cutis* and passes through the *rete mucosum*, this latter membrane may not be the depository of the colouring matter, whence it is taken up perennially by hair and by most feathers, but only at certain seasons by others. Whether, however, the change of colour in feather and hair be owing to the diffusion of a new body through them, or to a modification in the arrangement of their primary molecules causing them to reflect other rays,—in either case, he apprehends, organic action is equally implied.

April 23, 1833.

The Dean of Carlisle in the Chair.

The following letter, addressed to the Secretary by Mr. J. C. Lees, was read. It was accompanied by a drawing of the animal referred to in it, which was exhibited: it represented a species of *Glaucus*, Forst.

"Being at sea about two years ago, between the Azores and the Bahama Islands, in about lat. 30° N. long. 50° W., I observed the surface of the sea thickly covered in every direction, as far as I could see, with small animals. Having drawn up some of them in a bucket, I found them to have bodies and tails nearly resembling those of a *Lizard*, but the head was thick and blunt without any appearance of neck. I could not discover either eyes or mouth. Four short arms, or limbs, were attached to the body, nearly in the same situation as the legs of a *Lizard*, and from the outer end of each of them proceeded, in a radiating direction, fifteen slender feelers, diminishing to a fine point, the centre ones longer than the others. These animals were of a deep, but vivid blue colour, with a bright, well-defined line of silver down the back, from the head to the extremity of the tail; this streak of silver branched off also into the arms, and along each of the feelers, till towards the points it formed so thin a line as to become gradually imperceptible. The under part of the animals was of a silvery white; their appearance was very beautiful; they were about 1¼ inch long from the front of the head to the end of the tail, and about the same across from the extremities of the longest of the opposite feelers. The water continued covered with them for two days, during which time we sailed over about 100 miles; the number of them must therefore have been prodigious.

"They remained perfectly quiet in the water except when touched, when they either partially or entirely drew themselves up into a ball: they could in this manner draw up either one or more feelers, or the whole limb, with its fifteen. They did not appear to notice the approach of a finger or piece of stick until it actually touched them, and then did not attempt to swim away, but only drew up the part touched with a sudden and apparently angry jerk of the head. If the touch was violent or repeated, they drew themselves entirely up in a globular form; and the same thing occurred when they came in contact with each other. I endeavoured to preserve some of them alive by keeping them in sea water, but in three or four days they all died, and immediately shrunk up into a shapeless mass of a brown colour. I was equally unsuccessful in my endeavour to preserve them in spirits, in strong salt and water, or in vinegar: the instant they were introduced into those liquids they shrivelled up into a brownish shapeless mass. Although I

have several times crossed the Atlantic, and have continually had other opportunities of observing the sea, I have never before or since seen any of these animals. Neither the captain nor seamen of the vessel I was in recollected ever having seen any of them."

A note was read, addressed to the Secretary by Charles Telfair, Esq., Corr. Memb. Z.S. It was accompanied by a fossil bone from Vohemar in Madagascar, which was exhibited. The bone was considered as "part of the palate of a fish, called, in these seas, *la gueule pavée*." It was contrasted with the bones constituting the grinding apparatus of the *spotted Eagle Ray, Myliobatis Narinari*, Dum., from which it was remarkably distinct both in form and structure. It appears to be referrible to the inferior pharyngeal bone of a gigantic species of *Scarus*. In a recent *Scarus*, a foot in length, the inferior pharyngeal bone is 3 lines wide, and the number of series of oval *laminæ* forming its teeth is three, reckoned transversely, and exclusive of the elevated series forming a border along each side. In the fossil, the raised margins are wanting: without these its breadth is 1 inch and a half, and the number of series of *laminæ* is four. Some recent specimens in the Museum of the Royal College of Surgeons are little inferior in size.

The exhibition was resumed of the collection of *Shells* formed by Mr. Cuming on the western coast of South America, and among the islands of the South Pacific Ocean. The new species brought on the present evening under the notice of the Society were accompanied by characters by Mr. Broderip and Mr. G. B. Sowerby.

Genus Conus.

Before the author proceeds to describe the species brought to this country by Mr. Cuming, it may be necessary to point out the difficulty of the task, arising from the infinite varieties presented by this genus, and the very few points of form and structure in the shell which can be relied on as the foundation of specific character.

M. de Blainville, when noticing the numerous species already recorded, gives us a hint that many of them may be what Adanson calls "espèces de cabinet;" and no one can examine an extensive collection of *Cones*, particularly if it contain many individuals of each species for the purpose of comparison, without being struck by the force of the observation. Colour,—granulation or smoothness,—length or shortness of the spire,—its plainness or coronation,—will be found in many species to be the result of locality, food, or temperature. The following descriptions are, therefore, given with the diffidence which an investigation of the subject cannot fail to inspire.—W. J. B.

Conus tiaratus. *Con. testâ rhomboideâ, castaneâ monilibus castaneo-albis tessellatis et basin versus pallidè bifasciatâ; spirâ subproductâ coronatâ: long.* $1\frac{7}{8}$, *lat.* $\frac{7}{8}$ *poll.*

Hab. ad Insulas Gallapagos.

This species varies in size and intensity of colour. In fine specimens the white and chestnut tessellated necklaces are very distinct. The interior of the shell corresponds in colour with its exterior.

Found on sand in small ponds of sea-water.—W. J. B.

CONUS TORNATUS. *Con. testâ rhomboideo-productâ, sulcatâ, sulcis prominentibus, scabris, albâ castaneo maculatâ et punctatâ; spirâ conicâ, productâ, carinatâ; epidermide subfuscâ, tenui: long.* 1⅛, *lat.* ½ *poll.*

Hab. in Americâ Meridionali. (Xipixapi.)

This elegant species looks as if it had been turned in a lathe. It was found from ten to twelve fathoms deep in sandy mud.—W. J. B.

CONUS NIVIFER. *Con. testâ conicâ, subfuscâ maculis niveis frequentissimè sparsâ et fasciis 3 castaneis (ultimo maximo) cinctâ; spirâ planiusculâ, apice acuto; basi castaneâ: long.* 1, *lat.* ⅝ *poll.*

Var. α fasciis subobsoletis.

Var. β sine fasciis: varietas forsan *Coni nivosi*, Lam.; quære tamen.

Hab. ad Insulas Capo de Verde dictas.—W. J. B.

A very elegant species, especially when well developed and with the three dark bands complete.

The variety β may be Lamarck's *Con. nivosus*, but he refers to no figure, and the term "mouchetures" will hardly apply to the flake-like spots on our shell.—W. J. B.

CONUS NANUS. *Con. testâ conicâ, sursum albâ, deorsum lividâ; spirâ coronatâ, apice acuto; basi et fauce purpurascentibus: long.* ⅞, *lat.* ½ *poll.*

Hab. in Oceano Pacifico. (Lord Hood's Island.)

Found on the reefs.—W. J. B.

CONUS LUTEUS. *Con. testâ rhomboideo-productâ, luteâ monilibus castaneis exilibus cinctâ et maculis nigro-castaneis albo limbatis in spiram et in anfractûs basalis medium tessellatâ: long.* 1½, *lat.* ⅝ *poll.*

Hab. in Oceano Pacifico. (Annaa.)

The spire of this species, though full and rounded, terminates in a short acute point. The shell tapers rapidly towards the base. When in perfection, its rich saffron colour, girt with numerous delicate necklaces, and the broad belt of interrupted tessellated spots of the darkest chestnut bordered with the purest white, give it a very beautiful appearance. The tessellated spots are so regularly set on the whorls of the spire as to look like mosaic work. Some of the specimens have a pale yellow for the ground colour; but these seem to be faded.

Found on the reefs.—W. J. B.

CONUS CONCINNUS. *Con. testâ sub-pyriformi, politâ, basi transversim sulcatâ, albo luteoque quasi geographicè pictâ; spiræ*

subrotundatæ suturis subcrenulatis, apice acuto, roseo: long. $\frac{8}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. in Sinu Californiæ.

Found on the sands.—W. J. B.

CONUS RECURVUS. *Con. testâ elongato-conicâ, subrecurvâ, albâ rubro-castaneo nebulosâ et vittatim punctatâ; spirâ prominente, acutâ, albo castaneoque maculatâ; epidermide tenuissimâ: long.* 2, *lat.* $\frac{7}{8}$ *poll.*

Hab. in Americâ Meridionali. (Monte Christi.)

In young specimens the top of the body whorl, just as it joins the spire, is surrounded by a thin elevated edge. This, in young individuals, is almost sharp: with age all traces of it disappear. In its markings it sometimes resembles *Conus Amadis*.

Found in gravel at a depth of twenty-two fathoms.—W. J. B.

CONUS NUX. *Con. testâ brevi, conicâ, obesâ, albâ brunneo nebulosâ; spirâ subcoronatâ; basi granulosâ, acutâ, violaceâ: long.* 1, *lat.* $\frac{7}{7}$ *poll.*

Hab. ad Insulas Gallapagos.

In some individuals the brown predominates almost to the exclusion of the white, save a few scattered spots and flakes. This *Cone* approaches to *Con. sponsalis*, and perhaps may be a variety of that species.—W. J. B.

CONUS MONILIFER. *Con. testâ subfusiformi, transversim striatâ, albicante, castaneo-variegatâ, punctis castaneis seriatim ordinatis; spirâ acuminatâ, albo castaneoque variâ, apice acuto: long.* 2, *lat.* $1\frac{1}{2}$ *poll.*

Hab. in Americâ Meridionali. (Salango.)

Dredged at the depth of nine fathoms in sandy mud. A single specimen.—G. B. S.

CONUS ARCHON. *Con. testâ conicâ, albâ maculis flavo-castaneis geographicè distributis variâ: long.* $2\frac{1}{8}$, *lat.* $1\frac{1}{8}$ *poll.*

Hab. in Americâ Centrali. (Bay of Montija.)

This shell approaches some of the varieties of *Con. Cedo-nulli* in its contour and markings. It is the only specimen found by Mr. Cuming, and was taken from sandy mud at a depth of twelve fathoms.—W. J. B.

CONUS MUSIVUM. *Con. testâ rhomboideâ, transversim striatâ, pallidè rosea albo tessellatâ, maculis strigisque castaneis pictâ: long.* $1\frac{5}{8}$, *lat.* $\frac{6}{8}$ *poll.*

Hab. ad Insulas Philippinas.

This elegant *Cone*, which is in some degree allied to *Con. Textile* and its varieties, was found on the sands.—W. J. B.

CONUS PURPURASCENS. *Con. testâ conoïdeâ, subgranulosâ, purpurascente monilibus frequentibus fusco-albis ornatâ et maculis fuscis nubilâ; labri limbo interno violaceo; epidermide fuscâ, moniliformi: long.* $2\frac{3}{8}$, *lat.* $1\frac{1}{2}$ *poll.*

Hab. ad Panamam.

This *Cone* varies much in its colouring and markings. Some varieties present fantastic figures like *Con. Augur*; in others the brown patches are large and like cloudy shapes; in all, the brown and white tessellated necklaces are to be seen, as well as the violet rim on the inside of the lip. As in most of the *Cones* which have that peculiarity, some individuals are much more granulose than others.

Found on sandy mud in the clefts of rocks.—W. J. B.

CONUS GLADIATOR. *Con. testâ conicâ, brunneâ albo obscurè longitudinaliter strigatâ, balteo subcentrali subobsoleto, albente; spirâ subcoronatâ, granuloso-striatâ, brunneâ albo maculatâ; epidermide crassâ longitudinaliter rugosâ, hinc et hinc subtomentosâ: long.* 1⅛, *lat.* 1 *poll.*

Hab. ad Panamam.

Sometimes the ground colour is ash-colour, with longitudinal chestnut stripes.

Found in sandy mud in the clefts of rocks.—W. J. B.

CONUS ORION. *Con. testâ conicâ, castaneâ albo sparsim maculatâ, balteo albo supernè interdum castaneo tessellatâ cinctâ; spirâ mediocri albo castaneoque maculatâ: long.* 1⅛, *lat.* ⅞ *poll.*

Var. vittâ albâ moniliformi inter spiram et balteum.

Hab. in Americâ Centrali. (Real Llejos).

Found in soft sand in the clefts of rocks.—W. J. B.

CONUS GEOGRAPHUS.

Varietas nana, rosea: long. 2, lat. ⅞ poll.

Hab. in Oceano Pacifico. (Annaa.)

I do not find sufficient grounds for distinguishing this shell from *Con. geographus*. It is rather more dense in proportion to its size, and the spire is somewhat more elongated and contracted than that of the large variety: but these differences cannot be depended on as specific distinctions when set against the resemblance to *Con. geographus* in general form, and in the texture of its markings.

Found on the reefs.—W. J. B.

CONUS PRINCEPS.

Var. α. *Con. testâ conicâ, croceâ vel flavâ lineis castaneis frequentibus longitudinalibus tenuibus inscriptâ: long.* 2½, *lat.* 1⅜ *poll.*

Hab. ad Sanctam Elenam.

I cannot distinguish this shell specifically from *Con. Princeps*. In some individuals, there is a blank interval without any lineations. The only *epidermis* which I have seen is smooth and thin.

Found in sandy mud in the clefts of rocks.—W. J. B.

Var. β. long. 2⅜, lat. 1⅛ poll.

Hab. ad Panamam.

This much resembles the last, but the lineations are less regular, and in some individuals almost entirely absent: the shell too is somewhat more ponderous than that of var. α. The only *epidermis* which I have seen is rather thick and tufted, like that of *Con Princeps*.

Found in soft mud in the crevices of rocks.—W. J. B.

Var. γ. Tota crocea: long. 2⅛, lat. 1⅛ poll.
Hab. ad Montem Christi.

The spire of this is somewhat more developed than that of the shells above described; and elevated transverse lines surround most of the specimens. In some, traces of attempts at the longitudinal lineations are found. After a careful examination, I cannot separate this variety specifically from the other two. The elevated transverse lines are to be found in both the others.

Found in sandy mud in the clefts of rocks.—W. J. B.

In further illustration of his Paper "On the Laws that regulate the Changes of Plumage in Birds," Mr. Yarrell exhibited several varieties of British species, which possessed in part only the plumage common to the race. In some of these the feathers assumed at the moult were of the natural colour, and distinct from those previously borne; from which it was inferred, that, as the bird increased in age and strength, the plumage would assume entirely the colours peculiar to the species.

Mr. Yarrell also referred to some newly-collected series of feathers, which were shown. They were taken from birds at this time assuming the plumage of summer. In the *black-tailed Godwit, Limosa melanura*, Leisl., many of the old feathers produced at the preceding autumn moult still retained the colours they had borne through the winter; others were changing; and some had entirely assumed the colours peculiar to the breeding season, bearing the same tints and markings as some new feathers, the webs of which were only partly exposed. A series of feathers from the breast of the *Golden Plover, Charadrius pluvialis*, Linn., were also shown,—some entirely white, the colour peculiar to winter; some entirely black, being the prevailing colour of the breeding season; and others bearing almost every possible proportion of well-defined black and white on the same feathers.

Several feathers were also shown which were taken from a *Herring Gull, Larus argentatus*, Brunn., in its third year, which is now at the Society's Gardens. This bird was examined at Christmas last. Several tertial feathers were found to have their basal half blue-grey, the other half mottled with brown. Two notches were made with scissors in the webs of these feathers, intended to refer to the two colours then present. Some other feathers were wholly mottled with brown, and were marked with one notch. This bird was re-examined in April. The tertial feathers, which, when marked, were of two colours, were now entirely blue-grey; one feather was tipped with white. The other feathers, which, when marked, were wholly mottled, were now, for two thirds of their length, pure white, the terminal third alone retaining the mottled brown.

May 14, 1833.

William Yarrell, Esq. in the Chair.

Various skins of *Birds* from Switzerland, presented to the Society by the Administration of the Musée Académique of Geneva, were exhibited. They comprised several species not previously contained in the collection.

At the request of the Chairman, a paper by Mr. Gould "On a new Genus of the Family *Corvidæ*" was read. The genus proposed by Mr. Gould comprehends the *Pica vagabunda*, Wagl., *Pica Sinensis*, Gray, and a third species which the author believes to have been hitherto unnoticed. To this group, on account of its arboreal habits, he gives the name of

DENDROCITTA.

Rostrum capitè brevius, cultratum, ad basin latum, culmine arcuato, lateribus subtumidis.

Nares basales, plumis setaceis partim tectæ.

Alæ mediocres, remigibus 5tâ 6tâque longioribus.

Cauda elongata, cuneata, rectricibus spatulatis.

Tarsi breves, debiles. *Digiti* mediocres. *Hallux* fortis, ungue forti, incurvo.

Typus genericus.

DENDROCITTA LEUCOGASTRA. *Dend. atra; occipite, cervice, strigâ transversâ ad remigum basin, abdomineque albis; scapularibus, interscapulio, tectricibusque caudæ inferioribus dilutè castaneis; rectricibus duabus internis nisi ad apices cinereis.*

Hab.

The shortness and comparative feebleness of the *tarsi* in *Dendrocitta*, and its more elongated tail, the feathers of which are equally graduated, except the two middle ones which are much longer than the others, distinguish it from the typical *Picæ*, the *common Magpie* for example. These characters are in accordance with its habit of wandering from tree to tree in search of its food. It is further distinguished by the form of its bill.

All the species yet known are natives of Eastern Asia.

Mr. Bennett called the attention of the Society to the skin and skeleton of an animal recently living in the Menagerie, and exhibited in illustration of a paper "On the Family of *Chinchillidæ*, and on a New Genus referrible to it," the commencement of which he read. The animal in question was purchased, in June 1832, from a dealer, who was completely ignorant of the locality from which it was originally obtained; and was brought by Mr. Bennett under the notice

of the Committee of Science and Correspondence at its first meeting in that month. He then stated his conviction that it would be found to constitute the type of a new genus, intimately related to *Lagostomus* and *Chinchilla*, which he proposed to designate by the name of *Lagotis*, adding the specific denomination of *Cuvieri*, in commemoration of the illustrious naturalist, whose irreparable loss the world of science was just then called upon to deplore. He deferred, however, the completion of his account of the animal, until he should be enabled, at its death, to add the dentary and other internal characters, to the more obvious external distinctions on which he then relied. That opportunity having now occurred, he proceeded on the present occasion to redeem his pledge, and also to take a general view of the history, zoological characters and anatomy of the family to which it manifestly belongs.

As regards the history of *Lagotis*, although the last of the three animals constituting the family to come under the cognizance of zoological science, Mr. Bennett stated that he had little doubt that it was in fact the earliest known to travellers in South America, which he had no hesitation in assigning as its native country. He believed it to be the *Viscacha* of all the writers from Pedro de Cieça downwards, (including Acosta, Garcilasso, De Laet, Nieremberg, Feuillée, Ulloa, Vidauré, Molina, Schmidtmeyer and Stevenson,) who have mentioned that animal as an inhabitant of the Western or Peruvian acclivities of the Andes. The *Lagostomus*, on the other hand, is clearly the *Viscacha* described by so many travellers as colonizing the vast plains eastward of that great chain. Among these he cited Dobrizhoffer, Jolis, D'Azara, Proctor, Head, Miers and Haigh. For its zoological history he referred to its various describers, from M. De Blainville to M. Lesson. To complete the history of *Chinchilla* he also gave an account of the various notices regarding it, which have appeared since September 1829, the date of his account of it in the 'Gardens and Menagerie of the Zoological Society.'

The following characters point out the situation occupied by the three animals in the Order *Rodentia*, and the generic differences that exist between them.

Trib. Herbivora, F. Cuv.

Dentes molares eradicati, per totam vitam pulpâ persistente crescentes.

Fam. Chinchillidæ.

Dentes incisores superiores simplices; molares $\frac{4-4}{4-4}$, *e lamellis osseis binis ternisve tænialibus inter se parallelis, substantiâ vitreâ omnino circumdatis, constantes: coronidibus invicem exactè oppositis, attritu complanatis.* Americæ Australis incolæ, gregarii, subterranei, mites. Artus postici anterioribus subduplò longioribus. Cauda producta, ad apicem supernèque longè setosa.

Gen. 1. Lagotis.

Dentes incisores $\frac{2}{2}$ *acutati; molares* $\frac{4-4}{4-4}$, *singuli e lamellis tribus com-*

pletis obliquis constantes. Cranium posticè supernèque arcuatum, tympani cellulis superioribus inconspicuis. Pedes omnes tetradactyli, pollice omninò deficiente, unguibus parvis subfalcularibus. Auriculæ longissimæ. Cauda longa. Rupicolæ (Peruviani) vellere molli caduco induti.

Lagotis Cuvieri.

Gen. 2. Chinchilla.

Dentes incisores $\frac{2}{2}$ *acutati; molares* $\frac{4-4}{4-4}$, *singuli e lamellis tribus completis obliquis constantes, præter anticum inferiorem bilamellosum lamellâ anteriore profundè bilobâ. Cranium posticè retuso-truncatum, supernè depresso-complanatum, tympani cellulis conspicuè inflatis. Pedes antici pentadactyli, pollice completo; postici tetradactyli, unguibus parvis subfalcularibus. Auriculæ amplæ. Cauda longiuscula.* Rupicolæ Chilenses et Peruviani, vellere mollissimo tenacissimo induti.

1. *Chinchilla lanigera*, Benn.

2? *Chinchilla aurea.*

Callomys aureus, Isid. Geoffr. St. Hil. in Ann. Sci. Nat. tom. 21, p. 291.

Gen. 3. Lagostomus.

Dentes incisores $\frac{2}{2}$ *acutati; molares* $\frac{4-4}{4-4}$, *singuli e lamellis binis completis obliquis constantes, postico superiore trilamelloso. Pedes antici tetradactyli, pollice omninò deficiente, unguibus parvis falcularibus; postici tridactyli, unguibus productis rectis robustis. Auriculæ mediocres. Cauda mediocris.* Campestres Bonarienses et Paraguaienses, vellere parùm utili induti.

Lagostomus trichodactylus, Brookes.

The *Lagotis Cuvieri* has the size, and much of the general form of the rabbit. Its posterior limbs measure twice the length of the anterior; and its tail is about equal in length to its body exclusive of the head. Its whiskers are very numerous, closely set, and entirely of a jet black, ten or twelve of the longest on each side being exceedingly thick and rigid, and measuring 7 inches in length. The ears have nearly the form of a long parallelogram, regularly rounded at the tip, 3 inches in length, and 1 in breadth, with the margins rolled in below: they are so sparingly furnished with short scattered hairs as to appear almost naked. The fore feet, like the hinder, have only four toes, there being no vestige of a thumb; and the claws are small, slightly sharpened, and entirely concealed by long and somewhat bristly hairs. Those of the hinder feet are similar in shape and rather larger; but that of the inner toe is flattened, curved inwards, and exposed, the hairs immediately adjoining it giving place to a tuft of about eight rows of short, stiff, horny, curved bristles, approaching nearly in their rigidity to the comblike appendage, which is found in almost the same situation in the *Ctenodactylus Massonii*, Gray. A similar structure also occurs in the *Chinchilla*.

The hairy covering of *Lagotis* is almost entirely composed of a beautifully soft and downy fur, of considerable length, but loosely attached to the skin, and readily falling off, unless carefully handled. This fur is of a dusky hue at the base, and to within a short distance of the tip, where, for a space of from one to three lines in extent, it is of a dirty white, more or less tinged with yellowish brown. Through it protrude a few long hairs, which are entirely black: these are more numerous posteriorly. The mixture of these colours gives the general effect of a mottled greyish ash-colour. On the sides of the neck and body, where the tips of the fur verge more into yellowish brown than on the back, and where they are also of greater length, as well as on the haunches and beneath, the latter tinge appears rather more predominant. There is little of the dusky colour visible on the under surface. The hairs of the tail below are extremely short, closely adpressed, and entirely of a brownish black; on its sides they are of two kinds, black and white; and this is also the case with the very long, rigid, and erectile hairs, which form a crest along its upper surface. The very long, bristly hairs which project in a tuft at the tip are wholly black.

Mr. Bennett next proceeded to compare *Lagotis* with *Chinchilla*, occasionally illustrating his remarks by a reference to the structure of *Lagostomus*. He afterwards entered at length into the internal anatomy of the two former animals, and gave a full description of their skeletons, dwelling more particularly on the points of difference existing between them. He concluded by some observations on the tribe of *Rodentia* to which these animals are referrible, and on the genera which compose it.

May 28, 1833.

Lieut.-Col. Sykes in the Chair.

At the request of the Chairman, Mr. Gould adverted to a specimen of a *Hornbill*, now living at the Society's Gardens. He regarded it as a very young individual of the *concave Hornbill* of Dr. Latham, *Buceros cavatus*, and exhibited, in illustration of the adult characters of the bird, specimens of it from the Society's Museum.

A Paper was read "On the Characters of several New Genera and Species of Coleopterous Insects, by the Rev. F. W. Hope." It was accompanied by drawings of the objects represented, exhibiting the generic characters in detail. Those subjoined refer only to the more prominent distinguishing marks.

The insects described were the following:

APLOA, n. g. Carabidarum Truncati-pennium, Lebiæ affine.

Antennæ filiformes. *Palpi maxillares* articulo extimo simplici. *Mentum* in medio edentulum. *Thorax* anticè capite latior, margine postico recto. *Pedes* et *ungues* simplices.

APLOA PICTA. *Ap. flava; elytrorum maculis tribus fasciâque undulatâ posticâ nigris; antennis apicem versus obscurioribus; pedibus flaveolis.*
Long. 5 lin.; lat. 2½.
Hab. in Indiâ Orientali circa Poona.

CALOSOMA ORIENTALE. *Cal. suprà obscurè viridi-æneum; elytris crenato-striatis, interstitiis æqualibus, transversim rugosis, punctis impressis viridi-æneis triplici serie dispositis.*
Long. 10½ lin.; lat. 4¾.
Hab. in Indiâ Orientali circa Poona.

CHLÆNIUS SYKESII. *Chl. ater; capite tricolori; elytrorum maculis sex aurantiis.*
Long. 9 lin.; lat. 4.
Hab. in Indiâ Orientali circa Poona.

OICEOPTOMA TETRASPILOTUM. *Oic. atro-violaceum; thorace miniato, quadri-punctato; pedibus nigro-cyaneis.*
Long. 9 lin.; lat. 4½.
Hab. in Indiâ Orientali circa Poona.

LANGURIA NEPALENSIS. *Lang. cyanea; antennis piceis; elytris striato-punctatis.*
Long. 3 lin.; lat. 1.
Hab. in Nepâl.

This will probably be regarded as the type of a subgenus, having long *antennæ* with a slightly incrassated 3-jointed *clava*, legs comparatively long, narrow *tarsi*, and the posterior part of the *thorax* contracted.

OPILUS AURIPENNIS. *Op. ater; thorace nigro; elytris auratis nitidissimis; pedibus nigricantibus.*
Long. 7 lin.; lat. 2.
Var. thorace rubro, antennis pedibusque rufescentibus.
Hab. in Brasiliâ. (Rio Janeiro.)

The three last joints of the *antennæ* in this insect differ from those of the typical *Opili*. The ninth and tenth are trigonate, with a deep incision, and the eleventh is ovate, depressed; in *Opilus*, the ninth and tenth are trigonate, and the eleventh is obliquely truncate. The *tarsi* are also 4-jointed, the basal articulation of those of the typical *Opili* being in this insect wanting. On these accounts it may be regarded as the type of a new subgenus.

COPTORHINA, n. g. Copridi affine.

Antennæ clavato-lamellatæ. *Clypeus* profundissimè incisus. *Corpus* magnum. *Elytra* ad latera anticè sinuata.

COPTORHINA AFRICANA. *Copt. nigra; clypeo profundè inciso; thorace anticè retuso, posticè prominentiâ latâ; elytris tenuissimè striato-punctatis.*
Long. 8 lin. (dentibus clypei inclusis); lat. 5.
Hab. in Sierra Leone.

COPTORHINA KLUGII. *Copt. nigra; clypeo profundè inciso, dentibus porrectis, subreflexis; prominentiâ thoracis mediâ subfoveolatâ.*
Long. 6 lin.; lat. 4.
Hab. ad Caput Bonæ Spei.

PHÆNOMERIS, n. g. Anomalæ affine.

Antennæ 9-articulatæ, articulis tribus ultimis capitulum rotundum formantibus. *Palpi maxillares* articulo extimo ovato-elongato ad apicem conico. *Corpus* ovato-elongatum. *Caput* oblongiusculum. *Thorax* longitudine latitudini inæqualis. *Elytra* abdomine breviora. *Femora* incrassata, externè rotundata.

PHÆNOMERIS MAGNIFICA. *Phæn. viridis; capite nigro; thorace aurato; elytris striato-punctatis, igne micantibus; pedibus bicoloribus.*
Long. 7 lin.; lat. 3.
Hab. in Africâ. (Soudan.)

MACRONATA TETRASPILOTA. *Macr. nigro-olivacea, punctata; thoracis lateribus pallidè stramineis; elytris olivaceis, maculâ mediâ irregulari alteráque apicali minore notatis.*
Long. 8 lin.; lat. 4½.
Hab. in Indiâ Orientali circa Poona.

CETONIA CRETOSA. *Cet. picea; thorace utrinque maculâ albâ; elytris albo variegatis.*
Long. 8 lin.; lat. 4.
Hab. in Indiâ Orientali circa Poona.

LUCANUS DOWNESII. *Luc. ater; thorace elytrisque ferrugineo-brunneis; mandibulis multidentatis, femoribus tibiisque ferrugineis; tarsis nigris.*
Long. (mandibulis inclusis) 31 lin. (mandibulis exclusis 21); lat. thoracis 8, ad humeros 7.
Hab. in Africâ. (Fernando Po.)

LUCANUS ÆRATUS. *Luc. æneo-virens; mandibulis dentatis nigris; tarsis flavo-pubescentibus.*
Long. (mandibulis inclusis) 10 lin. (mandibulis exclusis 9); thoracis vel elytrorum, 4.
Hab. in Indiâ Orientali. (Tenasserim Coast.)

PHOLIDOTUS IRRORATUS. *Phol. ater; thorace albo irrorato; elytris lineâ elevatâ albo variegatis.* (♀)
Long. 5¼ lin.; lat. 2.
Hab. in Brasiliâ. (Rio Janeiro.)

ANTHICUS CYANEUS. *Anth. cyaneus; capite nigro; antennis pedibusque atris.*
Long. 2 lin.; lat. ½.
Hab. in Novâ Hollandiâ.
This may be regarded as the type of a subgenus, for which Mr. Hope proposes the name of *Anthelephila*. Its maxillary *palpi* are unusually large, while the labial are scarcely longer than the *labium*, and are terminated by a cup-shaped articulation.

ISACANTHA, n. g. Curculionidarum Infracticornium.

Anteunæ 11-articulatæ, extrorsum crassiores. *Mandibulæ* dentatæ. *Maxillæ* apertæ. *Corpus* elongatum, posticè dilatatum. *Femora* spinosa.

ISACANTHA RHINOTIOIDES. *Is. grisea; elytris punctatissimis; femoribus anticis spinis duabus æqualibus armatis.*
Long. 5½ lin. (rostro incluso, 7); lat. 2.
Hab. in Novâ Hollandiâ.

LUPROPS, n. g. Helopidarum.

Labium retuso-truncatum. *Palpi labiales* 3-articulati, articulo 1mo minimo, 2tio subfusiformi. *Caput* anticè utrinque angulariter productum, antennis sub angulo insertis. *Tarsi* dilatati.

LUPROPS CHRYSOPHTHALMUS. *Lupr. ater; oculis auratis; thorace elytrisque punctatissimis; tarsis infrà flavo-pubescentibus.*
Long. 5 lin.; lat. 1¾.
Hab. in Indiâ Orientali.

Lamia Roylii. *Lam. nigra; antennis corpore longioribus; elytris mucronatis, basi scabris, maculis octo albis notatis.*
Long. 28 lin.; lat. $8\frac{3}{4}$.
Hab. in Nepâl.

Lamia Crux nigra. *Lam. straminea; thoracis nigro, vittis tribus luteis; elytris maculâ cruciformi nigrâ alterisque duabus rotundatis aurantiis notatis.*
Long. 11 lin.; lat. 4.
Hab. in Africâ. (Sierra Leone.)

Prionus Hayesii. *Pri. nigro-brunneus; thorace marginato multispinoso; mandibulis porrectis, quadridentatis; pedibus anticis valdè elongatis.*
Long. $4\frac{1}{2}$ unc.; lat. ad humeros, 12 lin.; elytrorum, 17.
Hab. in Africâ.
This magnificent insect is not surpassed in size by any Coleopterous species with which Mr. Hope is acquainted.

Prionus Cumingii. *Pri. ater; thoracis bifoveolati angulo antico utrinque dilatato hamato; elytris varioloso-tuberculatis.*
Long. 27 lin.; lat. ad humeros 8, elytrorum 12.
Hab. in Chili. (Concepçion, Valparaiso.)

Prionus Pertii. *Pri. ater; capite oblongo; thorace nigro; elytris castaneis; femoribus piceis; tarsis ferrugineis.*
Long. 12 lin.; lat. 4.
Mr. Hope proposes as a generic name for this insect, *Dissosternum*. Its *prosternum* is produced between the anterior legs, and deeply incised, so as to form two strong processes.

Uracantha, n. g. Stenocoro affine.

Antennæ 11-articulatæ, articulo ultimo ad apicem acuto. *Corpus* lineari-oblongum. *Elytra* 2-dentata. *Pedes* simplices.

Uracantha triangularis. *Ur. brunnea; thorace albo lineato, tuberculato; elytris albo-pubescentibus, apicibus bidentatis lateribusque purpureo-fuscis.*
Long. 14 lin.; lat. 3.
Hab. in Novâ Hollandiâ.

Scolecobrotus, n. g. Uracanthæ affine.

Antennæ 12-articulatæ, erosæ, articulo ultimo scalpelliformi subserrato. Cæterum *Uracanthæ* simillima.

Scolecobrotus Westwoodii. *Scol. flavo-ferrugineus; clytris basi punctulatis, ad apicem bidentatis.*
Long. 14 lin.; lat. 3.
Hab. in Novâ Hollandiâ.

June 11, 1833.

John Cole, Esq., in the Chair.

A specimen of the *Patagonian Penguin*, *Aptenodytes Patachonica*, Gmel., recently presented to the Society by Lady Rolle, was exhibited. Mr. Yarrell availed himself of the opportunity to point out on it the proofs which it afforded of the statement made by him at the Meeting on March 12, (page 33,) that the *woolly Penguin* of Dr. Latham is the young condition of this species.

A specimen was exhibited of a *Goose* from the Sandwich Islands, being one of a pair recently living at the Society's Gardens, to which they were presented by Lady Glengall. Mr. Vigors characterized it as a species of *Barnacle Goose*, by the name of *Bernicla Sandvicensis*, and pointed out its distinguishing marks. He also observed on the general resemblance in the distribution of colouring which occurs in the species of *Bernicla* and in those of many other groups of *Birds*.

Numerous skins of *Birds* were exhibited, which had recently been obtained by the Society from California. They formed part of the collection, the *Mammalia* of which were brought under the notice of the Society by Mr. Bennett on March 26. Mr. Vigors remarked on them generally as regarded the geographical distribution of many of them; and pointed out, as apparently hitherto undescribed, an *Ortyx*, a *Falco*, two species of *Coccothraustes*, and a *Psittacara*. Among the known birds were several of those first described by Mr. Swainson in the 'Fauna Boreali-Americana,' and a specimen of *Ortyx Montezumæ*, Vig.

Dr. Grant directed the attention of the Meeting to a fine entire skull of the *round headed Grampus*, (*Delphinus globiceps*, Cuv.,) from the North Pacific Ocean, presented to the Society by Capt. Delvitte, R.N., Corr. Memb. Z.S. He availed himself of the opportunity of entering into some details regarding the osteology of the head of the *Grampus* and other predaceous *Cetacea*. The inferiority of these *Mammalia*, so obvious in many of their more important internal organs, is strikingly illustrated by the smallness of their cranial development, compared with the length and magnitude of the bones of the face, and with the entire bulk of the body. The extension of the face and its horizontal direction in the carnivorous *Cetacea*, the similarity of the form and the alternate disposition of the teeth as in *Crocodiles*, and the shortness and immobility of the neck as in the latter aquatic *Reptiles*, form a striking contrast when compared with these parts in the herbivorous species, and indicate their uses as organs adapted for prehension. Although the teeth of the *Grampus* and other *Dolphins* have the usual recurved conical form and want of opposition

of those of *Fishes* and *Reptiles*, and are liable to an early disappearance from the jaws, they are lodged in deep *alveoli*, and are accompanied with a fixed condition of all the bones of the face as in *Gavials*, *Crocodiles* and *Alligators*, in order to afford a stronger resistance during the conflicts of these animals with living prey. The great extension of the intermaxillary bones raises the nostrils to the crown of the head, and enables the animals to breathe without raising their large head above the water, or bending backwards their very short neck. The extension backwards of their strong upper jaw-bones over the cranial cavity, and the inclination upwards and forwards of their flat occipital bone from the horizontal position of the head, produce a remarkably compressed ridge across the *vertex* of the skull, and incline the occipital *foramen* of the *Grampus* upwards and forwards as in the above-mentioned *Reptiles*. The parietal bones being thrown to the lateral parts of the *cranium*, and the frontal bone forming a narrow band across the head, the occipital bone almost touches the upper jaw bones along this transverse ridge, and presents an extensive surface for the attachment of the strong muscles connecting the head to the spine. The coarse fibrous and spongy texture of the bones, and the thickness of the *parietes* of the *cranium*, are further analogies with *Reptiles*, and the want of perforations in the ethmoid bone for olfactory nerves, shows a deficiency of one important organ of sense.

Dr. Grant adverted to the want of symmetry in the bones of the head, which is so remarkable in the animals of this genus, and stated that in examining lately the large collection of skeletons and skulls of blowing *Cetacea* in the Cabinet at Paris, he found scarcely one which did not exhibit an increased development of the right side of the head, frequently twisting the nostrils so considerably to the left side that the streams directed through these passages must have fallen at some distance from the body of the animal. The left side is generally less developed in *Mammalia* than the right, and it appears to be the reverse in *Birds*, where the development of the ovary and oviduct is always checked on the right side. These phænomena may depend on the different position of the descending *aorta* in the two classes, and its influence on the nervous and other systems along its course. The unity of plan in the development of the head of piscivorous *Cetacea* is remarkably illustrated by the discovery of teeth in the lower jaw of the *fœtus* of the toothless *Balæna*. The whole proportions of the bones of the head and trunk of the *Grampus* are massive and strong, and indicate an animal possessed of great muscular strength, and a most formidable antagonist to the gigantic whales of the Arctic Seas.

He observed that the feeble attachment of the slender jugal bones and of the petrous and tympanic portions of the temporal bones, generally causes them to disappear, as in the present instance, in macerating the skulls of *Cetacea*. But such donations as this were most valuable to the Society, as objects of comparison both for recent and extinct species of animals but little known and difficult of access, and as specimens rarely to be obtained by any other means.

Specimens were exhibited of two *Monkeys*, forming part of the Society's Museum, which Mr. Bennett characterized as follows:

SEMNOPITHECUS NESTOR. *Semn. saturatè cinereus; capite, prymnâ, femoribus posticè, caudâque pallidioribus, illo fusco tincto, hac ad apicem, mystacibus longioribus, labiis, mentoque albidis; facie, auribus, manibusque nigris; artubus nigrescentibus.*

Long. *corporis* cum capite, 16; *caudæ*, 20 unc.

Hab.

The prevailing colour is a deep grey with a slight tinge of brown, becoming paler on the back of the neck and on the head, where the fuscous tinge is much more marked. On the loins the deep grey passes into a pure light grey, which is continued on the hinder part of the thighs and along the tail; the tail becomes gradually lighter in colour, and is for several inches at the tip almost white. In passing down the limbs the prevailing grey becomes gradually darker, the colour of the hands being nearly black. The under parts are somewhat lighter than the upper, particularly about the throat. Passing upwards from the throat the colour becomes much lighter, owing to a greater proportion of the lower part of the hairs being exposed. Hence the lips, the chin, and the whiskers are nearly pure white, the tips of the latter, which are prolonged backwards, being alone grey. Over the eyes is the ridge of stiff black hairs, which is usually met with in the *Semnopitheci*.

The hairs are of moderate length, measuring about an inch and a half.

The moderate length of the hairs, the somewhat lighter colour, and especially the white of the lower part and sides of the face, distinguish this species from *Semn. leucoprymnus*.

It may be assumed to be a native of India; but the dealer of whom it was purchased knew not whence it was obtained.

CERCOPITHECUS POGONIAS. *Cerc. nigrescens, albo punctulatus; dorso medio, prymnâ, caudâ supernè et ad apicem, fasciâque temporali nigris; fronte, scelidibusque externè flavidis, nigro punctulatis; mystacibus longissimis, albido-flavescentibus; corpore caudâque subtùs, artubusque internè, flavido-rufis.*

Long. *corporis* cum capite, 17; *caudæ*, 24 unc.

Hab. ad Fernando Po.

The hairs of the upper surface are black, ringed with whitish, producing a grizzled appearance, which occupies the back part of the head, the fore part of the back, the sides, the outer surface of the anterior limbs, and the posterior hands. In the middle of the back commences a broad black patch, which extends to the tail, and is continued along its upper surface for about two thirds of the length of that organ, the remaining portion being black both above and below. On the forehead the hairs are yellowish ringed with black; a few black hairs occupy the middle line; and on each side passing from above the eye to the ear is a broad patch of black. The whiskers expand very broadly on each side of the face; the hairs composing them are yellowish white, occasionally but

very sparingly ringed with dusky black. The ear has internally a long tuft of hairs of the same colour with those of the whiskers. The outer side of the hinder limbs, the hands excepted, is yellowish grizzled with black, their colour being intermediate in intensity between the lightest portion of the sides and the whiskers. The under surface of the body, the insides of the limbs, and the under surface of the proximal two-thirds of the tail, are reddish yellow.

In colouring, this species differs remarkably from every known *Monkey*.

The specimen is without a skull.

A specimen was exhibited of the *black Lemur, Lemur niger*, Geoff., which had recently been added to the Society's Menagerie. In calling the attention of the Society to it, Mr. Bennett stated his belief that this was the first individual of the species which had fallen under the observation of zoologists since the days of Edwards, its original describer, who saw and figured one which was living in 1755 in the possession of a surgeon in London. The description and figure given by Edwards have consequently been hitherto the only proofs of the existence of such an animal.

Mr. Bennett added that the *black Lemur* is the type of the *Lemur Macaco*, Linn.; and that the *Vari*, to which the name of *Lem. Macaco* has been applied by modern authors, is given by Linnæus as the Var. d. of that species. Custom having, however, transferred the specific name to the variety, he deemed it better to acquiesce in the use which has obtained, leaving to the *Vari* the name of *Lem. Macaco*, and to the *black Lemur* that of *Lem. niger*.

Specimens were exhibited of various *Mammalia*, *Birds*, and *Reptiles*, from the continent of India, which had been recently presented to the Society by Thomas Heath, Esq. Mr. Bennett observed on the several objects, pointing out especially the more interesting among them. They included an individual apparently referrible to the *Semnopithecus cucullatus*, Isid. Geoff. St.-Hil., although darker in all its markings than is indicated in the description given by the original observer of the species. They also included a species of *Felis*, of a size intermediate between the larger and the smaller animals of that genus, and having in its grey colour and longitudinal striping a general external resemblance to some of the *Viverræ*. This Mr. Bennett regarded as new to science, and proposed to designate it

FELIS VIVERRINUS. *Fel. fulvo-cinereus, subtùs albescens; capite, nuchâ, dorso, genis, guláque nigro vittatis; lateribus, ventre, pedibusque nigro maculatis.*

Long. *corporis* cum capite, 33 unc.; *caudæ* mutilæ, 7; *auriculæ*, 1¼.

The prevailing colour of the upper surface is a rather deep yellowish grey, the separate hairs being dusky at the base, yellowish in the middle, and having short black tips. The black lines and spots are formed of hairs destitute of yellow, and having the black tips of much

greater length. A longitudinal black band passes on each side, from the inner *canthus* of the eye above the ear nearly to the shoulder; a second, more internally, passes to the same distance backwards, and is somewhat interrupted anteriorly; and between this and its fellow on the *vertex* is the vestige of a median line, which on the forehead is broken up into a double row of spots; these and the two adjoining lines subdivide in front into numerous very small spots between the eyes. Two black lines pass downwards obliquely on either side from below the eye, over the angle of the jaw; and from their terminations on each side there passes a transverse band across the throat: the space between these lines is nearly white, as is also a stripe over each eye, and the whole of the under jaw and chin. There is a large black spot surrounding the base of the ear posteriorly, and the ear is also tipped with black. The long, linear markings of the back are disposed in about five interrupted, longitudinal bands, and some of the spots on the sides assume a linear form. Of these the most remarkable are, one on each side of the neck, and an oblique wavy band on the shoulder. The spots on the sides generally approach a rounded shape, and form, posteriorly, four or five interrupted longitudinal rows. Those of the under surface are larger, and are arranged without order. On the fore limbs the spots are small externally, and internally there are on each two large transverse black patches. On the hinder limbs the spots are arranged so as to form interrupted transverse bands on both surfaces. The hairs of the soles of the feet are dusky brown. The tail is spotted above in the same manner as the sides; its colour beneath is uniform. The spots are throughout numerous. The whiskers are white, and take their origin from three black lines on either side.

The species is nearly allied to *Felis Serval*, Schreb., but will readily be distinguished by the characters above given, by the comparative shortness and strength of its limbs, and by the locality whence it was obtained.

Specimens were exhibited of three species of *Toucan*, hitherto apparently undescribed, which form part of the Society's Museum. At the request of the Chairman, Mr. Gould pointed out their distinguishing characteristics. He described them as

Rhamphastos Swainsonii. *Rhamph. ater; vertice nuchâque rufo tinctis; gutture luteo, abdomen versus lineâ albâ alteráque coccined cincto; tectricibus caudæ superioribus albis, inferioribus coccineis.*

Long. 18 unc.; *caudæ*, 6¼; *alæ*, 9; *tarsi*, 1⅝. *Rostri* long. 5¼; alt., 2⅛; *culminis* ad basin lat., 1⅛.

Hab. in montosis Columbiæ.

The pure whiteness of the upper tail-coverts is an important character of this bird; but its most distinctive feature is in the markings of its bill, which presents three distinct and contrasted colours, disposed obliquely from the base to the point. The base of the lower part of the upper mandible, as well as the entire base of the under, is of a rich salmon colour, bounded by a narrow line of black on the upper mandible, the point of the lower being entirely of the

latter colour; the remainder of the upper mandible, from the forehead to the point, is of a rich orange yellow. The bare space round the eyes is of a blueish lead colour.

In one specimen which has fallen under Mr. Gould's observation, the salmon colour towards the base of the mandibles is entirely wanting, its place being occupied by a dull black, only less intense than that of the oblique line which borders it, and which passes from near the *culmen* at the base of the bill to the edge of the gape at about one third from the tip.

In the colours of its plumage this bird agrees so completely with *Rhamph. ambiguus*, Swains., (Zool. Illust. pl. 168,) as to induce a suspicion of their specific identity. But unless the colours of the bill and their disposition have been incorrectly observed by the artist whose drawing was used by Mr. Swainson, the two birds may be regarded in these particulars as really distinct.

RHAMPHASTOS CULMINATUS. *Rhamph. ater; gutture pectoreque albis; fasciâ pectoris posticâ tectricibusque caudæ inferioribus coccineis; uropygio sulphureo, plumis versus apices in aurantium transeuntibus.*

Long. 18–20 unc.; *caudæ*, 6½–7; *alæ*, 8½–9; *tarsi*, 2. *Rostri* long., 4–5; ad basin lat., vix 1.

Hab. in Mexico.

The bill is black, with a broad line of pale straw yellow running the whole length of the *culmen*, from which a band of the same colour passes downwards encircling the base of both mandibles.

This species resembles the *Rhamph. Cuvieri*, Wagl., which appears to Mr. Gould to be synonymous with *Rhamph. Erythrorhynchus*, the bill of which, he states, changes its colour according to the season from a brilliant scarlet to black.

PTEROGLOSSUS HYPOGLAUCUS. *Pter. olivaceo-brunneus, subtùs cæruleo-canus; vertice, occipite, caudâque nigris, rectricibus quatuor intermediis ad apicem brunneis; remigum pogoniis externis viridibus, internis brunneis; uropygio lutescente; tectricibus caudæ superioribus viridi-olivaceis.*

Long. 18¼ unc.; *caudæ*, 7; *alæ*, 6¾; *tarsi*, 1¼. *Rostri* long. 4; alt., 1½; lat. ad basin, 1¼.

Hab.

The varied colouring of this bird, and particularly the uniform silvery blueish grey of its under surface, afford a ready distinction of it from all the other *Toucans*. Its upper mandible is edged on its basal aspect by a narrow line of yellow, succeeded by a triangular spot of black; then follows an irregular mark of yellow, edged by a narrow irregular black line; the rest of the upper mandible throughout the whole of its *culmen* and sides is deep blood red: the lower mandible, for the basal half of its length, has the yellow and black colouring of the upper, but instead of terminating in red, this colour is exchanged for deep black.

The exhibition was resumed of the new species of *Shells*, forming part of the collection made by Mr. Cuming on the western coast of South America, and among the islands of the South Pacific

Ocean. Those exhibited on the present occasion were accompanied by characters by Mr. G. B. Sowerby.

Genus Triton.

Triton clathratus. *Trit. testâ oblongâ, turritâ, crassâ, albidâ, fusco maculatâ; anfractibus octo, decussatim sulcatis, granosis; suturâ crenulatâ; varicibus irregularibus, crassis, transversim sulcatis, longitudinaliter striatis; aperturâ subovatâ, margine internâ labii externi denticulatâ, labio columellari granuloso: long.* 1·2, *lat.* 0·6 *poll.*

Hab. ad Insulam Annaa.

Found on the reefs.—G. B. S.

Triton nitidulus. *Trit. testâ turritâ, crassiusculâ, politâ, fuscescente, maculis saturatioribus variis pictâ; anfractibus decem, inferioribus lævibus, superioribus longitudinaliter granoso-striatis; labio columellari lævissimo; varicibus albicantibus: long.* 1·5, *lat.* 0·5 *poll.*

Hab. ad Insulam Annaa.

Found on the reefs.—G. B. S.

Triton distortus. *Trit. testâ oblongo-turritâ, crassiusculâ, roseo-albicante, fusco maculatâ et nebulosâ; anfractibus undecim irregulariter tortuosis, seriatim graniferis, infra suturam crenulatis; varicibus secundis, lævibus, anticè granulosis; labio columellari anticè expanso, granuloso; margine internâ labii externi denticulatâ: long.* 1·6, *lat.* 0·6 *poll.*

Hab. ad Insulam Annaa.

Found on the reefs.—G. B. S.

Triton reticulatus. *Trit. testâ turritâ, acuminatâ, fuscescente, maculis nebulisque saturatioribus pictâ; anfractibus decem reticulatis, suturâ impressâ; varicibus reticulatis; margine internâ labii externi dentatâ; labio columellari anticè rugoso: long.* 1·3, *lat.* 0·4 *poll.*

Hab. ad Insulas Gallapagos.

Found under stones.—G. B. S.

Triton Mediterraneus. *Trit. testâ turritâ, acuminatâ, fuscescente, maculis nebulisque saturatioribus, nonnunquam strigisque pictâ; anfractibus novem, reticulatis, suturâ distinctâ; varicibus elevatis, latere dorsali profundè impresso, lineis transversis elevatis; margine internâ labii externi dentatâ; labio columellari anticè ruguloso: long.* 1·, *lat.* 0·35 *poll.*

Hab. ad oras Siciliæ.

This nearly resembles the last. It is placed here in order that the differences between the two may be seen by a comparison of the descriptions.—G. B. S.

Triton Ceylonensis. *Trit. testâ turritâ, gracili, pallescente, fusco maculatâ et variegatâ; anfractibus undecim, anticis octo reticulatis, suturâ subinconspicuâ; varicibus depressis; aperturâ oblongâ, margine labii externi internâ denticulatâ, peritremate reflexo, anticè dilatato; labio externo expanso: long.* 1·65, *lat.* 0·55 *poll.*

Hab. ad Insulam Ceylon.—G. B. S.

TRITON LINEATUS. *Trit. testâ turritâ, crassâ, pallescente, fulvo variegatâ; anfractibus novem, obsoletè transversim sulcatis, sulcis brunneis, interstitiis granulosis; varicibus obtusis; aperturâ oblongâ, labio externo intùs sulcato; labio interno anticè reflexo, incrassato; columellâ rugulosâ: long.* 2·6, *lat.* 1· *poll.*

Hab.

Much larger than any of the others. These seven may be regarded by some as mere varieties of *Trit. maculosus* of Lamarck, although I am fully satisfied of their being perfectly distinct species. I am, however, of opinion that it matters not whether they be regarded as species or varieties, seeing that it is equally necessary to describe them all particularly.—G. B. S.

TRITON DECOLLATUS. *Trit. testâ oblongo-subturritâ, pallescente, fusco variegatâ; apice retuso; anfractibus quinque, primis duobus reticulatis, reliquis ventricosis, transversim sulcatis, sulcis brunneis, interstitiis planiusculis; suturis distinctis; varice unico; aperturâ ovatâ, peritremate crenato; labio interno anticè reflexo, incrassato: long.* 1·, *lat.* 0·4 *poll.*

Hab. ad Insulam Annaa.

Found on the reefs, and easily distinguished from all the above by the fact of its being decollated and by its having only a single *varix*.—G. B. S.

Genus BULINUS.

BULINUS DISCREPANS. *Bul. testâ oblongâ, sabacuminatâ, albicante, nitidiusculâ; anfractibus quinque vel sex gibbosiusculis, lineis fuscis, obliquis irregulariter pictis, transversis duabus inferioribus subdistantibus; aperturâ subovatâ, supernè subacuminatâ: long.* 0·7, *lat.* 0·33 *poll.*

Hab. sub cortice arborum in Americâ Centrali.

This was found at Conchagua; it is somewhat similar to *Bul. nitidus*, but upon comparison may easily be distinguished.—G. B. S.

BULINUS CALVUS. *Bul. testâ oblongâ, subturritâ, pallescenti-brunneâ; anfractibus septem breviusculis, rotundatiusculis; aperturâ ellipticâ, margine internâ incrassatâ; umbilico mediocri: long.* 0·6, *lat.* 0·25 *poll.*

Variat nonnunquam lineâ spirali albicante.

Hab. ad Insulas Gallapagos.

Found on dried tufts of grass on James's, one of the Gallapagos Islands.—G. B. S.

BULINUS USTULATUS. *Bul. testâ oblongâ, subacuminatâ, fusco-nigricante; anfractibus sex vel septem gibbosiusculis, lineis nonnullis pallescentibus pictis; aperturâ ellipticâ, columellâ crassiusculâ, albicante, margine acutâ: long.* 0·6, *lat.* 0·3 *poll.*

Variat nonnunquam lineâ spirali pallidâ.

Hab. ad Insulas Gallapagos.

Found under detached pieces of lava on Charles's, one of the Gallapagos Islands.—G. B. S.

BULINUS PALLIDIOR.—*Bul. testâ oblongâ, subacuminatâ, totâ albicante; anfractibus sex, gibbosiusculis, ultimo maximo, inferioribus posticè marginatis; aperturâ oblongâ, intùs pallidè brunneâ,*

peritremate reflexo, anticè expanso, umbilicum mediocrem subocculante: long. 1·6, *lat.* 0·7 *poll.*

Mr. Cuming obtained two specimens of this species in South America, but without being able to ascertain its locality.—G. B. S.

Bulinus Luzonicus. *Bul. testâ oblongâ, subacuminatâ, albâ; apice obtuso, brunnescente; anfractibus quinque, lævibus, planulatis, inferioribus fusco cingulatis; aperturâ infrà rotundatâ, peritremate reflexo, cingulo fusco intùs notabili.*

Hab. ad Insulam Luçon, Philippinarum.

Two specimens of this very beautiful species are in Mr. Cuming's collection, both of which have only one dark brown band; a single specimen was among Mr. Humphrey's shells, which had three bands; he had called it *Chersina abbreviata*.—G. B. S.

Bulinus conspersus. *Bul. testâ ovato-subacuminatâ, tenui, corneâ, apice obtusiusculo; anfractibus sex, rotundatis, albido guttulatis et lineatis; aperturâ ovatâ, coloribus concoloribus pictâ; peritremate acuto, tenui; umbilico parvo: long.* 0·65, *lat.* 0·4 *poll.*

Hab. in collinis prope Lima.

Found buried in the earth under bushes on the hills around Lima. Two varieties abound there, of which one is more ventricose than the other. G. B. S.

Bulinus albus. *Bul. testâ ovato-ventricosâ, albâ, ore nonnunquam carneo; apice obtuso; anfractibus quinque, rotundatis, lævibus, suturâ distinctâ; aperturâ ovali, peritremate tenui, acuto; umbilico minimo: long.* 0·8, *lat.* 0·5 *poll.*

Variat punctulis corneis conspersâ.

Hab. in arenosis prope Copiapo.

Found in a sandy plain under bushes at Copiapo.—G. B. S.

Bulinus striatulus. *Bul. testâ oblongo-acuminatâ, albicante, subfusco tessellatâ; apice obtusiusculo; anfractibus sex vel septem, rotundatis, longitudinaliter striatis, striis elevatiusculis, exilibus; aperturâ oblongâ, peritremate tenui, acuto: long.* 0·9, *lat.* 0·45 *poll.*

Hab. in collinis prope Lima sub lapidibus.—G. B. S.

Bulinus decoloratus. *Bul. testâ oblongâ, subacuminatâ, albidâ, tenuissimâ; anfractibus quinque vel sex, longitudinaliter striatis, gibbosiusculis, cingulis nonnullis interruptis fuscescentibus; aperturâ ovali, margine acutâ; umbilico minimo: long.* 0·5, *lat.* 0·25 *poll.*

Hab. sub frutices prope Lima, Peruviæ.

Found buried in the earth under bushes on the hills around Lima.—G. B. S.

Bulinus unicolor. *Bul. testâ oblongâ, corneâ, tenui, apice obtuso; anfractibus sex, ventricosis, striatis, suturis distinctis; aperturâ ovatâ, margine tenui, acutâ; umbilico parvo: long.* 0·8, *lat.* 0·3 *poll.*

Hab. ad Insulam Perico in Sinu Panamensi.

Found on dead leaves.—G. B. S.

Bulinus Jacobi. *Bul. testâ oblongâ, tenui, fuscâ, nonnunquam albido bilineatâ; anfractibus sex, ventricosis, minutissimè granosis, granulis seriatis; suturâ profundè impressâ; aperturâ ovatâ, peritremate tenui, labio interno partim supra umbilicum magnum expanso; long. 0·55, lat. 0·3 poll.*

Hab. ad Insulam Jacobi, inter Gallapagos.

Found under scoriæ.—G. B. S.

Bulinus scabiosus. *Bul. testâ oblongo-pyramidali, brunneâ, apice saturatiore, albido guttatâ et maculatâ; anfractibus septem subventricosis, suturâ leviter impressâ; aperturâ subovali, peritremate tenui; umbilico parvo.*

Hab. ad Cobijam sub lapidibus.

This species resembles *Bul. pupiformis*; it is, however, much smaller and differently proportioned.—G. B. S.

Specimens were also exhibited from the same collection of two species of *Cirripedes*, apparently hitherto undescribed. They were characterized by Mr. G. B. Sowerby as follows:

Pollicipes ruber. *Poll. testâ irregulariter subtrigonâ, rubrâ, anticè subtùsque pallidiore; valvis superioribus majoribus, planulatis, subtrapeziformibus, supernè acuminatis; dorsali magno, sagittato, dorso rotundato-carinato; pedunculo squamulis minimis obtecto.*

Hab. apud Inner Lobos Island, ad littora Peruviæ.

This species is generally from 2 to 3 inches long; it is remarkable for the form and colour of the upper pair of valves and the dorsal valve. The interstices of the valves also are of a deep blood-red colour.—G. B. S.

Pollicipes polymerus. *Poll. testâ obtusè subtrigonâ; valvis lævibus, substriatis, superioribus quatuor majoribus convexis, subtrapeziformibus, apice posticè acuminato, basi subtruncato, reliquis plurimis plerumque subtrigonis; pedunculo squamulis minimis resupinatis obtecto.*

Hab. ad oras Californiæ.

The remarkable characters of this species are, the great number of small valves, and the minute scales of the peduncle being all placed with their *apices* downwards.—G. B. S.

Preparations were exhibited of the stomach and *cæcum* of two species of *Semnopithecus*, F. Cuv., *Semnn. Entellus* and *fascicularis*. They were obtained from individuals which recently died in the Society's Gardens.

Mr. Owen called the attention of the Society to these preparations in illustration of a Paper which he read "On the Sacculated Form of the Stomach in the *Monkeys* of the Genus *Semnopithecus*, F. Cuv." He referred to M. Otto as the first observer of this peculiar structure among the *Monkeys*, that eminent anatomist having described and figured it in the 'Nova Acta Academiæ Cæsareæ' (tom. xii. p. 511.), as it exists in a species to which he gave the name of *leucoprymnus*, placing it doubtingly among the

Cercopitheci, although it now seems by general consent to be regarded as a *Semnopithecus*. From its existence in M. Otto's species, and in the only two species of *Semnopithecus* which Mr. Owen has had opportunities of dissecting, the latter gentleman is disposed to consider it as appropriated to the genus, which may consequently be now regarded as established on anatomical as well as on zoological and geographical grounds.

The stomach of the *Entellus Monkey* (taken from an individual 1 foot 8 inches in length from the mouth to the *anus*) measured along the greater curvature, 2 feet 7 inches; along the lesser curvature, 1 foot: its greatest circumference was 1 foot and half an inch; its least circumference, 3 inches and two thirds. It may be regarded as consisting of three divisions: 1. a cardiac pouch, with smooth and simple *parietes*, slightly bifid at the extremity; 2. a middle, very wide, and sacculated portion; 3. a narrow elongated canal, sacculated at its commencement, and of simple structure towards its termination. The latter, from its greater vascularity and the more abundant distribution of the nerves of the eighth pair, Mr. Owen regards as the true digestive stomach; the two former divisions being rather to be considered as preparatory receptacles. Mr. Owen described the several portions in detail, and explained their physiology respectively, especially with respect to their fitness for performing a function analogous to rumination. He remarked, however, that while he referred to them, for the sake of perspicuity, as three principal divisions, it was necessary to observe that they are not characterized, like the stomachs of *Ruminants* or *Cetacea*, by any essential difference of structure, none of them possessing a cuticular lining.

The stomach of the *Croo Monkey* had precisely the same structure as that of the *Entellus*, but was smaller in proportion to the size of the animal. The individual from which it was obtained was much younger than the *Entellus*.

Mr. Owen referred to the displacement of some of the abdominal *viscera*, particularly of the liver, in consequence of the great development of the stomach. He also adverted to the length of the intestines, and by a tabular view of the measurements in the two *Semnopitheci*, in a *Cercopithecus*, and in a *Macacus*, he showed that notwithstanding the complication of the stomach in the former genus, the small intestines were proportionally longer than in the other two; the ratio being in *Semnopithecus*, eight to one; in *Cercopithecus*, six and a half to one; and in *Macacus*, four to one.

The stomach of *Semnopithecus* was carefully compared with that of the *Kangaroo*, and with that of the *Sloth*; both of which are well known to be remarkable for their complication. These were exhibited, as was also a preparation of the complicated stomach of a species of *Pteropus*.

In conclusion Mr. Owen inquired, what are the natural habits and food of these *slow Monkeys*, as M. F. Cuvier denominates the *Semnopitheci*? Will they be found to resemble those of the *Sloths*? Is their food more herbaceous than that of the *Monkeys* generally? This, he conceives, is highly probable; and that the enlarged capa-

city of the stomach enables them to carry off great quantities of herbage to masticate at their leisure, the great development of these receptacles compensating at once both for the absence or rudimentary condition of the cheek pouches and for the less nutritious quality of the food.

Col. Sykes reminded the Society that, in submitting his Catalogue of the *Mammalia* observed in Dukhun, East Indies, he took occasion to comment on the popular error respecting the ferocious and untameable disposition of the *common Hyæna, Hyæna vulgaris*, Cuv. His opinions were founded partly on observation of a cub which he had domesticated, and partly on facts communicated by his friends. He went on to state as follows:

"Two years have elapsed since I placed in the Gardens of the Society the above-mentioned cub (a female), which has now attained its full growth, and I am happy to be enabled to confirm the opinions I formerly advanced. In India it was allowed to run about my house, and on board ship it was released from its cage two or three times a day, to play with the sailors and gambol with the dogs. It early recognised my person and voice, and would obey when called; and in general was as playful and good-humoured as a puppy. My visits to it in the Gardens have been rare, and at long intervals, nor have I ever carried it food; I anticipated, therefore, that it would outgrow its early associations, and that I should be to it as any other stranger; but it has always greeted me not only as an acquaintance, but as an old friend; and if I am to judge from its agitation and peculiar cries, the animal's recognition is that of affection.

"On Sunday last it was asleep in its cage when I approached. On calling to it by its name it looked up, distinguished me in the crowd, started on its legs, and on my applying my hand to its mouth to smell to, it threw itself down against the bars, rubbed its head, neck, and back against my hand, and then started on its legs and bounded about its cage, uttering short cries. On ceasing to speak to it, and moving away, it stopped, and looked wistfully after me, nor resumed its motions until I addressed it again. Its manifestations of joy were so unequivocal, as to excite the surprise of a great number of bystanders. As these pleasing traits in the disposition of a calumniated animal appeared so new to those who surrounded me on that occasion, they may possibly be deemed of sufficient interest to be worthy of extended promulgation by record in our Proceedings.

"I take occasion to repeat my conviction, that association with man, constant kindness, and abundance of food, will suffice not only to modify, and indeed eradicate, the worst traits in the disposition of any animal of the higher classes, but give birth to others of which their natures were not deemed susceptible."

June 25, 1833.

Richard Owen, Esq. in the Chair.

Extracts were read from a letter addressed to the Secretary by W. Willshire, Esq., Corr. Memb. Z.S., dated Mogadore, May 5, 1833. It referred to various animals of Marocco which Mr. Willshire is in expectation of procuring for the Society. It also stated the opinion of the writer that "the *M'horr Antelope* [recently described by Mr. Bennett as a distinct species,] will be found to be of the same race as the *Nanguer* of Senegal;" Mr. Willshire "having traced the existence of the *M'horr* to Whadden (or Hoden on the maps), and even further to the southward, thus approaching near to Senegal." Mr. Willshire adds that he considers that "the *Antilope Leucoryx* is almost beyond a doubt the *Bekker-al-wash* of the Arabs of this neighbourhood."

Mr. Willshire forwarded at the same time the following account of the method practised in dressing skins in Marocco, the results of which are excellent as regards the preservation and colour of the fur and the flexibility of the pelt.

"Wash the skin in fresh water to deprive it of the salt; as soon as this is done scrape the flesh off; when take

"2 lbs. alum,

"1 quart buttermilk,

"2 or 3 handfuls barley meal,

"which mix well together, and lay on the fleshy side of the skin equally; fold up and press it together carefully, and let it lie two days. On the third day take it to the sea side, wash the skin well, and when clean and free from the mixture, hang it up to let the water run from it: then take 2 lbs. rock alum finely powdered, and throw or spread it equally on all parts of the skin; again fold up as before, and allow it to lie three days, when it will be in a proper state to dry in the sun, laid flat without taking away the powder. When it is dry, take a pint or two of fresh water and sprinkle it upon the skin, and again fold it up carefully for about two hours to imbibe the water; then lay it on a table, and after scraping it free from the mixture and flesh, take a sand stone (rather rough) and rub the skin well until it becomes soft and pliable, then hang it in the shade to dry. The process is then complete.

"When the skin is perfect, having the head, horns, &c., take off the horns and fill their cavity with a mixture of equal parts of powdered alum and ashes of charcoal, dissolved in water, and expose them two days to the sun. Saturate the trunks of the horns with 8 ounces of alum dissolved in water, and fold up with the skin, and apply the same on each occasion when employed in curing the skin. The flesh on the head and jaws to be carefully taken off, filling the

same with powdered alum. It should remain in the sun until perfectly dry.

"In addition to the foregoing description of the mode used in this country in dressing skins, as related by the person employed by me, it may be well to observe that the process does not take so long here, as I have often received back skins of the *Aoudad* and *Leopard* from the dresser, on the third or fourth, and never exceeding the fifth day, perfectly cured. Allowance has been made by the dresser, in the foregoing description, for the difference in the climate of London.

"The skins of smaller animals must not be subjected to so lengthened a process, or they will become harsh, and the pelt impoverished.—W. W."

A brief description was read of a pair of *Doves*, now living at the Society's Gardens, which had been pointed out by Mr. Vigors as representatives of a species hitherto undescribed. It may be characterized as follows:

COLUMBA PRINCEPS, Vig. *Col. suprà cinerea, subtùs alba; nuchâ rufo-castaneâ, metallicè splendente, scapulas versus vinaceâ; gutture viridi, metallicè splendente; caudâ suprà cacaoticâ, infrà pallidiori.*

Hab. in Australiâ.

This bird exceeds by one fourth the size of the *Wood Pigeon* of Europe. Its beaks and legs are crimson, and its *irides* hazel.

Dr. Grant exhibited a preparation of the *cloaca* of a female *Condor*, *Sarcorhamphus Gryphus*, Dum., which recently died at the Society's Gardens. He entered into a series of observations on the subject, demonstrating the differences of structure and appearance existing in its several parts, and the several orifices opening into it. He adverted to the imperfect development of the right oviduct and ovary in the class of *Birds*, and considered it as probably dependent on the position of the *aorta* in that class. To the position of the *aorta* in the *Mammalia* he was also disposed to attribute the inferior powers of the left side of the animals composing that class, an inferiority which is very striking in the cranial structure of the *Cetacea*, to which he had occasion to refer at the last Meeting of the Society. He dwelt particularly on the *bursa Fabricii*, remarkably evident in this large bird, and explained the several uses which had been attributed to that organ by its discoverer and by subsequent anatomists. With M. Geoffroy-Saint-Hilaire he regarded it as the analogue of Cowper's glands in the *Mammalia*, and adduced various reasons in favour of this view.

Mr. F. D. Bennett exhibited a dried preparation of the upper *larynx* and adjoining parts of the *Albatross*, *Diomedea exulans*, Linn., for the purpose of demonstrating the existence in that bird of an *epiglottis*.

The *rima glottidis* is bounded by two elevated fleshy lips, which

consist of mucous membrane and some few muscular fibres, and are armed with retroflexed *spiculæ*. These lips are in perfect contact at the hinder part of the *glottis* when it is closed, but diverge near their anterior part so as to leave a triangular open space of about the size of a pea, the edges of which are incapable of being approximated to each other. In front of this triangular aperture, and at some distance behind the tongue, (to which it is connected by mucous membrane and muscular fibres,) is an elevated substance of a soft leathery texture, resembling that of the *epiglottis* of *Mammalia*: its form is triangular, the *apex* being inferior and connected with the tongue, and the base being elevated and terminating in three thin convex portions or lobes. The middle one of these lobes is the largest; it is free, and rests immediately over the triangular orifice of the *larynx* just described, which, when depressed, it is in size adapted to cover. In a line continuous with the floor of the upper *larynx* and penetrating deeply beneath the *epiglottis* is a cavity or sac lined with mucous membrane.

Having demonstrated these parts on the preparation exhibited by him, Mr. F. D. Bennett added that as it had been the opinion of naturalists in all ages that no bird possesses an *epiglottis*, the structure which he had brought under the notice of the Society appeared to him highly interesting. So fixed was the opinion to which he had adverted that when Warren showed the existence in the *Ostrich*, *Struthio Camelus*, Linn., of a structure which he regarded as an *epiglottis*, the denomination was generally rejected even in this anomalous *bird*, and the part was considered as a mere elevation at the base of the tongue, a rudiment, but without the function, of the organ. In the *Albatross*, however, the function is that of an *epiglottis*; and the size, though small, is sufficient for the protection of that portion of the *rima glottidis* which cannot be closed in the manner usual in *Birds* by the apposition of its margins. With a peculiar structure of the *glottis* there exists an apparatus equally peculiar in the class, as a provision against the inconvenience which might otherwise result from the deviation from the normal structure.

Mr. F. D. Bennett also exhibited several specimens of a species of *Pyrosoma* captured by him, on the 6th September 1832, at sea, in lat. 1° 41′ N., long. 11° 56′ W. Between 2 and 4 A.M. the sea, having been two hours before less luminous than usual, presented one mass of bright phosphoric light extending to a considerable distance around the vessel. The extensive field of bright luminous matter emitted so powerful a light as to illuminate the sails, and to permit a book of small print to be read with facility near the windows of the stern cabins. Above this luminous field numerous sea fowl were hovering in search of their prey. The light appeared to be entirely owing to the *Pyrosomata*.

Specimens taken from the sea and placed in a vessel containing sea water, ceased altogether to emit light, or emitted it but sparingly while they remained at rest. On the water, however, being

agitated, or when one of the masses of animals was taken into the hand, the whole mass became instantly illuminated by myriads of bright dots, much resembling in hue the points on the *elytra* of a *diamond Beetle, Curculio imperialis*, Fab.

The *Pyrosoma*, thus enveloped throughout its whole extent in a flame of bright phosphorescent light gleaming with its peculiar hue, presented a most splendid spectacle; the light shed by it was sufficient to render objects distinctly visible in every part of an otherwise dark room. If long retained in the hand, or returned to a quiescent state in the water, the luminous spots gradually faded, and no light was visible until the animal was again disturbed, when the illumination instantly returned with all its vivid splendour. After death it emitted no light.

The mass of *Pyrosoma*, of the usual cylindrical form and gelatinous substance, was about 4 inches in length and 1½ in circumference. The tube, passing along its middle, is described as being open at both ends; the orifice at the broader extremity being much better defined in its circular form, larger, and more distinct than that of the opposite end. The surface of the mass appeared to be studded with numerous prominent rigid and pearly tubercles intermingled with small specks of a brown or red colour. In these latter the power of emitting light appeared chiefly to be seated, these being frequently bright while the remainder of the body exhibited only its natural white or yellowish white hue; a hue which changed after death into a red tinge. The brown specks, when removed from the body, did not emit light.

A "Description, with Additional Particulars, of the *Apteryx Australis* of Shaw," by Mr. Yarrell, was read. It described in greater detail than the communication made by the author on February 12, (page 24,) the external structure of this singular bird. It also observed on its probable habits, and on its place in the natural series in immediate relation with the *Struthionidæ*. Following up the history of our acquaintance with it, which commenced with the possession by Dr. Shaw of a single perfect skin (hitherto unique and brought under the observation of the Society by the kindness of the President, of whose collection it now forms part), Mr. Yarrell referred to the incidental notices of it by Captain Cruise, M. Lesson, M. Duperrey, and M. Gaimard, and from the evidence thus collected pointed out its locality to be Mount Ikou-Rangui, near East Cape, New Zealand, and its native name to be *Kiwi*, frequently doubled, according to the custom of the natives, into *Kiwi-Kiwi*. With this information it is hoped that some of our enterprising countrymen in that quarter may, ere long, succeed in acquiring additional specimens and additional knowledge, as regards both the habits and the structure of this curious race.

July 9, 1833.

Thomas Bell, Esq., in the Chair.

A letter was read, addressed to the Secretary by Charles Telfair, Esq., Corr. Memb. Z.S., and dated Port Louis, February 25, 1833. It gave an account of the history of a gigantic living specimen of the *Indian Tortoise, Testudo Indica*, Linn., which has recently been presented to the Society by Lieut. General Sir Charles Colville, late Governor of the Mauritius. The specimen is one of those which were brought from the Seychelles Islands to the Isle of France in 1766, by the Chevalier Marion du Fresne; and is believed to have since remained unchanged in size and appearance. Its length, measured along the curve of the back, is 4 feet 4¼ inches; its breadth, taken in the same manner, 4 feet 9 inches; the length of its *sternum*, 2 feet 8 inches; the breadth of its *sternum*, 2 feet 1½ inch. Its weight is 285 pounds.

An extract was read from a second letter from Mr. Telfair, of the date of Feb. 26, referring to an animal known in the interior of Madagascar by the name of *Sokinah*. Mr. Telfair regards it as an undescribed species of *Tenrec, Centenes*, Ill. A specimen of a very young individual, which was transmitted in spirit by Mr. Telfair, was exhibited, and compared with young specimens of the *European Hedge-hog, Erinaceus Europæus*, Linn., and of the *half-spiny Tenrec, Centenes semi-spinosus*, Ill. Its extreme youth, however, precluded the possibility of satisfactorily characterizing it. It was born in confinement, and lived for seventeen days; its parents having escaped from their cage on the night of its birth.

A letter was read, addressed to the Secretary by R. J. Bourchier, Esq., Corr. Memb. Z.S., dated Malta, June 8, 1833. It contained an account of two *Vultures, Vultur Kolbii*, Daud., (the *Chassefiente* of Le Vaillant,) which have recently been presented to the Society's Menagerie by Sir Thomas Reade, Corr. Memb. Z.S., His Majesty's Consul at Tunis. Mr. Bourchier also adverted to his attempts to procure for the Society living *Bustards* from Northern Africa. Although the birds are secured without much difficulty, his attempts have been hitherto unsuccessful, owing to the impossibility of keeping them alive in confinement for any considerable length of time, so inveterately sulky is their nature. He proposes to endeavour to obtain them at a very early age; or, if possible, to procure their eggs and have them hatched under a *domestic Turkey*.

A specimen was exhibited of the Indian variety of the *Nilotic Crocodile, Crocodilus vulgaris*, Cuv., obtained in Vellore, and pre-

sented to the Society by Alexander Bain, Esq. At the request of the Chairman, Dr. Harlan explained the structure of the heart and the course of the circulation in the *pike-headed Alligator*, *Alligator Mississippensis*, which he had described in detail in the 'Journal of the Academy of Natural Sciences of Philadelphia.'

Specimens of various objects of zoology, collected by George Bennett, Esq., Corr. Memb. Z.S., during his late voyage to New South Wales and in that colony, were exhibited. They were transmitted by Mr. G. Bennett to the Royal College of Surgeons, and the exhibition was made with the permission of the Board of Curators of the College Museum. They included a portion of a *Flying-fish*, to a parasite on which several *Barnacles* (*Cineras*, Leach,) were attached: several *Mollusca*: a river *Lobster*: portions of the *Death Adder*, &c. &c. They also included the *uterus* of a *Kangaroo*, "showing the fœtus with a *placenta* attached, contained within it." Mr. Owen, by whom the preparations were brought under the notice of the Society, and who remarked on each of them as they were severally presented, observed on this that he had not yet examined it sufficiently to determine the structure of the umbilical appendage visible in the preparation. It was accompanied by sketches by Mr. G. Bennett of the fœtal *Kangaroo in utero*, which were exhibited.

The preparations were accompanied by a letter addressed by Mr. G. Bennett to Mr. Owen, and dated Sydney, New South Wales, February 4, 1833, from which several extracts were read. Among them was the following:

"I have a section of one female *Ornithorhynchus* which I shot, in which the milk gland is very large; and I can now inform you from actual observation that milk is secreted from it: it comes out (as your mercury did when you injected the ducts,) in small drops on the surface of the skin. I intend sending you a further account of this; but you can mention it to the Zoological Society as a decided fact; and which had also been seen by some intelligent gentlemen in this country;—but I was not satisfied to assert it until I became an eye-witness of the fact. I wish you to show the specimens to the Zoological Society, with some brief comments in my name, stating also that I am about to send home a detailed account of the habits and œconomy of the *Ornithorhynchus* and *Kangaroo*."

The exhibition was resumed of the new species of *Shells* contained in the collection made by Mr. Cuming on the western coast of South America, and among the Islands of the South Pacific Ocean. Those brought on the present evening under the notice of the Society were accompanied, as on previous occasions, by characters by Mr. Broderip and Mr. G. B. Sowerby. They comprehended the following species of the

Genus CARDIUM.

CARDIUM CUMINGII. *Card. testâ æquivalvi, tumidâ, fragili, roseâ, diaphanâ, egregiè cancellatâ, anticè rugosâ, valvis posticè hiantibus; cristâ anticâ subalbidâ ab umbonis latere postico ad mar-*

ginem ventralem extensâ, in utrâque valvâ: alt. $\frac{8}{10}$, *lat.* $\frac{8}{10}$, *long.* 1 *poll.*

Hab. in Americâ Centrali. (Gulf of Dulce.)

This beautiful bivalve, rosy, transparent, and exquisitely wrought, was found by Mr. Cuming, whose name it bears. It was obtained from sandy mud, at a depth of twelve fathoms.

Pellucid, and with the valves separated posteriorly like the *Anatinæ*, with a crest so identical in form and structure with that of some of the *Mactræ* as to leave no doubt that this appendage is secreted in the same manner as it is in the latter genus,—*Cardium Cumingii* has the teeth and hinge of *Cardium*, and approaches so closely in many points to *Cardium bullatum* or *soleniforme* and others of that division, that, in the absence of all assistance which might be derived from investigating the anatomical structure of the animal, I do not feel justified in separating it from them.

Every one conversant with the subject has observed how very variable the teeth are in the genus *Cardium*. We have an edentulous *Cardium* (*Card. Grœnlandicum*), and another, a fossil species, entirely destitute of lateral teeth on one side. Whether this genus does not require revision is a question into which I shall not now enter. Certain it is that it comprehends a very great variety of external form and structure.—W. J. B.

CARDIUM PROCERUM. *Card. testâ ovatâ, dorso acuminatiusculo, pallidâ, fusco maculatâ, anticè rotundatâ, posticè subangulatâ; costis radiantibus* 25, *anticis quatuor primis obsoletiusculis, reliquis prominentibus, posticè angulatis, subrugosis; medianis planulatis, utrinque obtusè anguliferis; posticis anticè angulatis; insterstitiis planulatis; latere postico ringente, dentibus marginalibus validis; epidermide fuscâ: long.* 3·3, *lat.* 3·1, *alt.* 3·9 *poll.*

Hab. in Americâ Centrali. (Real Llejos.)

Found in coarse sand in from four to six fathoms water.—G. B. S.

CARDIUM ORBITA. *Card. testâ obovali, pallescente, fulvo variegatâ; anticè rotundatâ, posticè subangulatâ; costis radiantibus* 42, *anticis rotundatis, transversim costatis; medianis utrinque granosis, granis posticis majoribus; posticis posticè granosis, granis obliquis dentiformibus; interstitiis, præcipuè medianis, profundis; cardinis dente laterali antico maximo: long.* 2·5, *lat.* 2·3, *alt.* 3·3 *poll.*

Hab. ad Insulam Annaa in Oceano Pacifico.

Found in fine coral sand on the reefs.

CARDIUM PLANICOSTATUM. *Card. testâ subcordiformi, pallescente, fusco fulvoque variegatâ; anticè rotundatâ, posticè truncatâ, rotundato-angulatâ; areæ posticæ medio prominulo; costis radiantibus* 30, *planulatis, acutimarginatis, anticis transversim costellatis, posticis posticè crenulatis, omnibus creberrimè transversim striatis; umbonibus prominentibus; depressione profundâ sub umbonibus anticè conspicuâ: long.* 1·4, *lat.* 1·2, *alt.* 1·6 *poll.*

Hab. ad oras Americæ Centralis. (Guacomayo.)

Found in fine sand, at a depth of thirteen fathoms.

This species resembles *Card. medium* in its general form and appearance, but may easily be distinguished by a careful attention to the above characters.—G. B. S.

CARDIUM OBOVALE. *Card. testâ obovali, altiore quàm longâ, albâ, lateribus brevissimis, antico paulò longiore; medio ex umbone ad marginem inferam rotundato-carinato; costis radiantibus 22, lateralibus depressiusculis, anticis posticè crenulatis, medianis supernè transversim rugosis, interstitiis omnibus transversim striatis; dente laterali antico ad cardinem propiùs admoto: long. 0·55, lat. 0·55, alt. 0·8 poll.*

Hab. ad oras Americæ Meridionalis. (Xipixapi.)

Found in sandy mud at eleven fathoms depth.

A species very remarkable for the peculiarity of its general form; its length and breadth being equal, and its height much greater.—G. B. S.

CARDIUM ELATUM. *Card. testâ ovali, obliquâ, lævigatâ, ventricosissimâ, flavâ; sulcis radiantibus plurimis, medianis, prater posticis, obsoletis; aread laterali, posticâ, anticâque lævibus, marginibus edentulis; marginibus ventralibus dentatis; epidermide tenui: long. 4·, lat. 3·5, alt. 4·5 poll.*

Hab. ad Guaymas in Sinu Californiensi.

Found in sandy mud at low water.

This is the largest species of *Cardium* which I am acquainted with, its dimensions sometimes far exceeding those given above. It belongs to the same group in the genus as *Card. lævigatum, Card. serratum, Card. sulcatum,* &c.—G. B. S.

CARDIUM SENTICOSUM. *Card. testâ suborbiculari, compressiusculâ, albidâ, purpurascenti-fusco variegatâ; costis radiantibus 39—40, tredecim anticis anticè graniferis; demum 2—3 utrinque graniferis; reliquis posticè angulatis, graniferis, granis obliquis, posterioribus majoribus; interstitiis omnibus angustis, transversim striatis; latere postico ringente, dentibus marginalibus validis, purpurascentibus: long. 1·5, lat. 1·1, alt. 1·5 poll.*

Hab. ad Sanctam Elenam, Americæ Meridionalis.

Found in sandy mud at from six to twelve fathoms depth.

Very like *Card. muricatum,* but differing from it in being orbicular, in having more ribs, and in the form of the little grains upon the ribs.—G. B. S.

CARDIUM MULTIPUNCTATUM. *Card. testâ ovali, obliquâ, depressiusculâ, lævi, politâ, roseo-fulvâ, maculis punctisque plurimis saturatioribus; striis radiantibus confertissimis; margine posticâ dorsali subangulatâ: long. 1·3, lat. 0·8, alt. 1·5 poll.*

Hab. ad littora Chinæ.

Only two specimens of this rare and beautiful species are in Mr. Cuming's collection.—G. B. S.

CARDIUM UNIMACULATUM. *Card. testâ cordiformi, albâ, maculâ sanguineâ posticâ; valvis valdè convexis, carinatis, carinâ dentatâ; latere antico productiore, tumidiusculo; latitudine 0·55 longitudinem duplo superante, alt. 0·6 poll.*

Variat interdum immaculatum.

Hab. ad Insulam Annaa in Oceano Pacifico.

At first I took this for the young of *Card. Cardisce*, but find it differs in several particulars, and there are a great number of specimens exactly alike.

Found in fine coral sand on the reefs in great abundance.—G. B. S.

CARDIUM CONSORS. *Card. testâ obovali, turgidâ, altiore quàm longâ, pallescente, fusco-rufescente marmoratâ, radiatim multicostatâ; costis confertim squamosis, squamis fornicatis, anterioribus marginibus reflexis, posterioribus porrectis; intùs purpurascenti-fuscâ: long.* 2·, *lat.* 2·2, *alt.* 2·6 *poll.*

Hab. ad Sanctam Elenam et ad Guacamayo.

Collected in sandy mud at from six to eleven fathoms.

The number of ribs in this species is 34; they are more numerous and more closely set together than in *Card. Isocardia*, which it otherwise much resembles.—G. B. S.

CARDIUM LATICOSTATUM. *Card. testâ rotundatâ, subventricosâ, posticè subangulatâ, ringente, pallidâ, fusco maculosâ, radiatim costatâ; costis anticis medianisque latis, rotundatis, posticis angulatis: interstitiis angustis: long.* 1·7, *lat.* 1·3, *alt.* 1·7 *poll.*

Hab. in Sinu Xipixapi.

Found in sandy mud at the depth of eleven fathoms.—G. B. S.

CARDIUM MACULOSUM. *Card. testâ obovali, subventricosâ, posticè subdeclivi, marmoratâ, radiatim costatâ; costis anticis planatis marginibus crenatis, posticis rotundatis; interstitiis anticis angustissimis: long.* 1·9, *lat.* 1·5, *alt.* 2·5 *poll.*

Hab. ad Insulas Tres Marias, in Sinu Californiensi.

Found on the sands.—G. B. S.

CARDIUM PANAMENSE. *Card. testâ obovali, anticè rotundatâ, posticè subangulatâ, ringente; costis radiantibus anticis medianisque latis, magnis, primùm angulatis, demùm rotundatis, posticis angustioribus anticè crenatis: long.* 1·5, *lat.* 1·4, *alt.* 1·9 *poll.*

Hab. ad Panamam.

Found in sandy mud at a depth of ten fathoms.—G. B. S.

CARDIUM ASPERSUM. *Card. testâ longitudinaliter ovali, posticè hiante, pallidâ, rufescente marmoratâ, serratâ; lateribus subæqualibus; costis radiantibus numerosis, lateralibus crenulatis, medianis planulatis: long.* 1·6, *lat.* 0·75, *alt.* 1·2 *poll.*

Hab. ad Sanctam Elenam et ad Montem Christe.

Found in sandy mud at seven fathoms depth.

This resembles *Card. soleniforme*; by comparison, however, it is easily distinguished.—G. B. S.

CARDIUM MULTISTRIATUM. *Card. testâ obovali, pallidè fulvâ, rufo punctulatâ; striis radiantibus numerosis, anticis decussatis, posticis subgraniferis: long.* 0·8, *lat.* 0·7, *alt.* 0·9 *poll.*

Hab.

Only one specimen was found.—G. B. S.

Dr. Grant communicated the following extract from a letter which he had received from Dr. Coldstream, of Edinburgh :—

" Torquay, (Devon,) Nov. 10, 1832.—Today I examined the *ova* of *Sepia officinalis*. A group of eighteen was attached (each by a ring formed of its semigelatinous coats) to a leaf of *Zostera marina*. They were of an elongated oval shape, about 1 inch in length and $\frac{4}{10}$ths in breadth ; colour black, shining ; consistence soft. Tunics of the *ovum* very numerous, of various thickness, arranged concentrically. When these tunics were removed in succession until the *ovum* became transparent, I saw distinctly the contained fœtus and its yelk within the inner coat. I could see it move and respire. When the egg was gently pressed, it moved briskly. I succeeded in getting the inner membrane with the contained fœtus out of the egg entire. I kept one in this state in sea-water for many hours, at the end of which time no change had taken place. Others I opened, and let out the fœtus ; at first preserving it in its own fluid. Its only evident motion was that of respiration performed with more or less activity, according to the degree of disturbance given to it. When at rest, the respirations were thirty two per minute. The sac was dilated, and the funnel raised as in the adult ; and from the transparency of the mantle, I could see plainly the motions of the lateral valves. The surface was marked with several spots ; proportionally, not so numerous as in the adult. These seemed to me to become larger after the removal from the egg ; but I saw no contraction and dilatation similar to what occurs in the adult. The yelk at first adhered to the front of the body, being placed between the arms ; but I could not see how it was attached. In a short time it dropped off. It seemed to consist of a very thin membrane, inclosing a homogeneous transparent jelly. The lateral fin was broad, and, when the animal moved, had much wavy motion. When touched, before the yelk separated, the sac was contracted, raised, and a sharp expiration took place. The same, after separation of the yelk, was sufficient to make the animal move backwards a short distance. When salt-water was mixed with the fluid in which the fœtus floated, the animal, at first, appeared uneasy, drew its mantle over its eyes, and breathed quickly. This agitation, however, soon subsided, and there seemed to be additional vigour imparted. Viewed ventrally, the ink bag's silvery coats were seen shining through the mantle; and when the animal was touched, it twice or thrice ejected minute streams of ink. Whole length of the fœtus $\frac{4}{10}$ths of an inch. The eyes were very large proportionally. The suckers on the arms appeared only as minute tubercles. The shape of the yelk was nearly spherical ; diameter about $\frac{2}{10}$ths of an inch.

" Nov. 12.—The fœtus taken out of its egg on the 10th instant was, on the same evening, put into salt water, which happened to be muddy ; it continued to respire, and appeared well all the evening ; but afterwards its sac contracted so as to allow the lateral valves to be seen outside, and it was languid : next morning it was dead. Today I dissected it. The shell was found loosely imbedded in the mantle. It was $\frac{2}{10}$ths of an inch in length ; white; in shape

ovate; thickest at the narrow end, where it was almost opaque; composed of five concentric layers; outermost very thin, translucent, spotless; others marked with variously shaped spots; near the margin of the shell these were simple [roundish, oval, or oblong]; towards the centre more complex [elongated and variously but slightly branched]. Internally, I found the gills distinctly, and, to all appearance, perfectly formed. The ink bag contained a considerable quantity of very deep-coloured ink. The inferior pair of arms were very broad at their base, and furnished with a fin-like expansion.

"The fœtus which I laid aside (in salt water), covered with the inner coat only (that membrane being entire), I found this morning outside of it and dead. I opened others of the group of eggs, and found every fœtus dead. Some had ejected part of their ink within the egg. In some the amniotic fluid was, in part, gelatinous. The spots were distinctly visible on the skin of the mantle, head, and arms; yellowish brown beneath; darker above."

Mr. Cox read a Paper "On the Circumstances which modify the Existence of Animals in Northern Regions." He dwelt on the migrations of these animals, chiefly in search of food, which in the countries they usually inhabit could scarcely be obtained during the winter months. When the spring returns, and the supply of nutriment becomes abundant, plethora and consequent disease would probably result; but this, the author conceives, is provided against partly by the expenditure of the animal forces for the purposes of generation, and, in the *Ruminants* with deciduous horns at least, by the extra supply of blood required for the renovation of these organs. The horns of the several species of *Deer*, Mr. Cox remarked, appear to be large proportionally with the extent to which the variation in the deficiency and abundance of food at different seasons of the year prevails; those of the extreme north being much more heavy and branched than those of the animals of more temperate regions; and the branching being at its minimum in the *Deer* of India. In still warmer countries and in tropical regions, *Deer* almost cease to exist, their place being occupied by *Antelopes*, *Ruminants* with persistent horns; a provision quite in accordance with the assumed law that the growth of horn is designed to employ superabundant blood produced by excess of nourishment at one period of the year, these animals in which the horns are continually growing having constantly at their disposal food in sufficient and nearly equable quantity.

July 23, 1833.

William Yarrell, Esq. in the Chair.

A letter was read, addressed to the Society by W. Williamson, Esq., dated Scarborough, July 2, 1833. It contained a full description of a specimen of the *garrulous Roller, Coracias garrula*, Linn., which was shot in the previous week in a limestone quarry near that place. The description was that of a female in nearly adult plumage.

A specimen was exhibited of the *Irish Hare*, recently presented to the Society by Mr. Yarrell, who pointed out the characters by which it is distinguished from the *common Hare* of England and the Continent of Europe. Its head is shorter and more rounded; its ears still shorter than its head; and its limbs less lengthened. The fur also differs essentially from that of the *common Hare*, and is useless as an article of trade. Mr. Yarrell added, that he had lately brought a specimen of it under the notice of the Linnean Society.

At the request of the Chairman, Dr. Stark exhibited the skeleton of the *edible Frog, Rana esculenta*, Linn., and stated that this species is found in the neighbourhood of Edinburgh, whence his specimen was obtained. He pointed out some of the differences between its osseous structure and that of the *common Frog, Rana temporaria*, Linn.

Dr. Stark also stated that he had obtained in the neighbourhood of Edinburgh specimens of a species of *Stickleback, Gasterosteus*, Linn., not previously known to exist in Great Britain.

In answer to a question on the subject, Dr. Stark described the changes produced in the colour of various *Fishes*, both of fresh and salt water, but especially in *Minnows, Leuciscus Phoxinus*, Cuv., in consequence of their being kept in water contained in vessels of different colours; the tendency of the fish being to assume the colour of the vessel in which it is kept.

The stomach and *cæcum* of a *Squirrel Monkey, Callithrix sciureus*, Geoff., which recently died at the Society's Gardens, were exhibited. At the request of the Chairman, Mr. Martin read his notes of the dissection of the animal.

"The length of the body in this individual was 10 inches; that of its tail, 14.

"On opening the *abdomen*, the *viscera* were observed to occupy the usual situation, and presented nothing remarkable in their general aspect.

" The liver consisted of three lobes on the right and two on the left side. On the under surface of the first of the lobes belonging to the right portion, so as to be entirely concealed, was situated the gall bladder. In shape this organ was oval, and $\frac{3}{4}$ of an inch in length. Its duct, nearly 1 inch in length, entered the *duodenum* about $\frac{1}{3}$rd of an inch from the *pylorus*, being joined $\frac{1}{4}$th of an inch before its entrance by the hepatic duct. The bladder was full of green bile.

" The *pancreas* began distinct and narrow, closely adherent to the pyloric portion of the stomach on its dorsal aspect, and ended in a broad irregular mass, surrounded by the first curve of the *duodenum*. The length, when dissected away and extended, was $1\frac{3}{4}$ inch.

" The spleen, of a prismatic form, lay closely attached to the cardiac portion of the stomach, by which it was almost wholly concealed. Its length was 2 inches.

" The small intestines measured 3 feet in length: their circumference was 1 inch: their texture thin and transparent.

" The large intestines measured $1\frac{1}{2}$ inch in circumference, and were firmer than the small intestines: their surface was smooth and uniform, being destitute of longitudinal bands, or *sacculi*. In length they measured $6\frac{1}{2}$ inches.

" The *cæcum*, $1\frac{1}{2}$ inch in length, was pointed and recurved. Several mesenteric glands were clustered around the junction of the small and large intestines.

" The stomach was large, somewhat globular, having the cardiac portion developed, and the pyloric short. The measurement of the larger curve was 5 inches and 2 lines. The *omentum* was small and very thin.

" The kidneys, of which the right was rather the highest, were oval in shape, with a depression at the spot where the vessels enter. Their cortical substance was very thin and not very distinct. Their length was 1 inch. The urinary *tubuli* entered the *pelvis* by a single *papilla*. Renal capsules of the size of peas were closely attached. The ureters entered the bladder on its posterior aspect, two thirds from the *fundus*.

" The *uterus* was small. The ovaries were about the size of tares. The *clitoris* was $\frac{1}{2}$ an inch in length, pointed, and like a *penis* pendent from the *symphysis pubis*.

" The lungs had two lobes on the left side and three on the right: those on the left side were healthy; but those on the right were diseased, adhering to the *pleura costalis*, which was highly inflamed and covered with a coating of coagulable lymph. On cutting into the lobes one was found to be completely disorganized, and filled with caseous matter; the other two were in a state of active inflammation, having a firm fleshy feel and appearance, the cells being filled with lymph. The lining membrane of the *larynx* and *bronchi* appeared healthy.

" The tongue was pointed, and on its basal portion were three *papillæ*, placed so as to form the three points of a triangle, the *apex*

pointing towards the gullet, and being distant $\frac{1}{4}$ inch from the *glottis*: the length of the tongue was $1\frac{1}{8}$ inch.

"The *epiglottis* was broad and indented on the anterior edge.

"The thyroid gland was single, of an oval form, and nearly $\frac{4}{5}$ths of an inch in length.

"The heart was broad, and its *apex* blunt."

Colonel Sykes exhibited several specimens of *Loligo sagittata*, var. β, Lam., which came on board the Lady Feversham on his passage to England in 1831. He read the following extracts respecting them from his journal.

"Monday, April 3, 1831.—Lat. 22° 20′ S., long. 1° 52′ E.—Three specimens of *Loligo sagittata* leaped on board at sun-set on the forecastle, which the men saw, the trade wind being so light at the time as to threaten a calm.

"Two days afterwards, in lat. 18° 6′ S., long. 3° 12′ W., several other individuals of the same species were found at daylight on the poop, having come on board during the night, the wind having been steady and the sea smooth."

Col. Sykes stated that his object in bringing the specimens under the notice of the Society, was to point out the locality from which they were obtained, the habitats given by Lamarck being the European and American seas; and to direct particular attention to the leaping powers of the animal, which he believed to have been hitherto unobserved. He added that he was unable to satisfy himself as to the organization by which it was enabled to throw itself above the surface of the sea.

Mr. Owen mentioned as an additional instance of the existence of this power in the *Loligo sagittata*, that two specimens were preserved in the Museum of the Royal College of Surgeons, to which they were presented by Dr. Henderson as having leaped on board a vessel in the Mediterranean.

Dr. Grant again called the attention of the Society to his specimen of *Loligopsis guttata*, Grant, and to specimens of *Sepiola vulgaris*, Leach, for the purpose of explaining more fully the anatomical structure of these species, which he had exhibited, with *Sepiola stenodactyla*, Grant, at the Meetings on February 12 and March 26. He gave a detailed account of their anatomy, which he illustrated by reference to an extensive series of diagrams prepared by himself. These diagrams have been engraved on a reduced scale for publication in the Society's Transactions.

In the *Loligopsis* the *parietes* of the mantle are remarkably thin and loose, excepting where they are supported by the dorsal transparent *lamina*, and by two thin cartilaginous *laminæ* extending from the free edge of the mantle about half-way down the sides, and placed rather towards the ventral surface of the animal. These lateral *laminæ* present an appearance anomalous in *Cephalopods*. Each of them sends out twelve or thirteen conical tubercles, about a line

in diameter at their base, and projecting to the distance of a line beyond the general surface of the mantle.

The *viscera* occupy but a small portion of the cavity of the mantle, in which they are placed far backwards, the *branchiæ* themselves not extending forwards beyond the middle of the sac. The liver is divided, as in *Nautilus*, into four principal lobes, which are quite separate from each other; but the lobules which compose these lobes are not, as in the *Testaceous Cephalopod*, detached from each other. The branchial arteries are surrounded, before entering the auricles, by a spherical cluster of vesicles, like those which open into these vessels in *Nautilus*; but the auricles are not, as in *Nautilus*, wanting: they are, however, destitute of those singular *appendices* usually found attached to these muscular sacs in the *Naked Cephalopods*. The *branchiæ* are single on each side, and are proportionally the smallest which Dr. Grant has yet met with. The systemic ventricle is very muscular, and of a lengthened fusiform shape: it has an aortal trunk at each end. On the large dorsal or descending *aorta* there is, as in *Nautilus*, a distinct bulbous enlargement, probably the commencement of a *bulbus arteriosus*.

In *Sepiola*, in addition to the usual dorsal *lamina* which is thin and short, there exist, external to the mantle and supporting the fins, two firm crescentic cartilaginous plates, like *scapulæ*, playing freely on the outer surface of the mantle, and furnished with an outer and an inner layer of muscles, passing in the form of minute white *fasciculi*, from the middle of the dorsal part of the mantle: by this structure, great extent and effect are given to the motions of these powerful dorsal arms, which have thus a singular resemblance in their mode of attachment to the anterior extremities of *Vertebrata*.

The cavity of the mantle is comparatively small, and its whole extent is occupied by the *viscera*, which are largely developed, particularly the digestive organs, the ink gland, and the two glands of the oviducts. The ink gland is remarkable for its form as well as its magnitude. It consists of three longitudinal lobes placed transversely, and extending more in that direction than lengthwise. The two lateral lobes are kidney-shaped; the third or middle lobe is smaller, and from its upper part the duct arises.

The Secretary read a communication from M. Geoffroy-Saint-Hilaire, entitled "New Observations on the Nature of the Abdominal Glands of *Ornithorhynchus*," in which the author states it to be his purpose to reply to the observations of Mr. Owen on that subject, contained in the Proceedings of the Society, under date of the 12th of March in the present year (page 30).

"The question no longer regards merely the simple fact, *whether*, decidedly and absolutely, the *Monotremata* are *viviparous*, or *oviparous*; whether we should reason upon them according to the rules of *the past*, and apply to them the entire character of *Mammalia*; or whether we are not compelled to see in them sufficient anomalies to embrace them in views *of progress*.

"Let us state the case more precisely. There is but one single

consideration to be discussed; viz. whether the gland on each side of the *abdomen* is mammary and lactiferous (as Mr. Owen thinks), or whether it is not a gland of a different kind (as I, for my part, believe). I call it a gland *sui generis*, and have lately proposed to denominate it *Monotrematic*, as it attains its *maximum* of composition among the *Monotremata*.

"Is it a mammary gland? Mr. Owen's concessions militate strongly against this conclusion; for it is not conglomerate, it is not invested with an erectile tissue, and it is without nipples. In Meckel's time the appearance of the latter was hoped for, the nipples being frequently developed under the action of sucking; but at present this can no longer be anticipated. Females have been seen in full nutritive action, in New South Wales, by Lieut. Lauderdale Maule and Mr. James M'Arthur, and at London by Mr. Owen himself; and each observer has insisted on the circumstance that there were *no nipples*.

"Thus the fact of a decidedly assimilated *structure* is wanting: the gland of *Monotremata* is not in its composition comparable with a mammary gland. But I observe that I am answered here by a fact of an assimilated *function*. Lieut. Maule and Mr. M'Arthur speak of an abundant secretion, *milky* according to one, of a *milky appearance* according to the other. It is therefore inferred that there remains at least this character (the *function*) in common, to prove *mammary* a gland of a different structure. But, I may reply, begin by being certain that the product of the secretion is a true *milk*; do not introduce an *unknown* to characterize a new organ of a structure hitherto equally *unknown*. What! the organ is not in its composition *mammary*, and yet its secretion is *lacteal*! What would become, then, of the principle, *Such as the organ is, such necessarily is its function?*

"The vascular system does not go the length, as in conglobate glands, of folding itself round, of mutually anastomosing, and of penetrating itself, in obedience to the law of affinity of *self for self* (*de soi pour soi*); whence, at the proper period, a compound fluid,—*milk*. But this vascular system, as in mucous membranes, extends its terminating branches into cavities with an external exit. From this more simple apparatus I expect a fluid in itself more elementary—*mucus*, as I suppose.

"But I do more than believe this by way of conjecture: I offer this demonstration of the fact. On the 3rd of June I laid before the Academy of Sciences, of which I am this year President, a paper on the existence of a gland in all respects similar to that which is described and figured (Phil. Trans. 1832, pl. 17, fig. 2 and 3) by Mr. Owen in the *Echidna*,—a *Monotrematic gland* consequently, which I have observed in the *Water-Rat* (*Mus amphibius*, Linn.). I subjoin the figure of this gland magnified, and invite a comparison of this drawing with that of Mr. Owen's plate.

"I begged of our learned chemist, M. Dumas, Member of the Academy of Sciences, to analyse the product of the secretion of the monotrematic gland of the *Water-Rat*; his researches determine

that it is not milk. M. Dumas has obtained this result still more positively by microscopic observations. Each of these products is invariable in its form: milk has the appearance of perfectly spherical globules; while the matter from the gland of the *Water-Rat* exists under the form of thin flakes strongly angular at the edges. The mucus of the *saliva* presents the same aspect, except that the edges of the flakes are not so deeply indented. The result is, that the glandular secretion furnished by the *Water-Rat* appeared to us to be *mucus* mixed with a small proportion of fatty odorous matter; and there can be no doubt that the same is the case with the secretions of the glands of the *Shrews*.

" Now there remains an experiment to be made by the Zoological Society, but principally by Mr. Owen, animated like myself with zeal for scientific truth; and which I invite my colleagues to make. Alcohol does not alter the form of the elementary molecules, either of milk or of *mucus*. Mr. Owen has deposited in the Museum of the College of Surgeons his anatomical preparations; it is easy, without damaging the preparations, to take from the monotrematic apparatus a small quantity of its secretion, and to place it in the field of a microscope. An answer will thus be obtained, of which I admit beforehand all the consequences.

" The negative characters indicated above, (*no conglobate tissue, no erectile tissue, no nipples,*) are remarkable concessions on the part of Mr. Owen. He might have advanced still further in the same direction, and not have accepted, for example, from Lieut. Maule his milky fluid only, reserving himself to combat afterwards what that observer says *de visu* of the shells in the nest, and rejecting also the opinion of the country in favour of the oviparous character of the *Monotremata*.

" But I will not return here to all the accessory points of the controversy: I pass to Mr. Owen's observations in reply.

" Firstly, To destroy the effect of the analogy of the glands of the *Shrews*, to which I had referred the glands of the *Monotremata*, Mr. Owen cites the authority of Von Baer, who in the Archives of Anatomy and Physiology, published at Leipzig in 1827, p. 168, had combatted my views, in order to support the opinions of his friend and fellow-countryman Meckel, remarking that, proceeding from analogy to analogy, that of the *Cetacea* must also be taken into consideration. Von Baer says that the structure of the glands of the *Ornithorhynchus*, as described and figured by Meckel, reminded him in all particulars of the mammary glands of the *Cetacea*; and actually refers to a similar arrangement in the *Porpoise*. Now, adds this learned anatomist, ' it has never entered into the mind of any man to deny the *Porpoise* to be a lactiferous animal.' It is true that nobody has hitherto raised a doubt on this point; but it would not be by any means extraordinary if we were obliged to do so now, if it were certain, as I believe, that the monotrematic glands of the *Ornithorhynchus* give rise to a new mode of nutrition as regards the young. For if this were the fact, the *Cetacea* would participate in this new mode, in these new functions, which it will become ulte-

riorly necessary to determine better, inasmuch as offering an intermediate generation, viz. between that proper to the *Monotremata*, and a third sort, that of the *Ovovivipara*, (that is to say of the *Sharks* and *Rays*,) the eggs of which are hatched either within or without the body of the mother, they would furnish facts of the same rank as those of the vipers and other snakes, and would not offer such important characteristic differences between all these animals, as have hitherto been uniformly believed to exist. I refrain from proceeding further in order not to overpass the boundaries of analogies and of truth; but it might happen that the objection proposed by Von Baer should lead to this result; not that the *Monotremata* should be thrown back into the centre of the *Mammalia*, but that the *Cetacea* should be separated from among them. The affinity of structure, if it be such as the German physiologist announces, may lead to an idea that the mode of nutrition which I have sketched for the *Monotremata* may be equally adapted to the *Cetacea*. Formerly one mode only was known, and it was supposed *à priori* that the *Cetacea* must have passed through it. At all events it is necessary to revise the doctrine of the nutrition of the *fœtus* of *Cetacea*.

" Secondly, Mr. Owen points out the contradictoriness of my two opinions in two papers published at an interval of less than a month, and this is fair play in his capacity of critic. Nevertheless I had scarcely touched on the fact relative to the egg-shells in my first paper, proposing to return to it again. This I actually did some weeks afterwards, when I conceived a system complete in itself, well connected, opening out new views to research, and of which I frankly declare that I had not the smallest idea a few days before I became attached to it. Let it not, however, be believed that I present either my old or my new conjectures as facts, the solidity of which I decidedly maintain. In the absence of facts, I venture to recur to presumptions, which may become motives for research; but if I calculate certain probabilities, I merely desire to have applied to them the criterion of observation. I know well that the mind of no man is endowed with the faculty of imagining with regard to substantial bodies, of distinctly conceiving the idea of a form. What has been seen of this kind is thenceforth known. Seriously admitting the truth of this proposition, I merely wish to play a useful part, restricting myself to the duties of a naturalist having the privilege of age, confident in the experience of ancient studies, and acquainted with the possible extent of the diversities of the acts of nature, in order to assist observers less practised than myself in the study of natural history, so that if there should exist in the most distant part of the globe, organic conditions which we are interested in becoming immediately acquainted with, I may say to them ' There is a chance that it is A, or B, or C; see what is the fact; instruct us with regard to it.'

" Thirdly, The monotrematic glands follow the *phases* of the development of the sexual apparatus: like the mammary, they form part of it, being large only in the females. To this I answer that it is presuming too much with regard to the resources of nature, (which

shows on the contrary a tendency, as well as the most ingenious means of execution, for a diversity of forms,) to fall into absolute rules. What do we know of it? On the contrary, let us better understand our duties; let us constantly restrict ourselves to the consideration of facts. It is a means of exposing ourselves to grave mistakes, if we so easily and so precipitately determine with regard to functions. In fact the *Shrews* alone share with the *Monotremata* this fact of resemblance, viz. that the monotrematic glands are more developed in the female during the period of heat. The circumstances are different in the *Water-Rat*, which possesses the same gland at all seasons and in both sexes.

" Fourthly, What are we to infer from the distinction drawn from the nature of the localities, aquatic as regards the *Ornithorhynchus*, dry with reference to *Echidna*? And why might it not happen that the function should be modified according to the nature of the ambient medium? Let us not establish a general thesis on facts which are not accurately known. To acquire a knowledge of these facts is our object, and our uncertainty with regard to them forms the problematic part of our controversy. We are dealing with a new fact; let us wait till we have seen and learned it before coming to a definitive conclusion. The *Shrews* offer us another useful piece of instruction: they consist, in fact, of several species, all having the same gland, but not inhabiting the same localities. Some do not quit the lowlands and take freely to the water; while others are met with on the dry soil of upland plains."

The reading of M. Geoffroy-Saint-Hilaire's Paper having been concluded, Mr. Owen addressed the Society. He spoke of the glands adverted to by M. Geoffroy, as differing essentially from those of the *Monotremata*: in the *Water-Rat*, the glands exist in both sexes, and at all seasons; in the *Shrews*, they exist in the female only, and are developed in the season of heat; in the *Monotremata*, they exist also in the female alone, but their development is at the period of bringing forth the young. To these important discrepancies is to be added one still more important—the glands referred to in the *Water-Rat* and in the *Shrews* are additional to those for the nutrition of the young, and their function is wholly different: in the *Monotremata* only one set of glands exists, and these are admitted by M. Geoffroy, in his later hypothesis, to be for the secretion of nutriment for the young.

As regards the glands of the *Cetacea*, Mr. Owen adduced various testimonies to show that their secretion is milk, of a very rich quality, approaching to that of cream. Simplicity of structure, in a secreting organ which is usually complicated, cannot therefore be relied on as affording proof of a difference of function. All glands are in their lowest condition, simple tubes, which become, in the more highly developed forms of the gland, complicated in various degrees, conglomerate or conglobate. Such is the case with the organs for the secretion of bile, which commence in *Insects* in the form of simple tubes, and passing through various stages of complication, become in the higher classes condensed into a liver. Such is

the case also with the pancreatic organ; a case more in point, as it exhibits, within the compass of a single class, that of *Fishes*, all degrees of complication. In some it seems to be altogether wanting; in others, it is rudimentary, consisting of one or two minute *cæca* appended to the *pylorus*; and these, in others, increase in extent, in number, in complication, by becoming branched, and eventually form, in the *Cartilaginous Fishes*, true conglomerate glands. To the class of *Mammalia* mammary glands are peculiar; and it might almost have been expected *à priori* that in that class these organs should be found in the various degrees of simplicity or complication of which they are capable. Such appears to be the case; in *Cetacea* they are simple *cæca* (and in this respect the glands of *Monotremata* agree with these mammary glands); in higher forms they are conglomerate, and cannot be misunderstood.

Mr. Owen added, with reference to the microscopic test of the nature of the secretion which was proposed by M. Geoffroy, that he had not been able to procure either from the glands themselves or the openings of their ducts any portion of their secretions to which the test could be applied; globules of oil alone offering themselves to his observation, and these existed also in the spirit in which the animals were preserved.

August 13, 1833.

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

A letter was read, addressed to the Secretary by E. W. A. Drummond Hay, Esq., Corr. Memb. Z. S., and dated Tangier, July 5, 1833. It referred to various animals which Mr. Drummond Hay has obtained for the purpose of forwarding them to the Society's Menagerie; and adverted to others which he is in hopes of procuring.

On the subject of the *Bakra 'l whash*, in the plural *Bakkar el whash*, Mr. Drummond Hay states that this term, as well as *Mahats* and *Targeea*, (all signifying *wild Cow*,) appears to be applied by the Arabs to *Antilope Leucoryx*. It is, however, possible that the same name may be applied to large *Ruminants* of different species; although to any having the general appearance of an *Antelope* it is likely that the Arabs would give the term, generic as it were, *Gazal*.

The skins were exhibited of a *Cayman*, and of the *Coyote* or *Mexican Jackal*, the latter being apparently the *Prairie Wolf*, *Canis latrans*, Say. They were obtained in Mexico by Captain Colquhoun, by whom they were presented to the Society; as were also the horns, which were similarly exhibited, of the *Berenda*, a *prong-horned Antelope*.

The stomach was exhibited of the *Pekan* or *Fisher Marten*, *Mustela Canadensis*, Schreb.; and Mr. Martin, at the request of the Chairman, read his notes of the dissection of the animal.

"Its length from the nose to the origin of the tail was 21 inches. An immense deposition of fat loaded the cellular tissue, as well as the *omentum* and intestines.

"The liver, like that of the *Mustela Foina*, was tripartite, consisting of a large middle and two lateral lobes; to which may be added the *lobulus Spigelii*. The middle lobe was deeply cleft into three portions, the right portion being the largest. In the fissure between this and the next portion was situated the gall-bladder, globular, or nearly so, in shape, and filled with green bile. The hepatic ducts leading from the several lobes of the liver were as large as crow-quills; they united in a single trunk previously to joining the cystic duct, which they did half way down its course. The general duct entered the *duodenum* 1 inch below the *pylorus*.

"The stomach was $5\frac{1}{2}$ inches in length, and of a somewhat elongated form, the cardiac portion being but little enlarged.

"The *omentum* covered the whole of the intestines.

"The spleen, of considerable size, and of a soft and flaccid texture, was connected by fatty *omentum* to the stomach, at the distance of 1 inch. Its length was 3 inches, and its breadth $\frac{3}{4}$ of an inch.

"The *pancreas* was thin and of a long irregular figure, following the fold of the *duodenum*, and closely attached to it.

"The total length of the intestines was 9 feet 2 inches. In the *Mustela Martes*, the body of which is 1 foot 4 inches in length, their length is 5 feet 11 inches; in the *Mustela Foina*, they measure 5 feet 6 inches: these measurements are given by Daubenton. In the *Polecat*, *Putorius vulgaris*, Cuv., with the body 15 inches long, the length of the intestines is 5 feet. No distinction existed between the small and large intestines, until arriving at the *rectum*, which for the extent of 7 inches presented a decided increase of circumference. This part was in a state of high inflammation, and thickly studded with minute gritty particles: a similar state of disease, though not to so great an extent, and without any deep redness, existed also in other portions of the intestines. The peritoneal lining of the abdominal *parietes* was universally and deeply inflamed, and still more rough than the *rectum*, with a thick sprinkling of gritty particles.

"The bladder also was inflamed, but rough only on the surface in contact with the *rectum*. It was empty, uncontracted, flaccid, and appeared as if on the eve of gangrene.

"The anal glands were as large as a nut, and filled with thin yellowish strongly-scented fluid. Their ducts opened just within the verge of the *rectum*.

"The kidneys were soft, and rather large; their length being 2 inches.

"The *uterus* was very small;—the length of the *cornua* 2 inches. This organ partook of the inflammation which affected the rest of the pelvic *viscera*.

"The lungs consisted of two lobes on the left, and three on the right side. The heart was rounded, its depth being 2 inches, its breadth below the auricles $1\frac{1}{2}$ inch. The *aorta* was found to give off two arteries from its arch; of these the right, as large as a quill, ran single for $1\frac{1}{2}$ inch, and then sent off the left carotid, and secondly, a right branch, which divided immediately into right carotid and right subclavian. The other, or left artery, arising from the *aorta*, formed the left subclavian.

"The tongue was 3 inches in length and rough on its upper surface. The *epiglottis* was acuminate."

Mr. Bell exhibited specimens of two *Reptiles*, forming part of his collection, which he regarded as the types of two genera hitherto undescribed. He stated his intention of publishing, in the 20th Number of the 'Zoological Journal' shortly about to appear, descriptions and figures of them.

To one of them he gave the generic name

ANOPS.

Pedes nulli.
Annuli thoracici completi.
Rostrum porrectum, scutello arcuato compresso tectum.
Oculi sub scutellis latentes.
Linea lateralis depressa.
Cauda breviuscula.
Pori præanales nulli.

ANOPS KINGII. *An. corpore suprà fusco, infrà albido.*
Long. 8 unc. 5 lin.; *capitis*, 4 lin.; *caudæ*, 1 unc. 2 lin.
Hab. in Americâ Australi.

This genus is referrible to the *Amphisbænidæ*, with which it agrees in general form, in the structure and arrangement of the scales, the concealed eyes and ears, and the short obtuse tail. From the other genera of the family it is distinguished by the form of its *rostrum* and of its singular compressed frontal plate, which considerably resembles that which characterizes the genus *Typhlops*.

The second of these *Reptiles* belongs to the family *Scincidæ*. It is characterized by Mr. Bell as follows:

LERISTA.

Caput scutatum; *palpebræ* nullæ; *aures* sub cute latentes.
Corpus gracile; *squamæ* læves æquales.
Pedes quatuor: *anteriores* exigui, brevissimi, didactyli; *posteriores* longiores, tridactyli.
Anus simplex, semicircularis; *pori præanales* et *femorales* nulli.

LERISTA LINEATA. *Ler. æneo-viridescens, subtùs pallidior; lineis binis dorsalibus et binis lateralibus nigris.*
Hab. in Australiâ.

This new genus of *Scincidæ* agrees with *Gymnophthalmus*, Merr., and *Ablepharus*, Fitzing., in the absence of eyelids; but differs from both in the number of its toes: the former having 4–5, and the latter 5–5, while *Lerista* has only 2–3. In addition to this difference in the structure of the feet, it is remarkably distinguished by the want of external ears, and by its elongated and anguiform body; characters in which it agrees with *Saiphos*, Gray. The last-named genus, however, possesses eyelids, and differs also in the number of its toes from *Lerista*.

Mr. Bell also read a paper, entitled "Observations on the Neck of the *three-toed Sloth*, *Bradypus tridactylus*, Linn., demonstrating that this Animal possesses only the Normal Number of Cervical *Vertebræ*."

By all preceding anatomists since the days of Hermann the number of the cervical *vertebræ* in the *three-toed Sloth* has been considered to be nine; and the animal has consequently been regarded as deviating in this respect from the other *Mammalia*, in which class seven is the normal number of these parts,—a number which exists

equally in the short interval between the head and the *thorax*, scarcely deserving the name of a neck, of the *Cetacea*, and in the long flexile neck of the *Camel* and the *Giraffe*. It was natural that so marked a deviation from a general law should attract considerable attention, and numerous skeletons of the animal in which it was stated to occur have accordingly been examined by Cuvier, Meckel, and others, who have all, with the exception of the last-named anatomist, concurred in the statement that nine cervical *vertebræ* exist; Meckel alone hinting at the probability that what had been previously regarded as the ninth cervical might, in truth, be a first dorsal *vertebra*. On what grounds M. Meckel was induced to offer this suggestion does not appear; it is probable that he was led to it by the form of the *vertebra* itself, which is altogether that of a dorsal *vertebra*; or he may have been guided by a statement made by Cuvier that in a young individual examined by him the transverse processes of the ninth cervical *vertebra*, as he described it, were not united to the *vertebra* itself, whence Cuvier was induced to inquire, May not this be a small vestige of a rib? Cuvier does not appear to have noticed this detached portion of bone in any but this young individual, nor as connected with any but that which he continued, even in his latest work, to regard as the ninth cervical *vertebra*.

In two skeletons, however, which Mr. Bell possesses, one of a young individual and the other adult, there are bony detached appendages on each side both of the eighth and ninth *vertebræ*, reckoning from the *cranium*, and Mr. Bell is therefore disposed to regard these *vertebræ* as being rather the first and second dorsal than the eighth and ninth cervical, and to consider the seven *vertebræ* craniad of them as constituting the normal set. The transverse processes of these *vertebræ* are longer and narrower than the preceding ones, and each is terminated by a perfect articular surface, which is slightly depressed. To these articular surfaces are attached the heads of the rudimentary ribs. The first of these rudiments is small and slender, about four tenths of an inch in length, having a distinct rounded head at the articular extremity, then becoming abruptly smaller, and tapering to the *apex*. The second is considerably larger and assumes more of the character of a short rib. It is about 6 lines in length and nearly 2 in breadth. Its head is oblong and rounded; and there is a tubercle on the upper and anterior side. Towards the extremity it becomes broader and flatter, with an excavated surface inwards, and a convex rough prominence on the outer side, apparently the point of muscular attachment. Immediately behind and beneath the head of the bone is a minute *foramen* for the passage of intercostal vessels.

The character of the transverse processes of the two *vertebræ* differs very materially from that of the true cervical. In the superior *vertebræ* this process is transverse and slightly bifid. In the seventh cervical it stands obliquely forwards, and its *apex* is broad and oblong. In the first dorsal each transverse process is completely divided into an anterior flattened process which is turned

forwards, and a true lateral or transverse one which supports the little rudimentary rib: the transverse process is smaller, but considerably longer than those of the true cervical *vertebræ*, and stands more in a lateral or transverse direction. In the second dorsal *vertebra* the anterior process does not exist, and the body assumes the form of the succeeding ones. The transverse processes are simple and obtuse, and the articular surface is slightly excavated.

Mr. Bell exhibited, in illustration of his paper, the two skeletons referred to; that of the young individual being natural, and preserved with its connecting ligaments in spirit. The paper was also accompanied by drawings of the structure described in it.

A paper was read, entitled "Remarks on the Nature of the Respiratory Organs in certain Littoral *Mollusca* of Madeira: by the Rev. R. T. Lowe, A.M., Corr. Memb. Z.S." It referred to certain experiments published by the author in the 19th Number of the 'Zoological Journal,' which were instituted with the view of ascertaining, by the duration of their life when deprived by immersion in water of the access of free air, whether the animals of *Melampus*, *Tornatella*, &c., are pectinibranchiate or pulmoniferous. Mr. Lowe, in his present paper, intended for publication in the same Journal, is anxious to guard against the too strict adoption of his conclusion that animals which continue to exist for a long time immersed in water cannot be lung-breathing; as he conceives it to be possible that in animals so comparatively low in organization as *Mollusca*, the quantity of oxygen required for the aëration of the blood may be so small as to be furnished even by sea-water to lung-bearing races; or, in the second place, the lungs being supposed to be inactive during the immersion, that some compensating power may exist, as in the skins of the *Batrachia*, which may enable existence to be prolonged for a considerable time without the access of free air to animals whose organization is adapted for breathing it.

August 27, 1833.

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

A letter was read, addressed to the Secretary by the Rev. R. T. Lowe, Corr. Memb. Z.S., and dated Madeira, June 25, 1833. It accompanied an extensive series of the land and freshwater *Shells* of that island, which the writer presented to the Society's Museum, and which were exhibited. With one exception, they have been described by Mr. Lowe in a paper published, with figures, in the 'Transactions of the Cambridge Philosophical Society.'

In another letter, of the same date, Mr. Lowe states, "We have no native *Mammalia* (except a few *Seals* now and then on the coast,) existing on the Island, at least in its present state. The common *brown Rat* and the *Mouse* abound, of course introduced; and the *Ferret* is said to have become wild in one part of the island, though I have not myself seen it. The *Rabbit* is pretty common: it abounds in the *desertas*. As we have neither *Hares*, *Foxes*, *Shrews*, *Moles*, nor *Weasels*, so of the *Birds* we have no *Crows* nor *Rooks*, *Daws*, *Magpies*, *Sparrows*, (*Fringilla Petronia*, Linn., takes the place of the latter, at least in Porto Santo,) no *Titmice*, *Yellow-hammers*, &c."

A letter was read, addressed to Mr. Vigors by James Prinsep, Esq., and dated Calcutta, March 9, 1833. It accompanied a list of numerous zoological specimens forwarded to the Society by B. H. Hodgson, Esq., Corr. Memb. Z.S., Resident in Nepâl; and also of a large collection of living *Pheasants*, *Partridges*, &c., obtained by that gentleman at the request of the Council for transmission to England. On this list Mr. Prinsep had noted the condition of the various articles at the time of their arrival in Calcutta, by which it appeared that many of the birds had died during their journey from the interior. Of the *Monâl* or *Impeyan Pheasant*, only two remained alive from among seventeen sent; and of these two, one was reported to be dying.

The gizzard, liver, *duodenum*, and adjacent parts, and the *cloaca*, were exhibited of the young *concave Hornbill*, *Buceros cavatus*, Lath., which recently died at the Society's Gardens; and Mr. Owen read his "Account of the Anatomy" of the bird.

Its tongue is very short, of a triangular form, and smooth. The air-cells are very large, and that in front of the neck contains the *œsophagus* and the *trachea*. The *œsophagus*, as in the *Toucan*, is very wide, and of nearly equal diameter as far as the gizzard. The gizzard is thicker in its coats and of a more elongated form than that of the *Toucan*: its cuticular lining is very tough, and disposed in longitudinal ridges. After the duodenal fold, the remainder

of the intestinal canal is disposed in two similar folds; and then extends along the middle line of the back to the *cloaca*. There are no *cæca*. The coats of the intestines are stronger than is usual in *Birds*, and the diameter of the canal is more considerable, diminishing, however, gradually from the commencement of the *ileum* as far as the beginning of the *rectum*, and thence becoming wider to its termination. The whole length of the intestines is 5 feet; that of the bird, from the end of the bill to the vent, being 2 feet 2 inches, of which the bill measures 7 inches.

The liver has the usual two lobes, of which the right is the largest. The gall-bladder is of considerable size. The *pancreas*, of an elongated slender form, has a small oval enlargement at its commencement at the lower end of the spleen, and a flattened oblong mass on head at the bottom of the duodenal fold: it accompanies the *duodenum* throughout its length, being folded on itself similarly to the intestine. Its secretion is conveyed into the intestine by three ducts; one from its head, which enters the *duodenum* at the bend of the fold; the others from the elongated lobes, which terminate close together at the end of the fold between the insertions of the hepatic ducts: an arrangement corresponding with that described by Cuvier in his 'Leçons d'Anat. Comp.,' tom. iv. p. 55, as existing in the *Heron*.

In the *cloaca*, the rudimentary bladder is little more than a line in width, and the ridges bounding it above and below are confined to the back part of the cavity. The *bursa Fabricii* (which Mr. Owen regards as analogous to the glandular pouch, found single or double dorsad of the *rectum* in so many other classes,) is of a triangular form, large, and surrounded, as usual, by a capsule of muscular fibres.

The muscles of the mandibles consist of a *digastricus*, or of a muscle analogous to it, destitute, as is usual in *Birds*, of a middle tendon; a temporal muscle of moderate size; and *pterygoidei externi* and *interni*, proportionally more developed. There is also a strong ligament occupying the place of the *masseter*; and a second, destined to prevent dislocation backwards, which passes from the *zygoma* directly backwards to the condyle or articular depression of the lower jaw. Disproportionate as this apparatus seems to the moving of so large a body as the bill of the *Hornbill*, it is yet fully adequate, the weight of that organ by no means corresponding with its size. The cavities in the bones, the arrangement of the columns supporting their *parietes*, and the air-cells, produce at the same time lightness and strength.

With respect to other parts of the skeleton, Mr. Owen particularly noticed the extension of the air-cells into the distal bones of the extremities. In the *Pelican* Mr. Hunter observes that the air passes not only into the *ulna* and *radius*, but "into those bones which answer to the *carpus* and *metacarpus* of Quadrupeds." In the *Hornbill* the air passes also into the bones corresponding to the *phalanges*; and in the posterior extremity it permeates the *tibiæ*, *tarsi*, and *phalanges*.

Mr. Owen concluded by some remarks on the affinities of the *Hornbill* as deducible from its anatomy. Its nearest approach is to the *Toucan*. The *Toucan*, however, in the want of a gall-bladder agrees with the *Parrots*; the presence of that organ in the *Hornbill*, places the bird in more immediate relation with the *Crows*. The disposition of the intestines in long and narrow loops also agrees with the *Raven*. The tongue, so remarkably varied in form and use among the *Scansores*, resembles, in the *Hornbill*, that of the carnivorous *Birds*.

The individual was observed to be more attached to animal than to vegetable food, and would quit any other substance if a dead mouse were offered to it. This it would swallow entire, after squeezing it twice or thrice with the bill: and no castings were noticed. Petiver, however, has borne testimony to its regurgitating habits.

The communication was accompanied by drawings of the organs of nutrition; of the *cloaca*; and of the bill and its muscles.

A "Description of *Alepisaurus*, a new genus of *Fishes*," by the Rev. R. T. Lowe, A.M., Corr. Memb. Z.S., was read. It was contained in a letter addressed to the Secretary, and was accompanied by a coloured drawing of the *Fish*, which was exhibited, as was also a specimen, preserved in spirit, which had been presented to the Society by Mr. Lowe in the summer of 1832.

Mr. Lowe refers the genus in question to that family of the *Acanthopterygii* to which Cuvier has given the name of *Tænioides*. Its generic characters may be thus expressed.

ALEPISAURUS.

Caput compressum, anticè productum; *rictu* magno, pone oculos longè diducto; dentibus uniseriatis, validis, retrorsum spectantibus, quibusdam prælongis.

Corpus elongatum, attenuatum, cum capite omnino nudum.

Pinnæ dorsales duæ; *prima* alta, a nuchâ longè per dorsum producta; *secunda* parva, trigona, adiposa: *ventrales* mediocres, abdominales: *analis* mediocris, anticè elevata: *caudalis* magna, furcata.

Membrana branchiostega 6–7 radiata.

ALEPISAURUS FEROX.

Hab. in Mari Atlantico Maderam alluente, rarissimus.

In its habit, shape of body, smoothness of skin, compressed head, wide gape, and long formidable teeth, *Alepisaurus* agrees with *Trichiurus* and *Lepidopus*; but in the former of these genera the ventral fins are wanting, and in the latter they are rudimentary only and pectoral: *Trichiurus* is also destitute of a caudal fin. In both of them, moreover, the anal fin is anormal and the dorsal is single. The two dorsal fins of *Alepisaurus* are remarkable among the *Fishes* with which it is most nearly related; and the small adipose second dorsal evidently indicates a curious relation of analogy to the *Salmonidæ* among the *Malacopterygii*.

September 10, 1833.

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

A letter was read, addressed to Mr. Vigors by B. H. Hodgson, Esq., Corr. Memb. Z. S., and dated Nepâl Residency, February 23, 1833. It referred to the zoological specimens which the writer had forwarded to Calcutta, to be thence transmitted to England, some account of which, as contained in a letter from Mr. Prinsep, was read at the last Meeting.

Referring to his 'Catalogue of the Mammalia of Nepâl,' published in the 'Journal of the Asiatic Society of Calcutta,' Mr. Hodgson states that he has since ascertained, by living specimens, the existence of two kinds of *wild Sheep* in the Himalayan Region,—one a variety of *Ovis Ammon*, the other of *Ovis Musmon*. The native name of the former is *Ban-bhêra*, literally *wild Sheep*; that of the latter is *Nayour* or *Na'hoor*. The *Nayour* is described by Mr. Hodgson in the forthcoming volume of the Transactions of the Calcutta Society; as is also the *wild Goat*, the local name of which is *Jhâral*. This is truly a *Goat*, and is a variety of *Capra Ægagrus*, agreeing in its horns with the Alpine race: its head is closely shorn on all parts, and there is no vestige of a beard: there is, however, a copious flowing leonine mane, covering the whole neck and shoulders.

The *Jhâral* is not to be confounded with the *Ghŏrăl* (not *Gŏrăl*), the latter being truly an *Antelope*: its horns are cylindrical, while those of the *Jhâral* are angular; the latter is at first sight distinguished by the large flowing mane just alluded to, of which there is no vestige in the *Ghŏrăl*. As compared with the *Ghŏrăl*, *Antilope Goral*, Hardw.,—which is a small agile creature, without suborbital sinuses, (as Mr. Hodgson has ascertained by the examination of three living individuals,) and without mane,—the *Thâr* is a massive beast, twice the size, and has suborbital sinuses, and a mane along the back of the neck and shoulders, as described in a communication made by the writer to the Society, and published in the 'Proceedings of the Committee of Science and Correspondence,' Part II. p. 12. For the name of *Ant. bubalina*, then employed by him, Mr. Hodgson now proposes to substitute that of *Ant. Thar*; and states his intention of forwarding to the Society a detailed account of it, of the *Ghŏrăl*, of the *Goat*, and of the wild *Sheep* of Himalaya.

Mr. Hodgson adds, that the royal *Tiger* is found in the central region of Nepâl: he has a living specimen, which was taken in the latitude of Vully.

The Secretary called the attention of the Society to several recent acquisitions to the Menagerie; including a specimen of the *red-*

handed Tamarin Monkey, Midas rufimanus, Geoff., presented by J. Christopher, Esq.; of the *crested Porcupine, Hystrix cristata*, Linn., which had recently been brought forth there, being the first instance of such an occurrence in this species, and respecting which he added, that observation of the young while sucking confirmed the correctness of M. Blumenbach's statement that the nipple is nearly axillary; of the *purple-crested Touraco, Corythaix porphyreolopha*, Vig., presented by J. J. Audubon, Esq.; and of the *Platycercus Novæ Hollandiæ*, Vig., *Psittacus Novæ Hollandiæ*, Lath., a species which appears not to have been seen since the time when it was originally described until very recently, when a living specimen for the Menagerie, and skins for the Museum, were obtained nearly simultaneously.

Mr. Bennett also called the attention of the Meeting to a living *Lemur*, forming part of the Society's collection, and pointed out the distinguishing marks which induced him to consider it as the representative of an undescribed species, for which he proposed the name of

LEMUR RUFIFRONS. *Lem. cinereus, subtùs artubusque rufescente tinctis; caudâ saturatiore; fronte supernè rufo infernè albo, lineâ longitudinali mediâ nasoque nigris.*

Long. *corporis*, plus quam pedalis; *caudâ* corpore longiore.

The back is grisly, the fur being dusky at the base and grey at the tip: the tail is rather darker than the back, and is, on its under surface at its base only, as well as the parts surrounding the *anus*, black. The under parts, the haunches, and the limbs, especially the back part of the hinder ones, have an intermixture of rufous. A broad patch of rufous occupies the upper part of the forehead, extending to the ear on each side; it passes downwards and becomes fainter in forming whiskers surrounding the throat, somewhat similarly to those of *Lem. collaris*. Lower than this rufous patch, and extending on each side over, outside, and beneath the eye, is a broad, nearly complete circle of white. Down the middle of the forehead passes a longitudinal line of deep black, which expands between the eyes, and is continuous with the jet black of the nose.

The face is lengthened, and agrees in form with that of the section of the *Lemurs* represented by *Lemm. Macaco, niger, Catta*, and *ruber*; it is much more elongated and pointed than in *Lemm. albifrons, collaris*, &c.

The tail is cylindrical, and has evidently been bushy, some of the hairs being of considerable length.

At the request of the Chairman, Mr. Gould exhibited a series of specimens of the genus *Malurus*, Vieill., including the whole of the species previously known, together with one, forming part of the Society's collection, which he regarded as hitherto undescribed. He characterized it as the

MALURUS PECTORALIS. *Mal. capite dorsoque cyaneis; maculâ infrà-orbitali metallicè azureâ; lineâ a rictu ad oculum, fasciâ*

cervicem cingente a lateribus productâ, alterâque pectorali posticâ nigris; jugulo pectoreque saturatè purpureis, ventre pallidiore; alis sordidè caudâque æruginoso-cæruleis, remigum apicibus rhachibusque internis brunneis.

Long. tot. 4½ unc.; *rostri*, ⅞; *tarsi*, 7 lin.; *alæ*, 1 unc. 7 lin.; *caudæ*, 2½ unc.

Rostrum nigrum; *tarsi* saturatè brunnei.

Hab. in Australiâ.

Mr. Gould also exhibited specimens of the male and female of the *Trogon pavoninus*, Spix: the latter, he stated, has hitherto escaped the observation of ornithologists. It has recently been acquired for the Society's collection.

The female rather exceeds the male in all her proportions. Her bill is black instead of yellow: her crest is shorter, and has bronzy reflections. The whole of the under surface is of a brownish grey, with the exception of the under tail coverts, which are scarlet. The outer tail feathers, which in the male are white with black shafts, are in the female barred, except at the base, where they are dull black. The colours of the upper surface are similar in both sexes; but the plumes which spring from the rump, and which in the male attain so remarkable a length, scarcely extend in the female beyond the tip of the tail.

A "Description of *Perdix Lerwa*," by B. H. Hodgson, Esq., Corr. Memb. Z. S., was read. It was accompanied by a coloured drawing of the bird, which inhabits the northern region of Nepâl, and forms, by its half-plumed *tarsi*, a sort of link between the *Partridges* and the *Grouse*. Its habits assimilate with those of the latter genus. It is found close to the permanent snows, among rocks and low brushwood, and sustains itself upon aromatic buds, leaves, and small insects. It is characterized as follows:

PERDIX LERWA. *Perd. nigra, albo castaneoque transversim lineata; pectore brunneo; tarsis ultra calcar plumosis; remige 2dâ longiore.*

The great comparative expanse of the wing; the diminution of its rounded form by the second quill feather being the longest; the increased length and strength of the tail; and the extent of the feathering of the *tarsi*, are very remarkable characters, which give to this species a peculiar interest. Its dimensions, as compared with several allied birds, are given by Mr. Hodgson in the following table:

	Perd. Lerwa.	*Perd. Chukar.*	*Perd. gularis.*	*Perd. Francolinus.*
Length, from the tip of the bill to that of the tail	1·2¾	1·1½	1·2¼	1·2
Length of the bill	1	1⅛	1	1 1/16
Basal height of ditto	⅜	1/16	7/16	⅜
Basal breadth of ditto	⅝	12/16	9/16	⅝
Length of the tail	4⅝	3½	4⅛	3⅝
Expanse of the wings	1·11½	1·8	1·9½	1·8
Length of the *tarsi*	1⅞	2 3/16	2⅝	2 1/16
Length of the central toe and nail	1⅝	2 5/16	2½	1⅜
Weight	1lb. 2oz.	1lb. 2oz.	1lb. 2oz.	1lb.

A paper "On the Anatomy of the *Cheetah*, *Felis jubata*, Schreb.," was read by Mr. Owen. It commenced by remarking on *Felis* as a truly natural genus, and by observing that the anatomical structure of the animals composing it offers even fewer differences than their outward forms. The principal deviation from the common type is that which obtains in the organs of voice of the *Lion* (and, as Mr. Martin has observed, in those of the *Jaguar* also), where the *larynx* is situated at a considerable distance from the posterior margin of the bony palate, the soft palate and the tongue being proportionally increased in length, and thus a gradually expanding passage is formed, which leads from the *glottis*, where the air is rendered sonorous, to the mouth. This structure may contribute, in the *Lion*, to produce the peculiar roar of that animal.

In the *Cats* generally, the connexion of the *os hyoides* to the *cranium* is not by a long elastic ligament, as in the *Lion*, but by an uninterrupted series of bones. This latter structure exists in the *Cheetah*. The *Cheetah* has also the circular pupil of the *Lion*, *Tiger*, *Leopard*, and *Jaguar*, and is perhaps the most diurnal of the genus.

In the form of the *œsophagus*, and in the transverse *rugæ* of its lower half, the *Cheetah* agrees with the *Lion*; and, as in it and in the other *Feles*, the *œsophagus* is not prolonged into the *abdomen*, but terminates immediately after passing through the diaphragm in the stomach. This organ in the *Cheetah* has all the peculiarities which are found in the genus *Felis*. The intestines also agree in character with those of that group; and the *cæcum*, as usual in it, is simple, having none of the convolution which is found in the *Dog*. The liver, *pancreas*, and spleen, resemble those of the *Cats* generally; as do also the kidneys in the arborescent form of their superficial veins: a form, however, equally common to the *Viverridæ* and the *Felidæ*, which also agree in having *spiculæ* on the tongue.

The *viscera* of the *thorax* in the *Cheetah* agree with those of the *Cats*. The *lytta*, or rudiment of the lingual bone, so conspicuous in the *Dog*, is reduced in it, as in the other feline animals, to a small vestige.

There is, as in the *Feles* generally, no bone of the *penis*; and the *glans*, as usual in them, has retroverted *papillæ*.

The elastic ligaments of the ungual *phalanges* exist in the same number and position as those of the *Lion*; they are, however, longer and more slender, their length alone occasioning the incomplete retraction of the claws as compared with the rest of the *Felidæ*.

Mr. Owen concluded by observing that in the circulating, respiratory, digestive, and generative systems, the *Cheetah* conforms to the typical structure of the genus *Felis*.

September 24, 1833.

William Yarrell, Esq., in the Chair.

A collection of skins of *Birds*, sixty-four in number, formed in the Himalayan Mountains, and presented to the Society by Lady William Bentinck, was exhibited. It included several species apparently new to science, and was particularly rich in the interesting *Pheasants* of the Himalaya. The collection was remarkable on account of the fine condition of the specimens, which generally surpassed in beauty those previously contained in the Society's Museum.

A series of eighty skins of *Birds*, selected from a collection formed in India by H. B. Hillier, Esq., and presented by that gentleman to the Society, was exhibited. It comprised specimens of many species in fine or interesting plumage.

Mr. Bennett called the attention of the Meeting to a *Monkey* which had been for some time living at the Society's Gardens, and which, from a comparison of the figures and descriptions of recent authors, he had regarded as entirely new, until Mr. Ogilby pointed out to him its identity with the *Malbrouck* of Buffon, a very different animal from that figured under the same name by M. Fréderic Cuvier. The *Simia Faunus*, Linn., to which Buffon referred his *Malbrouck*, is wholly founded on a figure given by Clusius in his 'Exotica,' which represents, if correctly drawn, a species nearly related to the *Simia Diana*, Linn. (not F. Cuvier); and the *Simia Cynosurus*, Scop., with which M. Geoffroy and others have since identified it, is so imperfectly figured and described as to apply with almost equal justice to any of the related species. It became necessary therefore to give a new name to the true *Malbrouck*; which, as its characters appear to have been of late completely misunderstood, even in France, seemed also to require a new description to assist in its recognition. Buffon's figure, and the accompanying description by Daubenton, were taken from a female; the Society's specimen is a male.

CERCOPITHECUS TEPHROPS. *Cerc. suprà fusco-virescens, infrà albidus; artubus externè grisescentibus; facie pallidè carneâ, naso, genis, labiorumque marginibus pilis brevibus fuliginosis conspersis.*

The colour of the upper surface resembles that of the *Green Monkey, Cerc. Sabæus*, Geoff., having the separate hairs ringed with black and yellow; on the outsides of the legs it has more of a greyish hue, the lighter rings on the hairs having little of the yellow tinge. The under surface is nearly of a pure white, and this extends to the insides of the limbs and to the sides of the neck anteriorly, where the

hairs do not attain a sufficient length to constitute moustaches. The naked parts of the hands, and the nails, are black ; the ears dusky ; and the face is of a light flesh colour, with short black hairs, giving a sooty tinge to the nose, cheeks, and edges of the lips, from which a circle round the eyes and the space surrounding the nostrils are free. There is a narrow light bandeau traversing the forehead above the superciliary ridges. The tail, in its mutilated state, is nearly as long as the body, and is of the same colour as the latter above, and lighter beneath. The length of the body appears to be about 18, that of the tail 16 inches.

A paper entitled "Further Illustrations of the *Antilope Hodgsonii*, Abel," by B. H. Hodgson, Esq., Corr. Memb. Z. S., was read. These are derived from opportunities of observing other individuals which have occurred to the author since his original description was drawn up; the latter having been communicated to the Society in March 1831, and with some additional particulars in January 1832. A full abstract of these communications was given in the 'Proceedings of the Committee of Science and Correspondence,' Part I. p. 52 and Part II. p. 14; and they have also been published at Calcutta in the 'Gleanings of Science.'

The nasal tumours, which form so remarkable a peculiarity of the *Chiru*, are found, on closer examination, to consist of fine elastic skin and cartilage, similarly to the nostrils, immediately behind the posterior boundary of which they are situated, and into which they open freely; being, in fact, a prolongation backwards, and accessory dilatation of that reflection of the skin which lines the nostrils. Externally they present a round, firm, elastic swelling on each lip, well defined, and covered with hair like the adjoining parts: internally they constitute a sac, of capacity to contain a marble, lined with the same skin that lines the nostrils, and not communicating with the interior of the nose except by and through the ordinary nostrils, into which the sacs open forwards by a slit that will admit the finger to be passed into it, and thence all over the interior of the sac. These sacs are usually defiled with *mucus* secreted from the nose; and they seem to Mr. Hodgson to be nothing more than supplementary nostrils, designed to assist this exceedingly fleet animal in breathing when he is exerting all his speed: for the expansion of the nostrils opens them also, and their elasticity allows of their being dilated in the manner of the nostrils.

There is no appearance, either external or on the bones of the face, of lacrymal sinuses.

There is reason to believe that the female of the *Chiru* is destitute of horns. This is stated to Mr. Hodgson by Vir Keshwar Pandè, the Envoy of the Court of Nepâl to that of China; who adds, that the female has but two teats, and produces only one young at a birth.

As to the existence of inguinal pores, Mr. Hodgson states that he is yet uninformed.

Adverting to the opinion of Colonel Hamilton Smith that the

Chiru is probably identical with the *Kemas* of Ælian, Mr. Hodgson remarks, that if the latter animal is justly characterized as having a white tail, and residing in woods, it must be distinct from the *Chiru*, which inhabits open plains exclusively, never frequenting either mountains or woods; and in which, moreover, the tail on its outer surface is always coloured like the proximal part of the back.

Mr. Hodgson concludes his paper by a detailed description of the skull and horns of the *Chiru*. The bony *nucleus* of the latter has a large oval cavity, communicating by one clean canal with the frontal sinuses. A cavity also exists in the osseous core of the horns of the *Thár Antelope*.

A "Description of the *wild Dog* of Nepâl," by B. H. Hodgson, Esq., Corr. Memb. Z. S., was read. Its local name is *Búánsú*. It is characterized as the

CANIS PRIMÆVUS. *Can. dentibus molaribus in maxillâ inferiore utrinque sex; palmis plantisque pilosis; auribus erectis; suprà saturatè rubiginosus, infrà flavescens; caudâ insigniter comosâ, rectâ, mediocri.*

The very remarkable peculiarity in the number of the molar teeth of the lower jaw, indicated in the specific character, has been verified by Mr. Hodgson on the examination of the *crania* of three adult, two mature, and one young individual of the race. The deficient number is occasioned by the absence of the second tubercular tooth. All the other teeth exist in the ordinary number and positions.

At the commencement of his paper, Mr. Hodgson remarks on the uncertainty that prevails as to the primitive stock of the *familiar Dog*, and rejecting, with most modern zoologists, the claim of the *Wolf*, the *Jackal*, and the *Fox* to rank as its prototype, he also argues against regarding as such the half-reclaimed *Dingo* of Australia. He thinks that he has detected this original race in the *Búánsú* of Nepâl, the eastern and western limits of whose range appear to be the Sutlege and the Burhampootra, and which seems to extend, with some immaterial differences, into the Vindyia, the Ghauts, the Nilgiris, the Casiah Hills, and in the chain passing brokenly from Mirzapore through South Bahar and Orissa to the Coromandel Coast.

Of this race, although so wild as to be rarely seen, Mr. Hodgson has succeeded in obtaining many individuals; some of which lived in confinement many months, and even produced young, having been pregnant when they reached him. He is consequently enabled to describe not only the form and colours, but the manners also, which he does in great detail. The form he compares particularly with that of the *Indian Jackal* and the *Indian Fox*, short notices of which he gives as an Appendix, and comparative figures of which with the *Búánsú* he also forwards with his paper. The paper is also accompanied by comparative figures of the *crania* of these several species; and the description given of this important part of the animal structure is also comparative.

The *Búánsú* preys by night as well as by day, and hunts in packs of from six to ten individuals, maintaining the chase rather by its

powers of smell than by the eye, and generally overcoming its quarry by dint of force and perseverance. In hunting it barks like a hound; but its bark is peculiar, and equally unlike that of the cultivated breeds of *Dogs* and the strains of the *Jackal* and the *Fox*.

Adults in captivity made no approach towards domestication; but a young one, which Mr. Hodgson obtained when it was not more than a month old, became sensible to caresses; distinguished the dogs of its own kennel from others, as well as its keeper from strangers; and in its whole conduct manifested to the full as much intelligence as any of his sporting dogs of the same age.

It appears by a notice in the 'Journal of the Asiatic Society of Calcutta,' that Mr. Hodgson's paper on the *Búánsú* has been read before that body. It is consequently to be expected that it will be published in the 'Asiatic Researches.'

October 8, 1833.

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

A letter was read, addressed to the Secretary by W. A. Wooler, Esq., and giving an account of a *wild Dog* from the Mahablishwar Hills, now known as Malcolm's Pate, in the Presidency of Bombay: its local name is *Dhale*. The habits of this *Dog*, in a state of nature, are described by Mr. Wooler: they accord with those of the *Búánsú* of Nepâl, as detailed by Mr. Hodgson in a paper read at the previous Meeting of the Society.

A specimen was exhibited of the *hairless Egyptian* variety of the *familiar Dog*, which had recently died at the Society's Gardens. The exhibition was made principally with the view of illustrating the apparent connexion between teeth and hair. In this animal, so remarkable for its deficiency of hair, a corresponding deficiency of teeth was observed; there being neither incisors nor canines in either jaw, and the molars being reduced to one on each side, the large tubercular tooth being the only one remaining.

Mr. Yarrell stated in further illustration of the subject, that he had examined the mouths of two individuals of the same variety still living at the Gardens, in both of which he found the teeth remarkably deficient. In neither of them were there any false molars; one was entirely destitute of canines also, these teeth being in the other short of the usual number; and the incisors were also in both deficient in number.

He also exhibited from his collection the *cranium* of a hairless *Terrier*, in which the false molars were wanting.

A letter was read addressed to the Secretary by M. Savi, For. Memb. Z.S., and dated Pisa, July 22, 1833. It accompanied a collection of the works of the writer, which he presented to the Society, together with specimens of most of the zoological objects which he had added to science. These specimens were exhibited.

In bringing them severally under the notice of the Society, the Secretary continually referred to those writings of M. Savi which related to them, and explained from thence the most interesting particulars connected with each of the specimens submitted.

A collection of skins of *Mammalia*, obtained from the Frankfort Museum, was exhibited. The whole of them were from Abyssinia, where they were procured by M. Rüppell, in the 'Zoological Atlas' of whose 'Travels in Northern Africa' many of them were for the first time described and figured. They included thirteen species new to the Society's collection, and were severally brought under the notice of the Meeting by the Secretary.

October 22, 1833.

William Clift, Esq., in the Chair.

A letter was read, addressed to the Secretary by Sir R. Ker Porter, Corr. Memb. Z. S., and dated City of Caracas, August 14, 1833. It described a *Bear* now living at that place and brought from the Andes, which differs in the marking of its face both from the individual of *Ursus ornatus*, figured by M. F. Cuvier, and from that which forms at present a part of the Society's Menagerie. The yellowish white of its face begins on the bridge of the nose between the eyes, and describes under each eye a semicircle, whence it extends over the whole of the muzzle, taking rather a greyish hue, until it ends in pure white, covering the whole throat and chest, and forming a point between the fore legs. The rest of the animal is jet black, the hair being silky and shining. It is smaller by far in size than the *Bears* of the Northern countries of Europe, and is more compact in form.

Sir R. Ker Porter also enters into various details respecting the *Curassows* or *Powies* of Caracas. Of a pair kept by him in confinement, the female laid an egg without making any provision for its reception or paying it any subsequent attention.

He adds that he has obtained a specimen of a bearded *Capuchin Monkey* from the Rio Negro, which he intends forwarding to the Society in the spring.

Mr. Cox stated that he had at present in his possession a living *Mocking-bird*, which he had recently obtained from North America, and to which he invited the attention of the Members.

A specimen was exhibited of the female *Antilope Bennettii*, Sykes, which had been presented to the Society by the President, Lord Stanley. It had lived in his collection for about a month, and was believed to be pregnant, which was ascertained on examination after death to be the fact.

Drawings were exhibited of two *Fishes* taken in Mount's Bay, Cornwall. They were communicated by Dr. Henry Boase, and one of them was accompanied by a short description. It appears to be the *Capros Aper*, La Cép., *Zeus Aper*, Linn., a Mediterranean species which has not before been noticed as occurring on our shores, unless it be the fish included by Mr. Couch in his list of the *Fishes* found in Cornwall, (Linn. Trans., vol. xiv. p. 81.) under the name of *Stone Basse*; the reference to Ray, however, made by the latter author is to a species of *Gerres*, Cuv. Dr. Boase's drawing agrees well with the figure published by Rondelet. His description is as follows:

"Body thin and compressed, of a reddish colour, brightest at the origin of the fins; firm and rough with small shining scales; no

spots, stripes, nor bands. Jaws nearly equal; mouth small with retractile lips; snout cylindrical, and, when protruded, more than an inch in length; teeth setaceous. Eyes large; *irides* orange yellow and brilliant, furnished with a nictitating membrane. Gill-cover of two pieces, not spinous, but both angular. Lateral line curved. Fins: dorsal very long and divided, anterior portion of nine spines of unequal length connected by a thin membrane, the posterior consisting of fifteen [twenty-four?] bristly rays; pectoral small, of thirteen rays; ventral of six rays, the first a strong curved spine, all united by a membrane like the dorsal; anal of twenty-six rays, the first three being distinct spines; caudal square, of fourteen setaceous rays."

The other drawing represents a *Tetrodon*, evidently identical with that obtained from the same coast by Pennant and by Mr. Donovan.

Mr. Gray gave some account of the reproduction of *Cirrhipeda*, founded on observations made by him on *Balanus Cranchii*, Leach, during a recent visit to the coast of Devonshire. In illustration of his remarks he exhibited an adult of that species with the eggs attached to the body at the base of the shell, and the young *in ovo*. He also exhibited numerous very minute individuals of *Bal. vulgaris* affixed to rock.

He described the mode of reproduction as ovoviviparous. On opening under water, after they had been preserved in spirit, the eggs attached to the body of the adult, each was found to contain a perfectly developed animal, which occupied nearly the whole of its cavity. The form of the young *Barnacle* at this period of its existence is ovate, rather tapering above, and truncated and ciliated at the tip: it is furnished with three pairs of arms along the sides, the base of each arm being two-jointed; the lower pair of arms has only one elongated process, while each of the two upper pairs has two fusiform, thick, articulated and ciliated processes, similar to those of the anterior part of the perfect animal, but less elongated. From the adult it differs chiefly in having a smaller number of feet and in the less development of the hinder part. It is also destitute of shelly covering, which is probably not formed until the young animal becomes fixed. In very small attached individuals of the *common Barnacle* the shell is rather soft, transparent and horn-coloured.

In the absence of shell from the animal in the egg, an additional evidence is furnished of the affinity of the *Cirripedes* to *Crustacea* rather than to *Mollusca*: the fœtus in the latter class being covered by a shell at a very early stage of its embryo growth. The existence in the young animal of a smaller number of arms than that found in the adult is also analogous to the corresponding fact which has been observed in several of the *Branchiopodous Crustacea*. A similar fact has recently been noticed by Dr. Nordmann as occurring in *Lernæa*.

Mr. Gray remarked that he had been the more induced to call the attention of the Society to the subjects which he exhibited, on account of his observations being at variance with those recorded

by Mr. J. V. Thompson in the fourth Memoir of his 'Zoological Researches.' The young of *Balanus* is there described as being, when $\frac{1}{10}$th of an inch in length, a free swimming animal, resembling *Cyclops* in its general form, and having pedunculated eyes: and it is stated that it then throws off its bivalve-shell-like envelope together with the greater part of the black colouring matter of the eyes, becomes fixed and covered with calcareous matter, and is changed into a young *Barnacle*, such as is described by Pennant as *Balanus pusillus*, the arms at the same time acquiring the usual ciliated appearance. In Mr. Gray's specimens of the young, on the contrary, the general form of the adult is found, and the arms are ciliated while it is still in the egg, its total length being less than $\frac{1}{20}$th of an inch. Of this length it is also by no means uncommon to find *common Barnacles* attached.

Mr. Gray added that on examining the eggs which are found around the base of the animals of *Pentalasmis*, Leach, and *Otion*, Ej., he had observed indications of the existence of young similar to the adult. They were not, however, sufficiently developed to enable him to describe them with precision.

Mr. Gray also called the attention of the Society to a fact connected with the history of some of the marine *Gasteropodous Mollusca*, which he had observed on the same occasion with the young of the *Balani*. It is well known that the animals of terrestrial shells are torpid during the winter in cold and temperate climates, and during the dry season or summer in tropical regions; but it had not been previously remarked that a similar state occurs in those of marine shells. Mr. Gray found that many individuals of *Littorina petræa*, and some of *Litt. rudis*, were in this condition during his stay at Dawlish. They were attached to the rocks several feet above the reach of the highest autumnal tides; their foot was entirely retracted; and a membranous film was spread between the rock and the edge of the outer lip of the shell: the gills were only moist, the branchial sac being destitute of that considerable quantity of water which exists in it in those of the same species which are adherent to the rock by their expanded foot. In this torpid condition, the individuals observed by Mr. Gray continued during the whole of his stay, which lasted for more than a week. On removing several of them and placing them in sea water, they recovered in a few minutes their full activity.

Mr. Gray further stated that he had on the same occasion observed that the animal of *Rissoa parva* has the power of emitting a glutinous thread, by which it attaches itself to floating sea-weeds, and is enabled, when displaced, to recover its previous position. A similar property, he remarked, was long since observed in one of the land *Mollusca*, a species of *Limax*, Linn.; and it has recently been recorded by M. Sander Rang as occurring in a marine genus of *Mollusca*, to which he has given the name of *Litiopa*. Mr. Gray added his belief that it would probably be found to be common to many species of marine *Mollusca*.

November 12, 1833.

Richard Owen, Esq., in the Chair.

A letter was read, addressed to the Secretary by M. Julien Desjardins, Corr. Memb. Z. S., and dated Mauritius, June 20, 1833. It was accompanied by an "Extrait du Troisième Rapport sur les Travaux de la Société d'Histoire Naturelle de l'Ile Maurice," of which Society M. J. Desjardins is the Secretary. This extract, containing an account of the Zoological Proceedings of the Mauritius Natural History Society, was read.

In Ornithology only one paper has been read. It is a description, by M. J. Desjardins, of the *Greenshanks, Totanus Glottis*, Cuv., taken from a specimen killed in Mauritius: the bird not being known to have previously occurred in the island.

In *Ichthyology* the contributions have been numerous. M. Liénard, sen., has described a new species of *Grammistes*, Cuv., distinguishable from the two previously known by its compressed form, on which account it has been designated *Gramm. compressus*: its first dorsal fin has nine rays. He has also described a new species of *Cirrhites*, Cuv., remarkable for a vertical *septum* formed in the middle of its palate by a prolongation of the lining membrane of the mouth: and an *Aphareus*, Cuv., which to some differences in the number of the rays from *Aph. cœrulescens*, Cuv., adds others in colouring, and particularly a yellow spot on the forehead, and another near the angle of the *præoperculum*. He has given a particular account of *Epibulus Insidiator*, Cuv., and of its anatomy; and has noticed a fish, which he regards as a variety of this species, distinguished principally by its colour being pale yellow instead of reddish green. He has also described *Trichiurus lepturus*, Linn.; and *Zanclus cornutus*, Cuv., adverting, as regards the latter, to some particulars of the anatomy of this scaleless *Chætodon*. M. E. Liénard has described two new species of *Holacanthus*, La Cép., one of which is marked with numerous transverse bands, of which the anterior are interrupted; the other having also numerous bands similarly directed, but curved. M. J. Liénard has given a detailed description of a fish, which he regards as constituting a new subgenus between *Anampses*, Cuv., and *Odax*, Ej.: it has six incisor teeth, and these, instead of being directed outwards like the two incisors of *Anampses*, are curved inwards. And lastly, M. J. Desjardins has described two new species of *Chætodon*, Cuv.: one of them, *Chæt. festivus*, has a large eye-like spot on the soft rays of the dorsal fin, and a black spot on those of the anal; its form is orbicular, and the spinous rays of its dorsal fin are twelve: the other, *Chæt. chrysurus*, is of a rather elongated form, and has thirteen spinous rays in its dorsal fin; its principal markings are eight transverse bands, angular in the middle, succeeded by a white zone, which is followed by a region of orange yellow occupying the soft part of the dorsal and anal fins and the whole of the tail, and becoming paler at its hinder part.

M. J. Desjardins has also described a new species of the *Crustaceous* genus *Ranina*, Desm., to which he has given the name of *Ran. cristata*.

In Entomology M. W. Bojer has described a new species of the *Prionidous* genus *Dorysthenes*, Vig.; and M. J. Desjardins has given an account of three new species of *Libellula*, Linn., under the respective names of *Lib. limbata*, *Lib. semihyalina*, and *Lib. bimaculata*, all being indigenous to Mauritius.

The Secretary called the attention of the Society to several animals which had recently been added to the Menagerie. They included an *ursine Opossum*, *Dasyurus ursinus*, Geoff., an animal known to the colonists of Van Diemen's Land by the appellation of the *Native Devil*; a *Secretary Vulture*, *Gypogeranus serpentarius*, Ill., presented to the Society by Lieutenant-General Sir Lowry Cole; and two *crowned Cranes*, presented by the same distinguished officer, on his return from the government of the Cape of Good Hope.

Referring more particularly to the latter, he brought under the notice of the Meeting specimens from the Society's Museum of *crowned Cranes* from Northern and from Southern Africa, with the view of illustrating the characters which distinguish as species the birds from these several localities. Their specific distinction, he stated, on the authority of Professor Lichtenstein, had been pointed out, nearly thirty years since, by the Professor's father, who gave to the Cape bird the name of *Grus Regulorum*: this distinction has, however, not been generally known among ornithologists, although to those connected with the Society it has for some time been familiar, from observation both of numerous skins and of living individuals. In the bird of North Africa, for which the specific name of *pavoninus* will be retained, the wattle is small, and there is much red occupying the lower two thirds of the naked cheeks: in that of South Africa the wattle is large, and the cheeks are white, except in a small space at their upper part; the neck also is of a much paler slate colour than that of the North African species. He added that the latter characters had been observed to be permanent in an individual presented to the Society, in April 1829, from the collection of the late Marchioness of Londonderry, and which is still living at the Gardens: they exist also in both the individuals presented by Sir Lowry Cole.

The two species may be thus distinguished:

Genus Anthropoïdes, Vieill.

* *Occipite cristato, cristâ erectâ, effusâ, e plumis setaceis constante.*

Anthropoïdes pavoninus, Vieill. *Anth. genis nudis, supernè albis infernè latè roseis; paleari minimo; gutturis plumis elongatis nigrescentibus.*

Ardea pavonina, *Linn. et Auct.*

Hab. in Africâ Septentrionali et Occidentali.

Anthropoïdes Regulorum. *Anth. genis nudis, albis supernè roseis; paleari magno; gutturis plumis elongatis pendulis cæruleschenti-cinereis.*

Grus Regulorum, *Licht.*

Hab. in Africâ Meridionali.

It is probable that this latter species has been figured by Petiver and by Kolbe; but their representations are by no means sufficiently defined to authorize a positive reference to them.

Mr. Gray took occasion to remark that the oval form of the nostrils in the *crowned Cranes*, added to other distinguishing characters which have frequently been pointed out, might be regarded as indicating a generic difference between them and the *Demoiselle* and *Stanley Cranes*, in which the nostrils have the lengthened form usual in the genus *Grus*, a genus from which they scarcely differ except in the comparative shortness of their bill. For the group including the *crowned Cranes* the name of *Balearica* might, he thought, be retained; and that of *Anthropoïdes* be appropriated to the one comprehending *Anth. Virgo*, Vieill., and *Anth. paradisæus*, Bechst.

A collection of *crania* and skins of *Mammalia* from Nepâl, presented to the Society by B. H. Hodgson, Esq., Corr. Memb. Z. S., was exhibited. It contained skulls of the *Buansu, Canis primævus*, Hodgs., remarkable for the absence of a second tubercular molar tooth in the lower jaw, as described in a communication by the donor read at the Meeting on September 24th, (see page 111); of the *Thibetan Mastiff*, and of the *Pariah Dog*: of the *Indian Jackal* and of the *Indian Fox*, both of which are regarded by Mr. Hodgson as belonging to species hitherto undescribed, the molar teeth of the latter having in their acute tubercles much of an insectivorous character: and of the *Felis Nepalensis*, Vig. & Horsf.

Among the skins were those of a *Sciuropterus*, F. Cuv., as large as *Sci. nitidus*, Ej., and apparently new to science: of a *Sciurus*, Linn., also apparently new: and of a *Herpestes*, Ill., which Mr. Hodgson at present regards as a small variety of the common *Indian Ichneumon*, *Herpestes griseus*, Desm.

At the request of the Chairman, Mr. Gould exhibited a specimen of a *Toucan*, hitherto undescribed, and which he had recently acquired. It is nearly related to *Pteroglossus Aracari*, Ill., and to *Pter. regalis*, Licht.; and Mr. Gould pointed out the characters which distinguish it from those and other species. He proposed for it the name of

Pteroglossus castanotis. *Pter. suprà olivaceo-viridis, subtùs sulphureus; capite guttureque nigris; regione parotică femoribusque saturatè castaneis; uropygio, interscapulio, abdominisque fasciâ latâ coccineis; tectricibus caudæ inferioribus sordidè flavis; remigibus brunneis.*

Long. tot. 17½ unc; *rostri*, a rictu ad apicem, 5; *alæ*, 6¼; *caudæ*, 7½; *tarsi*, 1⅜.

Hab. in Brasiliâ.

The beak is depressed, of a deep straw yellow, with a broad triangular mark of black along its *culmen* for two thirds of its length, and a nearly similar mark of black on each side; its edges are

strongly dentated, the intervals between the notches being black: the under mandible is black throughout: an abrupt line of yellow surrounds the base of the beak. The *tarsi* are of a dark lead colour.

Mr. Gould also exhibited a *Woodpecker*, which he regarded as new to science. He described it as

PICUS FLAVINUCHA. *Pic. suprà viridis, subtùs fuscescens; vertice olivaceo; occipite nuchâque flavo cristatis; fronte, facie, colli lateribus, jugulòque saturatè brunneis, hoc albo maculato; gulâ sulphureâ; caudâ nigrâ.*

Fœm. *gulâ saturatè brunneâ.*

Long. tot., 13 unc.; *alæ*, 6¾; *tarsi*, 1; *rostri*, a rictu ad apicem, 1¼.

The beak is somewhat feeble, slightly arched, pointed, and broad at the base. The feathers of the *occiput* and back of the neck are of a silky texture, and constitute a golden yellow crest, which is drawn out to a point, and is edged abruptly by the dark brown of the face, the sides of the neck and the ear-coverts.

It inhabits the Himalayan mountains and also the lower regions of India.

Captain Belcher laid on the table several specimens of a *Barnacle*, the *Pentalasmis striata*, Leach, remarkable for the great length of their peduncles, which exceeded two feet.

The following notes by Mr. Martin of a dissection of a *Puma*, *Felis concolor*, Linn., which recently died at the Society's Gardens, were read.

"Among animals of the feline genus so few points of anatomical difference are found to exist, that the notes of the dissection of one species (allowance being made for relative magnitude,) are closely applicable to that of almost any other. We can therefore only expect to trace out minor differences in structure; and these not among organs essentially connected with the habits and general characteristics of the genus, but with habits peculiar and specific. Hence perhaps we find in this group the greatest difference to obtain in the organs of voice; a circumstance which might naturally be expected, as some according modification must necessarily produce the deep-toned roar of the *Lion*, the snarl of the *Jaguar*, and the hissing cry of the *Puma*.

"The distance between the base of the tongue and the *larynx* in the *Lion*, has been brought more than once under the notice of the Society; in the *Jaguar*, this distance, comparatively speaking, is nearly as great; but in the *Puma*, an animal equal, or nearly so, in size to the *Jaguar*, the distance is reduced to an inconsiderable space, 1 inch or 1$\frac{1}{12}$, according as the tongue is more or less protruded. In addition to this, it is worthy of observation, that the circumference of the *larynx* in the *Puma* is also very inconsiderable: compare, for example, the *larynx* of the *Jaguar* with that of the present animal, both natives of the wilds of the American continent. In the *Jaguar*

we find a *larynx* indicating from its general magnitude considerable depth in the intonations of the voice, whereas in the *Puma*, if we take either its diameter, or its distance from the termination of the palate and base of the tongue, we are led to expect neither the roar of the *Lion* nor the growl of the *Jaguar*, but the shrill tones of an animal, ferocious indeed, but of all others of the genus perhaps the most stealthy and insidious. I am the more inclined to call attention to these differences, because I think that I have observed a kind of mutual correspondence between the voice and the habits of animals, a point well worthy minute investigation, and on which, on a future occasion, I design to offer a few observations.

" Leaving the *larynx* of the *Puma*, little of peculiar interest presented itself, except in the stomach, which, after the entrance of the *œsophagus*, became somewhat contracted, and then expanded suddenly, diminishing to a long pyloric portion as usual. Before being distended with air, the stomach on its internal surface was evidently contracted into longitudinal folds: its *parietes* were firm. Its length, following the greater curvature, was 2 feet, along the lesser curvature, 9 inches: its greatest circumference, 11 inches.

" The length of the intestines was 14 feet 6 inches, the small intestines measuring 12 feet, and the large 2 feet 6 inches; the length of the *cæcum* was 2 inches. The greatest diameter of the small intestines was 2 inches; of the *colon*, immediately below the *cæcum*, 4 inches; of the *rectum*, 5.

" The length of the animal, measured from the extremity of the jaws to the root of the tail, was 3 feet 2 inches.

" The large intestines were destitute of muscular bands. The *cæcum* was pointed, and had several large glands at its base.

" The liver consisted of a middle and two lateral lobes, each subdivided; the middle one into one large and two smaller portions. The gall-bladder, irregularly contracted, as if from disease, was seated in the cleft of the middle lobe of the liver: its secretion entered the *duodenum*, with that of the *pancreas*, 1¾ inch below the *pylorus*. The *pancreas* was flattened in form, and commencing 1½ inch below the *pylorus*, followed the course of the *duodenum* for 11 inches. The spleen was tongue-shaped, and 6 inches in length.

" The lungs consisted of five lobes: three on the right and two on the left side. The heart was 4½ inches long and 3 broad.

" The circumference of the *trachea* was 2¾ inches.

" The *epiglottis* was long and pointed.

" The *os hyoides* consisted of a slender middle portion, united to the points of the thyroid cartilage by two distinct and somewhat arched portions (one on each side) passing down to meet the point of the cartilage: to the *cranium* it was connected on each side by a chain of four slender portions, of which the last and smallest was cartilaginous, and the others bony.

" The only internal morbid appearances were those of the mesenteric glands, which were universally enlarged. The body was much emaciated and the skin diseased."

November 26, 1833.

John Hamilton, Esq., Vice-President, in the Chair.

Specimens were exhibited of a *Bat*, which had recently been obtained by the Society from the collection of the late Rev. Lansdown Guilding, Corr. Memb. Z. S.

Mr. Gray, in directing the attention of the Meeting to them, remarked on them as constituting the type of a new genus, for which he proposed, on account of the shortness of the nose-leaf, the name of

BRACHYPHYLLA.

Dentes incisores $\frac{4}{4}$, *superiorum* intermedii magni conici, approximati, externi minimi; *canini*, $\frac{1-1}{1-1}$; *molares* $\frac{5-5}{5-5}$, quorum anteriores duo utrinque utrinsecus spurii, superiores antici minimi.

Rostrum truncatum; *nasus* a facie sulco profundo sejunctus, *prosthemate* lato, plano; *labium* inferius excisum, excisuræ marginibus verrucosis.

Lingua elongata, undique verrucosa.

Cauda brevissima.

Patagium anale amplum, posticè profundè emarginatum, bi-tendinosum.

Genus *Glossophago*, Geoff., maximè affine.

"The cutting teeth are four in each jaw, of which the two upper central are large, conical and close together; the side ones very small, low and rudimentary; and the lower ones small, equal and closely pressed between the canines. The canines are large, the lower ones fitting before the upper; the upper ones very large, with a deep notch on the hinder side. The grinders are five on each side of either jaw, of which three are true and two false: the two lower false grinders on each side are equal; the front ones of the upper jaw are very small and rudimentary.

"The head is ovate: the face short and blunt: the end of the nose truncated, with a short broad flat nose-leaf, connected with the lips in front, and surrounded by a deep groove behind, separating it from the rest of the face; the groove is edged behind by a rounded callous ridge. The nostrils are ovate, rather large, open, and placed widely apart from each other, one being situated on each side of the middle of the nose-leaf. The lips are smooth, without any beard on the inner side of the angle of the mouth: the upper one is entire; the lower has a deep notch in the centre, which is bald, triangular, and edged with a series of close, short, rounded warts. The tongue is elongated, and is closely and minutely warty.

"The wings are large and broad. The thumb is long, two-jointed,

free and sharply clawed; the index finger is composed of two, and the middle of four, bony joints.

"The interfemoral membrane is rather large, and is deeply notched behind.

"The tail is rudimentary, consisting of a single joint imbedded in the base of the interfemoral membrane. It has, in the female, a slight cartilaginous band extending beyond its tip, and separating behind into two diverging bands, one extending to the middle of each shin: in the male, these bands are distinct at their origin.

"The hinder feet are large; their toes are nearly equal, and are strongly clawed.

"This genus agrees with *Glossophaga* in most of its characters, and has the same warty-edged slit on the middle of the under lip, and the same elongated tongue: but it differs in the form and structure of the nose-leaf; in the tongue being covered with rough and closely set warts, which are not placed, as in that genus, in oblique plaits; and in the shape of the central upper incisors, which are elongated and conical, and not short and flat-topped and bevel-edged. In the form of its upper middle incisors it agrees with *Vampyrus soricinus*, Spix; but it is distinguished from that, and from all the other *Vampyri*, by the structure of its under lip and tongue, and by the hinder part of the nose-leaf being separated by a groove from the skin of the forehead. Its interfemoral membrane is somewhat like that of *Vamp. Spectrum*, Geoff., and has the same muscular bands.

Brachyphylla Cavernarum. *Brach. suprà badia, pilorum apicibus saturatioribus; infrà pallidè flavescenti-badia.*

Fœm. *pallidior.*

Long. *corporis* cum *capite*, 4¼ unc.; *ulnæ*, 2½; *tibiæ pedis*que *postici*, in mare, 2½, in fœminâ, 2¼; expansio *alarum*, 16.

Hab. apud St. Vincent's, Indiæ Occidentalis.

"The nose-leaf is oblong, transverse, notched and elevated behind. The *tragus* is triangular, elongated, crenulated on its outer and upper edge and 3-lobed. The face is rather bald in front, with scattered, rigid hairs; and there is a large convex wart, covered with rather rigid hairs, on the back part of the cheek just under the eyes. The wings are dark brown and bald; their front part and index fingers yellow, with a few scattered hairs on the outside of the thicker part near the loins and hinder members. The male is bay above, with the tips of the hairs darker; beneath it is pale yellowish bay. In the female the neck and wings are rather paler.

"This *Bat* inhabits caves in St. Vincent's according to the late Rev. Mr. Guilding, who proposed to call it *Vespertilio Cavernarum*."

Mr. Gray exhibited a drawing of a *Shell*, contained in the collection of Mr. Adamson of Newcastle. It was obtained from the base of the Parremo, near the Volcano of Tolyma, on the east slope of the Andes.

It may be thus characterized:

Bulinus Adamsonii. *Bul. testâ ovato-conicâ, subtenui, purpurascenti-albidâ purpureo nebulosâ, maculis oblongis purpureis albisque bifasciatâ; anfractibus convexiusculis; aperturâ ovatâ,*

anticè subeffusâ; labro subincrassato, purpureo; labio purpurascenti-nigro; columellâ anticè rectâ; gulâ albâ; periostraco olivaceo.

Axis $3\frac{3}{4}$ unc.; diameter 2.

This shell approaches most nearly to *Bul. Phasianella*, Val.; it is distinguishable by its bands, the dark colour of its inner lip, and the straightness of its pillar in front.

A paper was read, entitled, "Descriptions of some new Species of Cuvier's Family of *Brachiopoda*, by W. J. Broderip, Esq., V.P.G.S. and Z.S., F.R.S., L.S., &c."

The characters of these new species are as follows:—

Genus Terebratula.

Terebratula Chilensis. *Ter. testâ suborbiculari, gibbâ, albente, radiatim striatâ, striis latioribus, margine subcrenulato, subflexuoso: long.* $1\frac{7}{8}$, *lat.* $1\frac{5}{8}$, *crass.* $\frac{5}{8}$ *poll.*

Hab. in sinu Valparaiso.

This species varies much in size and appearance. In the older shells the radiated *striæ* almost disappear; and very young individuals are nearly smooth and oblong; while those of intermediate growth have the *striæ* strongly marked.

Mr. Cuming found this *Terebratula* in the Bay of Valparaiso, at a depth ranging from sixty to ninety fathoms. The older shells were attached to rocks, and the younger to *Corallines* and *Fuci*.—W. J. B.

Terebratula Uva. *Ter. testâ ovato-oblongâ, ventricosâ, subglabrâ, subdiaphanâ, lineis concentricis substriatâ; valvâ perforatâ subelongatâ: long.* 1, *lat.* $\frac{6}{8}$, *crass.* $\frac{7}{12}$ *poll.*

Hab. in sinu Tehuantepec.

This *Terebratula* was found by Captain Dare, while dredging for *Meleagrinæ margaritiferæ*, attached to a dead sea-worn bivalve, at a depth of from ten to twelve fathoms, and on a bottom of sandy mud.—W. J. B.

Genus Orbicula.

Orbicula lamellosa. *Orb. testâ corneâ, fuscâ, suborbiculari, subdepressâ, lamellis concentricis elevatis rugosâ: long.* $1\frac{1}{10}$, *lat.* 1 *poll.*

Hab. ad Peruviæ oras. (Iquiqui,—Bay of Ancon.)

This species was found by Mr. Cuming in groups, the individuals being in many instances piled in layers one over the other on a sandy bottom, at a depth ranging from five to nine fathoms. At Ancon they were found attached to dead shells, and also clinging to the wreck of a Spanish vessel of about 300 tons, which went down in the bay about twelve years ago. The sunken timbers (for the sheathing was gone to decay,) were covered with these shells, much in the same way that beams on land are sometimes invested with flat parasitic *Fungi*. At Iquiqui they were taken adhering to a living *Mytilus*.—W. J. B.

Orbicula Cumingii. *Orb. testâ subconicâ, suborbiculari, cras-*

siusculâ, striis ab apice radiantibus numerosis; epidermide fuscâ: long. $\frac{7}{10}$, *lat.* $\frac{3}{12}$ *poll.*

Hab. ad Paytam Peruviæ, ad Sanctam Elenam, et ad Panamam.

The concentric lines of growth in this species are crossed by the numerous *striæ* which radiate from the *apex* of the upper valve. The under valve, which varies from convexity to flatness, is much the thinnest, and is only marked by the concentric lines.

Found by Mr. Cuming at the localities above given, attached to the lower sides of stones in sandy mud at low water, and in some instances at a depth of six fathoms. The remains of the *cilia* of the *branchiæ* give a bearded appearance to the border of the shell in many of the dried specimens, as in *Orb. lamellosa*.

Orb. Cumingii approaches nearest to *Orb. striata*, described by Mr. G. B. Sowerby in the 'Transactions of the Linnean Society.'—W. J. B.

Genus Lingula.

Lingula Audebardii. *Ling. testâ oblongâ, glabrâ, corneâ, pallidè flavâ, viridi transversim pictâ, limbo anteriore rotundato, viridi: long.* $1\frac{2}{8}$, *lat.* $\frac{5}{12}$ *poll.*

Hab. ad Insulam Punam. (Bay of Guayaquil.)

The rounded anterior edge of this shell is green, and the transverse lines of that colour are produced by the progressive increase of the shell, which is smooth and parchment-like. In all the dried specimens the thin anterior edge is contracted into a square form, so as to produce a resemblance to a very square-toed shoe; but in its natural state this edge is rounded. A general contraction, moreover, gives the dried shells a narrower and more ventricose character than they really possess; and the remains of the *cilia* of the *branchiæ* give to their anterior edges a bearded appearance.

Mr. Cuming found this species, at about half-tide, in an extensive bottom of hard coarse sand, from four to six inches below its surface.—W. J. B.

Lingula Semen. *Ling. testâ ovato-oblongâ, crassiusculâ, planâ, albidâ, lævissimâ, politâ, limbo anteriore rotundato: long.* $\frac{4}{12}$, *lat.* $\frac{2}{12}$ *poll.*

Hab. ad Insulam Platam Columbiæ Occidentalis.

This shell, the only one I have seen, was dredged by Mr. Cuming in fine coral sand from a depth of seventeen fathoms. It may be a young individual; but the shell is so much firmer than it usually is in *Lingula* (so firm, indeed, as not to have contracted at all in drying), that I cannot but look on it as an undescribed species. In size and appearance it bears a near resemblance to a melon seed.

Mr. Cuming informs me that he found another specimen, about a line longer, at the same time and in the same place, but that he has unfortunately mislaid it.—W. J. B.

In illustration of Mr. Broderip's paper the *Shells* described in it were exhibited; as were also drawings of them. They form part of the extensive collection made by Mr. Cuming on the western coast of South America.

Mr. Owen read a paper "On the Anatomy of the *Brachiopoda* of

Cuvier, and more especially of the genera *Terebratula* and *Orbicula*."

The paper commences by a brief history of the formation of the order by Cuvier, and then refers to the anatomical particulars which have been recorded as regarding *Terebratula* by preceding writers. Among these Pallas seems to have given the best description of the animal. It is on one of this subdivision that the description given by Linnæus of the animal of his genus *Anomia* is founded.

Mr. Owen's materials for the anatomy of *Terebratula* consist of specimens of four species, three of which are inhabitants of the South Pacific Ocean (including one brought home by Mr. Cuming, and two by Captain P. P. King, R.N.); the fourth, *Ter. psittacea*, Brug., was brought from Felix Harbour, Boothia Peninsula, by Commander J. C. Ross, R.N.

The mantle adheres very closely to the valves: the lobe which corresponds to the perforated valve is traversed longitudinally by four large vessels; the opposite lobe is similarly traversed by two such vessels. Its margins are thickened, not as in the *Lamellibranchiate Bivalves* from contraction, but owing to a peculiar structure connected with respiration. They are puckered at regular distances, the puckerings being apparently caused by the insertions of delicate *cilia*, which pass as far within the mantle as they project out of it, but which are so minute as to be observable only by means of a lens. In the interspaces of the *cilia* the margin of the mantle is minutely fringed, and within the fringe is a canal, which extends along the whole circumference. From this canal the large vessels of the mantle lobes take their origin: they may be regarded as the branchial veins conveying the aerated blood to the two hearts, which are situated exterior to the liver, and just within the origin of the internal calcareous loop: they are accompanied in their course by much smaller vessels, probably the branchial arteries. Such is apparently the system of respiration in *Terebratula*.

The *viscera* occupy a very small space near the hinge. The alimentary canal commences by a small puckered mouth, situated immediately behind the folded extremities of the arms. It passes backwards, and expands into a membranous stomach, surrounded by the liver, a bulky gland of a green colour and minute follicular texture, which communicates with it by many orifices. The intestine passes down to the hinge, and then turns to the right side and terminates between the two mantle-lobes. No trace of a salivary gland was found.

The generation of *Terebratula* is that of the ordinary *Bivalves*. In two of the larger specimens the *ova* had insinuated themselves between the layers of the mantle, and partly surrounded the branchial vessels. When so far advanced they obscure the organization of the mantle which adapts it for respiration: this organization is consequently most satisfactorily observed in very young individuals.

Mr. Owen describes in detail the muscles, the arms, and the peculiar internal testaceous apparatus or loop connected with the hinge and supporting the arms. In the species which he examined, with the exception of *Ter. psittacea*, he finds that the loop possesses

some elasticity, and when acted on by the muscles becomes in its reflected part sufficiently convex to press upon the perforated valve and separate it slightly from the opposite one; thus compensating for the absence of the thick arms of *Lingula*, which in their protrusion push open the valves, and also for that of the elastic fibres constituting the ligament of ordinary *Bivalves*.

The *Orbiculæ* examined by Mr. Owen consist of specimens of *Orb. lamellosa*, Brod.

Along the whole circumference of the valves shining *cilia* are seen projecting for an extent varying from 2 to 4 lines: they are consequently much longer than in *Terebratula* and in *Lingula anatina*, and are rather longer than in *Ling. Audebardii*, Brod. On examination under a high power they are observed to be beset with smaller *setæ*, which probably gives them greater power in determining the respiratory currents. The mantle is similarly vaseular to that of *Terebratula*, there being, in the upper lobe, four principal trunks (comparatively, however, much shorter than in that genus); and two in the lower. These trunks terminate in sinuses, situated close to two strong tendinous membranes, which circumscribe the visceral mass, and to which the mantle-lobes firmly adhere. Here the veins of both mantle-lobes join, and the common trunk or sinus passes obliquely through the membrane, and may be plainly seen distributing *ramuli* over the liver and ovary.

The muscles and *viscera* form a rounded mass, situated in the posterior half of the shell. The mouth is seated between the base of the arms. The *œsophagus* passes obliquely through the tendinous wall of the *viscera* in a direction towards the upper valve: it becomes slightly dilated, and is then surrounded by the liver. The intestine is continued straight to the opposite end of the visceral cavity, is there again contracted, makes a sudden bend upon itself, and returns to the middle of the right side of the visceral belt, which it perforates obliquely, and terminates between the lobes of the mantle a little below the bend of the arm. The liver is of a beautiful green colour, and consists of a congeries of elongated follicles, closely compacted together, which communicate by numerous orifices with the stomach. As in *Terebratula*, there is no salivary gland.

In *Lingula Audebardii*, Brod., there is also no salivary gland; and Mr. Owen is therefore disposed to believe that the gland described as such in *Ling. anatina* by Cuvier, was only a portion of the liver, from which the colour had probably been removed by long maceration in spirit.

In the want of salivary glands the *Brachiopoda* would agree with the ordinary *Bivalves*. Destitute, like them, of any hard parts about the mouth for comminuting alimentary substances, glands for pouring in a fluid to blend with the food during that operation are not wanted.

The nervous system in *Terebratula* was not detected by Mr. Owen. In *Orbicula* two small *ganglia* were found on the side of the *œsophagus* next the perforated valve; from which two filaments, accompanying the *œsophagus* through the membranous wall, immediately diverge and pass exterior to the anterior shell muscles, pro-

ceeding with corresponding arteries to near the hearts, beyond which he could not trace them. A single small *ganglion* is situated on the opposite side of the *œsophagus*, but on a plane posterior to the preceding; this is probably the cerebral *ganglion* for giving off nerves to the free spiral extremities of the arms, close to the base of which it is situated.

Mr. Owen exhibited, in illustration of his paper, drawings of the several objects described in it.

The following Notes relative to the period of Uterine Gestation and the Conditiontof the new-born Fœtus in the *Kangaroo, Macropus major*, Shaw, were read by Mr. Owen.

"Perhaps there is no question in animal physiology that has given rise to more numerous and contradictory theories, and in which fewer facts have been well ascertained, than that which relates to the generation of the *Marsupial Animals*.

"In the present communication I propose to limit myself to the narration of some of the circumstances that have occurred in elucidation of this subject during a series of observations which have been made at the Gardens in Regent's Park during the past summer.

"All the *Kangaroos* at the Farm were for this purpose transferred from the Farm to the Gardens at the latter end of June. The whole stock consisted of two males and six females, all fully grown. The animals of different sexes were kept apart until they had become in some measure accustomed to the gaze of visiters, and reconciled to their new abode.

"It was to be expected that some accidents would occur in exposing so timid an animal, and one whose locomotion is of so violent a kind, to this change; and shortly after their arrival one of the females died in consequence of leaping against the wire fence. It is, however, probable, from the appearances observed on the *post mortem* examination of subsequent cases, that this, like the other individuals, was rendered highly excitable by great determination of blood to the brain. When the remainder had become more habituated to their new circumstances, the experiments were commenced, and the first step taken was to examine the pouches of all the females.

"The 1st female had previously been kept at the Gardens, and had a young one, which measured about 1 foot 2 inches from the nose to the root of the tail: this, of course, had quitted the nipple and the pouch, and now only returned occasionally to suck. There was no other young one in the pouch. The right superior nipple was the one in use; it was nearly 2 inches long and $\frac{1}{4}$rd of an inch in diameter, the gland forming a large swelling at the base. The other three nipples were everted, and about $\frac{1}{4}$ an inch in length.

"A 2nd female, from the Farm, had a young one attached to the lower nipple on the right side. It measured about 7 inches from the nose to the vent, was naked, with the skin of a bright pink colour, being still, in the language of M. De Blainville, a mammary fœtus. The nipple in use was $1\frac{1}{4}$ inch long from the gland to the mouth of the fœtus; the rest were everted, and about the size of those in the first-mentioned female.

"The 3rd female had a mammary fœtus, about 4 inches long from the nose to the vent, adhering to the left lower nipple, covered like the preceding with a naked vascular integument, which probably assists in oxygenating the blood. The eyes in this, as well as in the preceding, were closed. The other nipples were everted, but were not all of the same length, the right lower nipple being shorter than the right upper one. I could not ascertain when this female had been impregnated.

"The 4th and 5th females had no young in the pouch; all the nipples were everted.

"From this examination two facts were ascertained; 1st, that the *Kangaroo*, at least in a state of captivity, has no particular period or season for breeding; and 2nd, that the upper as well as the lower nipples are used both during the period of mammary gestation and for the young animal's subsequent supplies of nourishment.

"With respect to the female No. 2., the following facts relative to her gestation were obtained from Joseph Fuller, Head Keeper at the Farm. She received the male on the 14th of September 1832; but copulation might also have occurred previously. On the 14th of October of the same year Fuller observed her looking sickly, and when the male approached her she scratched and repulsed him. He perceived much slime, like white of egg, passing from the *vagina*. This was about 3 p.m., when he was unfortunately called away on some business. In the evening, at 8 o'clock, suspecting that parturition had taken place, he examined her pouch, and found a young one attached to a teat: on being touched the young one dropped off to the bottom of the pouch. Next day he again examined her, and found the young one adhering to the nipple. It fell off a second time on being handled, and both Joseph and Devereux Fuller had the little one in their hands out of the pouch, and both assert that it was not more than 1 inch in length. It was again put into the pouch, and the mother was meddled with no more till the 3rd of November following. On that day Mr. Yarrell and myself visited the Farm, and on hearing this account we examined the female, and found the young one, now 3 inches long, adhering strongly to the nipple. On further questioning Fuller on the subject, he said, that when first he saw the young one it was covered with blood-clot or *coagulum*; but on the following day it was quite clean and dry, and moved its body vigorously. The mother still suckles one of the previous year.

"From Mr. Morgan's experiments it would appear that when the mammary fœtus has arrived at nearly the size of a fully grown *Norway Rat*, it will bear a separation from the nipple for two hours, and regain its hold. According to Fuller's statement it will bear a separation from the nipple, and again become joined to it, at what is now proved to have been a very short period after uterine gestation; and Mr. Collie's observations, in the 18th Number of the 'Zoological Journal', are in confirmation of the same opinion. It is still uncertain in what manner it regained the nipple, although in a subsequent experiment, where a similar fœtus was detached, the mother made many, but, as it appeared, unsuccessful, attempts to replace it.

"In order to ascertain precisely the period of gestation, as an es-

sential guide to future experiments, the female No. 1. was selected, she being still suckling the young one of the previous year, and being known not to be impregnated. She was placed with the male only at such times as they could be watched.

"The *coitus* was observed on the 27th of August at 1 p.m. She was separated from the male the same day, and was kept in a distinct shed and paddock until parturition took place. In order to inure her to the examinations of the pouch when they should become indispensable, they were commenced six days after the copulation, and were repeated every morning and evening by James Hunt, the intelligent Keeper whose services were allotted to me by the Council during these investigations. At many of these examinations I was present, and the following are among my notes made on those occasions.

"Sept. 6th.—10th day of gestation. Pouch tolerably free from secretion; the right upper nipple about 2 inches long and ¼rd of an inch in diameter; the young one, which has left the pouch, still sucking occasionally; the other nipples as when first examined.

"Sept. 11th.—15th day. No alteration in the pouch or nipples; the young one still sucking occasionally.

"Sept. 30th.—34th day. The young one that was sucking is dead. The nipple in use by it has begun to shrivel, and the brown secretion to form.

"Oct. 4th.—38th day. Hunt observed the female in the afternoon putting her nose into the pouch, and licking the entry. He examined her at 6 in the evening; but a slight increase of the secretion was the only perceptible change, and there was no appearance in the nipples indicative of approaching parturition.

"Oct. 5th.—39th day. Hunt examined the female at 7 a.m. and found the young one attached to the nipple. No blood or albuminous discharge could be detected on the litter, nor any trace of it on the fur between the *vagina* and orifice of the pouch. As the birth took place in the night, the mother had probably had time to clear away all indications of it.

"I repaired to the Gardens the same day and examined the pouch. The young one was attached to the left superior nipple: it resembled an earth-worm in the colour and semitransparency of its integument, and adhered firmly to the point of the nipple. It breathed strongly but slowly, and moved its fore legs when disturbed. Its body was bent upon the *abdomen*, its short tail tucked in between the hind legs, which were about one third shorter than the fore legs, but the three divisions of the toes were distinct. The whole length, from the nose to the end of the tail, would not exceed 1 inch 2 lines. A linear longitudinal mark of the *umbilicus* was apparent.

"It has been asserted by Barton that the young of the *Opossum* immediately after birth are in a much more imperfect condition than that above described in the *Kangaroo*, being merely gelatinous corpuscles, comparable to a *Medusa*; but the later observations of Dr. Rengger on an *Opossum* (*Didelphis Azaræ*, Temm.,) nearly allied to the *Virginian* species (*Did. Virginiana*, Cuv.,) accord as to the condition of the new-born fœtus with what we have now been able to ascertain with accuracy is the condition of the new-born *Kangaroo*.

"Oct. 9th.—I again examined the pouch; the young one was evidently grown, and respired vigorously. I determined to detach it from the nipple for the following reasons: 1st, to decide the nature of the connexion between the fœtus and nipple; 2nd, to ascertain, if possible, the nature of the mammary secretion at this period; 3rd, to try whether so small a fœtus would manifest anything like voluntary action to regain the nipple; and, lastly, to observe the actions of the parent herself to effect the same purpose, as we might presume they would be instinctively analogous to those by means of which the fœtus was originally applied to the nipple, supposing that to take place through the agency of the mother.

"An organical connexion by vessels between the mammary fœtus and the nipple being a necessary consequence of the truth of Dr. Barton's assertion as to the condition of the product of generation at uterine birth, this has been much insisted upon; a discharge of blood has been described as a concomitant of marsupial birth; and even the anastomoses of the maternal vessels with those of the fœtus have been speculated upon. (See *Mém. du Muséum*, tom. ix. p. 393.)

"The dissections of the mammary fœtus of the *Kangaroo* by Mr. Hunter, showing the relation of the nipple to its tongue and mouth, the passage of the *larynx* into the posterior *nares*, the absence of the *urachus* and umbilical vessels, &c., tended indeed to disprove the theory of the vascular connexion; and the observations of Mr. Morgan and Mr. Collie, with the testimony of Joseph Fuller, were completely subversive of it. Nevertheless it was desirable to have ocular demonstration of the real state of the facts at this early period of the young animal's existence.

"It was removed from the nipple without the slightest trace of laceration of continuous vessels, or of any kind of connecting substance: but it adhered more firmly than I had been led to expect from Fuller. After it was detached, a minute drop of serous milk appeared on pressure at the point of the nipple: this was the smallest part of the nipple, and was not swollen or clavate; about half a line had entered the mouth of the fœtus.

"The young one moved its extremities vigorously after being detached, but made no effort to apply its legs to the fur or skin of the mother so as to creep along: it seemed perfectly helpless. It was deposited at the bottom of the pouch, and the mother was liberated and carefully watched. She immediately showed symptoms of uneasiness, stooping down to lick the orifice of the *vaginæ*, which she could easily reach, and scratching the exterior of the pouch with her fore paws. At length she grasped the sides of the opening of the *marsupium* with her fore paws, and drawing them apart, just as one would open a bag, she thrust her head into the cavity as far as her eyes, and could be seen moving it about in different directions. During this act she rested on her tripod, formed by the *tarsi* and tail. She occasionally lay down, but in that posture never meddled with the pouch: when stimulated to do so she immediately rose, and repeated the process of drawing open her pouch and inserting therein her muzzle, which she sometimes kept in for half a minute at a time. I never observed her put her fore legs, or either of them, into the pouch; these were invariably employed to widen

the orifice, or in scratching the exterior. When she withdrew her head, she generally concluded by licking the orifice of the pouch and swallowing the secretion.

"After repeating the above act of insertion at least a dozen times, she lay down and seemed at ease. When she had rested quietly about a quarter of an hour we examined her again, and found the young one not at the bottom of the pouch, but within 2 inches of the nipple. It was moving its extremities, and respiring as vigorously as before. I attempted to replace it on the nipple, but without success; it was therefore left in the pouch, and the mother was released.

"My engagements prevented me from visiting the Gardens until the day but one after this examination, when at 10 a.m. I examined the *marsupium*; but the fœtus was gone. We searched very carefully every portion of the litter, &c., in the hope of finding it, but without success. I concluded, therefore, that the fœtus had died, and that the mother had probably eaten it.

"From what I observed of the mother after the separation of the fœtus, I should conclude that parturition takes place in the erect and not in the recumbent posture; and on perceiving the ease with which she can reach with her mouth the orifices of the *vagina* and pouch, a means adequate to the removal of the young from the one to the other became obvious. I should suppose the fore paws not to be used for the transmission of the fœtus, but to keep open the pouch ready for its reception, while the mouth would be the means by which it would be deposited therein, and perhaps held over a nipple till the mother felt the sensitive extremity grasped by the young one.

"This mode of removal is consistent with analogy. *Cats*, *Dogs* and *Mice* transport their young by the mouth.

"I ought, perhaps, to have forborne this hypothesis when an opportunity of actually observing the process may so soon be afforded; but it was suggested by observing the actions of the mother after an artificial separation of the fœtus from the nipple, and accords with the phænomena better, I think, than any that have previously been proposed. There is no internal passage; there is no power of bringing the mouth of the *vagina* in contact with that of the pouch, either in the living or dead *Kangaroo*, without lesion of the parts; the fore paws could not so effectually protect the tender embryo from the external air as the lips, nor so safely ensure its passage; and the young one itself did not by any of its actions give the idea of its having the power of creeping up along the fur to the pouch or nipple.

"Where, however, the structure of the pouch, as in *Perameles* and some South American *Opossums*, is different, the mother's aid may be less necessary; but the period of gestation being now ascertained, every endeavour will be made to clear up this part of the problem *ex visu*."

December 10, 1833.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of *Nyctinomus acetabulosus*, Geoff.; an *Ibis*, apparently *Ibis religiosa*, Cuv.; and a *Chamæleon*, *Chamæleo verrucosus*, Cuv. They were presented to the Society by Charles Telfair, Esq., Corr. Memb. Z. S., by whom they were obtained from Madagascar.

Colonel Sykes placed on the table his specimen of the *wild Dog* of Dukhun, *Canis Dukhunensis*, Sykes, for the purpose of comparing it with a skin of the *wild Dog* of Nepâl, *Canis primævus*, Hodgs., recently presented to the Society by B. H. Hodgson, Esq., Corr. Memb. Z. S. He showed that the two *Dogs* are perfectly similar in their general form, and in the form of the *cranium*; and that in his specimen, equally with that of Mr. Hodgson, the hinder tubercular tooth of the lower jaw is wanting. The only differences remarkable between the two specimens is in the quality and colour of the fur, that of the *Dukhun Dog* being paler and less dense than that of the individual from Nepâl. These differences, depending probably on climate and individual peculiarity, cannot be regarded as sufficient to indicate a distinction between the two races. Identical as they are in form and habits, Col. Sykes considers them as belonging to one species. A short notice of the *Dukhun Dog*, communicated by him to the Committee of Science and Correspondence, was published in its 'Proceedings,' Part I. p. 100; and a detailed account of it, read by him before the Royal Asiatic Society, has just appeared in the Transactions of that body.

At the request of the Chairman, Mr. Gould exhibited a series of *Eurylaimi*, Horsf., in illustration of a paper "On an undescribed Species" of that genus, which he characterized as

EURYLAIMUS LUNATUS. *Eur. capite cristato; cristâ genisque brunneis; fasciâ supraciliari nigrâ; guld cinerascente; collo, interscapulio, pectore, abdomineque cærulescenti-cinereis; tergo uropygioque castaneis; parauchenio lunâ albâ notato; scapularibus nigris; alis lazulinis, ad apicem fasciâ latâ nigrâ notatis, remigibus prioribus quatuor albo apiculatis acutis, secundariis abruptis tribus interioribus castaneis; caudâ nigrâ, rectricibus tribus externis apices versus albis.*

Fœm. *Lunulâ ad colli latera nullâ.*

Long. tot. $6\frac{1}{7}$ unc.; *rostri*, a rictu ad apicem, $\frac{3}{4}$; *rostri* ad basin lat. $\frac{5}{8}$; long. *alæ*, $3\frac{1}{2}$; *caudæ*, 2; *tarsi*, $\frac{5}{8}$.

Hab. apud Rangoon.

The beak is dark olive inclining to black, and is lighter at its edges and along the *culmen*. The *tarsi* are brownish black.

The beautiful semilunar mark which extends across the whole of each side of the neck, consists of silvery white feathers, elevated above the rest, and abruptly terminated as if clipped by scissors.

The exhibition was resumed of the new species of *Shells* contained in the collection made by Mr. Cuming on the Western Coast of South America and among the Islands of the South Pacific Ocean. Those exhibited on the present evening were accompanied by characters by Mr. G. B. Sowerby, and consisted of the following species, thirty-six in number, of the

Genus Pleurotoma.

Pleurotoma maura. *Pleur. testâ turritâ, acuminatâ, fusco-nigricante; anfractibus duodecim, medio tuberculatis, infrà puncto-striatis, supernè depressione sinum labii sequente; canali recurvâ: long.* 1·9, *lat.* 0·55 *poll.; long. aperturæ* 0·8.

Hab. ad Insulam Platam Columbiæ Occidentalis.

Two specimens were brought up from a depth of fourteen fathoms in coral sand.—G. B. S.

Pleurotoma unimaculata. *Pleur. testâ turritâ, acuminatâ, albâ, anfractûs ultimi dorso fusco-unimaculato; anfractibus tredecim, medio tuberculatis, tuberculis elongatis, ultimi tuberculis in costellam inferam confluentibus; aperturâ brevi, labio externo expanso, sinu superiore profundo, inferiore obsoletiore; labio interno supernè callum tuberculiformem efformante: long.* 1·4, *lat.* 0·5 *poll.; long. apert.* 0·6.

Hab. ad oras Americæ Centralis et Occidentalis.

Found in sandy mud, in from eight to sixteen fathoms, at Monte Christe, Guacomayo and Salango.—G. B. S.

Pleurotoma rosea. *Pleur. testâ turritâ, acuminatâ, albidâ, anticè roseo tinctâ; anfractibus undecim, supernè connatis, medio tuberculiferis, tuberculis ovatis, anfractûs ultimi in costellas desinentibus; aperturâ brevi, labio externo expanso, sinu superiore profundo, inferiore obsoletiore; canali brevi, reflexâ: long.* 1·15, *lat.* 0·5 *poll.*

Hab. ad Salango et ad Montem Christi.

A delicately coloured species, very like the last in shape.

Found in sandy mud in from twelve to sixteen fathoms.—G. B. S.

Pleurotoma Clavulus. *Pleur. testâ subulatâ, lævi, albâ, fusco variegatâ, infrà incrassatâ; anfractibus novem, suturis connatis, ultimo crasso; aperturâ ovali, labio externo incrassato, reflexo, emarginaturâ subcirculari posticâ; epidermide tenui: long.* 0·9, *lat.* 0·35 *poll.*

Hab. in Sinu Montijæ Americæ Centralis.

Found in sandy mud at a depth of seventeen fathoms.—G. B. S.

Pleurotoma rudis. *Pleur. testâ turritâ, crassâ, rudi, fuscâ; anfractibus decem, medio coarctatis, suprà infràque tuberculatis,*

tuberculis inferioribus supernè albo maculatis; anfractu ultimo subdistorto, pone aperturam tuberculo magno; aperturâ ovali, labio externo tenui, sinuoso: long. 1·3, *lat.* 0·55 *poll.*

Hab. ad Montem Christi Columbiæ Occidentalis.

Found under stones.—G. B. S.

PLEUROTOMA OXYTROPIS. *Pleur. testâ turrito-subulatâ, brunnescente; anfractibus decem, spiraliter carinatis, carinâ medianâ albicante, conspicuâ, interstitiis decussatis; aperturâ oblongâ, canali rectâ, elongatâ, emarginaturâ laterali in carinam medianam decurrente: long.* 1·8, *lat.* 0·5 *poll.*

Hab. ad Panamam et ad Portam Portreram.

Found in sandy mud at from thirteen to twenty fathoms' depth.—G. B. S.

PLEUROTOMA MACULOSA. *Pleur. testâ oblongo-fusiformi, turritâ, albido-cœrulescente, fusco maculosâ; anfractibus undecim, lævigatis, medio tuberculiferis, tuberculis uniserialibus; aperturâ oblongâ, emarginaturâ laterali posticali (seu supra tubercula efformatâ); canali brevi; columellâ rectiusculâ: long.* 2·2, *lat.* 0·6 *poll.*

Hab. ad Montem Christi Columbiæ Occidentalis.

One specimen only was dredged in sandy mud at a depth of sixteen fathoms. The aperture is about two fifths of the length of the shell.—G. B. S.

PLEUROTOMA ALBICOSTATA. *Pleur. testâ acuminato-pyramidali, roseâ; anfractibus novem, lævibus, longitudinaliter costatis, costis confertis albis; aperturâ brevi, emarginaturâ posticali; canali brevissimâ: long.* 0·9, *lat.* 0·3 *poll.*

Hab. ad Insulas Gallapagos.

A very elegant small species, found in fine coral sand at a depth of six fathoms.—G. B. S.

PLEUROTOMA CLAVATA. *Pleur. testâ acuminato-pyramidali, roseo-albicante; anfractibus decem, lævibus, longitudinaliter subobsoletè tuberculato-costatis; aperturâ brevi, latiusculâ; emarginaturâ posticali: long.* 1·, *lat.* 0·3 *poll.*

Hab. ad Xipixapi Columbiæ Occidentalis.

A few specimens were found in sandy mud at a depth of ten fathoms.—G. B. S.

PLEUROTOMA BICOLOR. *Pleur. testâ oblongâ, pyramidali, fuscâ, albicante cingulatâ; anfractibus sex vel septem, longitudinaliter costatis, spiraliter sulcatis, costis posticè tuberculiferis; aperturâ brevi, margine crenatâ, emarginaturâ posticali; canali brevissimâ: long.* 0·85, *lat.* 0·3 *poll.*

Hab. ad Panamam et ad Insulas Gallapagos.

Found under stones at Panama, and dredged from a sandy floor at a depth of eight fathoms at the Gallapagos Islands.—G. B. S.

PLEUROTOMA SPLENDIDULA. *Pleur. testâ elongato-pyramidali, roseo-fuscescente; anfractibus undecim, lævigatis, costis longitudinalibus obliquis, medio prominulis, subconfertis, albis; anfrac-*

tûs ultimi dorso fusco, planulato; aperturâ brevi, canali brevissimâ; emarginaturâ posticali: long. 1·2, *lat.* 0·35 *poll.*

Hab. ad Insulas Gallapagos.

From a depth of six fathoms in fine coral sand.—G. B. S.

PLEUROTOMA OLIVACEA. *Pleur. testâ fusiformi, olivaceâ, unicolore; spirâ acuminato-pyramidali; anfractibus novem, supernè lævibus, infrà tuberculosis et spiraliter striatis, ultimo anticè striato; aperturâ oblongâ, anticè canalem efformante; labio externo tenui intùs striato; emarginaturâ labii externi posticali; suturis connatis: long.* 2·4, *lat.* 0·8 *poll.*

Hab. ad Salango et ad Sanctam Elenam Columbiæ Occidentalis.

Found in sandy mud at from five to twelve fathoms.—G. B. S.

PLEUROTOMA CINCTA. *Pleur. testâ crassâ, oblongâ, nigrâ; anfractibus novem, supernè lamellâ spirali, infrà cingulo flavo mediano crenato, ultimo cingulis duobus flavis, superiorè crenato, lineisque tribus elevatis crenatis; aperturâ brevi; canali brevissimâ: long.* 0·7, *lat.* 0·3 *poll.*

Hab. ad Montem Christi et ad Xipixapi.

Found in sand and gravel at a depth of seven fathoms.—G. B. S.

PLEUROTOMA BICANALIFERA. *Pleur. testâ turritâ, gracili, tenui; anfractibus novem, longitudinaliter costellatis, costellis graniferis; aperturâ oblongâ, utrinque canaliferâ, labio externo latè reflexo: long.* 0·8, *lat.* 0·3 *poll.*

Hab. ad oras Americæ Centralis.

Dredged from a depth of ten fathoms in sandy mud; from the Bay of Montija.—G. B. S.

PLEUROTOMA CORNUTA. *Pleur. testâ oblongo-pyramidali, apice acuto; anfractibus sex vel septem, supernè crenatis, infrà longitudinaliter costatis, transversim concinnè striatis; aperturâ oblongâ, canali brevi; peritremate posticè incrassato, in cornu breve producto: long.* 0·7, *lat.* 0·3 *poll.*

Hab. ad Sinum Caraccas Columbiæ Occidentalis.

Found in sandy mud at a depth of ten fathoms.—G. B. S.

PLEUROTOMA RUGIFERA. *Pleur. testâ oblongo-pyramidali, apice acuto; anfractibus octo vel novem, supernè crenatis, medianè longitudinaliter costellatis, ultimi dorso rugifero; aperturâ brevi; labio externo incrassato, emarginaturâ posticali profundâ: long.* 0·7, *lat.* 0·2 *poll.*

Hab. ad Insulas Gallapagos.

Dredged in six fathoms water among fine coral sand.

This species varies much in colour.—G. B. S.

PLEUROTOMA MODESTA. *Pleur. testâ ovato-subcylindraceâ, fulvâ, apice subulato-pyramidali; anfractibus sex vel septem, transversim carinulatis, carinulis crenatis; aperturâ canalique brevibus, emarginaturâ laterali pone medium labii positâ: long.* 0·7, *lat.* 0·25 *poll.*

Hab. ad Real Llejos et ad Insulam Annaa.

Dredged in sandy mud at eight fathoms' depth.—G. B. S.

PLEUROTOMA DISCORS. *Pleur. testâ turritâ, fuscâ; anfractibus decem vel undecim, supernè prope suturam unicarinatis, infrà nodulosis, medianè lævibus; ultimo anticè transversim lineato; varice ante aperturam conspicuo; aperturâ brevi, ovatâ, emarginaturâ profundâ ante carinam anfractuum: long.* 1·, *lat.* 0·35 *poll.*

Hab. ad Insulam Platæ Columbiæ Occidentalis.

A single specimen was dredged in seventeen fathoms among coral sand.—G. B. S.

PLEUROTOMA PALLIDA. *Pleur. testâ turritâ, albicante; anfractibus undecim, subrotundatis, creberrimè costellatis, sulcato-decussatis, supernè serie unicâ punctulorum impressorum ante costellas positâ; aperturâ brevissimâ, emarginaturâ profundâ, posticali: long.* 0·85, *lat.* 0·3 *poll.*

Hab. ad Portam Portreram Americæ Centralis.

Found in thirteen fathoms, on a sandy muddy floor.—G. B. S.

PLEUROTOMA ATERRIMA. *Pleur. testâ acuminato-pyramidali, aterrimâ; anfractibus octo, supernè unicarinatis, infrà crenulatis, ultimo serie unicâ medianâ tuberculorum, infrà striis graniferis duabus; aperturâ intùs nigrâ, emarginaturâ laterali inter carinam superiorem et seriem tuberculorum anfractûs; canali brevissimâ: long.* 0·8, *lat.* 0·35 *poll.*

Hab. ad Montem Christi Americæ Occidentalis.

Found under stones.—G. B. S.

PLEUROTOMA NIGERRIMA. *Pleur. testâ acuminato-pyramidali, nigerrimâ; anfractibus octo, supernè planulatis, prope suturam crenatis, infrà costis longitudinalibus ornatis, ultimi costis decurrentibus; aperturâ nigrâ, supernè callositate munitâ; canali longiusculâ, subreflexâ: long.* 0·8, *lat.* 0·35 *poll.*

Hab. ad Panamam.

Dredged in sandy mud in six and ten fathoms.—G. B. S.

PLEUROTOMA ADUSTA. *Pleur. testâ acuminato-pyramidali, fuscâ; anfractibus decem supernè planulatis, medianè tuberculiferis, tuberculis longitudinaliter subcompressis, ultimo infrà granoso-striato; aperturâ brevi, sinu posticali; canali brevissimâ: long.* 0·7, *lat.* 0·3 *poll.*

Hab. ad Montem Christi Columbiæ Occidentalis.

Found under stones.—G. B. S.

PLEUROTOMA TURRICULA. *Pleur. testâ acuminato-pyramidali, fuscâ; anfractibus decem, supernè serie unicâ tuberculorum, infrà longitudinaliter costatis, costis decussatis, ultimi costis decurrentibus supernè tuberculiferis; aperturâ latiusculâ, intùs purpureo-nigricante; canali brevi, latâ; sinu laterali inter seriem tuberculorum et costas constructo: long.* 1·7, *lat.* 0·7 *poll.*

Hab. ad Sanctam Elenam Columbiæ Occidentalis.

From sandy mud at a depth of six fathoms.—G. B. S.

PLEUROTOMA CORRUGATA. *Pleur. testâ acuminato-pyramidali, fuscâ; anfractibus decem, supernè prope suturam granoso-unicarinatis, infrà longitudinaliter costatis, costis decussatis, ultimi*

costis decurrentibus; aperturâ brevi, sinu laterali superiore; canali brevi, latâ: long. 1·1, *lat.* 0·4 *poll.*

Hab. ad Sinum Montijæ et ad Portam Portreram.

Found in muddy sand at ten fathoms' depth.—G. B. S.

PLEUROTOMA INTERRUPTA. *Pleur. testâ oblongo-pyramidali, pallescente; anfractibus octo, spiraliter sulcatis, cingulatis, cingulo mediano nigro, albo articulato; aperturâ canalique brevibus, sinu laterali postico: long.* 0·6, *lat.* 0·2 *poll.*

Hab. ad Insulam Annaa.

Found under coral on the reefs.—G. B. S.

PLEUROTOMA EXCENTRICA. *Pleur. testâ oblongo-pyramidali, brunneâ; anfractibus sex, duobus anticis excentricis, supernè prope suturam unicarinatis, carinâ undulatâ, infrà spiraliter sulcatis et longitudinaliter costatis; aperturâ brevi, subtrigonâ, peritremate distincto, labii externi margine undulato; sinu laterali postico: long.* 1·2, *lat.* 0·5 *poll.*

Hab. ad Insulas Gallapagos.

Found in coral sand at the depth of six fathoms.—G. B. S.

PLEUROTOMA INCRASSATA. *Pleur. testâ crassâ, acuminato-pyramidali, nigricante; anfractibus novem vel decem, supernè prope suturam obsoletè unicarinatis, carinâ interruptâ, infrà longitudinaliter costellatis, costellis granosis, lineis elevatiusculis spiralibus decussatis; aperturâ brevi, sinu laterali postico; canali brevi, obtusâ: long.* 2·3, *lat.* 0·8 *poll.*

Hab. ad Panamam et ad Montem Christi.

Dredged in from six to ten fathoms from sandy mud.—G. B. S.

PLEUROTOMA DUPLICATA. *Pleur. testâ acuminato-turritâ, gracili, pallidâ, epidermide corneâ fuscâ; anfractibus undecim vel duodecim, supernè prope suturam lineâ elevatâ unicâ, in medio tuberculato-costatis, lineis duabus elevatis, binis decussatis; ultimo infrà inconcinnè striato; aperturâ brevi, sinu laterali postico; canali brevi: long.* 1·6, *lat.* 0·6 *poll.*

Hab. ad Portam Portreram et in Sinu Montijæ Americæ Centralis.

Dredged from a sandy muddy floor at ten fathoms' depth.—G. B. S.

PLEUROTOMA UNICOLOR. *Pleur. testâ crassiusculâ, oblongo-pyramidali, nigrâ; anfractibus octo, lævibus, supernè prope suturam serie granularum unicâ, infrà longitudinaliter costatis; aperturâ brevi; canali brevissimâ; sinu laterali postico infra seriem granularum: long.* 0·85, *lat.* 0·3 *poll.*

Hab. ad Panamam.

Dredged in from six to ten fathoms on a sandy muddy floor.—G. B. S.

PLEUROTOMA RUSTICA. *Pleur. testâ rudi, crassiusculâ, oblongo-pyramidali, fusco-nigricante; anfractibus septem, supernè prope suturam unicarinatis, infrà longitudinaliter costatis, costis numerosis acutis, ultimi costis lineato-decussatis, decurrentibus;*

aperturâ brevi; canali brevissimâ; sinu laterali postico, rotundato: long. 1·1, *lat.* 0·4 *poll.*

Hab. sub lapidibus ad Xipixapi Columbiæ Occidentalis.—G. B. S.

PLEUROTOMA GRANULOSA. *Pleur. testâ turrito-pyramidali, brunnescente; anfractibus novem vel decem, supernè prope suturam lævibus, tumidiusculis, infrà rotundato-costatis, costis lineato-decussatis, lineis decussantibus minutissimè granulosis; aperturâ brevi; canali brevi, latâ; sinu laterali postico, rotundato: long.* 0·75, *lat.* 0·25 *poll.*

Hab. ad Sinum Montijæ et ad Panamam.

Dredged in sand from a depth of eight fathoms.—G. B. S.

PLEUROTOMA VARICULOSA. *Pleur. testâ gracili, turrito-pyramidali, fuscescente; anfractibus septem vel octo, rotundatis, supernè prope suturam lævibus, infrà longitudinaliter costatis, costis decussatis, granosis; aperturâ brevi, ovali, basi coarctatâ; canali brevisculâ; labio externo tenui, varicula externè instructo: long.* 0·6, *lat.* 0·2 *poll.*

Hab. ad Sinum Montijæ Americæ Centralis.

Dredged in sandy mud at ten fathoms' depth.—G. B. S.

PLEUROTOMA NITIDA. *Pleur. testâ gracili, turrito-pyramidali, brunneâ; anfractibus septem vel octo, rotundatis, lævibus, nitidis, longitudinaliter concinnè costellatis, et striatis; aperturâ canalique brevibus; suturâ crenulatâ; sinu laterali postico, mediocri: long.* 0·6, *lat.* 0·15 *poll.*

Hab. ad Sinum Montijæ Americæ Centralis.

Dredged in sandy mud at ten fathoms' depth.—G. B. S.

PLEUROTOMA COLLARIS. *Pleur. testâ acuminato-pyramidali, atrâ; anfractibus octo, supernè prope suturam obsoletè unicarinatis, infrà serie unicâ granularum, cingulum efformante albidum, ultimo infrà granulifero, granulis seriatim ordinatis, serie tertiâ albicante; aperturâ brevi; canali brevissimâ, latâ: long.* 0·5, *lat.* 0·2 *poll.*

Hab. ad Sinum Caraccensem Columbiæ Occidentalis.

Dredged in eight fathoms from muddy sand.—G. B. S.

PLEUROTOMA HEXAGONA. *Pleur. testâ gracili, acuminato-pyramidali, olivaceo-fuscâ; anfractibus decem, hexagonis, lævibus, tuberculosis, tuberculis per series sex obliquè ordinatis; anfractu ultimo majori, infrà spiraliter striato; aperturâ canalique brevibus; sinu laterali postico, mediocri: long.* 0·95, *lat.* 0·35 *poll.*

Hab. ad Guacomayo Americæ Centralis.

A single specimen was dredged in thirteen fathoms water among sandy mud.—G. B. S.

PLEUROTOMA FORMICARIA. *Pleur. testâ oblongo-acuminatâ, subcylindraceâ, brunneâ; anfractibus quinque vel sex, lævibus, costatis, costis majoribus, distinctis; aperturâ longitudinali, ovatâ; canali brevissimâ, latâ; sinu laterali posticali, parvo: long.* 0·4, *lat.* 0·1 *poll.*

Hab. ad Iquiqui Peruviæ sub lapidibus.—G. B. S.

The skins were exhibited of a *Lion* and *Lioness* killed in Guzerat by Captain Walter Smee, who, at the request of the Chairman, stated that they were selected from among eleven obtained by him in the same country, eight of which he had brought with him to England. The *Lion* is distinguished from those previously known by the absence of a mane from the sides of the neck and shoulders, the middle line of the back of the neck being alone furnished with longer hairs, which are erect like those in the same situation in the *Cheetah*, *Felis jubata*, Schreb. The under surface of the neck has long, loose, silky hairs, and there is a tuft at the angle of the anterior legs.

Captain Smee remarked that the existence in Guzerat of a *maneless Lion* had been known thirty years since by Colonel Sykes, and that Olivier had seen at Bagdad a similar animal, which was understood to have been brought thither from Arabia; but that hitherto, he believed, no skin of such a race had fallen under the observation of naturalists in Europe. Besides the absence of the extensive mane, it has to distinguish it from the ordinary *Lion*, a somewhat shorter tail, furnished at its tip with a much larger brush.

Regarding it as a strongly marked variety of the *Lion* hitherto known, Captain Smee proposed for it the following characters:

FELIS LEO, Linn., Var. GOOJRATENSIS. *Jubâ maris cervicali brevi, erectâ; caudæ flocco apicali maximo nigro.*

Hab. in Guzerat (et in Arabiâ?).

A male measured, including the tail, 8 feet 9½ inches in length. His total weight, exclusive of the entrails, was 4½ cwt.

The *maneless Lion* extends in Guzerat through a range of country about forty miles in length, where it is known as the *Ontiah Baug* or *Camel Tiger*, a name derived from its colour. In the hot months it is found in the low bushy wooded plains that skirt the Sombermutty and Bhardar rivers, from Ahmedabad to the borders of Cutch. It is destructive to cattle, but does not appear to attack man. When struck by a ball it exhibits great boldness, standing as if preparing to resist its pursuer, and then going off slowly, and in a very sullen manner; unlike the *Tiger*, which, on such occasions, retreats springing and snarling.

Captain Smee entered into various details respecting the animals exhibited by him, comprehending the heads of a paper "On the *maneless Lion* of Guzerat," which he had prepared for the Society.

The following notes by Mr. Martin on the anatomy of the *Grison*, *Galictis vittata*, Bell, (*Gulo vittatus*, Desm.,) were read. They are derived from the examination of an individual which recently died at the Society's Gardens.

"The animal was a male, measuring from the nose to the insertion of the tail 1 foot 6 inches; the length of the tail was 6¼ inches. As in the *Mustelidæ* generally, the intestines exhibited no division into small and large, except that the *rectum* became gradually increased in circumference. The total length of the intestines was 4 feet 5 inches. The stomach, when moderately distended with air, measured

10½ inches in its greatest circumference, 13 along its greater, and 4½ along its lesser curve. The *omentum* was thin and irregularly puckered together. At about 5 inches from the *anus* commenced a group of thickly crowded mucous follicles, occupying a space of 4 inches in length. The *anus* was furnished with two glands, of the size each of a nutmeg, and containing a fluid of the consistence and colour of liquid honey, and of a most intolerable odour: the orifice or duct of these glands opened just within the verge of the *anus*.

"The liver was tripartite, the middle portion being divided into one large and one small lobe: on the under side of the large lobe, in a deep furrow, was situated the gall-bladder, of a moderate size, and somewhat elongated form. The biliary secretion entered the *duodenum* 1½ inch below the *pylorus*.

"The *pancreas* was long, flat and narrow; beginning in a curved form near the *pylorus*, and following the course of the *duodenum* for about 4 inches.

"The spleen was loosely attached to the stomach, tongue-shaped, and in length 6 inches.

"The lungs consisted of three right and two left lobes. The heart was of an obtuse figure; it measured in length 1½ inch, and in breadth 1 inch. The primary branches of the *aorta* were as follow: 1st, a right branch, or *arteria innominata*, which, running for ½ inch, gave off the two carotids and the right subclavian; 2ndly, a left branch, passing to form the right subclavian.

"The *epiglottis* was acuminate, and in close approximation to the tongue, which was tolerably smooth, with a crescent of distinct fossulate *papillæ* at its base. The *os hyoides* was united by a succession of four bones on each side to the skull.

"The kidneys were of an oval form, the right being half its length higher than the left; the length of each was 1½ inch. The *tubuli* entered the *pelvis* of the kidney by a single large conical *papilla*. The suprarenal glands were small.

"The *testes* were each as large as a small nutmeg; the *cremaster* muscle, embracing the spermatic cord as it emerges from the ring, was very distinct. The *penis* had been injured in removing the skin of the animal; its length from the *pubes* was about 3½ inches, and its muscles were very distinct. It contained, as in the *Dog*, a slender bone, 1¾ inch long, commencing pretty stout, then narrowing as it proceeded till near the *apex*, when it suddenly bent at an obtuse angle, giving off at this part two small processes. The distance of the *prostate* from the bladder was 1½ inch.

"The morbid appearances consisted in extensive adhesions of the abdominal *viscera*, indicative of great inflammation. The lobes of the liver adhered to each other, to the *parietes* of the *abdomen* and to the stomach. At the distance of 10 inches from the *anus* there was an extensive *intus-susceptio*, a portion of intestine above that part (measuring, when withdrawn, 8 inches,) being received into the part below, to which it slightly adhered. The strangulated portion was puckered up so as to take up a space of only 3½ inches. The stomach exhibited dull red patches of inflammation, and was full of indigested food."

December 24, 1833.

William Yarrell, Esq., in the Chair.

Extracts were read from a letter, addressed to the Secretary by the Rev. R. T. Lowe, Corr. Memb. Z.S., and dated Madera, November 15, 1833. They related to a collection of *Fishes* made in that island by the writer, and accompanied about thirty species presented by him to the Society, in addition to those formerly transmitted by him, and exhibited at the Meeting of the Committee of Science and Correspondence on August 14, 1832. Those now sent were severally exhibited. They include the following species regarded by Mr. Lowe as hitherto undescribed, and for which he proposes the subjoined names and characters.

SERRANUS MARGINATUS. *Serr. nigrescens, luteo maculatus; pinnis dorsali, anali, caudalique nigris, albo marginatis; pinnâ dorsali filamentoso.*

D. 11 + 17. P. 18. V. 1 + 5. A. 3 + 9. C. 18.

This fish is very nearly related to *Serr. Gigas*, Cuv. & Val.; but appears to be distinguished by the greater number of the soft rays of its dorsal and anal fins, as well as by the white margin of these and the caudal. Its general tone of colouring is somewhat like that of a *Tench*, *Tinca vulgaris*, Cuv.; and it attains the length of 2 feet, and the weight of 8 pounds.

BERYX SPLENDENS. *Ber. ruber; pinnis ventralibus radiis duodecim mollibus.*

D. 4 + 14 v. 15. P. 1 + 17. V. 1 + 12. A. 4 + 30. C. ferè 30. M. B. 9.

This new species of *Beryx*,—a genus remarkable for the excess in number of the soft rays of the ventral fins beyond that which is normal in *Acanthopterygian Fishes*, viz. five,—has their number greater than any other except *Ber. Delphini*, recently described by M. Valenciennes from an individual obtained from the Indian Ocean. From *Ber. decadactylus*, Cuv. & Val., it differs by the greater number of these rays, by a greater number also of the rays of the branchiostegous membrane, and by its less compact form. Its height is equal to the length of its head, and measures three times and a half in its total length: its pectoral and dorsal fins, of equal length, are one fifth of the entire length of the fish; and the ventral measures one sixth. The dorsal and anal fins are proportionally higher than in that species; and the latter begins under the end of the former. The caudal fin is deeply forked. The number of *vertebræ*, exclusive of that which supports the rays of the caudal fin, is twenty-three.

Fam. Chætodontidæ.

Genus Leirus.

Corpus ellipticum, compressum; squamis deciduis parvis.
Caput parvum, nudum, declive.
Os parvum: maxillâ superiore obtusissimâ; inferiore breviore, truncatâ.
Dentes minuti, simplices, in utrâque maxillâ 1-seriati: palatini nulli.
Opercula marginibus serratis.
Pinnæ dorsalis analisque posticè latiores, squamosæ.
Membrana branchiostega 7-radiata.
Obs. Genus *Bramæ*, Bloch, maximè affine. Differt præcipuè dentibus palatinis nullis: etiam pinnâ caudali haud profundè bilobâ.

Leirus Bennettii.

Tetragonurus? simplex. *Tet. caudâ utrinque simplici.*
D. 15, 20 (ferè). P. ferè 10. V. 6. A. ferè 20. C. ferè 20. M.B. 7.
If this be a true *Tetragonurus*, Risso, (and there is no reason to doubt it except the absence of the *carinæ* on each side of the tail which give to that part in the type of the genus a square form,) it furnishes strong evidence of the affinity of that group to the *Scombridæ*. The spurious finlets behind its second dorsal and its anal fins denote a closer approach to the *Mackerels* than could be inferred from *Tet. Cuvieri*, Risso.

Crenilabrus Trutta. *Cren. virescens, variegata et maculata, squamis medio fuscis; fasciis verticalibus fusco-nigrescentibus; caudâ utrinque basi ocellatâ; pinnâ anali 5-spinosâ.*
D. 17 + 8. P. 15. V. 1 + 5. A. 5 + 8. C. 15.
By the smaller number of the spinous rays of its dorsal fin, by its colouring, and by other characters, this fish differs both from *Cren. exoletus* (*Labrus exoletus*, Linn.,) and from the one described under the same name by M. Risso—two evidently distinct species,—to which may now be added a third, having equally with them five spinous rays in the anal fin.

Rhombus Maderensis. *Rhomb. corpore ovali, suprà scabriusculo, etuberculato, olivaceo-fusco, nigrescente vel ferrugineo; annulis punctorum albidorum, maculas ocellosve pallidos formantibus, sparsim picto; infrà albo, immaculato; pinnæ dorsalis radiis indivisis, inclusis; dentibus minutis, 1-seriatis.*
D. 91. A. 69. P. sup. 10. inf. 9. V. sup. 6. inf. 5. C. 15.
A rather small but elegantly marked species, the spots on the coloured side resembling little orreries or planetaria. Its nearest relation seems to that which Risso has described under the name of *Rhomb. mancus*, though it has not the lengthened pectoral fin on the upper side of that species. It is not very uncommon in the bay of Funchal, and is the only one of its genus yet observed there.

It has all the characters of the second division of *Rhombus*, indicated by Cuvier in his 'Règne Animal.'

CENTRINA NIGRA. *Cent. corpore toto glabro, nigro; pinnarum apicibus hyalescentibus.*

It is said that this fish does not grow larger than the individual sent, (10 inches in length). It is intermediate in characters between *Centrina*, Cuv., and *Acanthias*, Ej.; having the teeth of the former genus, and the form of body of the latter, as well as the backward position of the second dorsal fin. It is entirely black, even on its under surface.

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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1834.

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LIST

OF

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With References to the several Articles contributed by each.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 14, 1834.

Joseph Sabine, Esq., Vice-President, in the Chair.

Several *crania* were exhibited of the *Lion* and of the *Tiger*, forming part of the Society's Museum, on which Mr. Owen explained the distinguishing characteristics of that part of the osseous system of these two large species of *Felis*. He adverted in the first instance to those pointed out by Cuvier in the 'Ossemens Fossiles', and remarked on the first of them,—the straightness of the outline in the *Lion* from the mid-space of the postorbital processes to the end of the nasal bones, in one direction, and to the *occiput* in the other,—as not being in all cases available: the second distinction,—the flattening of the interorbital space in the *Lion* and its convexity in the *Tiger*,—he regarded as being more constant and appreciable than the one just mentioned. There is, however, a distinction which he believes has never been published, which is well marked, and which appears to be constant; for it is found to prevail throughout the whole of the skulls of these animals which he has had opportunities of examining, including ten of the *Lion*, and upwards of twenty of the *Tiger*. It consists in the prolongation backwards, in the *cranium* of the *Lion*, of the nasal processes of the maxillary bones to the same transverse line which is attained by the coronal or superior ends of the nasal bones: in the *Tiger* the nasal processes of the maxillary bones never extend nearer to the transverse plane attained by the nasal bones than ¼rd of an inch, and sometimes fall short of it by ⅓rds, terminating also broadly in a straight or angular outline, just as though the rounded and somewhat pointed ends which these processes have in the *Lion* had been cut off.

Minor differences, Mr. Owen remarked, exist in the form of the nasal aperture, which in the *Tiger* is disposed to narrow downwards, and become somewhat triangular, while in the *Lion* its

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tendency is towards a square shape; in the deeper sinking, in a longitudinal depression, of the coronal extremities of the nasal bones in the *Tiger* than in the *Lion*; in the bounding of this depression above in most of the *Tigers' crania* by a small but distinct semilunar ridge, which is not found in those of the *Lion*; and in the larger comparative size, chiefly in their transverse diameter, of the infraorbital *foramina* in the *Lion*. These *foramina*, it is curious to observe, are double either on one or both sides in the only four *crania* examined of *Lions* which were known to be Asiatic, while in all the others the *foramen* was single on each side.

Specimens were exhibited of *Placunanomiæ* from the collection of Mr. Cuming, and the following Notes by Mr. Broderip respecting them were read.

Genus Placunanomia.

Since my publication of this genus in the 'Proceedings of the Committee of Science and Correspondence,' (Part II. p. 28.) Mr. Cuming has found among his stores the following three species in addition to *Plac. Cumingii*, which I have already recorded.

Placunanomia rudis. *Plac. testâ sordidè albâ, crassâ, concentricè irregulariter corrugatâ, intùs nitidè politâ: alt.* $1\frac{7}{8}$, *long.* $1\frac{5}{8}$, *lat.* $\frac{5}{8}$ *poll.*

Hab. in India Occidentali.

Obs. *Ostreæ edulis* speciem referens.

Mr. Cuming detected this *Placunanomia* attached to a *Spondylus croceus*.—W. J. B.

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Placunanomia foliata. *Plac. testâ subdiaphanâ, subcirculari, rudi, subfoliatâ, sordidè albâ, intùs splendente; valvæ superioris medio purpureo-fusco: alt.* $1\frac{7}{8}$, *long.* $1\frac{5}{8}$, *lat.* $\frac{4}{11}$ *poll.*

Hab. in sinu Guayaquil Columbiæ Occidentalis. (Isle of Muerte.)

Dredged up attached to a dead *Pinna* from a bottom of sandy mud, at the depth of eleven fathoms.

The surface of the inside of the lower valve is uneven but lustrous, and of a hue somewhat approaching to golden. The inside centre of the upper valve is of a rich purple brown. The outer surface of the lower valve, which has been attached throughout its whole extent, bears a somewhat crystalline appearance; and this observation may be applied to the adhering surface of *Plac. rudis*. In the last-mentioned species this portion is comparatively small, and the eye will immediately detect it from the contrast which it affords with the dull exterior of the part which was free.—W. J. B.

Placunanomia echinata. *Plac. testâ subtumidâ, valvâ superiore seriatim echinatâ, limbo purpurascente: alt.* $1\frac{1}{8}$, *long.* $1\frac{3}{8}$, *lat.* $\frac{3}{8}$ *poll.*

Hab. ad Insulam Nevis.

Dredged up attached to shells, by Mr. Powers, from sandy mud at a depth of six fathoms.

The inside of the upper valve is of a shining colour, approaching to golden, and that of the lower is sometimes silvery and sometimes of a lighter shade of the colour of the inside of the upper valve.

This species varies much in shape, according to circumstances. Mr. G. B. Sowerby possesses one of an irregular ovate form. Indeed *Placunanomia*, in common with other adherent genera, varies much in shape, accommodating its external form to the surface to which its lower valve is attached. It is remarkable also for putting on the appearance of other genera or species; and this, with the extreme closeness of the adhesion of the lower valve, has been perhaps one of the causes why it has escaped the notice of zoologists. Thus, *Plac. Cumingii*, to a casual observer, looks like one of the plicated *Oysters*; *Plac. rudis* greatly resembles the *common Oyster*, *Ostrea edulis*; and *Plac. echinata* wears something of the appearance of some of the short-spined *Spondyli*.—W. J. B.

Besides the species above recorded Mr. G. B. Sowerby has kindly furnished me with an odd valve of a large species from Luçonia, beautifully iridescent internally: but as it is believed that this is identical with the fine shell sold by him to the British Museum, I leave the description of it to the officers of that institution, in whose province it is, and who are so fully capable of doing it justice.

This genus, then, appears to be widely diffused. Mr. G. B. Sowerby has some other odd valves which may prove new. I possess two or three specimens adhering to *Spondyli* from an unknown locality; but they appear to be young, and, though I am inclined to think that there is among them a new species, I wait for further information before I venture to characterize it.—W. J. B.

Mr. Owen read the following Notes on the Anatomy of the *purple-crested Touraco*, *Corythaix porphyreolopha*, Vig.

"In commencing the anatomical examination of this *Bird*, my attention was first directed to the form of the tongue. This was large, and not confined to the posterior region of the mouth, but extended to the end of the lower mandible: its *apex* was beset with a few small horny bristles directed forwards, as in the *Toucans*, *Rhamphastos*, Linn., but much less produced than in those birds. It is probable that the ripeness of fruit on which these birds feed is tested by these yielding processes. The base of the tongue was, as usual, beset with retroverted *papillæ*, and elevated into a distinct ridge, serving, as in many of the cold-blooded *ovipara*, as an *epiglottis*. The interspace between this ridge and the laryngeal aperture was very glandular. That aperture was simple and terminated posteriorly by two retroverted spines; so that it is defended in some degree against regurgitated food as well as from that which is swallowed.

"The *œsophagus* is continued down to the stomach of uniform ample width (its diameter being $\frac{3}{4}$rds of an inch) without any dilatation or *ingluvies*, as in the true *Rasorial* birds. Its termination for about $\frac{1}{4}$ths of an inch is occupied by the zone of gastric glands, forming the *proventriculus*, which does not deviate in capacity or course from

the rest of the gullet. The gastric follicles are simple, elongated and rather flattened. The gizzard is small and weak in its *parietes*, resembling that of the *Toucan*. Its length is 1 inch 4 lines; its greatest diameter 10 lines. The lateral tendons are distinct, and the narrower portion beyond the *pylorus* has the strongest muscular coat, which, however, does not exceed at this part ¼rd of a line in thickness.

"The capacity of a gizzard of this structure is obviously one reason why a crop or reservoir is not required: where the muscular *parietes* encroach upon the digestive cavity, so as only to allow small portions of food to enter at a time for the purpose of undergoing trituration, then a crop is as necessary to the gizzard as the hopper to a mill. It is also required in some of the most carnivorous birds to enable them to glut themselves with portions of their prey when too bulky to be borne away entire, and thus to carry off more than the true digestive cavity can contain. But in birds which, like the *Toucans*, the *Hornbills*, the *Parrots*, and the *Touracos*, live amidst abundance of nutriment, and that of easy digestion, a superadded cavity to act as a reservoir, or to submit the food to maceration previous to its entering upon the digestive process, appears unnecessary.

"The intestinal canal in the *Touraco* has a similar affinity to that of the tribes of *Birds* above mentioned, being short, ample and without *cæca*. It measured twice the length of the bird from the end of the bill to the vent. A small pyloric canal intervenes between the gizzard and *duodenum*, and opens into the latter upon a valvular prominence. The *duodenum* suddenly dilates, and has a diameter of half an inch; but I am doubtful whether this is natural, as it was, in the present instance, distended with *Tæniæ*, which had perforated it in some places, and probably caused the death of the bird. The fold of the *duodenum* is 3 inches long, including a narrow bilobed *pancreas*. The intestine gradually diminishes in diameter to within 5 inches of the *cloaca*, when it suddenly dilates, and this portion has the usual disposition and course of the *rectum* in birds.

"The liver was composed, as usual, of two lobes. There was a gall-bladder, of an elongated form, with the cystic duct continued from the end furthest from the intestine. The mode of termination of the biliary and pancreatic ducts I was unable to determine, owing to the morbid adhesions caused by the irritation of the *Tæniæ*.

"The *testes* were small. The kidneys and supra-renal glands were of the usual structure.

"From the affinity pointed out by Cuvier between the *Touraco* and the *Curassows*, I examined carefully the structure of the *trachea*, so remarkable for its convolutions in the latter family of birds. It was, however, continued straight to the inferior *larynx*, and was connected to the *furculum* only by a slight *aponeurosis*: the sterno-tracheal muscles, a single pair, were strong in proportion to the size of the bird. The rings of the *trachea* were of a flattened form, gradually diminishing in size towards the lower extremity of the tube. The lungs were of the usual form and structure, and the

air-cells apparently not extending along the neck, or beyond the abdominal cavity, except to penetrate the osseous system; but of this I cannot speak with safety, as the bird was skinned before I dissected it.

"The eye of the *Touraco* is large, measuring 7 lines in lateral diameter. The *lens* is very convex posteriorly, and its capsule is attached to a narrow *marsupium*.

"The clavicles were united, forming an *os furcatorium*; but they were extremely weak, and yielded with facility at the point of union. The keel of the *sternum* was of moderate size, its greatest depth being to the length of the *sternum* as 1 to 4. The posterior margin of the *sternum* has two notches on either side of the keel, as in the *Toucan*; the lateral ones extending along two thirds the length of the *sternum*, the mesial ones about one third.

"After this detail it is scarcely necessary to observe that in all the important points of the internal structure the *Touraco* manifests close relationship to the *Scansorial* order, and a marked deviation from the typical structure of the *Rasores*, in which the superadded lateral dilatations of the alimentary tube, the crop and *cæca*, are so largely developed.

"The same affinity is also shown in the nature of its parasitic worms,—the *Tæniæ* belonging to the species *filiformis* of Rudolphi, so remarkable for the length and tenuity of the body, and which has hitherto been met with only in the *Psittacidæ*.

"I had an opportunity in this instance of witnessing very satisfactorily the mode of generation of the *Tænia*. Many separate joints were found in the track of the intestines, which, when viewed under the lens, were seen full of *ova*. Each of these joints contained from thirty to thirty-three *ova*, of a subglobular form, and a surface rendered irregular by minute asperities. The posterior joints of the unbroken worms were similarly distended, and readily separated.

"This division of the body approximates to the fissiparous mode of generation; but as the joints are merely the capsules of the *ova*, it is more strictly analogous to the mode of generation in the *Lernææ* and *Entomostraca*."

January 28, 1834.

William Yarrell, Esq., in the Chair.

A preparation was exhibited of the stomach of *Semnopithecus Maurus*, F. Cuv., presented to the Society by G. H. Garnett, Esq. It was brought under the notice of the Meeting for the purpose of showing that there exists in that *Monkey* the extremely elongated and sacculated form of the *viscus*, which was first described by M. Otto, as occurring in *Semn. leucoprymnus*, and which was subsequently exhibited by Mr. Owen, at the Meeting of June 11, 1833, (Proceedings, Part. I. p. 74.) as obtaining also in the only two species of the genus which he had then examined, the *Semn. Entellus*, F. Cuv., and the *Semn. fascicularis*, Raffl.,—a structure which he afterwards described and figured in the 'Transactions' (vol. i. p. 65, pll. 9 and 10). Mr. Owen's impression that this remarkable modification of the stomach is a generic peculiarity, receives confirmation from its occurrence in the first previously unexamined species which has been dissected within the Society's reach since the publication of his remarks.

An extensive series of *Eulimæ*, chiefly from the collection of Mr. Cuming, was exhibited, and the following account by Mr. G. B. Sowerby of the genus and of the characters of the several species was read.

Genus Eulima, *Risso.*

Testa turrita, acuminata, polita, anfractibus plurimis; aperturâ ovatâ, posticè acuminatâ; labio externo subincrassato, varices obsoletos frequentes, subsecundos, plerumque efformante: operculo corneo, tenui, nucleo antico.

This genus of marine *Shells* appears to be most nearly related to *Pyramidella* and *Rissoa*. A species which has been long known has had the appellation of *Turbo politus* among British Linnean writers; and a fossil species has been placed by Lamarck among the *Bulini*, under the specific name of *Bul. terebellatus*. There are two distinctly marked divisions of the genus, which are characterized by the two species above mentioned; one has a solid *columella*, and the other is deeply umbilicated. All the species are remarkable for a brilliant polish externally, and the shells are frequently slightly and somewhat irregularly twisted, apparently in consequence of the very obsolete *varices* following each other in an irregular line, principally on one side, from the *apex* toward the aperture. Several recent species are British, and the fossil species are found in the *calcaire grossier* near Paris.

* Perforatæ.

Eulima splendidula. *Eul. testâ acuminato-pyramidali, brunnescente, prope suturas albo castaneoque articulatâ; umbilico magno; aperturâ anticè angulatâ: long.* 1·45, *lat.* 0·6 *poll.*

Conch. Illustr., f. 7.

Hab. ad Sanctam Elenam Americæ Meridionalis.

A single specimen of this brilliant shell was dredged in sandy mud at from six to eight fathoms' depth.—G. B. S.

EULIMA MARMORATA. *Eul. testâ acuminato-pyramidali, albido brunneoque marmoratâ; anfractibus paululùm rotundatis; umbilico magno, patulo; aperturâ anticè angulatâ: long.* 0·85, *lat.* 0·4 *poll.*

Conch. Illustr., f. 8.

Hab.

A single specimen was in the collection of the late G. Humphrey.—G. B. S.

EULIMA INTERRUPTA. *Eul. testâ acuminato-pyramidali, albicante, ad varices brunneo maculatâ; umbilico mediocri; aperturâ anticè angulatâ: long.* 0·7, *lat.* 0·25 *poll.*

Conch. Illustr., f. 11.

Hab. in Americâ Centrali.

Dredged in coarse sand, at from eleven to thirteen fathoms, in the Gulf of Nocoiyo.—G. B. S.

EULIMA IMBRICATA. *Eul. testâ acuminato-pyramidali, albidâ, longitudinaliter spadiceo lineatâ; anfractibus infrà angulatis, prominentibus; umbilico parvo; aperturâ anticè angulatâ: long.* 0·8, *lat.* 0·25 *poll.*

Conch. Illustr., f. 4.

Hab. ad Sanctam Elenam Americæ Meridionalis.

Dredged in sandy mud in from six to eight fathoms.—G. B. S.

EULIMA BRUNNEA. *Eul. testâ acuminato-pyramidali, brunneâ; anfractibus rotundatis; umbilico parvo; aperturâ anticè rotundatâ: long.* 0·6, *lat.* 0·2 *poll.*

Conch. Illustr., f. 9.

Hab. ad Insulam Haynan dictam, in mare Sinensi.

Several specimens were in the late G. Humphrey's collection.—G. B. S.

** Imperforatæ.

EULIMA BREVIS. *Eul. testâ brevi, acuminatâ, hyalinâ; varicibus subsecundis; aperturâ anticè rotundatâ: long.* 0·4, *lat.* 0·15 *poll.*

Conch. Illustr., f. 15.

Hab. ad Insulas Oceani Pacifici.

Found on the *Mother-of-pearl Shells* at Lord Hood's Island.—G. B. S.

EULIMA HASTATA. *Eul. testâ breviusculâ, albâ, prope apicem testaceâ; aperturâ ovatâ, margine laterali anticâque subangulatis: long.* 0·7, *lat.* 0·2, *poll.*

Conch. Illustr., f. 10.

Hab. ad Sanctam Elenam.—G. B. S.

EULIMA MAJOR. *Eul. testâ acuminato-pyramidali, opacâ, lacteâ; labio externo subarcuato: long.* 1·6, *lat.* 0·4 *poll.*

Conch. Illustr., ff. 1. 1*. 1**.

Hab. ad Insulam Tahiti.

The largest specimen was found in coral sand on the reefs.—G. B. S.

EULIMA LABIOSA. *Eul. testâ acuminato-pyramidali, latiusculâ,*

anfractibus subrotundatis; aperturâ brevi, labio externo posticè dilatato: long. 0·7, *lat.* 0·3 *poll.*

Conch. Illustr., f. 2.

Hab. ad Insulam Annaa Oceani Pacifici.

Found in fine coral sand.—G. B. S.

EULIMA ANGLICA.

Turbo politus, *Mont., Test. Brit.* Conch. Illustr., f. 5.

EULIMA SUBANGULATA. *Eul. testâ acuminato-pyramidali, tenui, opacâ, albâ; anfractu ultimo anticè subangulato: long.* 0·7, *lat.* 0·2 *poll.*

Conch. Illustr., f. 3.

Hab. ad littora maris Indici.

A few specimens were among the late G. Humphrey's stores, labelled E. I.—G. B. S.

EULIMA PUSILLA. *Eul. testâ acuminato-pyramidali, tenui, hyalinâ, albâ; anfractibus longiusculis: long.* 0·3, *lat.* 0·05, *poll.*

Conch. Illustr., f. 6.

Hab. ad Sanctam Elenam Americæ Meridionalis.

Variat omnino fusca.—G. B. S.

EULIMA ARTICULATA. *Eul. testâ acuminato-pyramidali, albâ, fusco articulatâ et marmoratâ; anfractibus subrotundatis; varicibus subprominulis; labio externo crassiusculo: long.* 0·9, *lat.* 0·25 *poll.*

Conch. Illustr., f. 12.

Hab. ad littora Australiæ.

This species is remarkable for the dark coloration immediately anterior to each *varix*.—G. B. S.

EULIMA VARIANS. *Eul. testâ subfusiformi, acuminatâ, tenui, coloribus variâ; aperturâ oblongâ: long.* 0·5, *lat.* 0·15 *poll.*

Conch. Illustr., f. 14.

Hab. ad Xipixapi Americæ Meridionalis.

Two specimens were collected in sandy mud by Mr. Cuming, one of which is white, the other dark brown: several others were among G. Humphrey's stores, some of which are white, others are marked with brown lines and mottled.—G. B. S.

EULIMA LINEATA. *Eul. testâ fusiformi, tenui, albâ, lineis fuscis duabus spiralibus; aperturâ oblongâ: long.* 0·7, *lat.* 0·1 *poll.*

Conch. Illustr., f. 13.

Hab.

Several specimens of this were in G. Humphrey's collection, marked "Spira lineata, Weymouth, M.P.": these two last letters stand for *Musæi Portlandici*. I make no further remark, save that it appears to have been published by Da Costa under the name of *Turbo glaber*.—G. B. S.

EULIMA ACUTA. *Eul. testâ turrito-acutâ, albâ; anfractibus duodecim lævibus, suturis obsoletis; varicibus sparsis: long.* 0·4, *lat.* 0·05 *poll.*

Hab. in Americâ Centrali. (Bay of Montiji.)

Found in coarse sand at a depth of thirteen fathoms.—G. B. S.

February 11, 1834.

Joseph Sabine, Esq., Vice-President, in the Chair.

Extracts were read from a letter addressed to the Secretary by B. H. Hodgson, Esq., Corr. Memb. Z.S., and dated Nepâl, July 13, 1833. It conveyed the thanks of the writer for the present to him on the part of the Society of an illustrative series of skins of *Birds;* and, referring to the mortality among the living *Birds* and *Quadrupeds* forwarded by him for the Society's Menagerie, it expressed a hope that a subsequent attempt would be more successful.

Portions were exhibited of the *viscera* of a *Capybara, Hydrochærus Capybara*, Erxl., taken from an individual which recently died in the Society's Menagerie. They consisted of the stomach, the enormous *cæcum*, and the *fauces*. In calling the attention of the Meeting to the latter parts, Mr. Owen availed himself of the opportunity to demonstrate the structure first observed in them by Mr. Morgan, by whom it has been described and figured in the lately published Part of the 'Linnean Transactions'. The constriction of the hinder part of the soft palate, which prevents any but minutely divided substances from passing into the *pharynx*, and which was first observed in the *Capybara*, is found in many other *Rodents*, but does not obtain in the whole of the animals of that order.

Various preparations were exhibited of the *Rhea, Rhea Americana*, Vieill., and of the *Cassowary, Casuarius Emeu*, Lath. They were brought under the notice of the Society by Mr. Martin, who, at the request of the Chairman, read his notes of the dissections of these birds. They agreed generally with the descriptions published by Sir Everard Home in the 'Philosophical Transactions.'

Mr. Martin also exhibited a preparation of aneurism of the *aorta*, obtained from a *brown Coati, Nasua fusca*, F. Cuv., sent to the Society for *post mortem* examination by J. H. Lance, Esq. He stated that this disease appeared to be rare among *Quadrupeds*, no previous instance of it having occurred to him among more than a hundred individuals of various orders which he had dissected within the last few years.

A preparation was exhibited of a young *common Macaque Monkey, Macacus cynomolgus*, LaCép., which was born at the Gardens on the morning of the 25th January, but was dead when first noticed by the keeper. It is the first instance that has occurred in the Society's Menagerie of the birth of any *Monkey* of the Old Continent.

The reading was concluded of a Paper entitled "A few Remarks

tending to illustrate the Natural History of two Annulose Genera, namely *Urania* of Fabricius and *Mygale* of Walckenäer: by W. S. MacLeay, Esq."

Adverting in the first place to the doubts which prevail among entomologists as to the true situation in nature of the genus *Urania*, Mr. MacLeay proceeds to contribute towards the elucidation of the problem, the history of one species which appears to him to be possibly new. He characterizes it as

URANIA FERNANDINÆ. *Ur. alis nigris, anticis utrinque lineis transversis auro-viridibus suprà undecim, septimâ bifidâ, subtùs sex humeralibus latis, septimâ bifidâ, octavâ longissimâ trifidâ; reliquis apicalibus filiformibus; posticis suprà fasciâ haud serratâ et lineis octo brevibus lateralibus transversis auro-viridibus.*

Exp. alarum 4—4¼ unc.

Hab. in Cubâ.

Mr. MacLeay describes in great detail the perfect insect, and points out, as far as printed descriptions and figures exhibit them, (he having at present no access to cabinets,) the marks which distinguish *Ur. Sloanus*, Godart, and *Ur. Boisduvalii*, Guér., from the Cuban species. He conceives, however, from the many variations that he discovers in it, that this insect may be merely a variety of *Ur. Sloanus*, to which species *Ur. Boisduvalii* may also possibly be referred as a small variety.

The coast of Cuba, in every open sandy part of it, is girt immediately above the coral reefs by a copse belt, close and nearly impenetrable, composed of almost one species of tree, the *sea-side Grape*, *Coccoloba uvifera*, Linn. At the base of this belt grow various *Euphorbiaceæ* and *Convolvuli;* and behind it the parched sand supports many sea-side shrubs, including *Palms*, *Cæsalpiniæ*, *Cacti*, &c., festooned with the flowers of *Convolvuli*, *Echites*, and other climbing plants: the leaves are studded with small terrestrial shells, and large sea-shells, brought from their original element by the singular *Paguri* which have usurped them, cluster round the short stunted trunks.

Among the shrubs of these sands the most interesting is *Omphalea triandra*, the *cob* or *hog-nut* of Jamaica, a Euphorbiaceous plant, but affording a most delicious and wholesome kernel: its upper leaves are large, heart-shaped, and thick, having a leathery texture and scabrous pale green surface; the young leaves and those of young plants have the same texture and colour, but differ remarkably in form, being deeply incised, with their divisions long and narrow, particularly the middle one, and all more or less dentated on the sides. On the upper side of the entire leaves of this shrub torpidly reposes during the day, under a transparent web which protects it from the powerful rays of the sun, a caterpillar, which at night becomes active and greedily strips the *Omphalea* of its foliage: this is the *larva* of *Ur. Fernandinæ*.

The egg of this insect may be found, throughout the whole of the spring, glued to the tender incised leaves of the *Omphalea*, scarcely ever more than two being attached to a single leaf: it has a pearly

lustre and a pale green colour, sometimes turning to yellow; and varies in shape from an ovate to an oblate sphæroid. A circular space on its summit is smooth, and from hence proceed about twenty-four longitudinal ribs, the intervals between which are crossed by obsolete *striæ*.

The young *larva* is of the same colour with the egg, is marked by seven longitudinal black lines of hairs, and has a dirty yellowish head. When fully grown it is cylindrical, is without hinder protuberance on the penultimate segment, and has the more usual sixteen feet: it rarely rolls itself into a ring. Its head is sessile and red, with usually nearly twenty black spots, several of which seem to be tolerably constant; the mandibles are black. The *prothorax* is velvety black, with a white dorsal line and two or three white irregular spots at the sides; but the proportion of white varies, and there is sometimes a slight red spot on the back of the segment. The body varies from pale yellowish green to a flesh colour, with five paler longitudinal lines, of which the middle one is dorsal: the false feet are somewhat paler than the body; the true feet are red. The mesothoracic segment is rarely spotted, but all the others are often marked more or less with black spots. The spiracles are usually black. Each segment is furnished with about six hairs, which are white, and nearly one fifth as long as the whole body.

The *pupa* is not at all angular, but is rather gaily coloured; it is of a yellowish brown, with the *thorax* paler and the wings darker. The head is rounded and is marked, as well as the *mesothorax*, with several black spots; on the latter these are interspersed with points: the abdominal segments are each marked transversely with numerous black linear dots. The position of the *pupa* is horizontal, in an oval cocoon composed of a loose dirty-yellow silk, (with meshes so few and so lax as to allow the inmate to be readily seen,) and spun about withered or dead leaves.

The perfect insect is truly diurnal, swift in its flight, mounting high in the air, and travelling inland for two or three leagues, where it haunts gardens in great numbers. By far the greater number, however, remain on the sea-shore, sporting about the leaves of the *Coccoloba uvifera*, unless when depositing their eggs on the *Omphalea*. Its habit of frequenting the *Coccoloba* induced Mr. MacLeay to search long in vain for its *larva* on that tree. When it alights, all the four wings are expanded horizontally, and rarely, if ever, take a vertical position.

Mr. MacLeay concludes this portion of his paper by referring to Madame Merian's description of the metamorphosis of *Ur. Leilus*, and to her figure of its *larva*; both of which he regards as unworthy of credit. He then passes to her account of a *bird-catching Spider*.

The story of a *Spider* which catches and devours birds had, Mr. MacLeay believes, its origin with Madame Merian. Oviedo, Labat, and Rochefort make no mention of any *Spider* as possessing such habits, the two latter writers going no further than the statement that in the Bermudas there exists one which makes nets of so strong a construction as to entangle small birds. Madame Merian, however,

went the length of asserting that one *Spider* not only caught, but devoured small birds; and figured the *Mygale avicularia*, Walcken., in the act of preying on a *Humming-bird*. Now the *Mygale* does not spin a net, but resides in tubes under ground, and in all its movements keeps close to the earth; while *Humming-birds* never perch except on branches. The food of *Mygale* consists of *Juli*, *Porcelliones*, subterranean *Achetæ*, and *Blattæ*: a living *Humming-bird* and a small *Anolis*, placed in one of its tubes, were not only not eaten by the *Spider*, but the latter actually quitted its hole, which it left in possession of the intruders. The largest *Spider* of the West Indies that spins a geometrical web is the *Nephila clavipes*, Leach; and its net may perhaps, occasionally, be strong enough to arrest the smaller among the *Humming-birds*: but it is not likely that the *Spider* would eat the birds. A small species of *Sphæriodactylus*, Cuv., introduced into one of these nets, was enveloped in the usual manner by the *Spider*; but as soon as the operation was completed, the *Spider* lost no time in cutting the line and allowing her prisoner to fall to the ground. Mr. MacLeay consequently disbelieves the existence of any *bird-catching Spider*.

The Paper was accompanied throughout by numerous notes, including observations on many subjects adverted to by the author; such as the habits of the *land-Crabs* of Cuba; a description of the *grey Lizard* of the coast, apparently a species of *Agama*; &c. They also included an account of two species of *Sphæriodactylus*, Cuv., which are characterized as follows:

Sphæriodactylus cinereus. *Sphær. caudâ corporis longitudine; totus cinereus, translucidus, capite flaviori, apice roseo; squamis dorsalibus punctis minutissimis nigris aspersis.*

Long. tot. $2\frac{3}{4}$ unc.

This may possibly be the *small house Lizard* of Browne's Jamaica.

Sphæriodactylus elegans. *Sphær. fasciis dorsalibus transversis nigris* 14; *capite cœruleo-cinereo, subtùs nigro-fasciato; dorso subviridi; caudâ rubrâ, corpore breviore; ventre cinereo.*

Long. tot. $1\frac{1}{8}$ unc.

Both these *Lizards* are very common in houses in Cuba, occurring among books or wherever they can find shelter. They have bright eyes, are pretty and very harmless, and come out of their corners in rainy weather, declaring war against everything in the shape of a fly or musquitoe.

The Paper was also accompanied by drawings of the egg, *larva*, and *pupa* of *Urania Fernandinæ*, which were exhibited.

February 25, 1834.

Lieut.-Col. Sykes in the Chair.

A letter was read, addressed to the Secretary by M. W. Bojer, Corr. Memb. Z.S., and dated Mauritius, Nov. 15, 1833. It referred principally to the animal from Madagascar, which was transmitted in the spring of last year to the Society by the late Mr. Telfair, and which was brought by Mr. Bennett on April 9, 1833, (Proceedings, Part I. p. 46,) under the notice of the Society as the type of a new genus, for which he proposed the name of *Cryptoprocta*, on account of its possessing an anal pouch, and being thereby distinguishable from *Paradoxurus*, F. Cuv. One of the habits of the *Cryptoprocta ferox* indicated, during the life of the animal, the existence of this pouch: when violently enraged, and it was apt to become exceedingly ferocious on the sight of a morsel of flesh, "it frequently gratified the persons present with, not an odoriferous, but a most disagreeable smell, very like that of *Mephitis*." When its voracity was not thus excited, it was "quite domesticated and extremely fond of playing with children," and ran "about the house and yard free and sprightly, eating everything." When at liberty "it lay constantly in a rolling posture;" in confinement its sleeping position was not that of the *Viverræ*, "but always on its side, or even on its back, holding with its fore-feet the small wires of its cage." "It died of epileptic fits, which tormented it for nearly three months, and during the last few days of its existence the attacks were very strong and frequent." It had lived in the Mauritius, M. Bojer states, about twenty-five months; and he feels on this account some hesitation as to the immature condition of its dentary system, inquiring whether "this period was not sufficient for its developement, or were the detention and domestication the cause of the imperfection?"

With reference to this inquiry, Mr. Bennett remarked that in the *Viverridæ* generally the replacement of the milk teeth takes place at a comparatively late period of existence, a fact recorded by Mr. Gray in the 'Proceedings of the Committee of Science and Correspondence' of this Society (Part II., p. 65), and principally insisted on as regards *Paradoxurus*, a genus most intimately allied to *Cryptoprocta*. He added, that the fits of which the animal died were not improbably occasioned by the irritation of dentition.

Mr. Bennett's account of *Cryptoprocta ferox*, with a figure of the animal, will be published in the Second Part of the Society's 'Transactions.'

The reading was commenced of a Paper, entitled "Descriptions of New Species of *Calyptræidæ*: by W. J. Broderip, Esq."; and the *Shells* described in it, chiefly obtained from the collection of

Mr. Cuming, were exhibited. The abstract of this Paper, including the characters of the new species, will be given on the completion of the reading of it.

Mr. Owen read a Paper "On the Anatomy of the *Calyptræidæ*." After referring to the account given by Cuvier of the anatomy of *Crepidula*, to that by M. Deshayes of *Calyptræa*, and to M. Lesson's of *Crepipatella*, as elucidating the general plan of organization in this family, he proceeds to describe the structure of *Calypeopsis*.

The anatomy of this genus agrees very nearly with that of the before-known genera of the family, scarcely differing, except in the comparative extent of the locomotive and respiratory systems; but Mr. Owen has been enabled to add to the labours of his predecessors an account of the *testis*, and a description of the salivary glands. The *testis* is lodged in a membranous chamber, and consists of a glandular part of a light brown colour, and of a fibrous texture when seen under the lens; though, from analogy, the apparent fibres are no doubt seminal tubes. By the side of the *testis* there is a bag, or *vesicula seminalis*, appropriated to receive the secretion, which communicates with the termination of the oviduct posterior to the *anus*; the *anus* being situated on the right side of the branchial orifice, anterior to the *testis*, which here separates it from the oviduct. Between the *testis* and the process on the right side of the neck (regarded by Cuvier as the *penis*,) Mr. Owen has been unable to trace any communication: he feels, consequently, convinced that if this process forms part of the male generative system, it is to be regarded rather as an exciting than an intromittent organ. The salivary apparatus consists of two elongated follicles with glandular *parietes*, occupying the neck on either side of the *œsophagus*, anterior to the nervous collar, and opening into the *œsophagus* on each side of the base of the lingual plate.

After passing in review the several systems, Mr. Owen concludes by remarking on the internal chamber or cup which exists in the shells of this family. He regards it as being necessitated by the greater extent of the locomotive powers in *Calyptræa* than in *Patella*; a calcareous plate being interposed between the *viscera* and the foot to protect them from the pressure to which they would otherwise be exposed during the comparatively extensive and frequent contractions of the latter organ. As respiration has a direct relation to locomotion, the *Calyptræidæ* approach towards the higher marine univalves in the organs dedicated to that function. Throughout the family the extent of the respiratory *lamina* is found to correspond with the extent of the internal shell, and with the extent and organization of the foot.

Numerous specimens were exhibited of *Birds* collected in North America, principally in the United States, by George Folliott, Esq., and presented by him to the Society. At the request of the Chairman, Mr. Gould brought them severally under the notice of the Meeting. His principal object being to illustrate, so far as these

birds were concerned, the geographical distribution of allied or identical species, he directed his observations chiefly to the determination of those North American Birds which seemed to him to be referrible to European species, and of those which, having been generally considered as identical with European, appeared, on direct comparison, to present differences in form and colouring.

The *common Turnstone* of Europe, *Strepsilas collaris*, Temm., appears to be not only identical with the *Turnstone* of North America, but to be spread, without any tangible variation, over almost every portion of the globe. The *Sanderling*, *Calidris arenaria*, Temm., and the *Knot*, *Tringa Canutus*, Linn., are also identical in both continents; as is the *great white Heron* or *Egret*, *Ardea Egretta*, Temm. The *common Tern* or *Sea-Swallow* of England, *Sterna Hirundo*, Linn., occurs equally in North America. The *common Crow*, *Corvus Corone*, Linn., is also identical in both continents.

With respect to the *Whimbrel*, *Numenius phæopus*, Temm., and the *little Sandpiper*, *Tringa Temminckii*, Mr. Gould stated himself to be unable to determine as to their identity without the comparison of more specimens from America than he had yet been able to obtain for the purpose of examination.

The *Cross-bill* of North America Mr. Gould showed to be very distinct from that of Europe, the *Loxia curvirostra*, Linn.; it is one third less in all its proportions, and is somewhat less brilliant in colouring. The *Ring Dottrel* of North America is also specifically distinct from that of Europe, the *Charadrius Hiaticula*, Linn.; independently of differences in admeasurement, its semipalmated foot will always serve to distinguish it.

In addition to the *Birds* that have been already mentioned, Mr. Folliott's collection contained a series of the *Sylviadæ* of the United States, several *Fly-catchers*, the *Orphea rufa*, &c., &c.

Mr. Gray exhibited specimens of the shelly covering of a *Radiated* animal, allied to the *Echinidæ* and the *Asteriidæ*, which he regarded as the type of a new genus, and for which he proposed the name of

GANYMEDA.

Corpus hemisphæricum, depressum; depressione dorsi centrali quadrangulari.

Os inferum, centrale.

Anus nullus.

Ambulacra nulla.

"The body is hemispherical, depressed, thin, chalky and hollow.

"The back is rounded, rather depressed, flattened behind, with a rather sunk quadrangular central space.

"The sides are covered with sunken angular cavities with a small round ring, having an oblong transverse subcentral hole in their base.

"The under side is small, rather concave, with five slight sloping elevations from the angles of the mouth to the angles of the rather pentagonal margin. The edge is simple.

"The mouth is central. The vent none.

"The cavity is simple.

"The *parietes* are thin and minutely dotted, and the centre of the dorsal disc is pellucid.

"This genus is very nearly allied to the fossil described by Dr. Goldfuss in his beautiful work on Petrifactions, under the name of *Glenotremites paradoxus* (tab. 49. f. 9. and t. 51. f. 1.), with which it agrees in external appearance and form, in the possession of a sunken space on its upper surface, and in having only a single inferior pentagonal mouth. It differs from *Glenotremites* by being unfurnished with *ambulacra* running from the angle of the mouth to the margin, by being unprovided with conical cavities between those near the mouth, and by having in the flattened disc on the back a central quadrangular impression instead of the pentagonal star of that genus.

"Dr. Goldfuss describes the glenoid cavities on the surface as giving attachment to spines similar to those of the *Turban Echini*, (*Cidaris*, Lam.), and states that the under surface is covered with very small tubercles to which he believes spines were attached. The cavities on the surface of *Ganymeda* and the pits in them have very much the form of those figured by Dr. Goldfuss in his fossil, but I cannot regard them as being fitted for the attachment of spines: they have much more resemblance to the mouths of cells. So great, indeed, is this resemblance, that I entertained doubts whether the whole mass might not be a congeries of cells like the *Lunulites*, rather than the case of a single body, until I considered that it was impossible, from its form, that it could increase in size with the growth of the animal, and that its exceeding regularity proved that it must be the formation of a single creature.

"I am induced to consider these two genera, though differing in the above-stated particulars, as forming a family or order between the *Echinidæ* and the *Asteriidæ*; allied to the latter in having only a single opening to the digestive canal, and agreeing with the former in form and consistence, but differing from it in not being composed of many plates.

"I only know two specimens of this genus, which I believe were found on the coast of Kent, as I discovered them mixed with a quantity of *Discopora Patina* which I collected several years ago from *fuci* and shells on that coast. The specimens are $\frac{1}{4}$ of an inch in diameter.

"I propose to call the species *Ganymeda pulchella*."

March 11, 1834.

William Spence, Esq., in the Chair.

Specimens and drawings were exhibited of a *freshwater Tortoise*, forming part of the collection of Mr. Bell, by whom it was described as the type of a new genus, for which he proposed the name of

CYCLEMYS.

Sternum latum, testam dorsalem longitudine ferè æquans, integrum, solidum ; testæ dorsali ligamento squamato connexum.

CYCLEMYS ORBICULATA. *Cycl. testâ suborbiculari, carinatâ, posticè dentatâ, fuscâ ; scutis sterni flavescentibus, fusco radiatim lineatis.*
Long. *dorsi*, 8 unc. ; lat. 7 ; alt. 3.
Emys orbiculata, *Bell.*
Pullus. Emys Dhor, *Gray, Syn. Rept.*, p. 20.?
Hab. in Indiâ.

Mr. Bell regards the *Tortoise* which he has thus characterized as supplying a link in the connecting series of the *land* with the *freshwater* families which has hitherto been wanting ; and as especially valuable in the natural arrangement, by the clue which it furnishes to the correct location of the Indian forms of the genus *Emys*. It is, indeed, most nearly related to *Emys spinosa*, and on a superficial observation might almost be referred to that species ; but on closer examination it is found to differ from that *Tortoise*, not only specifically, but generically also : its sternal bones are permanently separated from the dorsal ones, with which they are connected by means of a ligament alone, similar to that which performs the same office in *Terrapene*. From the *Box-Tortoises*, however, to which, in this point of its structure, it is so closely related, *Cyclemys* is altogether distinct, the whole of its *sternum* being entire, instead of having, as is invariably the case in *Terrapene*, one or more transverse divisions of the *sternum* itself, the lobes of which move as on a hinge. In *Terr. Europæa* this mobility of the *sternum* exists in each lobe in a small degree, combined with the ligamentous connexion of the sternal to the dorsal bones. In *Cyclemys* the whole *sternum* moves together, though very slightly.

The transition from the *land* to the *freshwater Tortoises* may consequently be regarded as commencing in *Terrapene* ; passing through *Terr. Europæa* to *Cyclemys orbiculata* ; and thence through the Indian forms of *Emys*, which so closely resemble the latter species, to the other forms of *Emys* : the natural series of connexion between the *Testudinidæ* and the *Emydidæ* being thus completed.

The exhibition was resumed of the new species of *Shells* contained in the collection of Mr. Cuming. Those now exhibited were accom-

panied by characters by Mr. G. B. Sowerby, and consisted of species and varieties additional to those previously characterized by Mr. Broderip, (Proceedings, Part I. p. 52.) of the

Genus Conus.

Conus Algoensis. *Con. testâ tenuiusculâ, subcylindraceâ, lævi, fuscâ, fasciâ unicâ seu fasciis duabus interruptis albis ; spirâ brevi, subrotundatâ, albo fuscoque articulatâ : long.* 1·15, *lat.* 0·55 *poll.*

Hab. ad littora Africæ Meridionalis.

Found on the sands at Algoa Bay.—G. B. S.

Conus Aulicus.

Var. roseus. *Testâ formâ et staturâ* Con. Aulico *omninò simillimâ, maculis irregulariter subtrigonis, roseis.*

Hab. ad Insulam Annaa.

This, the most beautiful variety of *Con. Aulicus*, is found on the coral reefs around the Island of Annaa or Chain Island.—G. B. S.

Conus Nussatella.

Var. tenuis. *Testâ tenui, albâ, flavicante nebulatâ, punctulis fuscis transversè seriatim dispositis ; striis transversis tenuissimis.*

Hab. ad Insulam Annaa.

Found on the coral reefs.

This variety differs in being more slender, much thinner, more produced at the spiral end, and wider anteriorly, from the ordinary variety. Its transverse *striæ* are, moreover, very fine, and its brown specks much more distant and regular.—G. B. S.

Conus tendineus.

Var. granulosus. *Testâ formâ et staturâ omninò* Con. tendinei, *striis transversis confertis granulosis.*

Hab. ad Insulam Annaa.

Found on the coral reefs.—G. B. S.

Conus Luzonicus.

Var. Testâ formâ et staturâ omninò Con. Luzonici, *fusco-nigricante, fasciâ interruptâ medianâ cærulescente-albidâ, anticè albido variâ.*

Hab. ad Insulas Gallapagos.

Found in the clefts of rocks at low water.

A specimen of the more usual variety, which accompanies these, shows the *epidermis*.—G. B. S.

Conus brunneus, Wood. *Con. testâ turbinatâ, crassâ, coronatâ, fuscâ, maculis albis transversè fasciatim dispositis ; spirâ subprominulâ, albo fuscoque maculatâ, spiraliter sulcatâ, tuberculis magnis ; basi lineis elevatis, subgranosis : long.* 1·8, *lat.* 1· *poll.*

Wood, Suppl. pl. 3. f. 1.

Variat testâ crassiore, totâ fuscâ, immaculatâ.

Hab. ad Insulas Gallapagos, ad Puertam Portreram et ad Panamam.

Found in the clefts of rocks.—G. B. S.

Conus pulchellus. *Con. testâ oblongo-turbinatâ, coronatâ, albicante roseo tinctâ ; supernè turgidulâ, infrà granoso-lineatâ ; punctulis nonnullis fusco-nigricantibus sparsis ; aperturâ intùs carneâ : long.* 1·5, *lat.* 0·8 *poll.*
Hab. ad littora occidentalia Australiæ.
From Freemantle.—G. B. S.

Conus Diadema. *Con. testâ turbinatâ, lævi, crassâ, coronatâ, fuscâ, fasciâ angustâ medianâ pallidiore ; spirâ subdepressâ, tuberculis magnis, albis ; apice mucronato ; basi lineis elevatiusculis nonnullis ; aperturâ intùs purpureo-albicante : long.* 1·7, *lat.* 1· *poll.*
Hab. ad Insulas Gallapagos.
Found in the clefts of the rocks at low water.—G. B. S.

Conus ferrugatus. *Con. testâ acuminato-conicâ, lævi, albâ, maculis longitudinalibus punctisque seriatim dispositis ferrugineis ; spirâ subacuminatâ, albâ, ferrugineo maculatâ ; basi sulcatâ : long.* 1·7, *lat.* 0·8 *poll.*
Hab. ad Sinum Californiæ et apud Insulam Guaymas.
This differs much from *Con. monilifer* in its proportions.—G. B. S.

Conus Regalitatis. *Con. testâ turbinatâ, lævi, crassiusculâ, supernè ventricosâ, spadiceâ, maculis punctulisque albo-cærulescentibus variâ ; spirâ depressiusculâ, spiraliter sulcatâ ; basi lineis elevatiusculis paucis, subrugosis : long.* 2·, *lat.* 1·1 *poll.*
Hab. ad littora Americæ Centralis. (Real Llejos.)
Found in the clefts of rocks on sandy mud.
It may be designated *Real Llejos* or *Royalty Cone.*—G. B. S.

A specimen was exhibited of the *Musk Duck* of New Holland, *Hydrobates lobatus*, Temm. It had recently been presented to the Society by Lieut. Breton, R.N., Corr. Memb. Z. S., who entered into some particulars respecting its habits. He stated that these birds are so extremely rare, that he saw only three of them during his various excursions, which extended over twelve hundred miles of country. He has never heard of any instance in which more than two were seen together. They are met with only on the rivers, and in pools left in the otherwise dry beds of streams. It is extremely difficult to shoot them, on account of the readiness with which they dive; the instant the trigger is drawn, the bird is under water.

Some observations by Dr. Hancock on the *Lantern-fly* and other *Insects* of Guiana were read.

The writer concurs with M. Richard and M. Sieber in regarding as erroneous the statement of Madame Merian, that the *Lantern-fly*, *Fulgora lanternaria*, Linn., exhibits at night a brilliant light, and remarks that the whole of the native tribes of Guiana agree in treating this story as fabulous : it seems to be an invention of Europeans desirous of assigning a use to the singular diaphanous projection, resembling a horn lantern, in front of the head of the insect. He also states that the *Fulgoræ* rarely sing.

The insect whose song is most frequently heard in Guiana is the *Cicada clarisona*, the *Aria-aria* of the Indians, and *Razor-grinder* of the Colonists: in the cool shade of the forests it may be heard at almost every hour of the day; but in Georgetown its song commences as the sun disappears below the horizon. At Georgetown this *Cicada* was never heard in 1804, when Dr. Hancock first visited the place; but it is now very common, probably in consequence of the shelter afforded by the growth of many trees and shrubs in the gardens which have since been formed there. The sound emitted by it is "a long, continuous, shrill tone, which might be compared almost to that of a clarionet, and is little interrupted, except occasionally by some vibrating undulations."

March 25, 1834.

William Yarrell, Esq., in the Chair.

A specimen was exhibited of an *Albatross* presented to the Society by Lieut. Breton, Corr. Memb. Z. S., whose principal object in calling the attention of the Society to it was to mention that, being unprovided at the time at which the bird was killed with any of the ordinary preserving powder or soap, he had used for its preservation a mixture of Cayenne and black peppers with snuff and salt. The skin, well rubbed with this mixture, was brought through the intertropical regions in an ordinary trunk, affording free access to insects, and arrived in England uninjured. Lieut. Breton conceives that it may be advantageous to collectors to be made aware that the preservation of skins can be secured by articles so constantly at hand as those which he employed in this instance.

The exhibition was resumed of the new species of *Shells* forming part of the collection made by Mr. Cuming on the western coast of South America, and among the islands of the South Pacific Ocean. Those brought on the present evening under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby, and consisted of five species of the

Genus Gastrochæna.

Gastrochæna ovata. *Gast. testâ ovatâ, albicante, longitudinaliter striatâ, striis exilibus, lamellosis, formam marginis semper sequentibus ; longitudine lateris antici quintam partem testæ æquante : long.* 1·2, *lat.* 0·7, *alt.* 0·7 *poll.*

Hab. in Sinu Panamensi (Isle of Perico,) et ad Insulam Platæ.

Found in *Spondyli* at the Isle of Perico, and in coral rocks, at a depth of seventeen fathoms, at the Island of Plata.—G. B. S.

Gastrochæna truncata. *Gast. testâ oblongâ, posticè rotundato-truncatâ, striatâ, sordidè albicante ; epidermide tenui lamellosâ posticè tectâ ; latere antico brevissimo, subacuminato : long.* 1·4, *lat.* 0·7, *alt.* 0·7 *poll.*

Hab. in Sinu Panamensi. (Isle of Perico.)

Found in *Spondyli*.—G. B. S.

Gastrochæna brevis. *Gast. testâ breviter ovatâ, tenui, pellucidâ, striatâ, striis exilissimis ; longitudine lateris antici octavam partem testæ æquante : long.* 0·8, *lat.* 0·5, *alt.* 0·5 *poll.*

Hab. ad Insulas Gallapagos et apud Insulam Lord Hood's dictam.

Found in *Pearl oysters* in from three to seven fathoms.—G. B. S.

GASTROCHÆNA RUGULOSA. *Gast. testâ oblongâ, albidâ, striatâ, rugulosâ, striis anticis prope marginem hiantem confertis, acutis; hiatu longissimo: long.* 0·8, *lat.* 0·3, *alt.* 0·4 *poll.*
Hab. ad Insulas Gallapagos et apud Insulam Lord Hood's dictam.
Found with the last.—G. B. S.

GASTROCHÆNA HYALINA. *Gast. testâ ovali, albidâ, hyalinâ, lævi, dorso longitudinaliter striato; latere antico brevi; hiatu duos trientes testæ æquante: long.* 0·55, *lat.* 0·25, *alt.* 0·3 *poll.*
Hab. ad Insulam Lord Hood's dictam.
Found with the two last.—G. B. S.

A Note was read from Mr. Gray, giving an account of the arrival in England of two living specimens of *Cerithium armatum*, which had been obtained at the Mauritius, and had been brought from thence in a dry state. That the inhabitants of *land Shells* will remain alive without moisture for many months is well known: he had had occasion to observe that various marine *Mollusca* will also retain life in a state of torpidity for a considerable time, some facts in illustration of which he had communicated at a recent Meeting of the Society (Proceedings, Part I., p. 116.): the present instance included, however, a torpidity of so long a continuance as to induce him to mention it particularly. The animal, though deeply contracted within the shell, was apparently healthy, and beautifully coloured. It emitted a considerable quantity of bright green fluid, which stained paper of a grass green colour: it also coloured two or three ounces of pure water. This green solution, after standing for twelve hours in a stoppered bottle, became purplish at the upper part; but the paper retained its green colour though exposed to the atmosphere.

The Secretary mentioned an instance of the arrival in this country of a living *Cerithium Telescopium*, Brug., brought from Calcutta, in company with some small *Paludinæ*, which also reached England alive: these *Mollusca* were, however, kept in sea water frequently changed. The *Cerithium* was placed by Mr. G. B. Sowerby, for dissection, in the hands of the Rev. M. J. Berkeley and G. H. Hoffman, Esq., who have prepared a paper on its anatomy for the forthcoming No. of the 'Zoological Journal': it will be illustrated by a series of figures, which were exhibited to the Meeting. It is worthy of remark, that the spirit in which this animal was immersed for the purpose of killing it, and in which it was kept for some weeks, became of a dark verdigris colour.

Dr. Weatherhead exhibited two young *Ornithorhynchi* preserved in spirit, which he had recently received from New Holland, and stated his intention of presenting one of them to the Society's Museum. The smallest of them is about two inches in length; the largest about four. Both are destitute of hair; and in both the eye-lids are closed. In the smaller one there is a vestige of an umbilical slit.

The larger of the two is one of those which were kept in captivity, with their dam, by Lieut. the Hon. Lauderdale Maule, as noticed in a communication read at the Meeting of the Committee of Science and Correspondence of this Society on September 11, 1832, (Proceedings, Part II. p. 145). With it was exhibited the dried skin of the dam, to which the mammary glands, largely developed, had been left adhering.

A Note from Lieut. Breton, Corr. Memb. Z. S., was read, giving an account of an *Echidna*, which lived with him for some time in New Holland, and survived a part of the voyage to England. The animal was captured by him on the Blue Mountains: it is now very uncommon in the colony of New South Wales. He regards it as being of its size the strongest quadruped in existence. It burrows readily, but he knows not to what depth.

Previously to embarkation this individual was fed on ant-eggs and milk, and when on board its diet was egg chopped small with liver and meat. It drank much water. Its mode of eating was very curious, the tongue being used at some times in the manner of that of the *Chamæleon*, and at others in that in which a mower uses his scythe, the tongue being curved laterally, and the food, as it were, swept into the mouth: there seemed to be an adhesive substance on the tongue, by which the food was drawn in. The animal died suddenly off Cape Horn, while the vessel was amidst the ice; perhaps in consequence of the cold, but not improbably on account of the eggs with which it was fed being extremely bad.

Lieut. Breton agrees with MM. Quoy and Gaimard in believing that little difficulty would be experienced in bringing alive to Europe the *Echidna* or *Porcupine Ant-eater* of New Holland. He suggests the following plan.

Previously to embarkation the animal should gradually be weaned from its natural food of ants, which may be done with great facility by giving it occasionally ants and ant-eggs, (the last is, in fact, more properly speaking, its common food,) but more generally milk, with eggs chopped very small, or egg alone. When on board ship it should be kept in a deep box, with strong bars over the top, and a door. It is requisite that the box or cage be deep, because the animal constantly tries its utmost to escape; and possessing very great strength, is liable to injure itself in its exertions to force its way through the bars. The effluvia arising from its excrement are so extremely fetid, that it cannot be kept altogether in a cabin, unless the cage be frequently cleaned. While this is being done, the *Echidna* may be allowed its liberty, but must be narrowly watched, or it will certainly go overboard. It is absolutely necessary that the eggs which are to constitute its food during the voyage be as fresh as possible: they can be preserved in lime water. If milk is not to be procured, water must be supplied daily; and egg and liver (or fresh meat) cut small, should be given at least every alternate day; but, when the weather will permit, it should be fed once a day. Half an egg (boiled hard) and the

liver of a fowl or other bird will suffice for a meal. Finally, the animal should be kept warm, and well supplied with clean straw. It will be as well to nail two or three pieces of wood (battens) across the floor of the cage, to prevent the animal from slipping about when the ship is unsteady.

April 8, 1834.

Dr. Marshall Hall in the Chair.

A Letter was read, addressed to the Secretary by John Hearne, Esq., Corr. Memb. Z. S., dated Port au Prince, Feb. 15, 1834. It accompanied a present to the Society of a pair of the *common Goats* of Hayti; referred to various *Birds* which it is the intention of the writer to forward when the season is more advanced; and gave some particulars of a bird known in the island by the name of the *Musicien*, respecting which Mr. Hearne hopes to obtain, in the course of a journey which he projects into the higher lands of the interior, more full information than he at present possesses.

Some extracts were read from a Letter, addressed to Mr. Yarrell by Dr. A. Smith, Corr. Memb. Z. S., dated Cape Town, Jan. 12, 1834. It refers to the projected expedition from the Cape of Good Hope into the interior of Africa, which it is the intention of the writer to accompany. It is designed to proceed directly northward from Latakoo; and Dr. Smith anticipates in this new field numerous additions to his Zoological stores: along the eastern and western coasts he has already penetrated to a considerable distance. Speaking of the *Rodentia*, so numerous in Southern Africa, he mentions as collected by him, in his late visit to Port Natal and the Zoola country, a second species of his genus *Dendromys*. He also notices a new species of *Chrysochloris* obtained by him in the same country.

At the request of the Chairman, Mr. Gould exhibited an extensive series of *Birds* of the genus *Trogon*, Linn., comprising twenty-five species. The greater number of them form part of the Society's Museum, and the others were derived from his own collection.

He pointed out the distinguishing marks of the two sections of the genus, one of which is confined to America, while the other inhabits the Old Continent. He also pointed out among the species exhibited there which he regarded as hitherto undescribed; these he named and characterized as follows:

Trogon erythrocephalus. *Trog. capite guttureque sordidè sanguineis, hoc posticè strigâ albâ obsoletâ cincto; pectore ventreque coccineis; dorso tectricibusque caudæ superioribus arenaceo-castaneis; scapularibus alæque tectricibus majoribus nigro alboque flexuosim strigatis.*

Fœm. *Capite guttureque arenaceo-brunneis; torque albo magis quam in mare conspicuo; scapularibus nigro brunneoque strigatis.*

Rostrum brunneum; *mandibularum basis regioque ophthalmica* nuda coccineæ.

Long. tot. 12 vel 13 unc.; *alæ*, 5.

Hab. apud Rangoon.

Trogon Malabaricus. *Trog. capite, gutture, pectoreque fuliginoso-nigris, hoc torque lato albo; ventre coccineo; dorso tectricibusque caudæ superioribus sordidè arenaceo-brunneis; scapularibus tectricibusque alæ majoribus nigro alboque flexuosim strigatis.*

Fœm. *Capite, dorso, gutture, pectoreque sordidè brunneis; ventre luteo; pectore haud torquato; scapularibus nigro brunneoque strigatis.*

Rostrum nigrum; *mandibularum basis regioque ophthalmica* nuda cœruleæ.

Long. tot. 11 vel 11½ unc.; *alæ*, 5.

Hab. ad littus Malabar dictum.

In both these birds the quill-feathers are black, edged with white; the three outer tail-feathers on each side black at their base and broadly white at their tips; and the two middle tail-feathers tipped with black, their remaining portion being of a chestnut brown, which in *Trog. erythrocephalus* is deep, and in *Trog. Malabaricus* light.

Trogon elegans. *Trog. vertice, genis, guttureque nigris; cervice, dorso, pectoreque metallicè aureo-viridibus, hoc posticè torque albo cincto; ventre saturatè coccineo; scapularibus alæque tectricibus albo nigrescenti-brunneoque minutissimè flexuosim strigatis, pogoniis externis lineâ albâ longitudinali notatis.*

Fœm. *Capite, pectore, dorsoque saturatè brunnescenti-griseis; torque albo obsoleto; ventre quam in mari pallidiore.*

Rostrum saturatè aurantio-luteum.

Long. tot. 12 unc.; *alæ*, 5; *caudæ*, 7.

Hab. apud Guatimala, in Mexico.

The tail is considerably lengthened in the male, and its four middle feathers are bronzed green on the upper surface, and deeply marked with black at the tip; the three outer feathers are white at the tip, and barred to a great extent on their outer edges with alternate lines of black and white, a marking which appears also, though less extensively, on their inner edges, the remainder being black: in some specimens this marking of the tail is reduced to an irregular and minute sort of dotting, in place of the bars. In the female the middle tail-feathers are of a dull chestnut, tipped with black, and the three outer feathers much resemble those of the male, but are less decidedly dotted, assuming rather a freckled appearance.

Mr. Bennett briefly recapitulated the facts and reasonings which have from time to time been brought before the Society on the subject of the abdominal glands of the *Monotremata*, regarded by Meckel and by Mr. Owen as mammary, and by M. Geoffroy-Saint Hilaire as connected with a peculiar function, to which, however, different results have been attributed by that learned zoologist at various times. The object of the recapitulation was to introduce an abstract of a recent Memoir by M. Geoffroy-Saint-Hilaire, "On the structure and use of the Monotrematic glands, and particularly on those glands in the *Cetacea*." In this Memoir the author regards the mammary glands of the *Cetacea*, so analogous in structure to those of *Ornitho-*

rhynchus and *Echidna*, as having a function similar to that which he has attributed to these latter: he assumes that the fluid secreted by them is not milk but mucus, and that this mucus is not sucked by the young, (whose organs of deglutition he describes as being unfitted for sucking,) but is ejected by the mother into the water, the element in which they dwell, where, by imbibition of a portion of the water, it becomes thickened, and, floating by the mother's side, is devoured by the progeny.

M. Geoffroy has subsequently changed his opinion as to the nature of the fluid secreted by the nutrient glands of the *Cetacea*. He had had an opportunity of examining these glands in some *Porpoises*, and had found the secretion to be actually milk. He still, however, maintains that the young of the *Cetacea* do not suck, but that the mother ejects the nutritious fluid from the milk receptacle into the mouth of her young.

April 22, 1834.

Joseph Sabine, Esq., Vice-President, in the Chair.

Some Notes by J. B. Harvey, Esq., Corr. Memb. Z. S., were read: they accompanied a collection of *Shells* and *Crustacea* made by the writer on the coast of Devonshire, near Teignmouth. The several specimens were exhibited.

Among them were numerous individuals of *Cypræa Pediculus*, *Cyp. bullata*, and *Cyp. Arctica*. Of the former there are two varieties, one spotted and the other without spots. The spotted variety, Mr. Harvey states, is generally smaller than the plain one, and is less produced on one side near the *apex*.

Cyp. bullata is found in the same localities as *Cyp. Pediculus*, but it may be doubted whether it is the young of that species: it is so comparatively rare, that Mr. Harvey has dredged up only six specimens of it, while he has collected more than a hundred of *Cyp. Pediculus*: he possesses, moreover, young individuals of *Cyp. Pediculus* of smaller size than specimens of *Cyp. bullata*. In the latter the whorls are more produced at the *apex*, and the shell is so delicate as to be broken by even a slight fall.

On *Cyp. Arctica* Mr. Harvey remarks, that although its size and appearance are in favour of its being a young shell, he hesitates in referring it to the immature condition of the unspotted *Cyp. Pediculus*: his principal ground for doubt is the extreme rarity of *Cyp. Arctica*. He inquires, however, whether the young animal may not, perhaps, live deeply imbedded in the sand for a certain period before it comes to the surface, and thus generally elude the search of the conchologist until its shell becomes matured?

With the *Shells* Mr. Harvey had transmitted to the Society living specimens of *Caryophyllia Smithii*, Brod., the *Torbay Madrepore*, whose habits were described by Mr. De la Beche in the 'Zoological Journal' a few years since: these individuals died on the journey. They are attainable only at the lowest spring tides. They may be kept alive in sea water, changed every second or third day, by feeding them with a very small piece of fresh fish scraped, and deposited with a quill upon the animal, by which it is sucked in in a manner exactly similar to that of *Polypi*. The colours of some individuals are very vivid; and among these green, blue, and blueish grey are the most predominant. Adhering to the *Caryophyllia* is occasionally found the *Pyrgoma Anglicum*, Leach, which appears to occur in no other situation.

At the request of the Chairman, Mr. Thompson of Belfast exhibited an immature specimen of the *long-tailed Manis*, *Manis tetradactyla*, Linn., for the purpose of showing that when very young,

(the present specimen being but ten inches in length,) the animal is as thoroughly armed, both with respect to scales and spines, as the full-grown one. The specimen was also considered by Mr. Thompson as interesting on account of its locality, it having been obtained in Sierra Leone.

Mr. Thompson also read the following notice of the *Cuckoo, Cuculus canorus*, Linn., copied from his Journal, under the date of 28th May, 1833.

" On examination of three cuckoos to-day, which were killed in the counties of Tyrone and Antrim within the last week, I found them all to be in different stages of plumage: one was mature; another (a female) exhibited on the sides of the neck and breast the reddish-coloured markings of the young bird, the remainder of the plumage being that of maturity; the third specimen had reddish markings disposed entirely over it, much resembling the plumage described by M. Temminck as assumed by 'les jeunes tels qu'ils emigrent en automne', (Man. d'Orn, tom. 1. p. 383), but having a greater proportion of red, especially on the tail coverts, than is specified in his description of the bird at that age. This individual proved, on dissection, to be a female, and did not contain any eggs so large as ordinary sized peas. The stomach, with the exception of the presence of some small sharp gravel, was entirely empty, and was closely coated over with hair."

Attention was called to the stomach of one of these birds, that the hair with which it is lined might be observed. From its close adhesion to the inner surface of the stomach, and from the regularity with which it is arranged, Mr. Thompson was at first disposed to consider this hair as being of spontaneous growth; but part of the stomach having been subjected to maceration in water, and afterwards viewed through a microscope of high power, the hairs proved, to the entire satisfaction of Mr. Owen and himself, to be altogether borrowed from the *larvæ* of the *Tiger-moth, Arctia Caja*, Schrank, the only species found in the stomach of the bird in various specimens from different parts of the country which were examined by Mr. Thompson in the months of May and June, 1833.

Mr. Thompson also read a Catalogue, with incidental notices, of *Birds* new to the Irish Fauna. He prefaced his list by remarking that he did not bring them forward as unrecorded, without having previously consulted every work in which he was aware that the birds of Ireland are either particularly described or incidentally noticed; including the Statistical Surveys of the Irish counties, which contain, in several instances, Catalogues of the Birds that have been observed in them.

The Catalogue is as follows:

1. *Alpine Swift, Cypselus alpinus*, Temm. By the 'Dublin Penny Journal' of March 30, 1833, my attention was directed to a *rara avis*, said to have been killed at Rathfarnham, and preserved in the fine collection of birds belonging to Thomas W. Warren, Esq. On calling to

see this bird (its species not having been ascertained,) I found it to be the *Alpine Swift*, which has not before been recorded as obtained in any part of Ireland; the specimen recognised as the *Cypselus alpinus* by my friend, William Sinclair, Esq., and communicated by him to Mr. Selby for insertion in the British Fauna, having been met with off Cape Clear, at the distance of some miles from land.

Mr. Warren's specimen was received by him on the 14th of March, and was then in a perfectly fresh state.

2. *Redstart, Phœnicura Ruticilla*, Swains. This species is recorded on the excellent authority of Robert Ball, Esq., of Dublin, who has, in the autumnal months, shot several of them in the vicinity of Youghal, co. Cork.

3. *Bearded Titmouse, Parus biarmicus*, Linn. Mr. William S. Wall, Bird Preserver, Dublin, who is very conversant with British Birds, assures me that he received a specimen of this species from the neighbourhood of the river Shannon a few years since.

4. *Rock Pipit, Anthus aquaticus*, Bechst. Common about the rocks, &c., on the seashore, in the North of Ireland.

5. *Crested Purple Heron, Ardea purpurea*, Linn. Of this bird there is a fine specimen in mature plumage in the collection of Mr. Warren, which I am assured was shot at Carrickmacross.

6. *Little Bittern, Botaurus minutus*. A specimen of this bird, shot in the county of Armagh, is preserved in the cabinet of William Sinclair, Esq., Belfast. Specimens have also been obtained in the east and south of Ireland.

7. *Night Heron, Nycticorax Europæus*, Steph. Of this bird I saw a specimen a few weeks since in the shop of Mr. Glennen, Bird Preserver, Dublin, which he informed me was sent him in a fresh state from Letterkenny, early in the present year.

8. * *Spoonbill, Platalea leucorodia*, Linn. Mr. Ball informs me, that in the autumn of 1829, three of these birds were seen in company near Youghal, and that one of them was shot. It was preserved by Dr. Green of that town, and is at present in his possession.

9. * *Green Sandpiper, Totanus ochropus*, Temm. Of this bird I have seen Irish specimens in several collections.

10. *Dottrel, Charadrius morinellus*, Linn. A specimen of this bird, which was shot near Downpatrick a few years ago, is preserved in the house of Mr. Reid, at Ballygowan Bridge (Down).

11. *Black-winged Stilt, Himantopus melanopterus*, Meyer. In the winter of 1823, a bird of this species was seen by Mr. Ball in the neighbourhood of Youghal.

12. *Gadwall, Chauliodus strepera*, Swains. Dr. Robert Graves of Dublin informed me that a specimen of this bird which I saw in his collection was shot at Wexford.

13. *Smew, Mergus albellus*, Linn. Of this bird I have seen specimens from different parts of Ireland.

14. *Little Auk, Mergulus melanoleucos*, Ray. There is a specimen of this bird in the collection of Dr. Graves, which was shot at Wexford.

15. * *Black Tern, Sterna nigra,* Linn. Mr. Ball has seen this bird in the month of July, for some years successively, at Roxborough, near Middleton, co. Cork.

In addition to these I may mention the

16. * *Blackcap Warbler, Curruca atricapilla,* Bechst., which, though stated in Rutty's Dublin to be frequent in that county, admits of some doubt, as more than one species is commonly called by the name of *Blackcap* in Ireland. On the 1st March, 1834, I saw, in the shop of Mr. Galbraith, Bird Preserver, Belfast, a fresh specimen of an adult male *Blackcap,* which had been killed (probably the day before) in the garden at Down and Connor House, co. of Down.

Other individuals of the species marked thus * have been recorded in the MS. Catalogue of the late J. Templeton, Esq.—W. T.

Mr. Thompson also stated that specimens of the true *Lestris parasiticus,* Temm., have repeatedly occurred in the Bays of Dublin and Belfast. He added, that during the great storm which took place on the 31st August, 1833, a great many specimens of the *Octopus octopodia* (which had not before been recorded as occurring on the shores of Ireland) were thrown ashore in Belfast Bay.

Mr. Owen read a Paper "On the Structure of the Heart of the *Perennibranchiate Amphibia,* or *Reptiles douteux* of Cuvier."

He briefly noticed the progressive discoveries relating to the heart of *Reptiles* which have been made since the time of Linnæus, and which have successively rendered inapplicable to the *Saurians, Chelonians,* and *Ophidians,* the phrase "Cor uniloculare, uniauritum", applied to the whole of the *Reptilia* in the '*Systema Naturæ*'. He alluded to the researches of Dr. Davy and M. Martin St. Ange on the structure of the heart in the *Caducibranchiate Amphibia,* from which it appeared that two auricles were appended to the ventricle in those *Reptiles,* as well as in the higher orders above mentioned. He then proceeded to give the results of an examination of the hearts of specimens of *Amphiuma,* Cuv., *Menopoma,* Harlan, *Proteus,* Schreib., and *Siren,* Linn. He selected the heart of the *Siren lacertina* as the subject of detailed description, considering that the genus *Siren,* in combining with persistent external *branchiæ* a limited number of extremities, exhibits the simplest form of the *Amphibious Reptile.*

The heart in this species consists of three distinct cavities, as in the higher *Reptilia,* viz. of two auricles and one ventricle. The auricles appear to form externally one large and remarkably fimbriated cavity, situated behind, and advancing forwards, on both sides of the ventricle and *bulbus arteriosus.* The venous blood is poured into a large membranous sinus by one posterior and two anterior *venæ cavæ* prior to passing into the auricle. The conjoined trunk of the pulmonary veins appears also to enter this sinus, but it passes through without communicating with that cavity, and terminates in a small separate auricle, which opens into the ventricle by an orifice distinct from, but close to, the orifice of the right auricle. In the ventricle a rudimentary *septum* was noticed as affording an indication of a type of forma-

tion superior to that of *Fishes*. In the *bulbus arteriosus* a longitudinal projection appears as a commencing division of the single artery, which is given off from the ventricle.

The differences in the structure of the preceding parts, and in the origin and distribution of the different vessels exhibited by the other genera of *Perennibranchiata*, were successively noticed; and the affinities indicated by these modifications to the *Caducibranchiate Reptiles* on the one hand, and to the *Cartilaginous Fishes* on the other, were also pointed out.

The Paper was illustrated by drawings of the structures described in it.

May 13, 1834.

Richard Owen, Esq., in the Chair.

A Note was read from Mrs. Barnes, in which it was stated that that lady had brought up from the nest two of the smallest species of Jamaica *Humming-birds*. They were so tame, that at a call they would fly to her, and perch upon her finger. Their food was sugar and water. During the passage to England one of them was killed by the cage in which they were kept being thrown down in a storm; its companion drooped immediately, and died shortly afterwards.

It was remarked that injury to the bird in consequence of such an accident might be prevented by the introduction of a gauze-net screen into the cage, at some little distance within the wires.

Specimens were exhibited of several *Mammalia* from India, which had recently been presented to the Society by Lord Fitzroy Somerset. They were brought under the notice of the Meeting by Mr. Bennett, who called particular attention to the skin of a *Paradoxurus*, which he regarded as that of *Par. prehensilis*, Gray, a species hitherto known only by a drawing of Dr. Hamilton's preserved in the East India House.

The general colour of the animal is a pale greyish brown, in which longer black hairs are sparingly intermixed on the sides. On the back of the head and neck, and along the middle line of the back, these black hairs are almost the only ones that are visible. On the loins they form three indistinct black bands, of which the lateral are in some measure interrupted. The head is brownish, with the usual grey mark both above and below the eyes, and there are some short grey hairs between the eyes and across the forehead. The limbs are brownish black, rather darker towards their upper part. The tail, at its base, is of the same colour as the back, and rapidly becomes black; its terminal fifth is yellowish white. The ears are rather large, and sparingly covered with short brownish hairs.

Specimens were exhibited of three species of *horned Pheasants*, including the *Tragopan Temminckii*, Gray. In illustration of the history of the latter bird, Mr. G. Bennett, Corr. Memb. Z.S., placed upon the table drawings of specimens observed by him at Macao, and showing the remarkable wattle in various degrees of development. He also read a note on the subject.

In its contracted state the membrane has merely the appearance of a purple skin under the lower mandible; and it is even sometimes so much diminished in size as to be quite invisible. It becomes developed during the early spring months or pairing season of the year,

from January to March, when it is capable of being displayed or contracted at the will of the bird. During excitement it is enlarged, falls over the breast, and exhibits the most brilliant colours, principally of a vivid purple, with bright red and green spots: the colours vary in intensity according to the degree of excitement. When they are most brilliant, or, in other words, when the excitement is great, the purple horns are usually elevated. The living specimens seen by Mr. G. Bennett were procured from the province of Yunnan, bordering on Thibet. Mr. Beale, in whose aviary at Macao they were, had not succeeded in obtaining females of this race. Its Chinese name is *Tu Xou Nieu*.

Mr. G. Bennett also read a note on the habits of the *King Penguin*, *Aptenodytes Patachonica*, Gmel., as observed by him on various occasions when in high southern latitudes. He described particularly a colony of these birds, which covers an extent of thirty or forty acres, at the north end of Macquarrie Island, in the South Pacific Ocean. The number of *Penguins* collected together in this spot is immense, but it would be almost impossible to guess at it with any near approach to truth, as, during the whole of the day and night, 30,000 or 40,000 of them are continually landing, and an equal number going to sea. They are arranged, when on shore, in as compact a manner and in as regular ranks as a regiment of soldiers; and are classed with the greatest order, the young birds being in one situation, the moulting birds in another, the sitting hens in a third, the clean birds in a fourth, &c.; and so strictly do birds in similar condition congregate, that should a bird that is moulting intrude itself among those which are clean, it is immediately ejected from among them.

The females hatch the eggs by keeping them close between their thighs; and, if approached during the time of incubation, move away, carrying the eggs with them. At this time the male bird goes to sea and collects food for the female, which becomes very fat. After the young is hatched, both parents go to sea, and bring home food for it; it soon becomes so fat as scarcely to be able to walk, the old birds getting very thin. They sit quite upright in their roosting-places, and walk in the erect position until they arrive at the beach, when they throw themselves on their breasts, in order to encounter the very heavy sea met with at their landing-place.

Although the appearance of *Penguins* generally indicates the neighbourhood of land, Mr. G. Bennett cited several instances of their occurrence at a considerable distance from any known land.

The Secretary announced the recent addition to the Menagerie of the *Perdix sphenura*, Gray; the *Philippine Quail*, *Coturnix Sinensis*, Cuv.; and the *Hemipodius Dussumieri*, Temm.?: all presented to the Society by John Russel Reeves, Esq., of Canton. He added, that a second male specimen of the *Reeves's Pheasant*, *Phasianus veneratus*, Temm., had also been sent to the Menagerie by John Reeves, Esq. A pair of the middle tail-feathers of the last-named bird, measuring upwards of five feet in length, and presented by Wm. Craggs, Esq., were exhibited.

Numerous specimens were exhibited from Mr. Cuming's collection, in illustration of a Paper by Mr. Broderip, entitled, "Descriptions of several New Species of *Calyptræidæ*."

The new species described in this paper are distributed and characterized as follows:

Subgenus Calyptræa.

Testa subconica, subacuminata, cyathi basi adhærente, lateribus liberis.

α. *Cyatho integro.*

Calyptræa rudis. *Cal. testâ fuscâ, subdepressâ, suborbiculari, radiatim corrugatâ, limbo crenato; cyatho concentricè lineato, albido, irregulariter subcirculari; epidermide subfuscâ: diam. 2 poll. circiter, alt.* $\frac{7}{12}$.

Hab. ad Panamam et Real Llejos.

This species, whose white onyx-like cup, adhering only by its base, shows to great advantage against the ruddy brown which is the general colour of the inside of the protecting shell, was found under stones. The young shells are the flattest and most regular in form, but their inside is generally of a dirty white, dimly spotted with brown.—W. J. B.

β. *Cyatho hemiconico, longitudinaliter quasi diviso.* (Calyptræa, *Less.*)

Calyptræa corrugata. *Cal. testâ subalbidâ, suborbiculari, subdepressâ, corrugatâ; intùs nitente; cyatho concentricè lineato, producto; epidermide fuscâ: diam.* $1\frac{5}{8}$ *poll. circ., alt.* $\frac{8}{10}$.

Hab. in Americâ Centrali. (Guacomayo.)

Found under stones at a depth of fourteen fathoms.—W. J. B.

Calyptræa varia. *Cal. testâ albidâ, suborbiculari, crassiusculâ, longitudinaliter creberrimè striatâ; cyatho concentricè lineato, crassiusculo, producto: diam.* $1\frac{5}{8}$, *alt. max.* $\frac{7}{8}$, *alt. min.* $\frac{5}{8}$ *poll.*

Hab. in Oceano Pacifico. (Lord Hood's Island, the Gallapagos, and the Island of Muerte in the Bay of Guayaquil.)

This is a very variable species allied to *Cal. equestris*, and taking almost every shape which a *Calyptræa* can assume. It differs in thickness according to localities and circumstances.—W. J. B.

Calyptræa cepacea. *Cal. testâ albâ, suborbiculari, subconcavâ, tenui, diaphanâ, striis numerosis subcorrugatâ; intùs nitente; cyathi terminationibus lanceolatis: long.* $1\frac{1}{12}$, *lat.* $1\frac{1}{8}$, *alt.* $\frac{5}{8}$ *poll.*

Hab. in sinu Guayaquil. (Island of Muerte.)

This was dredged up, adhering to dead shells, from sandy mud, at a depth of eleven fathoms. Besides other differences, the terminating points of the divided *cyathus* are much more lanceolate than they are in *Cal. varia*.—W. J. B.

Calyptræa cornea. *Cal. testâ suborbiculari, complanatâ, albidâ, subdiaphanâ, concentricè lineatâ et radiatim striatâ; intùs nitente: diam.* $\frac{5}{8}$, *alt.* $\frac{1}{8}$ *poll.*

Hab. ad Aricam Peruviæ.

Dredged up from sandy mud at a depth of nine fathoms.—W. J. B.

Subgenus CALYPEOPSIS, *Less.*

Cyatho interno integro, lateraliter adhærente.

CALYPTRÆA RADIATA. *Cal. testâ conico-orbiculari, albidâ fusco radiatâ, striis longitudinalibus crebris; limbo crenulato; apice acuto, subrecurvo; cyatho depresso: diam.* 1, *alt.* $\frac{5}{12}$ *poll.*

Hab. in Americâ Meridionali. (Bay of Caraccas.)

The cup of this pretty species is pressed in, as it were, on one side, and adheres to the shell not only by its *apex*, but also by a lateral seam, which scarcely reaches to the rim of the cup. The *apex* of the younger specimens, both externally and internally, is generally of a rich brown, and there can be little doubt that when first produced they are entirely of that colour.

Found in sandy mud, on dead shells, at a depth of from seven to eight fathoms.—W. J. B.

CALYPTRÆA IMBRICATA. *Cal. testâ albidâ, crassâ, subconicâ, ovatâ, costis longitudinalibus et squamis transversis imbricatâ; apice subincurvo, acuto; limbo crenato; cyatho depresso: diam.* 1, *lat.* $\frac{4}{5}$, *alt.* $\frac{2}{3}$ *poll.*

Hab. ad Panamam.

Found on stones, in sandy mud, at a depth of from six to ten fathoms.—W. J. B.

CALYPTRÆA LIGNARIA. *Cal. testâ crassâ, fuscâ, deformi, striis corrugatâ; apice prominente subadunco, acuto, posteriore: long.* $1\frac{4}{10}$, *lat.* $\frac{6}{8}$, *alt.* $\frac{7}{8}$ *poll.*

Hab. in Americâ Centrali. (Real Llejos.)

The majority of individuals of this species have their shells so deformed that they set description at defiance: the comparatively well-formed shell occurs so rarely that it may be almost considered as the exception to the rule. When in this last-mentioned state, the circumference of the shell is an irregular, somewhat rounded oval, and it rises into a shape somewhat resembling the back of *Ancylus*, with the *apex* very sharp and inclining downwards. The shell in this shape is generally less corrugated than it is in deformed individuals, though some of those are comparatively smooth; but in both states the shell is striated immediately under the *apex*, and is for the most part corrugated on the other side of it.

Found under stones.

Var. *a*. Enormiter conica, cyatho valdè profundo.

This variety is often one inch and six eighths in height, and its cup nearly one inch deep, while the diameter of the shell at the aperture does not exceed one inch.

Found on shells at the Island of Chiloe, in sandy mud, at the depth of four fathoms.—W. J. B.

CALYPTRÆA TENUIS. *Cal. testâ irregulari, tenui, subdiaphanâ, creberrimè striatâ, albidâ interdum fusco pallidè strigatâ: diam.* 1 *circ.*, *alt.* $\frac{8}{12}$ *poll.*

Hab. ad Peruviæ oras. (Samanco Bay.)

Found on living shells, in muddy sand, at a depth of nine fathoms. —W. J. B.

Calyptræa hispida. *Cal. testâ subovatâ, subconicâ, albâ strigis maculisque subpurpureo-fuscis variâ, striis frequentibus et spinis tubularibus erectis hispidâ; limbo crenulato; apice turbinato; cyatho subdepresso: diam.* $\frac{1}{2}$, *lat.* $\frac{8}{10}$, *alt.* $\frac{3}{10}$ *poll.*

Hab. ad Insulam Muerte. (Bay of Guayaquil.)

This elegant species, the circumference of whose somewhat depressed cup is free, with the exception of one part where it adheres laterally, was found on dead shells, in sandy mud, at a depth of twelve fathoms.—W. J. B.

Calyptræa maculata. *Cal. testâ ovatâ, albidâ purpureo-fusco maculatâ, longitudinaliter rugosâ; limbo serrato; apice subturbinato, subincurvo: diam.* $\frac{1}{2}$, *lat.* $\frac{7}{10}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Insulam Muerte.

The external contour of this shell, more especially in the position of the subturbinated *apex*, much resembles that of *Ancylus*. The circumference of the cup is free, excepting at one point, where it adheres laterally throughout its length.

Found in sandy mud, on dead shells, at a depth of eleven fathoms.—W. J. B.

Calyptræa serrata. *Cal. testâ suborbiculari, albâ subpurpureo vel fusco interdum fucatâ vel strigatâ, costis longitudinalibus prominentibus rugosis; limbo serrato; apice subturbinato; cyatho valdè depresso: diam.* $\frac{1}{2}$, *lat.* $\frac{5}{10}$, *alt.* $\frac{2}{10}$ *poll.*

Hab. ad Real Llejos et Muerte.

Var. testâ albâ.

Found on dead shells, in a muddy bottom, at the depth of from six to eleven fathoms.—W. J. B.

Subgenus Syphopatella, *Less.?*

Laminâ internâ subtrigonâ, subcirculari, latere dextro replicato.

Calyptræa sordida. *Cal. testâ subconicâ, sordidè lutea, longitudinaliter subradiatâ; apice turbinato; cyatho depresso, subtrigono, haud profundo: diam.* $\frac{1}{2}$, *lat.* $\frac{5}{10}$, *alt.* $\frac{2}{10}$ *poll.*

Hab. ad Panamam.

This species, the inside and outside of which are of a sordid yellow, is generally covered externally with coral or other marine adhesions. The plate is spoon-shaped.

Found on stones, on a sandy bottom, at depth of twelve fathoms.—W. J. B.

Calyptræa Unguis. *Cal. testâ tenui, conicâ, corrugatâ, fuscâ; apice subturbinato; cyatho depresso, subtrigono: diam.* $\frac{1}{2}$, *alt.* $\frac{3}{10}$ *poll.*

Hab. ad Valparaiso.

The plate is spoon-shaped, but not so shallow as that of *Cal. sordida*.

Found on shells, at a depth of from seven to forty-five fathoms.—W. J. B.

Calyptræa Lichen. *Cal. testâ albidâ, interdum pallidè fusco*

sparsâ, subdiaphanâ, subturbinatâ, orbiculatâ, complanatâ: diam. $\frac{6}{8}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Insulam Muerte.

Found on dead shells, in sandy mud, at a depth of eleven fathoms. —W. J. B.

CALYPTRÆA MAMILLARIS. *Cal. testâ albidâ, subconicâ; apice subpurpureo, mamillare: diam.* $\frac{5}{10}$, *alt.* $\frac{4}{10}$ *poll.*

Hab. ad Insulam Muerte.

This pretty species varies. It is sometimes milk white, with the mamillary *apex* of a brownish purple, and with the inside sometimes of that colour, sometimes white, and sometimes yellowish. In other individuals the white is mottled with purplish brown stripes and spots.

Found on dead shells, in sandy mud, at a depth of eleven fathoms. —W. J. B.

CALYPTRÆA STRIATA. *Cal. testâ sordidè albâ, suborbiculatâ, subconicâ, subturbinatâ, striis longitudinalibus elevatis creberrimis corrugatâ; intùs fusco-flavescente: diam.* $\frac{1}{2}$, *alt.* $\frac{3}{10}$ *poll.*

Hab. ad Valparaiso.

Found on shells in sandy mud, at a depth of from forty-five to sixty fathoms.

CALYPTRÆA CONICA. *Cal. testâ conicâ, fuscâ albido maculatâ, subturbinatâ: diam.* $1\frac{4}{8}$, *alt.* $\frac{7}{10}$ *poll.*

Hab. ad Xipixapi et ad Salango.

Found attached to shells in deep water.

Subgenus CREPIPATELLA, *Less.*

Laminâ rotundatâ, apice laterali et subterminali.

CALYPTRÆA FOLIACEA. *Cal. testâ suborbiculari, albidâ, foliaceâ; intùs castaneâ vel albâ castaneo variâ: diam.* 1, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Aricam Peruviæ, saxis adhærens.

This *Crepipatella*, which bears no remote resemblance to the upper valve of some of the *Chamæ* when viewed from above, was found on exposed rocks near the shore.—W. J. B.

CALYPTRÆA DORSATA. *Cal. testâ subalbidâ, planiusculâ, costis longitudinalibus irregularibus rugosâ; intùs medio fusco-violaceâ: diam.* $\frac{3}{8}$, *lat.* $\frac{1}{4}$ *poll.*

Hab. ad Sanctam Elenam.

The back of this shell is not unlike the upper valve of some of the *Terebratulæ*.

Found on dead shells, in sandy mud, at a depth of six fathoms.—W. J. B.

CALYPTRÆA DILATATA, *Lam.*, varietas intùs nigro-castanea. *Cal. testâ sordidè albâ castaneo strigatâ; intùs nitidè nigro-castaneâ; laminâ albâ: diam.* $1\frac{4}{8}$, *lat.* $1\frac{1}{8}$, *alt.* $\frac{1}{2}$ *poll.*

Hab. ad Valparaiso.

This highly coloured variety was found on exposed rocks at low water. The pure white of the plate shows to great advantage, lying above the rich back ground of the interior of the shell. In some individuals this internal colour is all but black.—W. J. B.

Calyptræa strigata. *Cal. testâ subcorrugatâ, sordidè rubrâ albo varid; intùs subrufâ interdum albâ vel albâ rubro-castaneo varid: diam.* 1 *poll.*

Hab. ad Valparaiso.

This varies much both in colour and shape. Some of the specimens are quite flat, and the *lamina* almost convex. An obscure subarcuate longitudinal whitish broad streak may be traced on the backs of most of them. It is not impossible that it may be a variety of *Cal. dilatata.*

Found on *Mytili* at depths varying from three to six fathoms.—W. J. B.

Calyptræa Echinus. *Cal. testâ albidâ violaceo maculatâ, interdum fuscâ, striis longitudinalibus creberrimis spinis fornicatis horridâ; intùs flavente vel albâ: diam.* $1\frac{1}{2}$, *lat.* $1\frac{1}{8}$, *alt.* $\frac{5}{8}$ *poll.*

Hab. ad Peruviam. (Lobos Island.)

In old specimens the spines are almost entirely worn down, and rough *striæ* only, for the most part, remain. In this state it bears a great resemblance to the figure given of *Crepidula fornicata* in Sowerby's Genera of Shells, No. 23, f. 1.

Found under stones at low water.—W. J. B.

Calyptræa Hystrix. *Cal. sordidè albâ vel fuscâ, complanatâ, longitudinaliter striatâ, spinis magnis fornicatis apertis seriatim dispositis; intùs albidâ, interdum castaneo maculatâ: diam.* $1\frac{3}{8}$, *lat.* $\frac{7}{8}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Peruviam. (Lobos Island.)

Approaching the last, but differing in being always more flattened, in the comparatively great size of the vaulted spines, and in the comparatively wide interval between them; still I would not be positive that they are not all varieties of *Crepidula aculeata,* Lam.—W. J. B.

Calyptræa pallida. *Cal. testâ sordidè albâ, ovatâ; apice prominente: diam.* $\frac{7}{8}$, *lat.* $\frac{5}{8}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Insulas Falkland dictas.

Found under stones.—W. J. B.

Subgenus Crepidula, *Less.*

Laminâ subrectâ, apice postico et submedio.

Crepidula unguiformis, Lam., varietas complanato-recurva: *long.* $1\frac{3}{8}$, *lat.* $\frac{5}{8}$ *poll.*

Hab. ad Insulam Chiloen et ad Panamam.

This variety affords a good example of the powers of adaptation of the animal. The shell is either flattened or concave on the back, and recurved in consequence of its adhesion to the inside of dead shells of *Ranellæ Vexillum, cœlata,* &c.

It was dredged from sandy mud, at a depth ranging from four to ten fathoms.—W. J. B.

Calyptræa Lessonii. *Cal. testâ complanatâ, subconcentricè foliaceâ, foliis tenuibus, albâ fusco longitudinaliter strigatâ; intùs albidâ; limbo interno interdum fusco ciliato-strigato: long.* $1\frac{4}{10}$, *lat.* $1\frac{1}{10}$, *alt.* $\frac{2}{8}$ *poll.*

Hab. in sinu Guayaquil. (Isle of Muerte.)

This beautiful species, which I have named in honour of M. Lesson, was found under stones at low water. It will remind the observer of the upper valves of some of the *Chamæ*.—W. J. B.

CALYPTRÆA INCURVA. *Cal. testâ fusco nigricante, tortuosâ, corrugatâ; intùs nigricante, septo albo; apice adunco: long.* $\frac{6}{8}$, *lat.* $\frac{1}{2}$, *alt.* $\frac{3}{8}$ *poll.*

Hab. ad Sanctam Elenam et ad Xipixapi.

Found on dead shells dredged from sandy mud, at a depth ranging from six to ten fathoms.—W. J. B.

CALYPTRÆA EXCAVATA. *Cal. testâ crassiusculâ, subtortuosâ, lævi, albidâ vel subflavâ fusco punctatâ et strigatâ; intùs albâ vel albâ fusco fucatâ, limbo interdum fusco ciliato-strigato: long.* $1\frac{7}{8}$, *lat.* $1\frac{1}{8}$, *alt.* $\frac{5}{8}$ *poll.*

Hab. ad Real Llejos.

This species is remarkable for the depth of the internal margin before it reaches the *septum*. In *Crepidula adunca*, Sow., this depth is even greater than it is in *Crep. excavata*. The *apex* is close to the margin, and obliquely turned towards the right side.—W. J. B.

CALYPTRÆA ARENATA. *Cal. testâ subovatâ, albidâ rubro-fusco creberrimè punctatâ; intùs subrubrâ vel albidâ subrubro maculatâ, septo albo: long.* $1\frac{1}{8}$, *lat.* $\frac{7}{8}$, *alt.* $\frac{4}{7}$ *poll.*

Hab. ad Sanctam Elenam.

This approaches *Crep. porcellana*. The *septum* is somewhat distant from the margin, and the *apex*, which is also somewhat distant from it, is obtuse and obliquely turned towards the right side.

From sandy mud, on shells, at a depth ranging from six to eight fathoms.—W. J. B.

CALYPTRÆA MARGINALIS. *Cal. testâ subovatâ, sublævi vel vix corrugatâ, subflavâ vel albidâ fusco strigatâ; intùs nigricante vel flavâ fusco strigatâ, septo albo: long.* $1\frac{1}{8}$, *lat.* $\frac{10}{12}$, *alt.* $\frac{4}{7}$ *poll.*

Hab. ad Panamam et ad Insulam Muerte.

This species was found on stones and shells, in sandy mud, at a depth ranging from six to ten fathoms. The white *septum* shows beautifully against the black-brown of the interior. The *apex* is almost lost in the margin, and is directed towards the right side.—W. J. B.

CALYPTRÆA SQUAMA. *Cal. testâ suborbiculari, complanatâ, sublævi, subtenui, pallidè flavâ vel albidâ fusco substrigatâ; intùs subflavâ vel subflavâ fusco strigatâ: long.* 1, *lat.* $1\frac{1}{2}$, *alt.* $\frac{2}{7}$ *poll.*

Hab. ad Panamam.

The *apex* of this very flat species is lost in the margin. Found under stones.—W. J. B.

May 27, 1834.

William Yarrell, Esq., in the Chair.

A Letter was read, addressed to the Secretary by Sir R. Ker Porter, Corr. Memb. Z. S., dated City of Caracas, April 7, 1834. It related chiefly to a *Monkey*, and to some *Tortoises*, recently presented to the Society by the writer.

The *Monkey* is described in detail. It is the *Pithecia sagulata*, the *jacketed Monkey* or *Simia sagulata* of Dr. Traill. Sir R. Ker Porter points out the several differences in colouring which exist between this individual and the published description by the Baron Humboldt of the *Pithecia Chiropotes*: these consist chiefly in the comparative paleness of its back, and the greater darkness of the remainder of its body and of its bushy beard. He adds that the animal drinks frequently, always bending down on its hands, and putting its mouth to the surface of the water, heedless apparently of wetting its beard, and indifferent to the observations of lookers-on: he never saw it take up water in the hollow of its hand, and carry it in this manner to its mouth in order to drink. Its favourite fruit is the apple; and it does not refuse the pinion of a roasted chicken. Its voice is a weak and chirping whistle, which becomes shrill and loud when the animal is angry. It was obtained from the vicinity of the Orinoco, not far distant from the Rio Negro, in the heart of Guiana. It is known as the *Mono Capuchino*.

The *Tortoises* are referable to the *Testudo carbonaria*, Spix.

The Secretary announced that there had recently been added to the Menagerie a *white-crested Cockatoo, Plyctolophus cristatus*, Vieill.; and a pair of the *blue Jay, Garrulus cristatus*, Cuv.

He also stated that there had been acquired for the Menagerie a *Rhinoceros* of the *one-horned* species of Continental India. It is said to be about four years old. Its height at the loins, the highest part of the back, is 4 feet $10\frac{1}{2}$ inches; its length, from the root of the tail to the tip of the nose, measured in a straight line, is 10 feet 6 inches; its weight is about 26 cwt.

A specimen was exhibited of the young of the *Sandwich Island Goose, Bernicla Sandvicensis*, Vig., which was hatched at Knowsley. It was accompanied by the following note from the President, Lord Stanley.

"Through the kindness of John Reeves, Esq., I received at Knowsley a pair of these birds on the 15th of February, 1834.

They did not at first, when turned out on the pond among the other water-fowl, appear to take much notice of each other; but some workmen being at the time employed about the pond, one of the birds (I think, from recollection, it was the male,) seemed to have formed some sort of attachment to one of the men working. Whenever he was present the goose was always near to him, and whenever absent at his dinner, or when otherwise employed, the bird appeared restless, and gave vent to its solicitude by frequent cries, which as well as the anxiety, always ceased with the reappearance of the workman.

"The man having frequently occasion to pass through a door, which was obliged to be kept open, it was feared that the attachment of the animal might lead to its following its friend, and that on its exit, it might fall in with and be worried or stolen by vermin, and in consequence the pair of geese were confined in one of the divisions adjacent to, but divided from, the pond, on February 26.

"Within this small inclosure, in the sheltered half of it, in one corner, stood a small hutch, in which the female on the 5th of March laid her first egg. Till within a few days of that period no alteration took place in their manners, but it then became obvious that the male was jealous of intruders, and would run at and seize them by the trowsers, giving pretty sharp blows with his wings; but this always ceased if he observed that the female was at some distance, when he would instantly rejoin her: his return to the female was always accompanied by great hurry and clamour, and much gesticulation up and down of his head, but not of the wings. Three other eggs followed on the 7th, 9th, and 11th of March. The eggs were white, and very large in proportion to the size of the bird, being, I should imagine, (for, having no proper scales at hand, I did not weigh or subtract any of them, hoping that more might be laid,) fully equal to those of the *Swan Goose* or *Anas cygnöides*. The goose also surprised us by the rapidity of her operations, for we were hardly aware of the fourth egg having been laid that morning, when it was evident that she had begun to sit. During the whole period of incubation there could not be a more attentive nurse, and indeed she could not well help it, for the male, if she seemed inclined to stay out longer than he thought right, appeared, by his motions, to be bent on driving her back, nor was he satisfied till he had accomplished his object, when he again resumed his usual position, with his body half in half out of the hutch and his head towards the female; but if any person crossed the yard of the division, he would immediately hurry after the intruder, though, if he found there was no intention of molesting the nursery, he seemed generally satisfied, and did not like to quit the sheltered part of the division. At night he constantly made room for himself by the female, the result of which was unfortunate towards the progeny.

"On the 12th of April the eggs began to chip, and on the 13th two goslings were excluded; but it was found that the mother had pushed from under her the other two eggs, which were consequently taken away and put under a hen, though, as one was very nearly

cold, little hopes of any success with that were entertained, and it was in fact never hatched, but probably died in consequence of the removal by the goose at an important moment. On the morning of the 14th it was ascertained that she or the male, who always now sat close beside her in the box, had killed one of the two she had at first hatched, for it was found dead and perfectly flat. The fourth egg, which was put under the hen, was assisted out of the shell, and appeared weakly from the first, and as its mother had lost one, we put it to her, in hopes it would do better than with its nurse. She took to it at first very well; but subsequently, both the parents beating it, it was returned to, and well cared for, apparently, by its nurse, but died on the 20th, having received some injury in one eye, either from the old ones, or perhaps from the hen scratching, and thereby hitting it. The remaining gosling is doing very well, and appears strong and lively, and the parents are extremely attentive to it; and I have little doubt but these birds may easily be established, (with a little care and attention,) and form an interesting addition to the stock of British domesticated fowls.

"In its general appearance, and its Quaker-like simplicity of plumage, it seems to approximate most to the family of the *Bernacles*; but it appears to have almost as little (if as much) partiality for the water as the *Cereopsis*."

The bird in question was named by Mr. Vigors at the Meeting of the Society on June 11, 1833. It may be characterized as follows:

Bernicla Sandvicensis. *Bern. brunneo-nigrescens, subtùs marginibusque plumarum pallidioribus; collo albescenti; guld, facie, capite supernè, lineâque longitudinali nuchali nigris; crisso albo.*

Long. tot. 24 unc.; *rostri*, rictus, 1¼; *alæ*, 13¾; *caudæ*, 5; *tarsi*, 2⅛.

Hab. in insulis Sandvicensibus, et in Owhyhee.

Mr. Owen read a Paper "On the young of the *Ornithorhynchus paradoxus*, Blum." It was illustrated by drawings of the young animal and of various details of its structure, both external and internal, derived chiefly from the examination of the individual recently presented to the Society by Dr. Weatherhead: this individual was exhibited, as was also a smaller specimen, forming part of Dr. Weatherhead's collection.

The circumstances which first attract attention in these singular objects are the total absence of hair; the soft and flexible condition of the mandibles; and the shortness of these parts in proportion to their breadth as compared with the adult. The tongue, which in the adult is lodged far back in the mouth, advances in the young animal close to the end of the lower mandible, and its breadth is only one line less in an individual four inches in length than it is in fully grown animals; a disproportionate development which is plainly indicative of the importance of the organ to the young *Ornithorhynchus* both in receiving and swallowing its food.

On the middle line of the upper mandible, and a little anterior to the nostrils, there is a minute fleshy eminence lodged in a slight de-

pression. In the smaller specimen this is surrounded by a discontinuous margin of the *epidermis*, with which substance, therefore,—and, probably, from its having been shed, of a thickened or horny consistence,—the caruncle had been covered. It is a structure of which the upper mandible of the adult presents no trace, and Mr. Owen regards it as analogous to the fœtal peculiarity of the horny knob on the upper mandible of the *Bird*. He does not, however, conceive that this remarkable example of the affinity of *Ornithorhynchus* to the feathered class is necessarily indicative of its having been applied, under the same circumstances, to overcome a resistance of precisely the same character as that for which it is designed in the young bird, since all the known history of the *ovum* of *Ornithorhynchus* points strongly to its ovoviviparous development.

The situation of the eyes is indicated by the convergence of a few wrinkles to one point; but the integument is continuous, and completely shrouds the eyeball. In the absence of vision in the young animal, strong evidence is afforded of its being confined to the nest, there to receive its nourishment from its dam; and this deduction is corroborated by the cartilaginous condition of the bones of the extremities, and by the general form of the body: the head and tail are closely approximated on the ventral aspect, requiring force to pull the body into a straight line; and the relative quantity of integument on the back and belly shows that the position necessary for progressive motion is unnatural at this stage of growth.

Mr. Owen describes other external appearances of the young *Ornithorhynchus*, and then enters at considerable length into its anatomy. The stomach is nearly as large in an individual four inches in length as in the adult animal. In this specimen it was found filled with coagulated milk, and no trace was visible, on the most careful examination, of worms or bread, on which, up to the time of his discovery of the mammary secretion, Lieut. the Hon. Lauderdale Maule had believed that this individual had been sustained. A portion of this coagulated substance was diluted with water, and examined under a high magnifying power in comparison with a portion of cow's milk coagulated by spirit, and similarly diluted. The ultimate globules of the *Ornithorhynchus's* milk were most distinctly perceptible, detaching themselves from the small coherent masses to form new groups: the corresponding globules of the cow's milk were of larger size. Minute transparent globules of oil were intermixed with the milk globules of the *Ornithorhynchus*. A drop of water being added to a little mucus, it instantly became opake; and its minutest divisions, under the microscope, were into transparent angular flakes, entirely different from the regularly formed granules of the milk of the *Ornithorhynchus*.

In passing in review the several *viscera* of the young *Ornithorhynchus*, Mr. Owen observed on various physiological deductions which might be drawn from them, and on the differences and resemblances borne by them to the same organs in the ordinary viviparous *Mammalia* and in the *Marsupiata*.

June 10, 1834.

Richard Owen, Esq., in the Chair.

A collection of objects of Zoology, made by Lieut. Allen, R.N., Corr. Memb. Z. S., during his late expedition up the Quorra into the interior of Africa, and presented by him to the Society, was exhibited. It was accompanied by another collection formed by the same gentleman at Fernando Po. They comprehended a previously undescribed species of *Plover*; an undescribed *Tetrodon* and a *Myletes*; specimens of *Polypterus Senegalus*, Cuv., and of a *Gymnarchus*, Ej.; and specimens of the *three-horned Chamæleon*, *Chamæleo Oweni*, Gray, and of a *Galago*, *Galago Senegalensis*, Geoff.; the two latter being from Fernando Po. They also included numerous *Insects* and *Arachnida*, both from the interior and from the island.

The bird was characterized by Mr. Gould:

Vanellus albiceps. *Van. capite, gulâ, alis in medio, uropygio, ventre, crissoque albis; faciei lateribus colloque purpurascenti-cinereis; scapularibus, remigibus prioribus tribus, caudæque dimidio apicali nigris.*

Long. tot. a rostri ad caudæ apicem, 13 unc., a rostri ad digitorum apicem, 15 unc.; *alæ*, 8; *caudæ*, 4; *tarsi*, 3; *femoris*, 3; *rostri*, a rictu ad apicem, $1\frac{1}{2}$.

Rostrum viridi-aurantiacum, ad apicem nigrum.

Between the eye and the upper mandible is situated a fleshy substance (resembling that of the *common Cock*) which hangs down at right angles with the beak; it is of an orange colour, and is narrow in form, being one inch and a half long and half an inch wide at the base, whence it gradually tapers throughout its whole length to the tip. The spur on the shoulders is strong and sharp, and is nearly an inch in length.

The *Fishes* were characterized by Mr. Bennett, who remarked on the complete analogy borne by these species of the rivers of Western Africa to some of those of the Nile. The form of *Myletes*, Cuv., to which Lieut. Allen's fish belongs, has hitherto been obtained only in Egypt; the genus *Polypterus*, Geoff., originally observed in the Nile, seems to be limited to that river and to Senegal; the genus *Gymnarchus*, Cuv., has previously been noticed only in the Nile; and the *Tetrodon* of this collection resembles in its markings that of Egypt. The new species may be thus characterized:

Myletes Allenii. *Myl. oblongus; pinnâ dorsali primâ supra ventrales positâ.*

D. 10, 0. A. 14. C. 19. P. 15. V. 9.

Specimen minimum, biunciale, a *Myl. Hasselquistii*, Cuv., (*Salmo Dentex*, Hass.,) differre videtur situ pinnæ dorsalis primæ.

TETRODON STRIGOSUS. *Tetr. dorso hispido, nigrescente; ventre lateribusque lævibus, his albo nigroque longitudinaliter lineatis, illo albo: pinnâ caudali quadratâ; pectoralibus latè rotundatis.*
D. 12. A. 9. P. 19. C. 8.
Tetr. lineato, Linn., (*Tetr. Physa*, Geoff.,) analogus videtur. Differt maximè ventre lateribusque haud armatis.

The exhibition was resumed of the new species of *Shells* collected by Mr. Cuming on the western coast of South America and among the islands of the South Pacific Ocean. Those brought on the present evening under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby. They belonged to the

Genus PETRICOLA.

PETRICOLA ELLIPTICA. *Pet. testâ ovato-ellipticâ, rufescenti-albidâ; radiatim costatâ, posticè lævi; lamellis concentricis sparsis; lunulâ anticâ distinctâ: long.* 1·2, *lat.* 0·7, *alt.* 0·9 *poll.*
Hab. ad Paytam.
Found in hard mud at low water.—G. B. S.

PETRICOLA OBLONGA. *Pet. testâ oblongo-ellipticâ, pallescente; radiatim costellatâ; lineâ dorsali posticâ rectiusculâ; lamellis concentricis pluribus, posticè lævigatis: long.* 0·9, *lat.* 0·5, *alt.* 0·7 *poll.*
Hab. ad oras Peruviæ. (Pacosmayo.)
Found in hard mud at low water.—G. B. S.

PETRICOLA SOLIDA. *Pet. testâ subgloboso-ellipticâ, pallescente, umbonibus extremitatibusque ambabus fusco-violaceis; radiatim costatâ, posticè lævigatâ; lineis incrementi nonnunquam sublamellosis, posticè magis eminentibus: long.* 1·3, *lat.* 0·8, *alt.* 1·0 *poll.*
Hab. ad oras Peruviæ. (Lambeyeque.)
Found in hard clay and stones at low water.—G. B. S.

PETRICOLA DISCORS. *Pet. testâ oblongo-ellipticâ, brunnescente; radiatim costellatâ, costellis acutis, posticè lævi; lineâ dorsali rectâ: long.* 0·8, *lat.* 0·3, *alt.* 0·55 *poll.*
Hab. ad littora Peruviæ. (Lambeyeque.)
Found in hard clay.—G. B. S.

PETRICOLA CONCINNA. *Pet. testâ oblongâ, pholadiformi, albicante; concentricè costellatâ; anticè rotundatâ, radiatim sulcatâ; dorso declivi, alterius valvæ lamellâ lævigatâ; posticè acuminatiusculâ, costellis concentricis lamellosis, confertis: long.* 0·8, *lat.* 0·35, *alt.* 0·35 *poll.*
Hab. ad Montem Christi.
Only one perfect pair and a single valve could be preserved.
Found in hard clay at low water.—G. B. S.

PETRICOLA DENTICULATA. *Pet. testâ oblongâ, pholadiformi, extùs pallescente, intùs ad extremitates fusco-nigricante tinctâ; anticè subrostratâ, posticè rotundatâ; lineâ dorsali rectiusculâ,*

ventrali subprominulâ; omninò radiatim sulcatâ et concentricè striatâ, striis anticè sublamellosis denticulatis: long. 1·3, *lat.* 0·6, *alt.* 0·6 *poll.*

Hab. ad Paytam Peruviæ.

Found in hard clay and stones at low water.—G. B. S.

Var. *abbreviata. Testâ breviore, striis sublamellosis denticulatis nullis: long.* 1·1, *lat.* 0·6, *alt.* 0·6 *poll.*

Hab. ad Insulam Platæ.

Found in stones at low water.—G. B. S.

Petricola rugosa. *Pet. testâ oblongâ, pholadiformi, albicante; radiatim costellatâ, tenuissimè concentricè striatâ; marginibus plerumque deformibus: long.* 1·4, *lat.* 0·55, *alt.* 0·7 *poll.*

Hab. ad oras Chilenses. (Conception.)

Found in *Balani* at from three to seven fathoms depth.—G. B. S.

Petricola tenuis. *Pet. testâ oblongâ, pholadiformi, tenui, albicante; radiatim costellatâ, costellis anticis posticisque fortioribus, omnibus striis exilissimis rugulosis decussatis; latere antico brevissimo: long.* 1·, *lat.* 0·5, *alt.* 0·55 *poll.*

Hab. ad littora Peruviæ. (Lambeyeque & Pacosmayo.)

Found in hard clay at low water.—G. B. S.

Petricola robusta. *Pet. testâ rotundato-subtrigonâ, subgibbosâ, solidiusculâ, extùs rufescente-fuscâ, intùs nigricante; radiatim costatâ, costis anticis tenuioribus confertioribus, posticis altioribus; interstitiis omnibus exilissimè decussatim striatis; latere antico rotundato, postico subacuminato; margine dorsali declivi: long.* 1·2, *lat.* 0·8, *alt.* 0·9 *poll.*

Hab. ad Panamam et ad Insulam Muerte dictam.

Found in rocks at the depth of from six to eleven fathoms.—G. B. S.

Petricola amygdalina. *Pet. testâ tenui, subhyalinâ, flavescente, obovatâ, lævi; latere antico brevissimo, angustiore; postico longiore, altiore, lamellis nonnullis elevatis distantibus ornato: long.* 1·3, *lat.* 0·5, *alt.* 0·8 *poll.*

Hab. ad Insulas Gallapagos.

Found in *Mother-of-Pearl Shells* in from three to six fathoms at Lord Hood's Island.—G. B. S.

The following "Description of a new Genus of *Gasteropoda*, by W. J. Broderip, Esq., Vice President of the Geological and Zoological Societies, F.R.S., &c." was read.

Scutella.

Testa Ancyliformis, intùs nitens. Apex posticus, medius, involutus. Impressiones musculares duæ, oblongo-ovatæ, laterales. Apertura magna, ovata.

Animal marinum.

This genus appears to be intermediate between *Ancylus* and *Patella*, while the aspect of the back sometimes reminds the observer of *Navicella* or *Crepidula*, Lam. Its place will most probably be among the *Cyclobranches* of Cuvier.

The two muscular impressions are situated on each side of the interior a little below the summit; while, in *Patella*, they nearly surround the internal circumference of the same part of the shell. The aperture is generally surrounded by a margin, and the *apex*, which in *Ancylus* is oblique, is central though posterior.

Mr. Cuming brought home the following species which I now proceed to describe.

SCUTELLA CRENULATA. *Scut. testâ subconicâ, cancellatâ, striis ab apice radiantibus exasperatis, albâ; intùs nitente; annulo marginali et margine crenulatis: long.* $\frac{6}{8}$, *lat.* $\frac{6}{8}$, *alt.* $\frac{4}{12}$ *poll.*

Hab. ad insulam Anäan (Chain Island).

This shell was found dead on coral sand on the beach of the island at a distance from any fresh water.

The marginal ring is very strongly developed, and the margin itself is not even; for when the shell is placed with the aperture downwards on a flat surface, it rests on the two ends, the sides of the margin forming each a low arch.

SCUTELLA IRIDESCENS. *Scut. testâ oblongo-ovatâ, complanatâ, minutissimè substriatâ, albo et roseo guttatim tessellatâ; intùs iridescente, margine interno albo, roseo maculato: long.* $\frac{3}{10}$, *lat.* $\frac{2}{10}$, *alt.* $\frac{1}{10}$ *poll.*

Hab. in Oceano Pacifico. (Grimwood's Island.)

This species was gathered by Mr. Cuming on the sands when the tide was out. There was no fresh water near, and though he obtained several individuals in the finest condition, the soft parts were gone, having evidently but lately fallen a prey to some carnivorous creature.

The shape of *Scut. iridescens* is very elegant, and the silvery iridescent nacre which lines the inside of the shell, contrasted as it is with the less brilliant but lively coloured margin, is almost dazzling. The back of the shell, which is very brittle, is mottled with white and rose colour. This disposition of its markings almost conveys the impression that the surface of the back is uneven; but with the exception of the very minute *striæ*, which are almost imperceptible, it is smooth.

SCUTELLA ROSEA. *Scut. testâ subconicâ, striatâ, albâ, lineis flammulisque roseis ornatâ; intùs nitente, interdum subiridescente: long.* $\frac{4}{8}$, *lat.* $\frac{3}{8}$, *alt.* $\frac{1}{12}$ *poll.*

OBS. Varietas forsan præcedentis.

Hab. cum præcedente.

The shape and many other points in this shell differ from those of *Scut. iridescens.* Externally it is much more conical and the *striæ* which run from the *apex* to the interior margin are direct and minute, while those which are lateral are much coarser and cross the somewhat elevated white parts obliquely: in *Scut. iridescens*, the exceedingly minute *striæ* radiate evenly from the *apex*. In *Scut. rosea* we lose the brilliancy of the internal nacre which distinguishes *Scut. iridescens*, and, in some individuals, it is entirely absent. Still the

former may only be a variety of the latter: both were found together.—W. J. B.

The *Shells* described in this communication were exhibited.

A note by Mr. G. Bennett, Corr. Memb. Z.S., was read. It gave an account of a *Pelican* now living in the grounds of Mr. Rawson at Dulwich, which wounded itself just above the breast to such an extent as to expose a spacious cavity. The bandages applied to the part were repeatedly torn off by the bird for the space of ten days, at the expiration of which the wound was healed. During the whole of the time the bird was in perfect health; eating fish and drinking as usual. The scar of the wound is still readily observable.

June 24, 1834.

Joseph Sabine, Esq., Vice President, in the Chair.

A letter was read, addressed to the Secretary by Keith E. Abbott, Esq., and dated Trebizond, Dec. 10, 1833. It referred principally to a collection of objects of Zoology formed by the writer in his neighbourhood and presented by him to the Society; and contained notices of other objects which he expects to be able to procure and transmit.

It also gave some account of "the famous honey of Trebizond, which is spoken of by Xenophon in his history of the retreat of the ten thousand Greeks, as having produced the effect of temporary madness or rather drunkenness on the whole of the army who ate of it, without, however, causing any serious consequences. It is supposed to be from the flowers of the *Azalea Pontica* that the *Bees* extract this honey, that plant growing in abundance in this part of the country, and its blossom emitting the most exquisite odour. The effect which it has on those who eat it is, as I have myself witnessed, precisely that which Xenophon describes: when taken in a small quantity it causes violent head-ache and vomiting, and the unhappy individual who has swallowed it resembles as much as possible a tipsy man; a larger dose will completely deprive him of all sense and power of moving for some hours afterwards." A portion of the honey accompanied the letter, and was exhibited.

The other objects presented by Mr. Keith Abbott were also exhibited.

At the request of the Chairman, Mr. Gould brought the *Birds* severally under the notice of the Meeting. Their principal interest rested on the assistance afforded by a collection formed in such a locality towards the determination of the geographical limits of certain species. Those among the *Birds* of Europe which are found in India also would, it is reasonable to anticipate, occur in the intermediate locality of Trebizond; but there are, among the Trebizond *Birds*, various European species which do not, as far as is yet known, occur in India, and the existence of which in so eastern a range is consequently interesting.

The following species are contained in the Trebizond collection presented to the Society by Mr. Keith Abbott. The remarks as to the localities inhabited by them respectively are by Mr. Gould.

1. *Aquila pennata.* Inhabiting eastern Europe and the adjacent parts of Asia and Africa.

2. *Buteo vulgaris*, Bechst. European; but not previously observed in Asia, although there is a nearly allied species in the Himalayan mountains. It has not yet been noticed in Africa.

3. *Circus æruginosus.* European, Indian, and African.

4. *Circus cyaneus.* European, African, Indian, Chinese, and North American specimens present no apparent specific differences.

5. *Circus cineraceus.* European, Indian, and African.

6. *Coracias garrula,* Linn. Inhabiting Europe, and abundantly Northern Africa; but hitherto not observed in India.

7. *Lanius Collurio,* Linn. Hitherto not obtained from India.

8. *Cinclus aquaticus,* Bechst. Hitherto not obtained from any locality so far to the east as Trebizond.

9. *Saxicola Œnanthe,* Bechst. Similarly circumstanced with the last.

10. *Parus major,* Linn. Also similarly circumstanced.

11. *Parus biarmicus,* Linn. European, and of Eastern Asia; but hitherto not observed in India.

12. *Pyrgita domestica,* Cuv. European, and obtained also from the Nubian mountains, as well as from the Himalayan and from other parts of India.

13. *Carduelis communis,* Cuv. Not hitherto observed in India.

14. *Emberiza miliaria,* Linn. Previously not obtained from any locality so far to the east as Trebizond.

15. *Sturnus vulgaris,* Linn. Common to the three continents of the old world.

16. *Troglodytes communis,* Cuv. Not hitherto observed in India.

17. *Tichodroma muraria,* Ill. Inhabiting the South of Europe, and found also in the Himalayan mountains, but not in the low lands of India.

18. *Otis Tetrax,* Linn. Inhabiting Europe and Africa, but not India.

19. *Œdicnemus crepitans,* Cuv. Similarly circumstanced with the last.

20. *Vanellus* ——— ? A young bird of a species apparently undescribed.

21. *Tringa variabilis,* Meyer. European and American; but hitherto not observed in India or Africa.

22. *Tringa pugnax,* Linn. European and Chinese.

23. *Totanus Glottis,* Bechst. Not hitherto observed in India or Africa.

24. *Botaurus stellaris.* Inhabiting the three continents of the old world.

25. *Sterna Hirundo,* Linn. Inhabiting Europe and America, but not observed in India.

26. *Sterna leucoptera,* Temm. Hitherto not observed out of Europe.

27. *Tadorna Vulpanser.* Similarly circumstanced with the preceding.

28. *Anas Boschas,* Linn. Almost universal.

Mr. Keith Abbott states that in addition to the above-named birds he has shot at Trebizond the following:

Falco rufipes, Bechst.
Oriolus Galbula, Linn.
Pastor roseus, Temm.
Pterocles arenarius, Temm.
Totanus Calidris, Bechst.

Totanus ochropus, Temm.
Anas rutila, Pall.

At the request of the Chairman Capt. Stoddart exhibited, with the permission of the Committee of the Naval and Military Museum, three *Birds* forming part of that collection. These were the *Columba spiloptera*, Vig.; the *Tetraogallus Nigellii*, Gray; and a new species of *Numida*, Linn., remarkable for the nakedness of the head and of the greater part of the neck; for the possession of long hackled feathers round the base of the neck and on the breast; and for the absence of caruncle on the head. The latter bird was accompanied by a detailed description by Major-General Hardwicke, which was read. In it the author pointed out the distinctive characters between this new species and the several previously described birds of the genus *Numida*. It may be characterized as follows:

NUMIDA VULTURINA. *Num. capite haud cristato collique parte anteriore nudis, occipite tantùm brunneo-plumoso; colli inferioris pectorisque plumis elongatis, lanceolatis, cæruleo nigroque variis, vittâ albâ mediand notatis; brunneo-nigra, albo guttata, fasciata, et lineata.*

Long. a rostri ad caudæ apicem, 18 unc.; ad digiti medii apicem, 24; *rostri*, 2 unc.

Rostrum brunneo-rubrum.

The specimen was brought by Capt. Probyn from the Western Coast of Africa. From the injured condition of the tail- and wing-feathers it is evident that it had been kept in confinement, and it has the appearance of having been under the influence of moulting when it died.

Mr. Sabine called the attention of the Meeting to a specimen of a hybrid *Bird* between the *common Pheasant, Phasianus Colchicus*, Linn., and the *grey hen, Tetrao Tetrix*, Linn., which was exhibited. Its legs were partially feathered; it bore, on the shoulder, a white spot; and its middle tail-feathers were lengthened. Mr. Sabine stated his intention of entering at some length into the history of hybrid and cross animals in connexion with his description of this bird. It was bred in Cornwall.

A specimen was exhibited of a *Bat* captured in New Holland by George Bennett, Esq., Corr. Memb. Z. S. It was brought under the notice of the Meeting by Mr. Gray, who regarded it as previously undescribed. He characterized it as

RHINOLOPHUS MEGAPHYLLUS. *Rhin. prosthemate posteriore ovato-lanceolato, faciem latitudine subæquante; pallidè murinus; patagiis subnudis pilis parcis albis subtùs prope corpus instructis.*

Long. *humeri*, 12½ lin.; *ulnæ*, 22½; *pollicis* cum ungue, 4; *tibiæ*, 9; *pedis*, 5; *calcaris*, 5; *caudæ*, 12.

Hab. in Novâ Hollandiâ, in cavernis prope fluvium Moorumbidjee dictum.

"The hinder nose-leaf is bristly, ovate-lanceolate, nearly as broad at the base as the face, with a rather produced tip; the *septum* of the nose is grooved; and the front leaf expanded with a quite free membranaceous edge. The head is elongated; the face depressed; the muzzle rounded; the ears are large, reaching when bent down rather beyond the tip of the nose. The fur is soft and of a pale mouse colour. The membranes are dark and naked, with rather distant whitish hair on the under side near the sides of the body.

"This *Bat* is very nearly allied to the true European *Rhinolophi*, and agrees with them in having four cells at the base of the hinder nose-leaf, and distant pectoral teats. It differs from them in having a much broader nose-leaf. The pits on the nose and the distant teats are not found in the other *Rhinolophi*, which have no hinder nose-leaf. These I propose to separate from the others under the name of *Hipposiderus*."

Mr. Gray also exhibited specimens of several *fresh-water Tortoises*. Of these he had recently received three from John Russel Reeves, Esq., of Canton, two of which he regarded as being previously undescribed. These he now characterized as follows:

EMYS NIGRICANS. *Em. testâ obovato-oblongâ, convexâ, nigro-fuscâ; subtricarinatâ, carinâ mediânâ obtusâ posticè continuâ, lateralibus indistinctis distantibus; scutellis obscurè radiatis, vertebralibus latis, anterioribus pentagonis; marginibus revolutis, posticâ subserratâ; infrà ad latera luteo maculatâ; sternum subconvexum, luteum, nigro variegatum.*

Long. *testæ*, 3 poll.

Hab. in Chinâ prope Canton.

This species is nearly allied in shape and colour to *Em. crassicollis*, Bell, but differs by the distance and indistinctness of its lateral keels, the convexity of its *sternum*, and the shape of its anterior vertebral plates. From *Em. Thurjii*, Gray, it is distinguished by its smaller size, the darkness of its colour, and the yellow spotting on the under side towards the edge of the shell.

The character is taken from a half-grown shell, from which the animal had been removed.

EMYS SINENSIS. *Em. testâ ovatâ, convexâ, subcarinatâ, olivaceâ nigro punctatâ; scutellis lævibus, luteo strigatis, vertebralibus latis hexagonis; marginibus integris, lateralibus subrevolutis; subtùs lutea, maculis oblongis olivaceis nigro marginatis ornatâ; sterni lateribus subcarinatis: collo lineis tenuissimis flavis notato.*

Long. *testæ*, 5 poll.

Hab. in Chinâ.

Allied to *Em. vulgaris*, Gray, but easily distinguished by the orange streaks in the centre of each discal shield. The under side of each of the marginal plates is marked near its hinder edge by a large oblong subquadrate olive spot, which is dotted and margined with black; the axillary and inguinal plates are marked with a black ring. The sternal plates are varied with brown.

A third undescribed species of *Emys*, of which a specimen was ex-

hibited by Mr. Gray, was brought from Dukhun by Lieut. Col. Sykes. It was characterized as the

Emys tentoria. *Em. testâ ovato-oblongâ, olivaceâ; dorso subangulariter compresso; scutellis subrugosis, vertebralium primo quadrato, reliquis elongato-hexagonis carinatis posticè productis (tertio præcipue) tuberculatis, marginalibus sternalibusque flavo carinatis; sterno subplano parum elevato.*

Hab. in Indiæ Orientalis regione Dukhun dictâ.

A fourth new species characterized by Mr. Gray was the

Emys platynota. *Em. testâ ovatâ, convexâ, fuscâ; dorso complanato; scutellorum vertebralium primo lato hexagono; margine subintegro; sterno plano; capite luteo variegato.*

Hab. in Indiâ Orientali.

Long. *testæ*, 9 poll.

The shell differs at first sight from all the other species of the genus by the flatness of the middle of the back, agreeing in that character with *Hydraspis planiceps*, Bell.

Mr. Gray also exhibited a specimen of the *fresh-water Tortoise* which he had described in his 'Synopsis Reptilium,' under the name of *Cistuda Bealii*, from a drawing communicated to him by Mr. Reeves. The examination of the specimen subsequently received from Mr. Reeves has enabled him to ascertain that it is really an *Emys*, which is easily distinguishable from all the other known species of that genus by the possession of two eye-like spots on each side of the nape: the shell is in form like that of *Em. vulgaris*, Gray; its colour is dull olive, speckled with black as in *Cistuda Europæa*, Gray. The name of the species will now necessarily be changed to *Emys Bealii*.

With these *Terrapins* Mr. Reeves had also transmitted to Mr. Gray three specimens of *Cistuda Amboinensis*, Gray, two of which, differing very much from each other and from the typical species in external form, were exhibited.

The first is extremely heavy and solid, with a very high back. It appears to have belonged to an old animal, as the plates are worn nearly smooth; its *sternum* is solid, flat, rounded before and behind, and the gular and anal pairs of plates are each united into one, leaving only a slight groove between the gular pair, showing where the division is generally placed.

The second is very much depressed, expanded on the sides, so as to be nearly orbicular, and is as wide as it is long. This extension is chiefly produced by the length of the costal plates, for the vertebral ones are very narrow, the front one being rather longer than broad, and much narrower behind. The *sternum* is very broad, flat, rounded before, and slightly keeled behind. All the plates are separate.

Colonel Sykes exhibited several pieces of the leaden pipes used for the supply of water to his house, which were perforated by having been gnawed by *Rats*.

The following notes, by Mr. Rymer Jones, of the dissection of a

Tiger, Felis Tigris, Linn., which recently died at the Society's Gardens, were read.

The stomach was simple, 18 inches in length, and 13 in its greatest circumference. It was seated in the left hypochondriac and in the umbilical regions. The *œsophagus* entered it at 3 inches from its cardiac end. Its mucous coat exhibited beautifully minute convoluted *plicæ*, perhaps from the arrangement of the gastric glands. The pyloric valve was little distinct.

The *omentum* was loaded with fat, and extended about two thirds of the distance to the *pubes*.

The *duodenum* was loosely attached by a broad mesentery, and measured in length about 12 inches: the length of the small intestines was 18 feet; their circumference was uniform throughout, 2½ inches. The *cæcum* was 2 inches long, and the same in circumference; its form being that which is met with in the *domestic Cat*. The length of the large intestines was 2 feet 10 inches; their circumference 4 inches. The muscular coat of the intestines was thick throughout their whole extent.

The liver, when spread out, resembled in form a vine-leaf, being divided by deep fissures reaching nearly to the hepatic vessels. It consisted of five lobes, the middle one of which was the largest; this presented below a deep fissure lodging the gall-bladder, which seemed to perforate the substance of the *viscus*, its *fundus* appearing in a hole on the convex surface. The length of the gall-bladder was 3 inches; its circumference 3½; its shape pyriform; and its neck convoluted as in the *domestic Cat*: the length of the neck, when unravelled, was 2½ inches. The bile entered the intestine at 4 inches from the *pylorus*, in common with the pancreatic secretion.

The *pancreas* was placed between the layers of *peritoneum* which formed the mesentery of the *duodenum*. It was of a long ribband-like form; 22 inches in length; 1 inch in its greatest and ⅝ths in its least breadth.

The spleen was loosely attached to the cardiac extremity of the stomach; of a flat, club-shaped form; and measured at its broadest part 3 inches in width, at its narrowest, 1 inch: its greatest thickness was ½ inch.

The lungs consisted of four lobes on the right and three on the left side.

The heart, of a pyramidal shape, and measuring 5 inches in length and 4 in breadth, was seated in the middle of the chest upon the *sternum*. The medium thickness of the muscular *parietes* of the right ventricle was ½ inch, of the left ventricle, ⅝ths. There were no traces of Eustachian valve, or of valve to the coronary vein. The *venæ cavæ* were two, one superior and one inferior. The primary branches of the *aorta* were also two.

The *trachea* consisted of forty-five rings, each forming rather more than a semicircle and being completed behind by a membrane which had the appearance of being muscular. It divided inferiorly into three branches, two of which passed to the right, and one to the left lung. The vocal ligaments were little prominent, and the *sacculus laryngis* was scarcely perceptible.

The *pharynx* was very muscular. The lining membrane of the *œsophagus* was disposed, in its upper third, in longitudinal *plicæ*, and throughout the rest of its extent in transverse folds resembling thickly placed *valvulæ conniventes*, becoming more numerous and smaller towards the stomach. The tonsils were exceedingly small, consisting of three or four little glandular patches under the mucous membrane. The *apex* of the *epiglottis* was obtusely pointed, and much curled towards the tongue: the *frænum epiglottidis* contained a powerful muscle serving to raise the *epiglottis:* the aryteno-epiglottidean ligament was so studded with mucous follicles as to represent glandular masses. The *dorsum* of the tongue, 10 inches in length, was thickly studded with retroverted spines, which towards the posterior part became converted into loose, triangular, fleshy appendages attached here and there to the surface.

The supra-renal glands were imbedded in fat and situated about 1 inch internal to the anterior extremity of the kidneys; their length was $2\frac{1}{4}$ inches, their breadth 1 inch. The kidneys were 4 inches in length, $2\frac{1}{2}$ in breadth, and $2\frac{1}{4}$ in thickness. They had the ordinary position and form, and exhibited on their surface the arborescent vessels observable in the *Felidæ* and *Viverridæ* generally. Their cortical and tubular portions were beautifully distinct; the medium thickness of the former being 3 lines. One *papilla* received the *tubuli uriniferi* of the whole kidney. The ureters terminated about 1 inch from the neck of the bladder. The urinary bladder, of an oval shape and 6 inches in length, was so small that without distension it would not have contained more than three or four ounces of fluid.

The prostate gland was $\frac{1}{4}$ of an inch in diameter and $\frac{1}{8}$ths in thickness; its form was circular, flattened from before backwards; it was placed behind the neck of the bladder, which it did not embrace. When cut into, its substance exhibited a rosy white colour. Its secretion resembled whey, and was poured into the *urethra* through several little orifices on each side of the *verumontanum*, which was a little eminence half an inch in length. The *vasa deferentia* terminated with the ducts of the prostate. Nothing analogous to *vesiculæ seminales* was observed. Cowper's glands were of the size of moderately large hazel-nuts, surrounded by a strong muscular envelope; on cutting through this case the glandular masses were found to be of the size of large peas, the remainder of the bulk being made up by the thickness of the muscular covering; their secretion was poured out by two ducts into the bulbous portion of the *urethra*. The *urethra* was $9\frac{1}{2}$ inches in length; its mucous lining presented no *lacunæ*, and was, when slit open, $\frac{5}{8}$ths of an inch broad at the *verumontanum*, $\frac{1}{2}$ at the membranous portion, $\frac{5}{8}$ at the bulb, and about $\frac{3}{8}$ths throughout the rest of its extent. The *penis* was $5\frac{1}{2}$ inches in length; the *glans* measuring $\frac{7}{8}$ths of an inch and being of a conical form ending in a sharp point; its surface was studded with minute *papillæ*, but was quite smooth; it inclosed an *ossiculum* $\frac{3}{4}$ of an inch in length.

The morbid appearances observed consisted of tubercular disease of the lungs, with rupture of the air cells in several places.

July 8, 1834.

William Yarrell, Esq., in the Chair.

A Letter was read addressed to the Secretary by M. Julien Desjardins, Corr. Memb. Z.S., dated Mauritius, January 10, 1834. It accompanied a collection of objects of Zoology, consisting chiefly of *Mammalia* and *Birds*, which were exhibited to the Meeting.

Mr. Gray exhibited various undescribed *Shells*, chiefly contained in his own collection. He characterized them as follows :

Unio Novæ Hollandiæ. *Un. testâ oblongo-elongatâ, gracili, solidâ ; anticè subcompressâ, lævi, rotundatâ, posticè subventricosâ, productâ, tuberculis magnis inæqualibus in seriebus curvatis radiantibus dispositis ; disco argenteo purpureo maculato, margine inferiore anticè crassissimâ ; dente cardinali anteriore parvo, parùm elevato, bituberculato ; dentibus posterioribus parvis, sub cartilaginis margine posteriore positis ; periostracâ crassâ, nigrâ.*

Hab. in Novæ Hollandiæ flumine Macquarrie, 70 circiter mill. ab ejus ostio.

Anodon Parishii. *An. testâ ovatâ, ventricosâ, solidâ ; anticè compressâ, subproductâ, subgracili, posticè expansâ, dilatatâ, rotundatâ ; margine cardinali rectâ, marginis inferioris dimidium longitudine æquante ; disco margaritaceo-albo ; periostracâ brunneo-nigrescente.*

Long. $7\frac{1}{2}$, alt. $3\frac{3}{4}$ poll.

Hab. in fluviis Paraguayæ.

The submarginal scar has an acute inflection under the hinder muscular one; and there are several small unequal scars behind that of the anterior adductor, as well as others, also unequal, under the *umbones*.

Anodon penicillatus. *An. testâ ovatâ, ventricosâ, crassâ, solidiusculâ, lævi ; anticè subcompressâ, rotundatâ, subgracili, posticè obliquè truncatâ ; ad marginem inferiorem posticè dilatato-rotundatâ ; disco albo, lineis angularibus brunneo-nigrescentibus prope cicatricem muscularem submarginalem notato ; periostracâ olivaceâ, lævi.*

Hab. in fluviis Paraguayæ.

The black lines of the inside of the shell are deposited along the upper edge of the submarginal muscular scar, and are gradually covered by the pearly layer deposited by the surface of the mantle over the scar ; the interior ones, being the most thickly covered, are the lightest in colour.

There is a two-lobed oblong muscular scar at the back of the lower edge of that of the anterior adductor. There is also a small deep scar under the front of the *umbones*.

ANODON PORCIFER. *An. testâ ovatâ, subventricosâ, crassâ, solidâ; anticè convexâ, rotundatâ, posticè productâ, porcâ angulari prope depressionem marginis posticæ; margine inferiore posticè subrotundatâ; disco nitidissimo, iridescenti-margaritaceo; periostracâ lævi, nigrâ viridi radiatim pictâ.*

Hab. in fluviis Paraguayæ.

There is only a single small ovate scar behind the lower end of that of the anterior adductor muscle; the part under the *umbones* is destitute of any.

Mr. Gray also exhibited specimens of several *Shells*, which he referred to a genus to be separated from *Helix* under the name of

NANINA.

Helix (pars), *Fér.* Vitrina (pars), *Quoy.*

Animal. Collare amplum, lobo dextro antico, antro respirationis in sinu posito, lobo sinistro postico lato expanso partem inferiorem testæ anfractûs ultimi tegente. Pes posticè truncatus, processu brevi conico dorsali supra truncaturam sito.

Testa depressa, perforata, polita; aperturâ lunatâ; peristomate tenui, edentulo, costâ internâ vel nullâ vel obsoletâ.

Indiæ, Chinæ, &c. Incolæ.

The shells comprised in this genus have been referred by M. De Férussac, and by most authors, to *Helix*: they are, however, more nearly related to *Vitrina*, with which M. Quoy intends placing them. But from the shell of *Vitrina* that of *Nanina* differs by being umbilicated, as well as by its smaller mouth. The lobation of the collar of the animal of *Nanina* distinguishes it also from *Vitrina*; the collar of the latter being entire, with a linear lobe on the side extending over the shell, and with the respiratory hole placed at its base.

The animal was first observed and figured by General Hardwicke in 1797.

The following species belong to the genus:

Nan. Nemorensis. Helix Nemorensis, *Müll.*
Nan. Javanensis. Hel. Javanensis, *Fér.*
Nan. exilis. Hel. exilis, *Müll.*
Nan. citrina. Hel. citrina, *Linn.*
Var. Hel. castanea, *Müll.*
Hel. Rapa, *Chemn.*
Nan. monozonalis. Hel. monozonalis, *Lam.*
Nan. Clairvillia. Hel. Clairvillia, *Fér.*
Nan. Vitrinoides. Hel. Vitrinoides, *Desh.*

NANINA JULIANA. *Nan. testâ solidâ, albâ; spirâ convexiusculâ;*

anfractibus depressis fasciâ mediâ brunneâ, ultimo anticè roseo fasciâ brunneâ axin cingente; peristomate rotundato, roseo.
Axis 11, diam. 20 lin.
Hab. in Ceylon.
This is one of the most beautiful of the genus. It approaches to *Nan. Javanensis*, but is thicker and larger.

NANINA STRIATA. *Nan. testâ solidiusculâ, subpellucidâ, albidâ; periostracâ tenui, olivaceâ; spirâ convexiusculâ, confertim transversè striatâ; anfractu ultimo anticè sublævi.*
Axis 9, diam. 15 lin.

Mr. Gray also exhibited an extensive series of *Shells* of the

Genus TEREBRA,

forming part of his own collection, and illustrating an account of many new species of that group which he presented.

He stated that the animal has a small foot, and a very long *proboscis*, at the base of which are seated two very small *tentacula*; the *operculum* is ovate, thin, horny, rounded behind, and rather tapering in front. The shell is covered by a very thin, pellucid, horn-coloured *periostraca*: it is usually white, variously streaked with brown, the streaks being often interrupted or broken into spots by the two spiral bands of the shell; one of these bands is placed near the spiral groove and the other on the middle of the whorl. The *apex* of the cavity is frequently filled up by a calcareous deposition; but this deposition has never been observed in *Ter. duplicata.*

The species may be divided into the following sections:

I. *Anfractibus sulco spirali cingulum posterius efformante; labio interiore tenui, concavo.*

OBS. Cingulum in junioribus magis conspicuum; labium internum in adultis rarissimè incrassatum.

Huic sectioni referendæ sunt
Ter. maculata, Lam.
Ter. tigrina.—Buccinum felinum, *Dillw.*
Ter. strigata, Sow.—Buccinum elongatum, *Wood, Suppl., f.* 22.
Ter. dimidiata, Lam.
Ter. striatula, Lam.
Ter. flammea, Lam.
Ter. muscaria, Lam.
Ter. subulata, Lam.
Ter. oculata, Lam.
Ter. crenulata, Lam.
Ter. corrugata, Lam.
Ter. duplicata, Lam.
Ter. pertusa, Sow. Born, Mus., t. 10. f. 13.
Ter. nubeculata, Sow.
Ter. myuros, Lam.

TEREBRA KNORRII. *Ter. testâ turritâ, subulatâ, acuminatâ, solidâ,*

politâ ; anfractibus planis, superioribus transversè sulcatis ; albâ brunneo interruptè trifasciatâ, fasciâ posteriore latâ maculis irregularibus, mediand angustâ, anteriore latiore maculis quadratis.

Axis $2\frac{1}{2}$, diam. $\frac{1}{2}$ unc.

Knorr, Deliciæ, vol. iii. t. 23. f. 3.

This species differs from *Ter. maculata* by being more slender, and by having the front of the whorls spotted. From *Ter. tigrina* it is distinguished by the marbling of the back of the whorls.

TEREBRA AFFINIS. *Ter. testâ turritâ, subulatâ, gracili, solidiusculâ ; anfractibus planis, transversè punctato-sulcatis, tenuiter spiraliter striatis, sulco spirali posteriore profundo ; aperturâ parvâ ; albâ nebulis lineisque spiralibus tribus vel quatuor saturatè rufis.*

Axis $1\frac{3}{4}$ unc.

Var. a. Purva. $1\frac{1}{4}$ unc.

b. Gracilior. 1 unc.

Allied to *Ter. nubeculata,* but smaller and more slender in its proportions.

TEREBRA RUDIS. *Ter. testâ turritâ, subulatâ, longitudinaliter plicatâ, spiraliter sulcatâ, cancellatâ ; anfractibus planis, cingulo posteriore convexiusculo, noduloso ; aperturâ mediocri ; pallidè flavâ, apice flavo.*

Axis $1\frac{1}{4}$ unc.

TEREBRA STRIATA. *Ter. testâ turritâ, subulatâ, gracillimâ, lævi, striis spiralibus distantibus ; anfractibus convexiusculis, sulcis curvatis distantibus, cingulo parum noduloso, superioribus profundè sulcatis cinguloque altero albo-noduloso, ultimo anticè striis spiralibus frequentibus ; aperturâ minimâ ; pallidè brunneâ.*

Axis $1\frac{1}{4}$ unc.

Resembles *Ter. affinis,* but the grooves are not punctatè.

TEREBRA UNDULATA. *Ter. testâ turritâ, subulatâ, gracillimâ, longitudinaliter undatâ, plicis angularibus lævibus, interstitiis linearibus rufis minutè punctatis ; anfractibus planiusculis, serie posticâ tuberculorum alborum majusculorum ; aperturâ parvâ ; pallidè flavâ.*

Axis $1\frac{1}{4}$ unc.

TEREBRA ALBA. *Ter. testâ turritâ, subulatâ, costis longitudinalibus spiralibusque frequentibus cancellatâ ; anfractibus planis, cingulo convexiusculo ; aperturâ parvâ ; albâ.*

Axis $\frac{3}{4}$ unc.

TEREBRA FLAVA. *Ter. testâ turritâ, ovato-subulatâ, longitudinaliter plicatâ plicis frequentibus æqualibus, striis spiralibus frequentibus punctatis ; anfractibus planis, cingulo convexiusculo ; pallidè flavâ.*

Axis 1 unc.

Var. Subulata, gracilis, costis longitudinalibus magis acutis.

TEREBRA PUNCTATOSTRIATA. *Ter. testâ turritâ, subulatâ, gracili, tenui, lævi, striis spiralibus distantibus punctatis, sulco spirali posteriore profundiore; anfractibus convexiusculis, ad suturam subcrenulatis, superioribus profundè punctatis; aperturâ angustâ; pallidè rufo-flavâ.*

Axis 2¾ unc.

TEREBRA GRACILIS. *Ter. testâ turritâ, lineari-subulatâ, pellucidâ, lævi, politâ, tenuiter spiraliter striatâ, plicis longitudinalibus distantibus; anfractibus subplanis, sulco posteriore profundo; cinereâ, anfractu ultimo antucè purpureo.*

Axis 1 unc.

Hab. ad Africæ oras.

TEREBRA TESSELLATA. *Ter. testâ turritâ, subulatâ, lævi; anfractibus planis, cingulo convexo noduloso albo, superioribus cingulo altero etiam noduloso; albâ brunneo interruptè trifasciatâ, maculis æqualibus quadratis.*

Axis (an junioris?) 1 unc.

This differs from all the other spotted species by the hinder belt being destitute of spots: the belt is also more nodulose than in the other species which are marked with spots.

TEREBRA VARIEGATA. *Ter. testâ turritâ, subulatâ, costis spiralibus vix prominentibus parùm nodulosis; anfractibus planis; albâ vel viridescente, seriebus tribus macularum brunnearum, maculis posterioribus quadratis inter cinguli nodulos compressos, cæteris oblongis transversis.*

Axis 2¼ unc.

Var. Pellucida, albida brunneo maculata, nodulis albis opacis.

TEREBRA PLICATA. *Ter. testâ turritâ, ovato-subulatâ, tenui, tenuiter spiraliter striatâ, costis longitudinalibus undatis albis subdistantibus; anfractibus planis, cingulo subelevato costato, suturâ crenulatâ; aperturâ mediocri; pallidè brunneâ.*

TEREBRA PUNCTATA. *Ter. testâ turritâ, subulatâ, gracili, acuminatâ, lævi; anfractibus planis, cingulo subangusto noduloso, superioribus cingulo altero etiam noduloso; aperturâ parvâ; pallidè flavescente, seriebus quatuor macularum brunnearum parvarum in strigas aliquando confluentium.*

TEREBRA LÆVIGATA. *Ter. testâ turritâ, subulatâ, gracillimâ, tenui, lævi, tenuissimè striatâ; anfractibus planis, in medio subcarinatis, cingulo lævi subelevato porcâ carinatâ utrinque aucto; anfractu ultimo haud carinato; aperturâ minimâ; albidâ.*

Axis 1¼ unc.

TEREBRA LÆVIS. *Ter. testâ turritâ, subulatâ, lævi; anfractibus subconcavis, in medio subcarinatis, superioribus transversè sul-*

catis, cingulo albo opaco angusto lævi sulco subprofundo anticè porcáque angustissimá carinatá posticè aucto ; albá flavescente variá.

Axis $1\frac{1}{4}$ unc.

II. *Anfractibus sulco spirali cingulum posterius efformante ; labio interiore incrassato subelevato.*

Obs. Quoad aperturam *Cerithia* quodammodo simulantes.

Huic sectioni referendæ sunt

Ter. cerithina, Lam.

Ter. tricolor, Sow.—*Ter. tæniolata*, Quoy, cui proprii sunt insuper sulcum cingulum efformantem sulci alii spirales duo.

Terebra anomala. *Ter. testá turritá, subulatá, lævi, politá ; anfractibus planis, sulco spirali postico profundo crenato, posticè longitudinaliter plicatis ; aperturá anticè subeffusá, posticè angustatá acutissimá, labio interiore præsertim posticè incrassato ; albá, fasciá latissimá subposticá alteráque angustiore anticá cinereis vel brunneis, apice acutissimo brunneo.*

Axis $1\frac{3}{4}$ unc.

Terebra ornata. *Ter. testá turritá, ovato-subulatá, solidá ; anfractibus planis, sulco spirali posteriore profundo, cingulo convexo subnoduloso ; aperturá ovatá, labio interiore subincrassato declivi ; albá, seriebus quatuor macularum parvarum brunnearum quadratarum, serierum intermediarum maculis nonnunquam in strigas oblongas confluentibus.*

Axis 4 unc.

Terebra cancellata. *Ter. testá turritá, subulatá, sulcis spiralibus frequentibus profundis, plicis longitudinalibus æqualibus subconfertis ; anfractibus planis, sulco posteriore profundo ; aperturá subparvá, labio interiore incrassato elevato ; pallidè cinereá.*

Axis $1\frac{3}{4}$ unc.

Terebra straminea. *Ter. testá turritá, subulatá, subrugosá, spiraliter confertim sulcatá ; anfractibus subplanis, cingulo postico subelevato obliquè transversim sulcato alteroque nodulorum magis rotundatorum ; aperturá parvá, labio interiore posticè subcalloso ; flavescente.*

Axis $2\frac{1}{4}$ unc.

Terebra triseriata. *Ter. testá turritá, subulatá, gracillimá, subcylindricá, costis spiralibus subgranulosis confertis ; cingulo postico convexo noduloso, ante hoc altero subangustiore, et tertio minore pone ; aperturá minimá, labio interiore subincrassato ; pallidè flavescente.*

Axis $1\frac{3}{4}$ unc.

III. *Anfractibus sulco postico nullo.*

* *Labio interiore tenui.*

a. *Testâ elongatâ, gracili.*

Ter. lanceolata, Lam.
Ter. strigillata, Lam.
Ter. hastata, Lam.—Ter. costata, *Mœnch.*

TEREBRA ALBIDA. *Ter. testâ turritâ, ovato-subulatâ, acuminatâ, lævi; anfractibus planis, suturâ subimpressâ; pallidè flavescenti-albidâ.*
Axis 1¼ unc.

b. *Testâ brevi.*

Ter. aciculata.—Buccinum aciculatum, *Lam.*
Ter. polita.—Buccinum politum, *Lam.*

** *Labio interiore incrassato, elevato; testâ brevi.*

OBS. *Nassæ* quodammodo affines; sed neque labium internum dilatatum, nec externum incrassatum.
Ter. lineolata, Sow. Wood, Suppl., f. 22.
Ter. Tahitensis.—Buccinum Tahitense, *Gmel.*—Buccinum Australe, *Sow.*

Mr. Gray concluded by stating that specimens of all the species of *Terebra* enumerated by him are contained either in his private collection ~~or in the~~ British Museum.

Mr. Gray also exhibited an extensive series of *land* and *fresh-water Shells* which he regarded as hitherto undescribed. He characterized them as follows:

HELICOPHANTA FALCONERI, Reeve, MSS. *Hel. testâ ovatâ, tenui, vesiculari, profundè umbilicatâ; pallidè brunneâ, fasciis maculisque prope suturam saturatioribus; apice obtuso; anfractibus quatuor convexis, ultimo anticè declivi; umbilico magno, compresso; peristomate simplici, fauce albâ.*
Hab. in Novâ Hollandiâ.
This species is very nearly allied to *Hel. magnifica,* Fér., Moll., t. 10. f. 10, but differs in being much more umbilicated and ventricose, having a greater number of whorls, and being deeper coloured.

ZONITES WALKERI. *Zon. testâ depressâ, umbilicatâ, politâ, flavo-brunneâ; anfractibus 3½ citissimè majoribus, ventricosis, tenuiter concentricè striatis; dorso striis densis spiralibus; umbilico profundo; aperturâ magnâ, fauce albidâ.*
Axis 8 lin., diam. 1 unc.
Hab. in Novâ Hollandiâ, 70 millia passuum circiter a Fort Macquarrie.
This species is allied in form and size to *Zon. fuliginosus* of North

America, but differs in the back of the whorls being cancellately striated, and in the mouth being larger and more rounded.

Bulimus atomatus. *Bul. testâ ovatâ, acutâ, tenui, imperforatâ, pallidè brunneâ, punctis brunneis triangularibus sæpe strigosis notatâ; spirâ obtusè conicâ; anfractibus paulum elevatis; aperturâ elongatâ, tertiâ parte spiram superante; peristomate simplici; labio interno subreflexo; columellâ anticè rectâ; fauce albo.*

Axis 2¼, diam. 1¼ unc.

Hab. in Novâ Hollandiâ, 70 millia passuum circiter a Fort Macquarrie.

The three following species were discovered in the interior of New Holland by Mr. Allan Cunningham, and two of them have been figured, but not described, in Mr. Griffith's Edition of Cuvier's 'Animal Kingdom.'

Helix Cunninghami, Gray, in Griff. Anim. Kingd., t. 6. f. 4. *Hel. testâ valdè depressâ, albo brunneoque fasciatâ; spirâ planiusculâ; anfractibus paulum convexis, ultimo depressissimo, rotundato; umbilico latissimo anfractus omnes monstrante; aperturâ oblongâ, deflexâ; labio externo reflexo, subincrassato, dextrorsum rotundato, sinistrorsum complanato recto; fauce purpurascente.*

Axis 11, diam. 29, aperturæ diam. 12¼ lin.

Hab. in Novâ Hollandiâ, in sylvis densis obscuris apud Hay's Peak.

This species varies in the size of its brown bands, some individuals being nearly white with a few narrow brown bands in the centre of the last whorl; while in others the bands spread over the whole upper part and the upper half of the lower portion of that whorl. It is allied to *Hel. sepulchralis* in form, but is larger and has no keeled band round the *umbilicus*, which is also wider; and to *Hel. Radama*, Less., Cent. Zool., t. 9, from Madagascar, which differs from it in being thinner, of a uniform brown colour, and having a larger mouth, the front of the whorls near the *umbilicus* appearing also to be constantly white.

Helix Fraseri, Gray, in Griff. Anim. Kingd., t. 6. f. 6. *Hel. testâ globosâ, imperforatâ, pallidè brunneâ fasciis plurimis angustis linearibus spiralibus brunneis; spirâ convexâ, hemisphæricâ; anfractibus rotundatis, ultimo maximo ventricoso; aperturâ oblongâ, semilunatâ; labio externo rotundato, reflexo, subincrassato, purpurascenti-brunneo; interno vix incrassato.*

Axis 19, diam. 24, aperturæ lat. 12, long. 14 lin.

Hab. in Novâ Hollandiâ.

This species most nearly resembles *Hel. crispata*, but is larger and more globular; the whorls are more ventricose, and the bands continuous: it is covered with a thin greenish horny *periostraca*.

Helix Jacksoniensis. *Hel. testâ depressâ, pallidè brunneâ, politâ, concentricè substriatâ; spirâ convexâ; anfractibus planis, ultimo rotundato, depresso; aperturâ lunatâ; fauce albidâ; labio externo tenui.*

Axis 3, diam. 3½ lin.

Hab. in Novâ Hollandiâ, prope Port Jackson.

The shell resembles *Hel. nitida* in form, but is imperforate.

To Mr. Cunningham Mr. Gray was also indebted for three species discovered by him in Phillip's Island, a small island about 5 miles South of Norfolk Island. These he characterized as follows:

Helix Campbellii. *Hel. testâ conicâ, subglobosâ, depressiusculâ, imperforatâ, subrugosâ, rugis transversis densis, striisque spiralibus indistinctis; pallidè brunneâ, fasciâ latâ subposticâ pallidâ; spirâ conicâ, convexâ; anfractibus planiusculis, ultimo carinâ medianâ indistinctâ, anticè lævi; peristomate tenui, acuto, juxta axin subincrassato, albo.*

Axis 5½, diam. 8½ lin.

Hab. in Insulâ Phillip Maris Pacifici.

Helix Phillipii. *Hel. testâ subglobosâ, depressâ, imperforatâ, pallidè corneâ, pellucidâ, maculis viridibus sparsis irregularibus; transversim subdistanter rugosâ; spirâ convexâ; anfractibus planiusculis, ultimo parum ventricoso, rotundato, fascid posticâ submedianâ angustâ albâ; aperturâ semilunatâ; labio tenui, supra axin subincrassato, albo.*

Axis 5, diam. 8 lin.

Hab. in Insulâ Phillip.

Jun. *spirâ planiusculâ, anfractu ultimo subcarinato.*

This species is allied to the former in the shape of the mouth and structure of the lip; but the whorls are angular in the young state only, as in most of the *Helices* of Lamarck.

Carocolla Stoddartii. *Car. testâ conico-subglobosâ, depressiusculâ, tenuissimè rugosâ, brunneâ pallidè fasciatâ vel flavescente fasciis saturatioribus, imperforatâ; spirâ conicâ, convexâ; anfractibus planiusculis, ultimo indistinctè in medio carinato; peristomate tenui, juxta axin subincrassato, acuto.*

Axis 4, diam. 7 lin.

Var. 1. *Testâ saturatè brunneâ, fasciâ prope suturam latiusculâ.*

Var. 2. *Testâ supra brunneâ, infra flavescente, fasciâ pone carinam latâ brunneâ.*

Var. 3. *Testâ pallidè flavâ, fasciâ ante carinam latâ brunneâ.*

Var. 4. *Testâ pallidè flavâ supra brunneo subnebulosâ.*

Hab. in Insulâ Phillip.

The remaining species were described from specimens in Mr. Gray's own collection; they were characterized as follows:

Bulimus rhodostomus. *Bul. testâ ovatâ, perforatâ, solidâ,*

striatâ, albidâ roseo marmoratâ, periostracâ tenui olivaceâ; suturâ tenuiter crenulatâ; anfractibus fasciis duabus posticis obscuris latis; fauce roseâ; peristomate paulum incrassato; axi anticè saturatè brunneâ.

Axis 1¼, diam. ⅜ unc.

Hab. in Novâ Hollandiâ?

Bulimus crassilabris. *Bul. testâ ovatâ, acutâ, lævi, politâ, albâ brunneo parum tinctâ; spirâ conicâ, apice obtuso subproducto; anfractibus convexiusculis; aperturâ parvâ; labio externo subincrassato, interno incrassato, calloso, subrepando, perforationem parvam linearem fere tegente.*

Diam. ⅜ unc.

Bulimus apiculatus. *Bul. testâ ovatâ, elongatâ, perforatâ, lævi, albâ, strigis brunneis obliquis; spirâ conicâ, apice acutiusculo, saturatè brunneo; ultimo anfractu obsoletissimè albo carinato; aperturâ spirâ breviore, subangustâ; labio externo simplice, interno tenui, ante columellam parum reflexo, saturatè brunneo.*

Axis 10, diam. 4¼ lin.

This shell resembles *Bul. Kingii*, but is more solid and has a dark *apex* and pillar.

Bulimus Pullus. *Bul. testâ ovatâ, subcylindricâ, subimperforatâ, pellucidâ, albidâ, tenuiter striatâ; apice conico, obtusiusculo, pellucido; anfractibus novem vel decem vix elevatis; aperturâ parvâ, subrotundâ, semilunatâ; labiis subincrassatis rotundatis.*

Axis 8, diam. 2½ lin.

Hab. "in Indiâ Orientali ad ripas Gangis," Dr. Royle.

It varies greatly in size, and is often much smaller.

Bulimus Burchellii. *Bul. testâ ovato-lanceolatâ, imperforatâ, albâ, rugosiusculâ; apice obtuso, subattenuato; anfractibus convexiusculis; aperturâ ovatâ, spirâ tertiâ parte breviore; labiis parum incrassatis, albis.*

Axis 7, diam. 2½ lin.

Jun. *anfractibus angulariter subcarinatis, labiis tenuibus.*

Hab. in Africâ Australi, prope Lattakoo.

The specimens were strung together to form a necklace.

Lignus tenuis. *Lign. testâ ovatâ, subturritâ, tenuissimâ, albâ, pellucidâ, periostracâ tenui glabrâ flavâ indutâ; spirâ conicâ, apice obtuso, subproducto; anfractibus convexis, ultimo obsoletissimè carinato, anticè purpurascenti-brunneo; columellâ antice tenui, rectiusculâ.*

Axis 15, diam. 9 lin.

Hab. in Africâ?

This shell is in shape most like the young of *Hel. flammigera*, Fér., Moll., t. 118, f. 5; but differs in colour, in tenuity, and in the shape of the front of the pillar-lip.

Helix Codringtonii. *Hel. testâ orbiculari, conicâ, imperforatâ, solidiusculâ, pallidâ irregulariter densè albo lineatâ; spirâ convexâ; anfractibus rotundatis, ultimo depressiusculo; aperturâ lunatâ, ovatâ, obliquâ; labio externo reflexo, albo, anticè planiusculo, declivi, interno tenui.*

Axis 15, diam. 20 lin.

Hab. "in Græciâ apud Navarino," S. P. Pratt, Esq.

Helix fidelis. *Hel. testâ depressiusculâ, latè perforatâ, pallidè brunneâ, profundè striatâ, periostracâ tenui pallidâ indutâ; spirâ conicâ, convexâ; anfractibus elevatiusculis, citissimè majoribus, fasciâ suturali notatis, ultimo rotundato anticè brunneo; aperturâ obliquâ; peristomate albo, subreflexo; fauce posticè albâ, anticè brunneâ.*

Axis 11, diam. 15 lin.

Var. *spirâ paulo depressiore.*

Helix Cracherodii. *Hel. testâ depressâ, tenui, latè perforatâ, striatâ, pellucidâ, albidâ præsertim ad spiram rufescenti-brunneo variegatâ; spirâ convexâ; anfractibus elevatiusculis, ultimo obsoletissimè carinato, fasciâ medianâ albâ; peristomate simplici; fauce brunneâ, maculâ albâ in labii medio.*

Axis 9, diam. 14 lin.

Hab. in Indiâ Orientali?

This is perhaps a *Nanina*, but it is more largely perforated than any of that genus of which I have seen the animal.

Helix Maderaspatana. *Hel. testâ globosâ, depressâ, perforatâ, pallidè brunneâ albido marmoratâ, substriatâ; spirâ elevatiusculâ; anfractibus rotundatis, cito majoribus, ultimo ventricoso, fasciâ albidâ submedianâ, anticè pallidiore; aperturâ semilunatâ, majusculâ; peristomate subincrassato, albido; perforatione profundâ, angustâ.*

Axis 9, diam. 13 lin.

Hab. "in Indiâ Orientali, 200 millia passuum circiter a Maderaspatanâ versus Africum," J. W. Heath, Esq.

While on the subject of Indian *Helices*, Mr. Gray remarked that *Hel. ligulata*, Fér., Moll., t. 31. f. 2, 3, is a common Indian species; and that *Hel. cicatricosa*, Chemn., vol. ix. t. 109. f. 913, is found in the more elevated regions of India, and has lately been described by Mr. Lea under the name of *Hel. Himalayana*.

Carocolla Novæ Hollandiæ. *Car. testâ orbiculari, conicâ, subdepressâ, subperforatâ, tenui, lævi, tenuissimè elevato-punctatâ, pallidè fulvâ; spirâ conicâ, convexâ; anfractibus sex distinctis, fasciâ brunneâ submedianâ; ultimo pallidè angulariter carinato, anticè convexo, circum axin saturatè brunneo; aperturâ subangulatâ; peristomate pone carinam subinflexo, subincrassato, reflexo, nigro; labio interno tenui, brunneo; fauce albidâ, fasciâ pellucidâ.*

Axis 9, diam. 14 lin.

Hab. in Novâ Hollandiâ, 200 millia passuum ab Ostio Fluvii Macquarrie.

Helix granifera. *Hel. testâ conicâ, orbiculari, depressiusculâ, imperforatâ, pallidè brunneâ, granis minutis albis aspersâ; spirâ convexâ, obtusâ; anfractibus vix elevatis, ultimo acutè carinato, anticè convexiusculo; aperturâ ovato-trigonâ; labiis incrassatis, reflexis, albis, externo anticè recto, inæqualiter* 3*-dentato, dentibus duobus internis obliquis approximatis, externo majore distante compresso.*

Axis 7, diam. 11 lin.

Hab. vulgaris in Indiâ Occidentali.

Helix pachygastra. *Hel. testâ orbiculari, depressâ, imperforatâ, badiâ, lævi, tenuiter striatâ; spirâ convexiusculâ; anfractibus planis, ultimo ventricoso, rotundato, obsoletissimè in medio carinato; aperturâ subtrigonâ; labiis incrassatis callosis, externo anticè intùs dente parvo extus plicâ majore instructo.*

Axis 4½, diam. 8 lin.

Mr. Gray observed on this character that he calls that a tooth which is solid, and that a plait which is marked externally by a corresponding groove. Thus the *Chondri* of Cuvier have toothed mouths, and the *Pupæ* and *Clausiliæ* plaited.

The exhibition was resumed of the new species of *Shells* contained in the collection formed by Mr. Cuming, chiefly on the Western Coast of South America and among the islands of the South Pacific Ocean. Those brought on the present occasion under the notice of the Society were accompanied by observations and characters by Mr. G. B. Sowerby, and comprised the following species of the

Genus Pholas.

"The utmost caution is necessary in the examination and description of the various sorts of *Pholades*, on account of the extraordinary difference in the form of the same species in different stages of growth. The addition of accessory valves also, as they increase in age, must be carefully observed, in order to guard against too implicit a confidence in their number and form. And though I might be considered guilty of asserting a truism by stating that the difference in size of different individuals of the same species may and sometimes does mislead the tyro in the science of Malacology; lest such difference should mislead the adept also, let him too proceed cautiously, and when he finds a fully grown shell of half an inch in length agreeing perfectly in proportions and characters with another of two inches long, let him not conclude that it is a distinct species, but if he can find no other difference except that which exists in their dimensions, let him consider the one a giant, the other a dwarf. Let it be remembered that among the *Cypræa* it is not un-

common to observe young shells of three inches in length, and fully grown ones of the same sort only one inch in length; likewise, of the well-known British *Pholades* there are individuals quite in a young state of two inches in length, and perfectly formed shells of the same species not more than half an inch long. For an instance in demonstration I need only refer to the *Phol. papyraceus*, so abundant at Torquay, of which the young shells have been considered by many as a distinct species and have been named by Dr. Turton *Phol. lamellosus*. This varies in size exceedingly, so that it may be obtained both in an incomplete and young state and in a fully grown condition from half an inch to nearly two inches in length. The circumstance of its having rarely occurred in an intermediate state of growth, when the anterior opening is only partly closed and the accessory valves only partly formed, led Dr. Turton and others to persist in regarding the young and old as two distinct species. Other similar instances will be shown in the course of the present concise account of some hitherto undescribed species of the same genus brought to England by Mr. Cuming."—G. B. S.

PHOLAS CRUCIGER. *Phol. testâ oblongâ, scabrâ, marginibus anticâ ventrali apertâ, anticâ dorsali reflexâ; valvâ accessoriâ solitariâ, posticâ, transversâ: long.* 1·7, *lat.* 0·65, *alt.* 0·7 *poll.*

Hab. ad oras Columbiæ Occidentalis et Americæ Centralis.

In this species the anterior ventral opening is somewhat more closed in some specimens than in others. It appears to form only one accessory valve, which crosses the valves behind the *umbones*: the dorsal margins are closed by *epidermis*.

Found in three localities; namely, in soft sandstone at half-tide on the shores of the island of Puna in the Gulf of Guayaquil; in soft stone at low water in the Bay of Caraccas; both in West Columbia; and in hard clay at a depth of thirteen fathoms in the Gulf of Nocoiyo in Central America.—G. B. S.

PHOLAS CHILOENSIS, var. parva. *Phol. Chiloensis, testâ parvâ, tenuiore: long.* 1·6, *lat.* 0·6, *alt.* 0·6 *poll.*

Found in soft stone at a depth of seventeen fathoms at the island of Plata, West Columbia.—G. B. S.

PHOLAS SUBTRUNCATA. *Phol. testâ ovato-oblongâ, scabrâ, posticè rotundato-subtruncatâ, lævi; margine anticâ ventrali hiatu maximo; valvâ accessoriâ solitariâ, anticâ, lanceolatâ, anticè acuminatâ: long.* 1·9, *lat.* 0·9, *alt.* 0·8 *poll.*

Hab. ad Insulam Platæ, Columbiæ Occidentalis.

Found in soft stone at a depth of seventeen fathoms. Very like our British *Pholas parva*.—G. B. S.

PHOLAS CALVA, Gray, MSS. *Phol. testâ ovatâ, anticè retusâ, posticè subacuminatâ, hiante; valvis singulis in areas tres divisis; areis, anticâ scabriusculâ; intermediâ epidermide corneâ lon-*

gitudinaliter striatâ indutâ; posticâ squamis corneis, posticè rotundatis, imbricatis, lævibus, gradatim minoribus, ornatâ; parte anticâ ventrali clausâ lævigatâ; valvâ accessoriâ anticâ dorsali maximâ, lævi, quinquelobatâ; marginibus dorsali ventralique posticis epidermide corneo-testaceâ obtectis: long. 2·, *lat.* 1·, *alt.* 1·1 *poll.*

Hab. ad Sinum Panamæ.

Obs. Testæ junioris parte anticâ ventrali apertâ, hiatu maximo; valvâ accessoriâ nullâ, marginibus dorsali ventralique posticis haud obtectis: long. 1·5, lat. 0·7, alt. 0·7 poll.

This is another remarkable instance of extreme dissimilarity between the young and fully grown shells; the large anterior ventral opening, so conspicuous in the young shell, being completely closed up in the fully grown individual; the enormous accessory valve covering the *umbones* and spreading widely over the anterior dorsal parts of the shell is also a remarkable addition formed at its full growth.

Found in *Spondyli*, at a depth of twelve fathoms, at the Isle of Perico in the Bay of Panama: the young shells have also been taken out of hard stones at low water in the same place.—G. B. S.

Pholas calva, var. nana. *Phol. calva, testâ nanâ: long.* 0·5, *lat.* 0·25, *alt.* 0·25 *poll.*

Hab. ad Panamam.

Found in hard stones at low water.—G. B. S.

Pholas acuminata. *Phol. testâ ovatâ, anticè rotundatâ, posticè acuminatâ, hiatu minimo; valvis singulis in areas tres divisis; areis, anticâ scabriusculâ; intermediâ epidermide corneâ longitudinaliter striatâ indutâ; posticâ squamis corneis, posticè acuminatis, imbricatis, lævibus, gradatim minoribus, ornatâ; parte anticâ ventrali clausâ, lævigatâ; valvâ accessoriâ anticâ dorsali magnâ, subtetragonâ, anticè unilobatâ; marginibus ventrali dorsalique epidermide corneo-testaceâ obtectis, tegmine dorsali anticè inflato: long.* 2·, *lat.* 0·9, *alt.* 0·9 *poll.*

Hab. ad Panamam.

Found in limestone at low water. The same sort of difference is observable between the young and fully grown shells in this species as in *Phol. calva*.

One specimen of this shell in Mr. Cuming's collection merits particular notice. It demonstrates a fact of considerable importance to geologists. It is in argillaceous limestone, very much resembling lias, and in forming the cavity in which it resides, it has, by such chemical process as frequently takes place, absorbed a much greater quantity of the rock than could be retained or converted; this is again deposited at the upper part of the cavity; and thus the rock is recomposed.—G. B. S.

Pholas melanura. *Phol. testâ ovatâ, anticè rotundatâ, posticè obtusâ, hiatu mediocri; valvis fasciâ impressâ transversim sul-*

catâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali radiatim corrugatâ, parte anticâ ventrali tenuiore, inflatâ; posticâ longitudinaliter striatâ, posticè epidermide nigrâ indutâ: margine dorsali anticâ inflato-reflexâ; valvis accessoriis duabus, posticis, subtrigonis, supernè fornicatis: long. 1·4, *lat.* 0·75, *alt.* 0·8 *poll.*

Hab. ad Montem Christi, Columbiæ Occidentalis.

Found in hard clay at low water.—G. B. S.

Pholas tubifera. *Phol. testâ oblongâ, posticè subattenuatâ, subtruncatâ, anticè rotundatâ; valvis fasciâ transversim sulcatâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali radiatim sulcatâ, decussatâ, parte anticâ ventrali tenuiore, subinflatâ; posticâ longitudinaliter striatâ; margine dorsali anticâ reflexo-inflatâ; valvis accessoriis dorsalibus duabus, posticis, subovatis; epidermide posticè in duas valvas planulatas decurrente, deinde tubulum calcareum ad extremam partem conspicuum: long.* 1·3, *lat.* 0·5, *alt.* 0·45 *poll.*

Hab. ad Sinum Caraccensem, Columbiæ Occidentalis.

Obs. Testa intermediæ ætatis tubulum caret.

Found in decayed wood dredged up at ten fathoms' depth.

A marked resemblance may be easily traced between this and the *Pholas papyracea* of Southern Devonshire.

Pholas Quadra. *Phol. testâ oblongâ, tenuissimâ, anticè inflatâ, rotundatâ, posticè subattenuatâ, subtruncatâ; valvis fasciâ transversim sulcatâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali concentricè lamellosâ, lamellis squamuliferis, parte anticâ ventrali tenuiore, inflatâ, radiatim obsoletè costellatâ; posticâ longitudinaliter sulcatâ; margine dorsali anticâ concavo-reflexâ, musculum recipiente, epidermide obtectâ; epidermide posticè in vesiculas quatuor, undique duas, decurrente; deinde tubulum calcareum ad extremam partem conspicuum: long.* 1·, *lat.* 0·3, *alt.* 0·3 *poll.*

Hab. ad Montem Christi, Columbiæ Occidentalis.

Found in stones at low water.—G. B. S.

Pholas Quadra, var. *Phol. Quadra, testâ parvâ, margine dorsali anticâ inflato-reflexâ.*

Hab. ad Montem Christi.

This variety differs only in the circumstance of the *epidermis* which covered the muscle contained in the concave reflected anterior dorsal margin being changed into calcareous matter. The young shells are without any tube or other accessory parts.—G. B. S.

Pholas curta. *Phol. testâ ovali, posticè acuminatâ, anticè rotundatâ; valvis fasciâ transversim sulcatâ dimidiatis; areis, anticâ obliquè divisâ, parte posticâ dorsali longitudinaliter striatâ et radiatim corrugatâ, parte anticâ ventrali tenuiore, subinflatâ;*

posticâ concentricè striatâ; valvâ accessoriâ solitariâ, dorsali, anticâ, utrâque extremitate subacuminatâ, medio coarctatâ; marginibus ventrali dorsalique epidermide corneo-testaceâ obtectis, parte dorsali posticè furcatâ: long. 0·6, *lat.* 0·3, *alt.* 0·35 *poll.*

Hab. ad littora Columbiæ Occidentalis.

From the Isle of Lions, Province of Veragua, in soft stone at low water.—G. B. S.

Pholas cornea. *Phol. testâ oblongâ, tenui, anticè rotundatâ, posticè obtusâ; epidermide tenui corneâ indutâ; valvis fasciâ dimidiatis; areâ anticâ obliquè divisâ, parte posticâ dorsali rugosiusculâ, parte anticâ lævi; areâ posticâ majore, lævigatâ; valvis accessoriis tribus, anticâ dorsali rotundatâ, posticè subemarginatâ, anticè subacuminatâ; hiatu postico magno: long.* 0·9, *lat.* 0·5, *alt.* 0·5 *poll.*

Hab. ad littora Columbiæ Occidentalis.

Found in the trunk of a tree at low water at Chiriqui in the province of Veragua.—G. B. S.

The whole of the *Toucans* of the Society's collection were exhibited in illustration of an account given by Mr. Gould, at the request of the Chairman, of the species of *Ramphastos*, Ill., and *Pteroglossus*, Ej., constituting the family *Ramphastidæ*. Mr. Gould's attention having been of late particularly directed to this family in the preparation of a Monograph of it, illustrated by coloured figures of all the birds comprised in it, he was enabled to state the existence of the under-mentioned species of the

Fam. Ramphastidæ, *Vig.*

Rostrum magnum, ad basin nudum; *tomiis* serratis.
Lingua pectinata.
Pedes scansorii.

Genus Ramphastos, *Ill.*

Ramphastos (pars), *Linn.*

Rostrum maximum.
Nares frontales, prope basin maxillæ sitæ.
Cauda æqualis.
Nigri, torque pectorali tectricibusque caudæ inferioribus coccineis, pedibus cæruleis. Rostrum, guttur, tectrices caudæ superiores, orbitæque nudæ discolores.

* *Caudæ tectricibus superioribus flavis.*

Ramphastos erythrorhynchus, Gmel. *Ramph. rostro rubro, culmine fasciâque basali flavis, hâc posticè lineâ anticè fasciâ tomiisque nigris.*
Long. tot. 23 poll.; *rostri*, 6¼; *alæ*, 8½; *caudæ*, 6½; *tarsi*, 2.

Red-beaked Toucan, *Edw., Gleanings, t.* 238.—*Lath., Syn., tom.* i. *p.* 328.

Ramphastos erythrorhynchus, *Gmel. et Auct.*

Tucana Cayennensis gutture albo, *Briss., Orn., tom.* iv. *p.* 416. *t.* 31. *f.* 2.

Toucan, *Le Vaill., Ois. de Par., tom.* ii. *t.* 3.

Toucan à collier jaune ? *Id., Ib., t.* 4.

Toucan à gorge blanche de Cayenne, appellé Toucan, *Buff., Pl. Enl., n.* 262.

Ramphastos Levaillantii ? *Wagl., Syst. Avium.*

Hab. in Cayennâ, Guianâ, et ad ripas fluvii Amazonum.

Descr. Torques pectoralis mediocris. Irides rubræ. Orbitæ cœruleæ. Guttur album sulphureo nonnunquam tinctum.

Ramphastos Cuvieri, Wagl. *Ramph. rostro nigro, culmine fasciâque basali luteis, lateribus convexis.*

Long. tot. 24 poll.; *rostri*, 7¼; *alæ*, 9; *caudæ*, 6½; *tarsi*, 2.

Ramphastos Cuvieri, *Wagl., Syst. Avium.*

Hab. propè fluvium Amazonum ?

Descr. Præcedenti coloribus simillimus; sed paullò major, rostrique colores alii. Tectrices caudæ superiores aurantio tinctæ.

Ramphastos culminatus, Gould. *Ramph. rostro nigro, culmine fasciâque basali stramineis, lateribus compressis subconcavis.*

Long. tot. 18—20 poll.; *rostri*, 4—5; *alæ*, 8½—9; *caudæ*, 6½—7; *tarsi*, 2.

Ramphastos culminatus, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 70.

Descr. Præcedenti simillimus, sed minor; mandibula superior compressa, nec ad latera convexa. Tectrices caudæ superiores posticè in aurantio-coccineum vergentes.

** *Caudæ tectricibus superioribus albis.*

Ramphastos Swainsonii, Gould. *Ramph. rostro obliquè dimidiatim flavo, torque pectorali lineâ albâ anticè auctâ.*

Long. tot. 18 unc.; *rostri*, 5½—6; *alæ*, 9; *caudæ*, 6½; *tarsi*, 1⅝.

Ramphastos Swainsonii, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 29.

Tocard ? *Le Vaill., Ois. de Par., tom.* ii. *pl.* 9.

Ramphastos ambiguus ? *Swains., Zool. Ill., pl.* 168.

Hab. in Columbiâ et in Mexico Australi.

Descr. Rostri pars superior flava; pars inferior (pro tempestate ?) colore variat, quippe aliquando nigra, aliquando rufa nigro, præsertim anticè, cincta. Guttur flavum, a torque pectorali coccineâ lineâ albâ sejunctum. Irides, orbitæque cœruleæ.

Ramphastos carinatus, Swains. *Ramph. rostro ad apicem sanguineo, mandibulâ superiore viridi culmine maculâque irregulari utrinque ad tomium flavis, inferiore cœruleâ.*

Long. tot. 20 unc. ; *rostri*, 6 ; *alæ*, 8 ; *caudæ*, 7 ; *tarsi*, 2.
Ramphastos carinatus, *Swains., Zool. Ill., pl.* 45.
Brazilian Pie, *Edw., Glean., vol.* ii. *t.* 64.
Yellow-breasted Toucan, *Id., Ib., vol.* iii. *p.* 253. *t.* 329. (adultus).
Ramphastos Tucanus ?, *Shaw, Gen. Zool., vol.* viii. *p.* 362.
Hab. in Mexico.

Descr. Præcedenti coloribus simillimus. Linea alba pectoralis nulla. Rostrum pluricolor compressum, fasciâ angustâ basali nigrâ cinctum.

Ramphastos Toco, Gmel. *Ramph. caudæ tectricibus superioribus caudæ dimidium longitudine æquantibus.*
Long. tot. 27 unc. ; *rostri*, 7½ ; *alæ*, 10 ; *caudæ*, 7 ; *tarsi*, 2.
Toucan de Cayenne appellé Toco, *Buff., Pl. Enl., n.* 82.
Ramphastos Toco, *Auct.*
Toco, *Le Vaill., Ois. de Par., tom.* iii. *p.* 7. *t.* 2.
Hab. in Guianâ et ad fluvium Platæ.

Descr. Maximus. Cauda subabbreviata. Rostrum maximum, aurantiacum, fasciâ basali maculâque magnâ utrinque ad apicem mandibulæ superioris nigris. Guttur album. Torques pectoralis subevanescens. Orbitæ rubræ.

*** *Caudæ tectricibus superioribus coccineis.*

Ramphastos vitellinus, Ill. *Ramph. rostro nigro, fasciâ propè basin cæruleâ cincto ; gutturis flavi marginibus genisque albidis.*
Long. tot. 17—18 unc. ; *rostri*, 5 ; *alæ*, 7 ; *caudæ*, 6½, *tarsi*, 1¼.
Ramphastos vitellinus, *Auct.—Swains., Zool Ill., pl.* 56.
Pignancoin, *Le Vaill., Ois. de Par., tom.* ii. *pl.* 7.
Hab. in Guianâ, Cayennâ, et ad fluvium Amazonum.

Descr. Guttur in medio aurantiaco-flavum, latera versus multoties pallidius, præsertim ad genas auresque ubi in album evadit. Torques pectoralis latior. Orbitæ cœruleæ. Irides rubræ.

Ramphastos Ariel, Vig. *Ramph. rostro nigro, fasciâ prope basin flavâ, culmine basin versus cæruleo ; gutture flavo fasciâ pallidè flavâ a pectoris torque latâ coccineâ sejuncto.*
Long. tot. 18 unc. ; *rostri*, 4 ; *alæ*, 7½ ; *caudæ*, 6½ ; *tarsi*, 1¼.
Ramphastos Ariel, *Vig., in Zool. Journ., vol.* ii. *p.* 466.
Ramphastos Tucanus, *Linn.* ?
Tucana Brasiliensis gutture luteo, *Briss., Orn., vol.* iv. *p.* 419. *pl.* 32. *f.* 1.
Toucan à gorge jaune de Brésil, *Buff., Pl. Enl., n.* 307.
Toucan de Para, *Vieill., Gal. des Ois., Suppl.*
Ramphastos Temminckii, *Wagl., Syst. Avium.*
Hab. in Brasiliâ.

Descr. Irides cœruleæ. Orbitæ rubræ.

Ramphastos dicolorus, Linn. *Ramph. rostro viridescente, fasciâ basali nigrâ ; pectore coccineo.*

Long. tot. 14–17 unc.; *rostri*, $2\frac{3}{4}$–$3\frac{3}{4}$; *alæ*, 7; *caudæ*, $6\frac{1}{2}$; *tarsi*, $1\frac{7}{8}$.

Ramphastos dicolorus, *Auct.*

Yellow-throated Toucan, *Lath., Syn., vol.* i. *p.* 325.

Petit Toucan à ventre rouge, *Le Vaill., Hist. Nat. des Toucans, pl.* 8.

Tucai, *Azar., Voy., tom.* iii. *p.* 143.

Ramphastos Tucai, *Licht., Cat., p.* 7.

Ramphastos chlororhynchus, *Temm., Man. d'Orn.*

Hab. in Brasiliâ.

Descr. Guttur flavum in medio subaurantiacum. Pectus totum coccineum. Irides cœruleæ. Orbitæ rubræ.

Obs. In junioribus rostrum brevius, sordidè flavum.

Genus Pteroglossus, *Ill.*

Rostrum magnum.

Nares superæ, in maxillæ basi sitæ.

Cauda gradata.

Suprà viridescentes, uropygio (nisi in perpaucis) discolore; subtùs, capite, collo, rostro, orbitisque nudis utplurimùm discoloribus; pedes cærulei.

Pteroglossus Aracari, Ill. *Pter. gastræo flavo, fasciâ latâ coccineâ; rostro flavescente, culmine maxilláque inferiore nigris.*

Long. tot. 18–19 unc.; *rostri*, 4–5; *alæ*, 6; *caudæ*, $7\frac{1}{4}$; *tarsi*, $1\frac{5}{8}$.

Pteroglossus Aracari, *Ill., et Auct.*

Ramphastos Aracari, *Linn.*

Araçari à ventre rouge, *Le Vaill., Ois. de Par., tom.* ii. *p.* 29. *pl.* 20.

Hab. in Brasiliâ.

Descr. Caput collumque nigra. Uropygium coccineum. Pectus venterque maculis indistinctis sparsis coccineis notati. Orbitæ cœruleæ. Rostrum ad basin lineâ elevatâ flavescente cinctum.

Pteroglossus regalis, Licht. *Pter. gastræo flavo, maculâ pectorali nigrâ, fasciâ anticè nigrâ posticè coccineâ subventrali.*

Long. tot. 15–17 unc.; *rostri*, 4–$4\frac{1}{2}$; *alæ*, 6; *caudæ*, $7\frac{1}{4}$; *tarsi*, $1\frac{5}{8}$.

Hab. in Mexico.

Descr. Rostrum flavescens, culmine, maxillæ superioris serraturis, maxillâque inferiore nigris; hâc ad basin lineâ elevatâ flavescente cinctâ. Caput collumque nigra, hoc supernè castaneo infernè coccineo posticè cincto. Pectus, venter, femoraque maculis indistinctis sparsis coccineis notati. Fascia gastræi bicolor pectus inter et ventrem interposita. Uropygium coccineum. Orbitæ cœruleæ.

Pteroglossus castanotis, Gould. *Pter. gastræo flavo, fasciâ latâ coccineâ; auribus castaneis.*

Long. tot. $17\frac{1}{2}$ unc.; *rostri*, 5; *alæ*, $6\frac{1}{4}$; *caudæ*, $7\frac{1}{2}$; *tarsi*, $1\frac{3}{8}$.

Pteroglossus castanotis, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 119.

Hab. in Brasiliâ.

Descr. *Pteroglosso Aracari* simillimus, nisi rostri capitisque coloribus. Rostrum flavum, culmine, maxillâ inferiore (præter lineam elevatam flavam basalem), maxillâ superiore obliquè dimidiatim, serraturisque nigris. Genæ auresque vel etiam gula nuchaque castaneæ.

Pteroglossus bitorquatus, Vig. *Pter. pectore nuchâque coccineis.*

Long. tot. 14 unc.; *rostri*, 3; *alæ*, 5; *caudæ*, 6; *tarsi*, 1¼.

Pteroglossus bitorquatus, *Vig., in Zool. Journ., vol.* ii. *p.* 481.

Hab. in Guianâ.

Descr. Rostrum flavescenti-albidum, maxillæ inferioris dimidio apicali obliquè nigro. Caput suprà nigrum. Capitis latera gutturque castanea, hoc posticè torque angustâ nigrâ alterâque flavâ cincto. Venter crissumque flavi. Uropygium coccineum. Orbitæ rubræ.

Obs. Fascia flava inter guttur et pectus aliquando deest.

Pteroglossus Azaræ, Wagl. *Pter. pectore coccineo, fasciâ latâ nigrâ.*

Long. tot. 15 unc.

" Araçari Azara, *Le Vaill., Ois. de Par., Suppl., p.* 40. *t. A.*" fide Wagler.

Ramphastos Azaræ, *Vieill., Nouv. Dict. d'Hist. Nat., tom.* xxxiv. *p.* 282.

Pteroglossus Azaræ, *Wagl., Syst. Avium.*

Hab. rarissimus " in Brasiliâ." *Wagl.*

Descr. Rostrum flavum, serraturis nigris. Nucha castanea. Fascia flava inter guttur et pectus nulla. Orbitæ cœruleæ. In cæteris præcedenti simillimus.

Obs. Maxilla superior aliquando obliquè dimidiatim fusco-viridis.

Pteroglossus ulocomus, Gould. *Pter. plumis capitis, genarum, nuchæque foliiferis.*

Long. tot. 18 unc.; *rostri*, 4; *alæ*, 5¾; *caudæ*, 7½; *tarsi*, 2¼.

Pteroglossus ulocomus, *Gould, in Proceedings Zool. Soc., Part* i. *p.* 38.

Hab. prope fluvium Amazonum?

Descr. Verticis plumæ latæ, haud barbatæ, crispæ, nigræ, nitidissimæ; occipitis nuchæque magis angustæ, spatulatæ, itidem nigræ; genarum gulæque magis spatulatæ, flavidè albescentes nigro apiculatæ. Rostrum elongatum, albo serratum, ad apicem aurantiaco-flavum, lineâ elevatâ basin cingente rubrâ; culmine aurantiaco, vittâ utrinque latâ sordidè cœruleâ, lateribus basin versus rubris; maxillâ inferiore, præter apicem aurantiaco-flavum, stramineâ. Jugulum gastræumque flava, pectore parcè ventre confertim coccineo

maculatis, pectoris maculis sublunatis, ventris fascias interruptas simulantibus. Interscapulium uropygiumque coccinea. Orbitæ cœruleæ.

PTEROGLOSSUS HYPOGLAUCUS, Gould. *Pter. subtùs cœruleo-canus, crisso coccineo.*

Long. tot. 18¼ unc.; *rostri*, 4; *alæ*, 6¾; *caudæ*, 7; *tarsi*, 1¾.

Pteroglossus hypoglaucus, *Gould, in Proceedings Zool. Soc., Part.* i. *p.* 70.

Hab. in Columbiâ.

DESCR. Colorum diversitate singularis admodum. Corpus totum subtùs, præter crissum coccineum, cœruleo-canum. Caput caudaque nigræ. Nucha cœruleo-cana. Interscapulium, tergum, et pteromata olivaceo-brunnea. Uropygium flavum. Remiges secundarii virides. Rectrices ad apices brunnei. Mandibularum basis obliquè flava, utrinque maculâ fasciæformi nigrâ notata; superior, nisi ad basin, sanguinea; inferioris dimidium apicale nigrum. Orbitæ cœruleæ.

PTEROGLOSSUS BAILLONI, Wagl. *Pter. subtùs et ad caput croceus.*

Long. tot. 14–16 unc.; *rostri*, 2½–3½; *alæ*, 5½; *caudæ*, 7¼; *tarsi*, 1¼.

Pteroglossus Bailloni, *Wagl., Syst. Avium.*

Araçari Baillon, *Le Vaill., Ois. de Par., tom.* ii. *p.* 44. *t.* 18.

Ramphastos Bailloni, *Vieill., Nouv. Dict. d'Hist. Nat., tom.* xxxiv. p. 283.

Pteroglossus croceus, *Jard. & Selby, Ill. of Orn., vol.* i. *pl.* 6.

Hab. in Brasiliâ.

DESCR. Simplex. Suprà olivaceo-viridis, fronte flavo, uropygio coccineo. Subtùs croceus. Rostrum lutescens, basin versus in olivaceum transiens. Orbitæ rubræ.

PTEROGLOSSUS VIRIDIS, Ill. *Pter. gastræo luteo; rostro supernè flavo, in medio aurantiaco, infernè violaceo-nigro.*

Long. tot. 14 unc.; *rostri*, 3½; *alæ*, 4½; *caudæ*, 5; *tarsi*, 1½.

Green Toucan, *Lath., Syn., vol.* i. *p.* 331.

Tucana Cayanensis viridis, *Briss., Orn., vol.* iv. *p.* 423. *t.* 33. *f.* 1.

Toucan verd de Cayenne, *Buff., Pl. Enl., n.* 727. (mas.), 728. (fœm.)

Ramphastos viridis, *Linn.*

Hab. in Demerarâ, Guianâ, &c.

DESCR. Suprà olivaceo-viridis, subtùs luteus; uropygio coccineo. Capite colloque in mari atris, in fœminâ castaneis. Rostrum robustum, culmine latè sordidè flavo lineâ longitudinali a lateribus aurantiacis mandibulæ superioris discreto; mandibulâ inferiore violaceo-nigrâ, ad basin roseâ. Orbitæ cœruleæ.

PTEROGLOSSUS INSCRIPTUS, Swains. *Pter. gastræo flavo; rostro flavo, culmine, apice, serraturarum maculis transversis, fasciâque propè basin nigris.*

Long. tot. 12–13 unc.; *rostri*, $2\frac{3}{4}$; *alæ*, 4; *caudæ*, 5; *tarsi*, $1\frac{1}{4}$.
Pteroglossus inscriptus, *Swains., Zool. Ill., pl.* 90.
Hab. in Guianâ.

Descr. Præcedenti coloribus simillimus; abdomen magis flavum, rostrumque maximè diversum.

Pteroglossus maculirostris, Licht. *Pter. ventre lutescente, crisso coccineo; mandibulæ superioris lateribus maculis transversis nigris subfasciatis.*

Long. tot. 12 unc.; *rostri*, $2\frac{1}{4}$; *alæ*, $4\frac{3}{4}$; *caudæ*, 5; *tarsi*, $1\frac{3}{8}$.
Araçari Koulik du Brésil, *Le Vaill., Ois. de Par., vol.* ii. *p.* 45. *t.* 15. "*Suppl. p.* 41. *f. A A* (mas.)." fide Wagler.
Araçari à bec tacheté; Ramphastos maculatus, *Vieill., Gal. des Ois., tom.* ii.
Pteroglossus maculatus, *Jard. and Selby, Ill. of Orn., vol.* i. *pl.* 26.
Hab. in Brasiliâ.

Descr. Uropygium cum stragulo concolor. Fascia lunata inter cervicem et stragulum sulphurea. Caput (præter genas auresque), collum, pectusque in mari aterrima, in fœminâ castanea; genæ in mari aurantiacæ, in fœminâ viridescenti-brunneæ; aures sulphurei, fœminæ magis sordidi. Rostrum pro genere brevius, cinerascens, ad culmen in olivaceum vergens, ad latera maculis irregularibus nigris circiter quatuor notatum. Rectrices sex intermedii rufescenti-brunneo apiculati. Orbitæ cœruleæ.

Pteroglossus Culik, Wagl. *Pter. ventre imo olivaceo, crisso coccineo; rostro nigro basin versus in rubrum transeunte.*

Long. tot. 12–13 unc.; *rostri*, $2\frac{3}{4}$; *alæ*, $4\frac{1}{4}$; *caudæ*, $4\frac{1}{4}$; *tarsi*, $1\frac{1}{4}$.
Araçari Koulik de la Guiane, *Le Vaill., Ois. de Par., tom.* ii. *p.* 41. *pl.* 13.
Green Toucan, *Edw., Glean., vol.* iii. *pl.* 330.
Toucan à collier de Cayenne, *Buff., Pl. Enl., n.* 577 (mas.).
Toucan à ventre gris de Cayenne, *Id., Ib., n.* 729 (fœm.).
Ramphastos piperivorus, *Linn.*
Pteroglossus Culik, *Wagl., Syst. Av.*
———— Reinwardtii? *Id., Ib.*
———— Langsdorffii? *Id., Ib.*
Hab. in Cayennâ et Guianâ.

Descr. Præcedenti simillimus mas differt rostro, rectricibus omnibus castaneo apiculatis, genisque cum auribus concoloribus flavis. Fœminæ caput supernè nigrum; collum castaneum; fascia cervicalis nulla; genæ auresque flavæ; jugulum pectusque cœruleo-cana. Orbitæ, in sexu utroque, cœruleæ.

Pteroglossus prasinus, Licht. *Pter. suprà aureo-viridis, uropygio concolore; subtùs viridis; crisso rectricumque apicibus rufis; genis gulâque albescentibus.*

Long. tot. 13 *poll.*; *rostri*, 3.
Hab. in Mexico.

Descr. Rostrum flavum, culminis strigâ, maculâ ante nares, alterâ longitudinali ad tomium, mandibulâque nigris. Rectrices ante apices rufos remigesque in cœruleum vergentes.

Obs. In junioribus maxilla ad basin rufo nebulosa apicem versus in flavum et lutescentem transit. In his venter sordidè viridis.

Pteroglossus sulcatus, Swains. *Pter. viridis, uropygio crissoque concoloribus; gulâ albescente; genis cœruleis.*

Long. tot. 11–13 *poll.*; *rostri*, 3–3¼; *alæ*, 5; *caudæ*, 4¾; *tarsi*, 1¼.

Pteroglossus sulcatus, *Swains., in Journ. Roy. Instit., vol.* ix. *p.* 267. *Zool. Ill., pl.* 44. *Temm., Pl. Col., pl.* 356.

Hab. in Guianâ.

Descr. Subunicolor. Remiges rectricesque in cœruleum ad apices vergentes. Rostrum pro genere brevius, latum, ad latera et supernè complanatum; maxillæ latera 2-, mandibulæ 1-sulcata: nigrum, culmine apiceque saturatè rufo-brunneis, mandibulæ angulo sanguineo.

The whole of the species characterized above are figured in Mr. Gould's 'Monograph of the Ramphastidæ,' which is just completed; and all of them, with the exception of *Pteroglossus Azaræ*, *Pter. inscriptus*, and *Pter. prasinus*, are contained in the Society's collection, and were exhibited to the Meeting.

July 22, 1834.

William Yarrell, Esq., in the Chair.

A letter was read, addressed to Mr. Vigors by B. H. Hodgson, Esq., Corr. Memb. Z.S., and dated Nepâl Residency, February 14, 1834. It referred to various living animals which it is the intention of the writer to forward to Calcutta for transmission to England during the ensuing season. It also referred to a collection of skins of *Mammalia* and *Birds* which have already been dispatched by Mr. Hodgson for the Society. Among them are skins of the *Chiru Antelope, Antilope Hodgsonii*, Abel, male and female; and the writer refers to these as elucidating the points which had been unascertained by him at the time of making to the Society his several previous communications, abstracts of which have been published in the Proceedings of the Committee of Science and Correspondence, Part i. p. 52, and Part ii. p. 14; and in the Proceedings of the Society, Part i. p. 110.

The communications referred to "left only the inguinal pores, the number of teats in the female, and the fact of her being cornute or otherwise, doubtful: those points are now cleared up. The female is hornless, and has two teats only: she has no marks on the face or limbs, and is rather smaller than the male. The male has a large pouch at each groin, as in *Ant. Dorcas*: that of the female is considerably smaller. These escaped me," Mr. Hodgson says, "till I got this season's specimens, remarkable as the pouches are. But the fact is that they are composed of very thin brittle skin, and, as they hang loose by a narrow neck, they are apt to be torn off by the Bhoteahs while preparing the specimens."

Mr. Hodgson again describes in detail the maxillary tumours or accessory nostrils of the *Chiru Antelope*. He regards as analogous to these accessory nostrils, and as essentially the same with them in use, the intermaxillary pouches noticed by Col. Hamilton Smith as partially characteristic of his *Cephalophine* and *Næmorrhædine* subgenera of *Antilope*.

Referring to Col. Hamilton Smith's distribution of the genus *Antilope*, Mr. Hodgson remarks that "the *Chiru Antelope* can only belong either to the *Gazelline* or the *Antilopine* group. Hornless females would place it among the latter; but lyrate horns, ovine nose, and want of sinus, would give it rather to *Gazella*, and its singular inguinal purses further ally it to *Ant. Dorcas* of this group. But from *Gazella* it is distinguished by the accessory nostrils or intermaxillary pouch, the hornless females, the absence of tufts on the knees, and of bands on the flanks. The *Chiru* with his bluff bristly

nose, his intermaxillary pouches, and hollow-cored horns, stands in some respects alone," and hence Mr. Hodgson is disposed to suggest the regarding it as representing "a new subgenus, to be termed *Pantholops*, the vulgar old name for the *Unicorn*." "The habits and manners of the *Chiru*, his medial size, and his elegant vigorous form, ally him most to the *Antilopine* and *Gazelline* groups, and equally to both."

Some extracts were read from a Letter addressed by the President, Lord Stanley, to the Secretary, giving an account of the breeding of several *Birds* in his Lordship's Menagerie at Knowsley. The *red Grosbeak*, *Loxia Cardinalis*, Linn., has a nest of three young which are nearly fledged; and a single young one of the *Towhee Bunting*, *Emberiza erythrophthalma*, Gmel., has been hatched. The *Loxia cucullata* has this year, as last year also, made a nest and laid one egg; and the *American yellow Bird*, *Fringilla tristis*, Linn., is now sitting.

The gosling of the *Sandwich Island Goose*, respecting which a notice from Lord Stanley was read on May 27, (p. 41.) "is now fully as large as the parents, and nearly resembles them in plumage; the only differences being about the neck, which is more indistinct in front and wants the full extension of the black down the nape, and the collar at the bottom just above the breast is only faintly marked. The legs also are as yet of a dirty greenish yellow tinge. It is not pinioned, but has hitherto shown no wish to use its wings. In fact they are the tamest of the tame, scarcely will move out of one's way if in the walks, and are constantly coming into the building, even more familiarly than the *common Ducks*."

A specimen was exhibited of the *Manis Temminckii*, Smuts, forming part of the collection made by Mr. Steedman in Southern Africa. Mr. Bennett stated that his object in calling the attention of the Society to it was to point out the external characteristics of a species known to its original describer by its skeleton alone and by a few detached scales.

It may be thus characterized:

MANIS TEMMINCKII, Smuts. *Man. capite breviore; corpore latiore, squamis magnis, 11-seriatis; caudâ truncum longitudine subæquante, latitudine paullò minore, ad apicem subtruncatum vix angustiore.*

Hab. apud Latakoo?

Long. tot. 25½ unc.; *caudæ*, 12; lat. *dorsi*, 8; *caudæ*, prope apicem, 5.

The most remarkable features of this animal are the shortness of the head; the breadth of the body; and the breadth of the tail, which is nearly equal to that of the body, and continues throughout the greater part of its extent of nearly the same width, tapering

only slightly towards the end where it is rounded, and almost truncate. In the shortness of the head and the general form of its upper part, the *Man. Temminckii* bears nearly the same relation to the *Man. Javanica*, as is borne by the *Weasel-headed Armadillo, Dasypus 9-cinctus*, Linn., to the *six-banded, Das. 6-cinctus*, Ej. Of the eleven series of scales on the body, one on each side is ventral rather than dorsal. The scales are very large, longitudinally striate, smooth as though rubbed towards their hinder margin, and slightly produced into a thin, short, and rounded process: they are comparatively few in number, the large scales of the middle line of the back from the *occiput* to the tip of the tail being twenty only in number; in *Man. pentadactyla*, Linn., they are about thirty; and in *Man. Javanica*, Desm., they vary from about forty-five to fifty. A peculiarity in the distribution of the scales of *Man. Temminckii* is the cessation of the middle series of them at a short distance anterior to the extremity of the tail, so that the last four transverse rows consist of four scales each, each of the preceding ones having five.

Some notes by Mr. Rymer Jones of the dissection of an *Agouti, Dasyprocta Aguti*, Ill., were read.

The animal was a male; adult; measuring $19\frac{6}{10}$th inches from the extremity of the jaws to the root of the tail; and weighing 4lbs. $4\frac{1}{4}$oz. Its head measured $4\frac{6}{10}$ inches in length; the tail, $1\frac{9}{10}$.

The *testes* were situated within the *abdomen*, in contact with the abdominal muscles, to which they were connected by a duplicature of *peritoneum*; the *epididymis*, contained in a pouch apparently formed by the *cremaster* muscle, protruded through the internal oblique. The preputial orifice was $1\frac{1}{10}$ inch from the *anus*.

The stomach, $5\frac{1}{2}$ inches long and 8 inches in its greatest circumference when moderately distended, had a remarkable constriction between its cardiac and pyloric portions which gave it the appearance of consisting of two distinct cavities; the pyloric portion bulged out on each side of the *pylorus* so as to make the *duodenum* commence from a central depression.

The *omentum* was shrivelled up under the stomach, and reached, when unfolded, rather more than half way to the *pubes*: it extended further on the right side than on the left.

The intestines measured in total length 253 inches. The length of the small intestines was 222 inches, and their greatest circumference (at the *duodenum*) $1\frac{4}{10}$; the *cæcum* was 6 inches long, and its greatest circumference $2\frac{8}{10}$; the large intestines measured 25 inches, the greatest circumference being at the commencement of the *colon*, where it was 2 inches, and whence it gradually tapered towards the *rectum* which was only $\frac{6}{10}$ in circumference. There were two glands, each $\frac{9}{10}$ of an inch in length, and placed on each side of the *anus*: they secrete a yellow substance resembling the *cerumen* of the ear and of a fragrant odour.

The liver, weighing $4\frac{1}{2}$oz., occupied the usual situation, and con-

sisted of five lobes. The anterior or cystic was the largest, and presented inferiorly two deep fissures, one of which (the left) received the suspensory ligament, and the other the gall-bladder. The next in size was the left lobe. To the inferior surface of the right lobe two *lobuli* were appended. The concave surface of the liver was very irregular in its aspect. The gall-bladder was pyriform, 1 inch in length, and deeply buried in a fissure in the concavity of the largest lobe of the liver. The bile entered the intestine $\frac{1}{4}$ inch from the pyloric ring.

The *pancreas*, of an elongated form and running along the dorsal aspect of the stomach across the spine, measured $2\frac{3}{4}$ inches.

The spleen weighed $5\frac{3}{4}$ drachms. It laid close to the spine, above or anterior to the left kidney, and attached to the cardiac extremity of the stomach. Its form was flat ovoid, with a deep *fossa* on its posterior margin lodging the anterior portion of the kidney.

The lungs consisted of four lobes on the right side and of three on the left. They measured $3\frac{1}{2}$ inches in length; the breadth of the right was $1\frac{3}{10}$, of the left, 1. They weighed (much diseased and studded with tubercular masses) 2 oz. 6 drachms.

The heart, of a globular shape, and very muscular, measured $1\frac{3}{10}$ inch in length, $1\frac{4}{10}$ in lateral breadth, and $1\frac{1}{10}$ in its antero-posterior diameter. It was seated more in the left than in the right side of the chest, lying on the cartilages of the second, third, fourth, fifth, sixth, and seventh ribs, and on the corresponding portion of the *sternum*.

The *venæ cavæ* were one superior and one inferior. The *aorta* gave off from the convexity of its arch one large trunk, which, after running half an inch from the main artery, divided into an *arteria innominata*, a left carotid, and a left subclavian.

The *trachea* consisted of twenty-eight rings, each forming nearly a complete circle. The superior *cornu* of the *os hyoides* was composed of three parts. The upper opening of the *larynx* was cup-shaped and patulous, owing to the prolongation of the arytenoid cartilages. The *rima glottidis* was small and triangular. The borders of the *epiglottis* formed two sides of an equilateral triangle.

The mucous membrane of the *pharynx* presented numerous prominent *papillæ*. The tongue was $2\frac{6}{10}$ inches in length, and had numerous very delicate *papillæ*, which were scarcely visible to the naked eye.

The nostrils were contracted and very moveable.

The pupil was oval, its long axis being placed horizontally.

The supra-renal glands, each 1 inch in length, were of an oblong shape and dingy yellow colour. They were situated close to the sides of the bodies of the second and third lumbar *vertebræ* in contact with the anterior extremity of the kidneys.

Of the kidneys the left rested on the transverse processes of the third, fourth, and fifth lumbar *vertebræ*; the right was placed more anteriorly, extending from the posterior margin of the last rib to

the transverse process of the fourth lumbar *vertebra*. They were flattened behind, and each measured in length $1\frac{8}{10}$ inch, in breadth $1\frac{2}{10}$.

At the anterior and external extremity a portion was separated from the rest by a deeply indented line, and resembled a patch stuck on. The weight of the two kidneys was 1oz. $5\frac{3}{4}$ drachms. The urinary bladder, pyriform, and measuring, when moderately distended, $3\frac{1}{2}$ inches in length and $1\frac{1}{4}$ in diameter, was situated chiefly above the brim of the *pelvis*.

The *testes* were barrel-shaped, $1\frac{1}{2}$ inch long and $\frac{1}{2}$ in diameter. The *epididymis* was of a triangular form, about $\frac{1}{2}$ inch long and the same in diameter, and attached by the apex of the triangle to the extremity of the *testis*. The *vasa deferentia* terminated at the sides of the *verumontanum*. The *vesiculæ seminales*, $2\frac{1}{4}$ inches in length, consisted of a middle portion, into which sixteen or eighteen little appendices opened: they terminated at the sides of the *verumontanum*. The prostate glands, four in number, formed of masses of convoluted vessels, the two superior ones evidently differing in texture from the two inferior, terminated in the same situation. Cowper's glands were of the size of kidney beans, internally very spungy, and filled with glairy fluid.

The *penis* was 4 inches in length. Its muscles consisted of two *levatores penis*, arising from the posterior margin of the *os pubis* close to the *symphysis*, sending forwards two tendons running upon the *dorsum penis* to be inserted into the bone covering the dorsal aspect of the *glans*: and two *erectores penis*, arising from the whole length of the posterior margin of the *os pubis*, and embracing the external aspect of the *crus penis* on each side, into the sheath of which they were inserted. The *ejaculatores seminis* were very massive; and the *urethra* very muscular. The *glans penis* was $1\frac{1}{4}$ inch in length, and bifid at the extremity, which contained a spacious orifice, at the bottom of which were seen two smaller apertures: the anterior of these was the opening of the *urethra*; the posterior led to a rugous canal about $\frac{3}{4}$ inch in length, at the bottom of which were placed two osseous spurs, which, by a muscular apparatus, may be protruded from the extremity of the *penis*. Externally the *glans* was studded with very fine bristles, both upon its upper and lower surface, which were arranged for the most part in longitudinal lines pointing backwards. From the lateral aspects of the middle half of the *glans* projected two horny plates, serrated at their external margin, all the minute teeth pointing backwards.

The morbid appearances observed were tubercles in the lungs, liver, and kidneys.

August 12, 1834.

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

A Letter was read, addressed to the Secretary by B. H. Hodgson, Esq., Corr. Memb. Z. S., and dated Nepâl, February 28, 1834. It related chiefly to the distinguishing characteristics between the *Ghŏrăl* and the *Thâr Antelopes*.

Mr. Hodgson remarks that *Antilope Goral*, Hardw., and *Ant. Duvaucellii*, Ham. Smith, agree with each other in manners, form, and characters; as do also *Ant. Sumatrensis*, Shaw, and *Ant. Thar*, Hodgs. But the two former appear to him to differ very considerably in characters, as they certainly do in structure and in manners, from the two latter. He is, nevertheless, disposed to leave the whole of them for the present in one group, for which it will, however, be necessary to propose amended characters. The double thick coat of *Antt. Goral* and *Duvaucellii*, he is aware, may be referred to their cold habitat, and he suggests that possibly even their want of suborbital sinus may be attributable to the same cause.

Observing first that the solidity of the core of the horns must cease to form part of the generic character of *Antilope*, he proceeds to offer the following characters for the

Subgenus Nemorhedus, *Smith*.

Structure assuming a Caprine form, suited for heavy climbing or for leaping. Horns in both sexes; their cores hollow and connected with the frontal sinuses, but not porous and only subcellular; inserted behind the orbits, short, conical, simply bent back, annulo-wrinkled, parallel to the plane of the face, and nearly so to each other, subremote at the base. Suborbital sinus small or wanting. No inguinal pores. Tail Caprine. Ears longish, pointed, and striated. Muzzle small. Maned. Hair of two sorts and thick, or of one sort and spare. Four teats in the females.

Reside in the mountainous and woody regions of the continent and islands of India, solitarily or in small groups.

1. *Ant. Sumatrensis*, Shaw. *Cambing Ootan*.

2. *Ant. Duvaucellii*, Ham. Smith. Variety of *Ant. Goral*?

3. *Ant. Goral*, Hardw. Characters extremely Caprine, being allied to *Antilope* only by its round and ringed horns. Size small. Attitude gathered, with the back much arched, and structure adapted for leaping. Limbs moderately stout and rigid. General form of the scull Caprine, with the ridge-line much bent, and the *parietes* depressed at a strong angle to the frontal bones, and no indentation

before the orbits. Fifty inches long, exclusive of the tail, and twenty-seven high. Horns seated on the crest of the frontals, six inches long, parallel to each other, and the points inclined inwards; 20 to 30 *annuli* extending two thirds up the horns, crowded and vague, especially towards the base, somewhat interrupted by faint longitudinal *striæ*, pearled, truncated, independent of each other, and equally developed all round. No suborbital sinuses. A half muzzle. Upper lip clad. Tail conico-depressed and half nude only below. Fur of two sorts, abundant and loosely applied to the skin. A short semi-erect mane on the *vertex*. Knees usually callous and nude, but not congenitally so.

Colours rusty and brown, paler below. Line of the *vertex*, tail, chest, and a stripe down the front of the fore legs and back of the hind brown-black. Outsides of the ears rusty. Lips and chin rufescent white. A large patch of pure white at the junction of the head and neck below. Horns, hoofs, and muzzle black. *Iris* dark hazel. Eye mean.

Female: rather smaller and paler hued.

Young: redder and destitute of marks, or mane.

Inhabits the juxta-Himâlayan region of Nepâl.

4. *Ant. Thar*, Hodgs. The *Thár* of the Nepâlese. Characters less decidedly Caprine than in the last. Very nearly allied to the *Cambing Ootan*. Back straight. Withers higher than the croup, and structure suited for heavy climbing, not for leaping. Limbs very stout and rigid, with higher hoofs, the edges of which are raised above the pads. General form of the scull Cervine, with the ridge-line moderately convexed, and the *parietes* not depressed at a strong angle to the frontal bones. A deep indentation before the orbits. Horns posterior to the orbits but below the crest of the frontals, eight inches long, rather stouter and less falcated than in the preceding, subdivergent with the points inclined outwards; with 20 to 30 crowded *annuli* extending two thirds up the horns, the *annuli* truncated, pearled, equal all round, independent, broken by decided longitudinal *striæ*. One inch below the eye a suborbital sinus opening on a nude space by a round puncture, and furnished with a fleshy thick gland secreting a viscous humour, as in *Ant. Sumatrensis*. A half muzzle larger than in the preceding, and spreading a little over the upper lip. Tail shorter, depressed, nude below. Fur of one sort only, and scanty, harsh, and applied to the skin. A semi-erect mane, as in the *Ghoral*. Knees callous, perhaps congenitally so: *sternum* not so. Size large. Sixty-four inches long by thirty-eight high, and upwards of 200 lbs. in weight.

Colour of the whole animal above, with the entire head and neck, jet black; on the flanks mixed with deep clay red. The limbs and hams outside, as far down as the great flexures, clay red, nearly or wholly unmixed; the rest of the limbs hoary or rufescent hoary. Outsides of ears dark. Chest pale. No stripes down the legs. Lips and chin dull hoary, and a stripe of pure hoary running backwards over

the jaws from the gape. Horns, hoofs, and muzzle black. *Iris* dark hazel. Eye mean.

Female: as large as the male and like him in all material respects.

Young: paler and mixed with grey.

Inhabits the precipitous and wooded mountains of the central region of Nepâl, up and down which it rushes with fearful rapidity, though it does not spring or leap well; nor is it speedy.

The exhibition was resumed of the new species of *Shells* contained in the collection formed by Mr. Cuming on the Western Coast of South America, and among the Islands of the South Pacific Ocean. Those exhibited on the present evening consisted of various species of *Anatinidæ* and of the *Myidous* genus *Saxicava*: they were accompanied by characters by Mr. G. B. Sowerby.

Genus Periploma, *Schum.*

Periploma lenticularis. *Per. testâ ellipticâ, lenticulari, æquivalvi, albâ, impolitâ, tenui; epidermide tenuissimâ; margine dorsali anticâ sinuatâ, cum margine anticâ angulum supernè efformante: long.* 0·7, *lat.* 0·3, *alt.* 0·55 *poll.*

Hab. ad Insulam Muerte dictam.

The inside of this species shines with a silvery lustre, but is not iridescent.

It was found in sandy mud at a depth of eleven fathoms.—G. B. S.

Periploma planiuscula. *Per. testâ oblongâ, planiusculâ, inæquivalvi, albicante, impolitâ, tenuiusculâ; latere antico brevi, subrugoso; marginibus, anticâ subdeclivi subtruncatâ, dorsali rectiusculâ; epidermide tenui, pallescente: long.* 2·4, *lat.* 0·8, *alt.* 1·8 *poll.*

Hab. ad Sanctam Elenam.

Odd valves alone were found on the sands.

This species bears some resemblance to Professor Schumacher's *Per. inæquivalvis*; it differs, however, in shape from that species, and both the valves are deeper.—G. B. S.

Genus Anatina.

Anatina prismatica. *An. testâ oblongâ, subtrapeziformi, crassiusculâ, opacâ, laminâ internâ prismaticâ; latere antico truncato, hiatu maximo; lamellâ utriusque valvæ internâ subumbonali, ex tuberculo ligamentifero decurrente, ramoque ligamenti cornei ferè parallelo, anticè inclinato: long.* 2·7, *lat.* 1·3, *alt.* 1·8 *poll.*

Hab. ad littora Oceani Polaris Meridionalis. (New South Shetland.)

Driven on shore after a gale.—G. B. S.

Anatina costata. *An. testâ oblongâ, albâ, posticè rostratâ, anticè rotundatâ; costis octo radiantibus, anticis gradatim mino-*

ribus; rostro lævi; margine ventrali crenatâ: long. 0·3, *lat.* 0·15, *alt.* 0·2 *poll.*

Hab. ad Sanctam Elenam.

A single specimen was found in sandy mud at a depth of six fathoms.

In form it resembles *An. longirostrata*.—G. B. S.

Genus Lyonsia.

Lyonsia picta. *Ly. testâ obovatâ, tenui, posticè latiore; epidermide fuscâ, lineis nigris undulatis pictâ; marginibus, anticâ dorsali declivi, posticâ dorsali rectiusculâ; anticâ ventrali hiante, hiatu parvo, posticâ et posticâ ventrali rotundatis: long.* 0·85, *lat.* 0·4, *alt.* 0·65 *poll.*

Hab. ad Insulam Muerte dictam.

Found attached to particles of sand in eleven fathoms' water.

As it increases in size it becomes rather irregular in its form.—G. B. S.

Lyonsia brevifrons. *Ly. testâ oblongâ, pallescente; epidermide obscurâ, corneâ; latere antico brevi, acuminato, postico longiore, attenuato; marginibus, dorsali posticâ elongatâ rectiusculâ, dorsali anticâ brevi declivi, anticâ ventrali hiante, hiatu declivi, elongato, magno: long.* 0·8, *lat.* 0·3, *alt.* 0·4 *poll.*

Hab. ad Sanctam Elenam.

Found in sandy mud at from six to eight fathoms' depth, attached to particles of sand.—G. B. S.

Genus Saxicava.

Saxicava tenuis. *Sax. testâ oblongâ, tenui, albâ; epidermide pallescente; latere antico brevi, subtruncato: long.* 0·8, *lat.* 0·25, *alt.* 0·4 *poll.*

Hab. ad Pacosmayo et ad Lambeyeque.

Found in coral rock at twenty-five fathoms' depth.—G. B. S.

Saxicava purpurascens. *Sax. testâ oblongâ, solidiusculâ, anticè brevissimâ, posticè truncatâ; epidermide tenuissimâ, posticè purpurascente: long.* 1·1, *lat.* 0·4, *alt.* 0·4 *poll.*

Hab. ad Insulam Muerte dictam.

A single specimen was found in sandy mud at a depth of eleven fathoms.—G. B. S.

Saxicava solida. *Sax. testâ oblongâ, solidâ, rugosâ, subirregulari, albicante; epidermide corneâ; latere antico brevissimo, postico elongato truncato, costis divergentibus duabus conspicuis: long.* 1·4, *lat.* 0·6, *alt.* 0·8 *poll.*

Hab. ad Sanctam Elenam.

Found in clefts of rock brought up from a depth of eighteen fathoms.

The specimens from which the above characters have been taken appear to give the most perfectly regular form of the species. There are other varieties from Payta and the Isle of Muerte.—G. B. S.

A collection of *land* and *fresh-water Shells*, formed in the Gangetic Provinces of India by W. H. Benson, Esq., of the Bengal Civil Service, and presented by that gentleman to the Society, was exhibited. It comprised forty species, and was accompanied by a descriptive list prepared by the donor, and also by detailed notices of some of the more interesting among them. These notices were read: they are intended by Mr. Benson for publication in the forthcoming No. of the 'Zoological Journal.'

From the time that he first became acquainted with the animal of a *Shell* resembling in all respects, except in its superior size, the European *Helix lucida*, Drap., Mr. Benson regarded it as the type of a new genus of *Helicidæ* intermediate between *Stenopus*, Guild., and *Helicolimax*, Fér. He had prepared a paper on this genus, for which he intended to propose the name of *Tanychlamys*; he finds, however, that Mr. Gray has recently described (page 58) the same genus under the name of *Nanina*. The generic characters observed by Mr. Benson are as follows:

NANINA, *Gray*.

Testa heliciformis, umbilicata; peritremate acuto, non reflexo.

Animal cito repens. Corpus reticulosum, elongatum. Pallium amplum, foramine communi magno perforatum, peritrema amplexans; processubus duobus transversè rugosis (quasi articulatis) omni latere mobilibus instructum, unico prope testæ aperturæ angulum superiorem exoriente, altero apud peripheriam testæ. Os anticum inter tentacula inferiora hians; labia radiato-plicata. Tentacula superiora elongata, punctum percipiens tumore oblongo situm gerentia. Penis prægrandis; antrum cervicis elongatum latere dextro et prope tentacula situm. Solea complanata pedis latera æquans. Cauda tentaculata; tentaculum subretractile, glandulâ ad basin positâ humorem viscidum (animale attrectato) exsudante.

Mr. Benson describes particularly the habits of the species observed by him, which he first discovered living at Banda in Bundelkund on the prone surface of a rock. The animal carries the shell horizontally or nearly so; is quick in its motions; and, like *Helicolimax*, it crawls the faster when disturbed, instead of retracting its *tentacula* like the *Snails* in general. In damp weather it is rarely retracted within its shell, the foot being so much swelled by the absorption of moisture that if it is suddenly thrown into boiling water the attempt to withdraw into the shell invariably causes a fracture of the aperture. In dry weather the foot is retracted, and the aperture is then covered by a whitish false *operculum* similar to that of other *Helicidæ*. The two elongated processes of the mantle are con-

tinually in motion, and exude a liquor which lubricates the shell, supplying, apparently, that fine gloss which is observable in all recent specimens. The fluid poured out from the orifice at the base of the caudal horn-like appendage is of a greenish colour; it exudes when the animal is irritated, and at such times the caudal appendage is directed towards the exciting object in such a manner as to give to the animal a threatening aspect.

Of several specimens brought to England by Mr. Benson in 1832, one survived from December 1831, when it was captured in India, until the summer of 1833.

Another *Shell* particularly noticed by Mr. Benson is the type of a new genus, allied to *Cyclostoma*, which he has described under the name of *Pterocyclos* in the first No. of the 'Journal of the Asiatic Society of Calcutta.' Mr. Benson has ascertained, by the inspection of specimens in the collection of Mr. G. B. Sowerby, that the *Cycl. bilabiatum* of the latter is the same shell at a more advanced period of growth; when, in addition to the notch and overhanging wing at the upper part of the aperture, the peristome becomes thickened and sinuated. The *Cycl. Petiverianum*, Gray, exhibits an approach to *Pterocyclos* in the crude formation of a wing at the upper part of the right lip.

A species of *Assiminia*, Leach, obtained at Barrackpore, has the shell ovate-conical, narrowly umbilicated, varying infinitely in colour, and generally banded with red, white, and glaucous; the aperture is entire, oblong-oval, angular at the upper part. The head has only two short, thick, subcylindrical *tentacula*, with the percipient points placed at their summits. The snout is like that of *Paludina*, transversely corrugated, and bilobed or rather emarginate at the middle of the extremity; the lobes rounded. The mantle is free; the branchial cavity open. The foot has a spiral horny *operculum*, angular at the upper end.

Specimens of this *Assiminia* were preserved alive in a glass, replenished occasionally with fresh or salt water, until after the vessel in which Mr. Benson returned to England had passed St. Helena.

A *Snail* obtained near Sicrigali and the river Jellinghy, one of the mouths of the Ganges, is thus characterized by Mr. Benson:

HELIX INTERRUPTA. *Hel. testâ sinistrorsâ, orbiculato-convexâ, infrà tumidâ, umbilicatâ, ad peripheriam obtusè angulatâ, longitudinaliter confertissimè striatâ, suprà striis interruptis, fasciis transversalibus dispositis; spirâ apice obtusâ; peritremate tenui, acuto.*

Animal. *Tentacula duo superiora elongata capitulis tumidis puncta percipientia gerentibus, duo inferiora capitulis parvis tumidis. Pes elongatus, compressus, marginatus, suprà granulatus, aperturâ terminali anum et membrum carnosum mucorem emittens continente.*

In this latter character, that of the excrement being voided from

an opening in the terminal and posterior part of the foot instead of from the *foramen commune*, the animal of *Hel. interrupta* differs most materially from the other *Helices*. The angulated periphery of the shell shows an approach to *Carocolla*, but Mr. Benson is not aware that the animal of this genus differs from that of *Helix*. From *Hel. Himalayana*, Lea, the *Hel. interrupta* is distinguished by its peculiar sculpture; its spire is also more exserted.

The collection also contained specimens of an *Arcaceous Shell* found in the bed of the Jumna at Humeerpore in Bundelkund. Its form, its lozenge-shaped ligamental scar, and the position and order of the teeth are those of the *Arcaceæ* generally; while the oblique production of the teeth on the posterior side down the inner surface of the cardinal *lamina*; the separation of the teeth into two sets by the interposition of an edentate portion of the cardinal *lamina*; and the freedom of the shell from ribs, with the exception of the ridges which occur at its angles; distinguish it from the marine *Arcaceæ*. Mr. Benson proposes for the fluviatile form the generic appellation *Scaphula*.

Referring to specimens contained in the collection of a new form of *Solenaceous Shell*, described by him in the 'Journal of the Asiatic Society of Calcutta,' under the name of *Novaculina*, Mr. Benson describes also a second species of the genus which he has recently obtained from South America, and points out the characters which distinguish it from *Nov. Gangetica*.

The following Note by Mr. Benson relative to the importation of the living *Cerithium Telescopium*, Brug., adverted to at the Meeting on March 25, 1834, (page 22,) was read.

"The possibility of importing from other countries, and especially from the warmer latitudes, the animals which construct the innumerable testaceous productions that adorn our cabinets and museums, the accurate knowledge of which is so necessary to enable the conchologist rightly to arrange this beautiful department of nature, must be an interesting subject to every naturalist, and will render no apology necessary for the following notices extracted from my journal. Their publicity may incite others who may have opportunities of trying the experiment to follow the example.

"January 1832. Observed near the banks of the canal leading from the eastern suburb of Calcutta to the Salt Lake at Balliaghát, heaps of a *Cardita* with longitudinal ribs, of a large and thick *Cyrena*, and of *Cerithium Telescopium*, exposed to the heat of the sun for the purpose of effecting the death and decay of the included animals previously to the reduction of the shells into lime.

"Early in the month I took specimens of them, and leaving them for a night in fresh water I was surprised to find two *Cerithia* alive. I kept them during a fortnight in fresh water, and on the 22nd January carried them, packed up in cotton, on board a vessel bound for England. After we had been several days at sea I placed them

in a large open glass with salt water, in which they appeared unusually lively. I kept them thus, changing the water at intervals, until the 29th May, when we reached the English Channel. I then packed them up, as before, in a box, and carried them from Portsmouth to Cornwall, and thence to Dublin, which I did not reach until the 14th June; here they again got fresh supplies of sea water at intervals. One of them died during a temporary absence between the 30th June and 7th July; and on the 11th July the survivor was again committed to its prison, and was taken to Cornwall and thence to London, where it was delivered alive to Mr. G. B. Sowerby on the 23rd July.

"This animal had thus travelled, during a period of six months, over a vast extent of the surface of the globe, and had for a considerable portion of that time been unavoidably deprived of its native element."—W. H. B.

At the request of the Chairman, Mr. Heming exhibited a *Swift, Cypselus Apus*, Ill., preserved in spirit, and showing a considerable dilatation at the base of the lower jaw and upper part of the throat. White has observed that "*Swifts*, when wantonly and cruelly shot while they have young, discover a lump of insects in their mouths, which they pouch and hold under their tongue;" but from this notice it would scarcely have been anticipated that so large a collection was made as was found in the present instance. The dilatation had a rounded appearance; distended the skin so as to show distinctly and widely separated the insertion of each of the small feathers at this part; and measured in length 11 lines, and in depth 6. On opening the pouch it proved to be simple, and unconnected except with the cavity of the mouth.

Mr. Heming also exhibited a drawing taken from the recent bird.

Dr. Marshall Hall showed some experiments in the decapitated *Turtle*. Irritation of the nostrils, *larynx*, and spinal marrow induced acts of inspiration; that of the fins and tail induced movements of the other parts respectively.

But the principal object of Dr. Hall was to show that irritation of the nerves themselves equally induced movements of the limbs, &c. When either the sentient or the motory branch of the lateral spinal nerves was stimulated, motions were induced in all the limbs. Dr. Hall stated that a movement of inspiration and of deglutition was caused in the *Donkey* by irritation of the eighth pair of nerves. It has been already stated that irritation of the nostrils, or the branches of the fifth pair of nerves, induced inspiratory acts in the *Turtle*. From these and other facts, Dr. Hall is induced to consider the functions of these two nerves as similar. He further observed that both are nerves of secretion, and that both are muscular nerves —if the minor portion of the fifth be included—as well as exciters of respiration; the fifth differs chiefly in being sentient, being dis-

tributed to external as well as internal surfaces. With the fifth and eighth, Dr. Hall associates other spinal nerves. He considers respiration as a part of a general function of the nervous system, which presides over the *larynx*, *pharynx*, sphincters, ejaculators, &c., to which he has given the name of reflex, from its consisting of impressions carried to and from the *medulla oblongata* and *medulla spinalis*. Some illustrations of this function were given by Dr. Hall at the Meeting of the Committee of Science and Correspondence on November 27, 1832, (Proceedings, Part ii. p. 190,) and further illustrations of it have formed the subject of a Paper by him, which has since been published in the 'Philosophical Transactions'. The experiments shown on the present occasion demonstrate the existence of a series of physiological facts at variance with the law laid down by M. Müller in his Paper entitled "Nouvelles Expériences sur l'effet que produit l'Irritation mécanique et galvanique sur les racines des nerfs spinaux; par Jean Müller, Professeur à l'Université de Bonn," and published in the 'Annales des Sciences Naturelles,' tom. xxiii. (1831), p. 95, viz. "Il suit encore qu'il y a des nerfs qui n'ont point de force *motrice* ou *tonique*, qui ne peuvent jamais occasionner des mouvemens par eux-mêmes, qu'ils soient irrités par l'action galvanique ou mécanique, et qui ne conduisent le courant galvanique que passivement, comme toutes les parties molles humides; qu'il y a en revanche des *nerfs moteurs* ou *toniques* (*nervi motorii seu tonici*) qui montrent à chaque irritation médiate ou immédiate leur force tonique, *qui agit toujours dans la direction des branches des nerfs et qui n'agit jamais en arrière*." In Dr. Hall's experiments the influence first pursued a backward course to the spinal marrow, being afterwards reflected upon the muscles.

Dr. Hall next observed, in regard to respiration, that, whilst Sir Charles Bell is contending that it is involuntary, and Mr. Mayo that it is voluntary, the old doctrine of its being mixed, or partaking of both properties, is the true one. He founded this view upon the following facts:

1. If the *cerebrum* be removed, respiration continues as an involuntary function through the agency of the eighth pair of nerves;

2. If the eighth pair be divided, respiration equally continues, but as an act of volition; but

3. If the *cerebrum* be first removed, and the eighth pair be then divided, respiration ceases on the instant. Volition is first removed with the *cerebrum*; the influence of the eighth pair is then removed by its division. The two sources of the mixed or double function being both cut off, the function ceases.

Dr. Hall explains and reconciles in this manner the difficult and apparently contradictory facts,—that the *medulla oblongata* alone, above the origin of the eighth pair of nerves, or the eighth pair of nerves themselves, may be divided, without arresting the respiration; but that the *medulla oblongata* cannot be divided at the origin of these nerves without arresting the respiration instantly. In the

first case the agency of volition is alone removed, and the respiration continues through the influence of the eighth pair; in the second, that of the eighth pair is removed, and the respiration continues as a function of volition; but in the third, both influences are destroyed at once, and with them the mixed or double function.

The same mixed or double character belongs to the other parts of the reflex function, as that of the *larynx*, the sphincters, the ejaculators. All the organs of the reflex function are also alike impressed through the medium of the mental affections or passions.

The course of the influence which constitutes the reflex function must be divided into the incident, or that into the *medulla*, and the reflected, or that from the *medulla*. The nerves which conduct the incident impression have, hitherto, received no designation; the others constitute a part of the system of muscular nerves. To the former class belong nerves which doubtless supply the *larynx* with its impressibility by carbonic acid, &c., &c., and hitherto undescribed, untraced; to the latter, the superior and inferior laryngeals: to the former belong the fifth, in the nostrils, in the face,—the eighth in the lungs, &c.; to the latter the respiratory nerves: to the former, nerves hitherto undescribed of the sphincters, ejaculators, &c.; to the latter, the muscular nerves supplying these parts.

The whole constitutes the subject of an investigation in which Dr. Hall has been for some time engaged.

August 26, 1834.

William Yarrell, Esq., in the Chair.

An extensive series was exhibited of skins of *Mammalia*, collected in Nepâl by B. H. Hodgson, Esq., Corr. Memb. Z. S., and presented by that gentleman to the Society. It included twenty-two species, several of which were first made known to science by the exertions of Mr. Hodgson, while others still remain to be described by him.

A paper "On the *Mammalia* of Nepâl," written by Mr. Hodgson, has been read before the Asiatic Society of Calcutta, and has been published in the 'Journal' of that Society: but Mr. Hodgson has availed himself of the opportunities which have occurred to him since it was written, to make various additions and corrections in the copy transmitted by him to the Society, portions of which have been read at several previous meetings.

Mr. Hodgson's paper commences by an account of the physical characters of Nepâl, which are so varied, according to the elevation of the several districts, as to render it necessary, when treating on its natural productions, to divide it into three regions. The lower region consists of the Tarâi or marshes, the Bhawar or forest, and the lower hills, and has the climate of the plains of Hindoostan, with some increase of heat and great excess of moisture. The central region includes a clusterous succession of mountains, varying in elevation from 3000 to 10,000 feet, and having a temperature of from 10° to 20° lower than that of the plains. The juxta-Himalayan region, or Kachâr, consists of high mountains, the summits of which are buried for half the year in snow: the climate has nothing tropical about it, except the succession of the seasons.

Mr. Hodgson then enumerates the *Mammalia* which have been observed in Nepâl, adopting in their arrangement the system of Cuvier, and noticing as regards each the region in which it occurs. He adds occasional remarks as to their habits; and notices many which appear to him to be undescribed.

The following is an abstract of this portion of his communication:

QUADRUMANA

are limited to the southern region, where Mr. Hodgson is aware of the existence of

Semnopithecus Entellus, F. Cuv., which has been introduced by religion into the central region, where it flourishes, half domesticated, in the neighbourhood of temples.

Macacus radiatus, Geoff.

He regards it as probable that among the lower hills occurs *Nycticebus Bengalensis*, Geoff.

CHEIROPTERA.

Pteropus, Briss.
Molossus, Geoff.
Rhinolophus, Geoff.
Vespertilio, Geoff.

Species of these genera are abundant in the Tarâi; but there are few in the central region, and fewer still in the northern. One species of *Rhinolophus* and three of *Vespertilio* harbour in outhouses in the central region; and one species of *Pteropus*, of a smaller size and duller colour than the *Pter. medius*, Temm., of the plains, appears in troops in the autumn to plunder the gardens of the ripe pears.

PLANTIGRADA.

Talpa, Linn. This genus is found only in the Kachâr.

Sorex Indicus, Geoff. A dull slaty blue variety of this species is found only in the lower and central regions.

Prochilus labiatus, Ill.,
Helarctos Malayanus, Horsf.,
are found in the Tarâi.

Ursus isabellinus, Horsf.,
Ursus Thibetanus, F. Cuv.,
occur in the central and northern regions.

Gulo orientalis, Horsf. Lower region.

Ratelus mellivorus, Storr. In the lower region and also in the proximate part of the central tract.

Ailurus fulgens, F. Cuv.,
Ictides albifrons, Val.,
belong to the Kachâr, though they occasionally occur in the central region.

Paradoxurus, F. Cuv. Of this genus an undescribed species, coloured, especially in youth, like *Mustela flavigula*, Bodd., is found in the central region. A second species, perhaps the *Par. Bondar*, Gray, occurs in the Tarâi.

DIGITIGRADA.

Viverra undulata, Gray, ? Common in the central region.
Viverra Rasse, Horsf.,
Viverra Indica, Geoff.,
are common in the Tarâi.

Herpestes griseus, F. Cuv., occurs in the lower region; and a second species, apparently undescribed, of a somewhat smaller size and darker duller grey colour, is found in the central region.

Felis Tigris, Linn.,

Felis Pardus, Linn.,
Felis Leopardus, Linn.,
Felis jubata, Linn.,
are all found in the lower region.

The *Leopard* extends into the central region, where it abounds, but is much less dreaded than the *Bear*.

The *Leopard* is found moreover in the northern region; and the *Tiger* also occurs there, close to the snows, but scarcely in the central region.

Felis Nepalensis, Vig. and Horsf.,
Felis Moormensis, Hodgs.,
belong to the central region; as does also an undescribed and beautifully marked species.

Felis viverrinus, Benn., is confined to the Tarâi.

Other small species of *Felis*, not yet determined, are found in the northern region.

Mustela flavigula, Bodd., and two allied and hitherto undescribed species, occur in the central region. A fourth *Martin*, with a shorter tail than the above and more resembling the *common Weasel* of England, is found in the Kachâr. It is the

Martes laniger, Hodgs. Its fur is thick, spirally twisted, woolly, and of a uniform dirty cream colour.

Mustela putorius, Linn.? is an inhabitant of the central, and more abundantly of the northern, region.

Lutra, Linn. Of this genus Mr. Hodgson conceives that no less than seven species are found in Nepâl, five of which differ from the two which inhabit the plains of Hindoostan. Four of these he regards as new, differing materially in length, in bulk and proportions, and in colour; one of them is yellowish white all over; the rest are brown, more or less dark, some having the chin and throat or under surface paled nearly to white or yellow.

Canis familiaris, Linn. The *Pariah* is the only *Dog* of the lower and central regions. The *Thibetan Mastiff* is limited to the Kachâr, into which it was introduced from its native country, but in which it degenerates rapidly; there are several varieties of it.

Canis primævus. Hodgs.

Canis aureus Indicus. In the lower and central regions; rare in the Kachâr.

Canis Bengalensis, Shaw., the small Indian insectivorous *Fox*, occurs in the Tarâi.

Canis n. s.? a large *Fox*, peculiar to the Kachâr.

Canis Lupus, Linn. In the lower region.

Rodentia.

Hystrix leucurus, Sykes. In the central and lower regions.

Lepus nigricollis, F. Cuv.? In the Tarâi.

Lepus n. s. A species as large as the *ordinary Hare* and nearly resembling it occurs rarely in the central and northern regions.

Sciurus Palmarum, Linn. Abundant in the southern region.

Sciurus n. s. ?, of an earthy brown colour tipped with golden yellow, occurs in the central region.

Sciuropterus nitidus, F. Cuv. In the lower and central regions, but rarely in the latter.

Mus decumanus, Linn.,

Mus Rattus, Linn. Both very numerous and troublesome.

Mus Musculus, Linn. Very uncommon.

Field *Mice* are frequently met with.

Edentata.

Manis n. s., allied to *Man. Javanica*, Desm. Of frequent occurrence in the hills of the lower region and in the mountains of the central tract.

Pachydermata.

Elephas Indicus, Cuv.,

Rhinoceros unicornis, Cuv., are both abundant in the forest and hills of the lower region, whence in the rainy season they issue into the cultivated parts of the Tarâi to feed upon the rice crops.

Mr. Hodgson suggests that there are two varieties, or perhaps rather species, of the *Indian Elephant*, the Ceylonese and that of the Saul forest. The Ceylonese has a smaller lighter head, which is carried more elevated; it has also higher fore-quarters. The *Elephant* of the Saul forest has sometimes five nails on its hinder feet.

The *Rhinoceros* goes with young from seventeen to eighteen months and produces one at a birth. At birth it measures 3 feet 4 inches in length, and 2 feet in height. An individual born at Katmandoo eight years since measures now 9 feet 3 inches in length; 4 feet 10 inches in height at the shoulders; the utmost girth of his body is 10 feet 5 inches; the length of the head, 2 feet 4 inches; of the horn, 5 inches: he is evidently far from being adult. It is believed that the animal lives for one hundred years; one, taken mature, was kept at Katmandoo for thirty-five years without exhibiting any symptoms of approaching decline. The young continues to suck for nearly two years. It has when born and for a month afterwards a pink suffusion over the dark colour proper to the mature hide.

Sus. scrofa, Linn., var.

Ruminantia.

Cervus Axis, Erxl.

Cervus porcinus, Zimm.

Cervus n. s. ?, a brown porcine *Axis*.

Cervus Elaphus, Linn., ?

Cervus Aristotelis, Cuv.

Cervus equinus, Cuv.

Cervus n. s., of a black colour and belonging to the same group as the two last named.

Cervus Bahrainja, n. s., serving, with *Cerv. Wallichii*, Cuv., to connect the *Elephine* and *Rusan* groups of the genus.

Cervus Ratwa, Hodgs.

All these *Deer*, except the last, which belongs to the *Muntjaks*, inhabit the lower hills. The *Ratwa* is proper to the central region and occasionally occurs in the lowest valleys of the Kachâr.

Antilope Goral, Hardw. Northern and central regions.

Antilope Thar, Hodgs. Central region, and occasionally in the northern and southern.

Antilope Chickara, Hardw.,

Antilope Cervicapra, Pall.,

both belong exclusively to the lower region.

Mr. Hodgson is of opinion that the distinctions attempted to be established as between two *Chickaras* on account of some differences in the drawings and specimens of General Hardwicke and Duvaucel cannot be maintained.

Capra Jharal, Hodgs. In the northern region exclusively.

Ovis Ammon, var.

Ovis Musmon, var. Also in the northern region.

Mr. Hodgson states that the wool of the *Huniah* or Bhotean domesticated *Sheep* is superb; and suggests that attempts should be made to naturalize the race in England. To such attempts he is willing to render every assistance in his power. It is suited only for the northern region of Nepâl, suffering much from the heat of the central district.

Bos Taurus, var. *Indicus*.

Bos grunniens, Linn. Domesticated in the Kachâr.

Bos Bubalus, Briss.

Specimens were exhibited of several *Reptiles*, which were accompanied by notes by Mr. Gray. These notes were read.

Mr. Gray regards the *Testudo Spengleri*, Walb., as the type of a new genus of *Emydidæ*, having, like the *fresh-water Tortoises* generally, the toes lengthened and covered by a series of shields, but these members, instead of being webbed as in the other genera of the family, are quite free from each other; the legs, moreover, are destitute of fringe along their outer edge. This structure of the feet and limbs indicates habits less aquatic than those of the *Emydidæ* generally; and Mr. Gray states that such appears to be the case with the *Em. Spengleri*, for though he has watched for a considerable time the specimen now living at the Society's Gardens he has never observed it to enter the water.

From the beautiful figure of the animal of *Em. spinosa* given by Mr. Bell in his 'Monograph of the *Testudinata*,' Mr. Gray is inclined to believe that this species belongs to the same genus with *Em. Spengleri*, the toes, especially those of the hind feet, being

represented in the figure as quite free. The shells of the two species agree in being of a pale brown colour above, and in being sharply toothed on the margin; in both which respects they differ from the other *fresh-water Tortoises*.

GEOEMYDA.

Testa depressa, ad marginem latè serrata. Pedes utrinque squamis elongatis biseriatis instructi, haud ciliati: digiti liberi, subgraciles, supernè squamis tecti. Caput parvum, cute tenui, lævi, durâ obtectum.

Indiæ (*et Africæ?*) *Incolæ.*

1. GEOEMYDA SPENGLERI. *Geo. testâ oblongâ, pallidè brunneâ, tricarinatâ, carinis continuis nigro marginatis; margine posticâ profundè serratâ; sterno nigro luteo marginato; scutellis axillaribus inguinalibusque nullis.*
Testudo Spengleri, *Walb., in Berl. Naturf., theil* v. *t.* 3.
Testudo serrata, *Shaw, Gen. Zool., vol.* iii. *t.* 9.
Testudo tricarinata, *Bory St. Vinc., Atlas, t.* 37. *f.* 1.
Emys Spengleri, *Schweig.*, 32.
Hab. "in Chinâ," J. R. Reeves, Esq.

2. GEOEMYDA SPINOSA. *Geo. testâ suborbiculari, carinatâ; areolis spinâ centrali armatis; margine totâ profundè serratâ; suprà pallidè fuscâ, sterno pallidè fusco brunneo radiato; scutellis axillaribus inguinalibusque mediocribus.*
Emys spinosa, *Bell, Test., t.* . *fig.* 1, 2.—*Gray, Hardw. Ind. Zool., tom.* ii. *t.* . *fig.* 1.
Hab. "apud Penang," Capt. Hay.

A new genus of *Geckotidæ* is characterized by Mr. Gray under the name of

GEHYRA.

Digiti 5–5, ad basin dilatati, serie unicâ squamarum transversalium integrarum tecti, ad apicem compressi, liberi, omnes (præter pollices) unguiculati. Pori femorales nulli.

This genus is very nearly allied to *Platydactylus*, Cuv., in the form of the base of the toes; but the ends of the toes are thin, simple, and compressed, instead of being more widely dilated, and with the last *phalanx* affixed along the upper surface. The body is covered with small uniform granular scales, and the belly with larger flat scales; the tail is ringed with square scales, those of the under surface being the largest.

GEHYRA PACIFICA. *Ge. pallidè brunnea albido punctata, subtùs alba; occipitis strigâ utrinque fasciisque latis irregularibus dorsalibus quinque vel sex pallidis; artubus pallido marmoratis.*
Long. *corporis* 2¾ poll.; *caudæ*, totidem.
Hab. in Insulâ quâdam Oceani Pacifici.

The collection of the British Museum contains a specimen, much discoloured, of what appears to be a second species of this genus. Another species is contained in the Muséum d'Histoire Naturelle at Paris.

A living specimen was exhibited of the *Red Viper* of the Somersetshire Downs. It had been sent from Taunton to Mr. Gray, who states that he has compared it very attentively with the *black* and with the *common Viper* of England, and that he cannot discover the slightest difference between them except in the shade of the colour. They all agree in having the upper lip shield white, with brown or black edges, and in having a series more or less distinct of lozenge-shaped spots. He consequently refers them all to *Vipera Berus*, Daud.

Mr. Gray also states that he believes the *Lacerta ædura*, described by the Rev. R. Sheppard in the seventh volume of the 'Linnean Transactions', to be the male, observed during the summer, of the common *Lacerta vivipara*, the *Lacerta agilis* of British authors; the several characters which were pointed out by Mr. Gray at the Meeting on May 22, 1832, (Proceedings of the Committee of Science, Part ii. p. 112,) being at that season so fully developed as to produce the appearances noticed by Mr. Sheppard in his account of his presumed species.

The following notes were read of the dissection of a specimen of *Azara's Opossum, Didelphis Azaræ*, Temm., which recently died at the Society's Gardens. The general dissection was performed by Mr. Martin; that of the organs of generation by Mr. Rymer Jones.

"The animal was an adult male, measuring, exclusive of the tail, 1 foot 5 inches, the tail being 1 foot 4 inches in length.

"On opening the body the situation of the *viscera* was as usual. Their examination afforded the following details.

"The liver was found to consist of three lobes; one on the left, of a pyramidal figure, a large central lobe, and one on the right, small, irregular in shape, with a bifid margin. On the convex or external aspect of the middle lobe, the gall-bladder showed itself, filling up a circular aperture so regularly defined as to appear artificial; and on turning back the liver, the gall-bladder was seen to occupy a deep *sulcus*, incomplete or unclosed (as it were) in its centre. The gall-bladder was of a globular form, its diameter being about $\frac{7}{8}$ of an inch; its duct ran in a furrow, which took its course midway across the lobe on its under surface. At 2 inches from the neck of the gall-bladder, this cystic duct was joined at an acute angle by the hepatic ducts, the number of which corresponded with that of the lobes. The *ductus choledochus communis* thus formed continued its course for nearly 2 inches, and entered the *duodenum* about the same distance below the *pylorus*, the aperture being very small and valvular. With the biliary duct, the pancreatic also en-

tered the intestine, there being but one common termination between them. On tracing the pancreatic duct it was found issuing from the middle of the right extremity of the gland, which latter was somewhat irregular in shape, having each extremity divided into two *cornua*, and to the junction of the two right *cornua* the duct was easily traced. The length of the *pancreas* was 2¾ inches.

"The stomach was ovoid in form, the cardiac portion occupying nearly one half of the *viscus*, and the pyloric orifice being not more than ¼ an inch from the cardiac. The position of the pyloric valve was marked by a deep indentation. The length of the stomach was 3 inches; its diameter opposite the cardiac orifice, 2¾.

"The spleen was attached by a loose fold of mesentery to the middle of the greater curvature of the stomach, and was somewhat triangular in shape. It was 2¼ inches in length, and 1⅛ in breadth at the broadest part.

"The *duodenum* was attached throughout by a mesenteric fold, its diameter was about ⅞, or nearly an inch. From the *duodenum* the small intestines gradually diminished in diameter to the ileo-colic valve, their diameter in the narrowest part being reduced to ¼ an inch. The total length of the small intestines was 3 feet 7 inches. The *cæcum* was simple in figure, with a blunt *apex*, and measured 2 inches in length. The large intestines measured 4½ inches.

"The kidneys were of the usual shape and exhibited no difference in their respective situation, neither being placed higher than the other. The membranous capsule was little adherent, and no superficial vessels were observable. The *papilla* was single. The length of each kidney was 2½ inches, the breadth ¾, and the thickness ⅝. The renal capsules appeared wanting.

"The lungs were very irregularly divided, there being four lobes on the right side and but one, without any fissure, on the left.

"The rings of the *trachea* at its upper part formed nearly an entire circle, which, as they proceeded downwards, became less and less complete till, at the lower part, three-fourths only of the ring was cartilage. The number of rings was twenty-one, but many were so bifurcated at the lower part as to render it doubtful whether they should be counted as double or single.

"The sterno-thyroid and sterno-hyoid muscles were very strong and distinct. The thyroid glands were found lying one on each side of the first six rings of the *trachea*, and measured ¾ of an inch in length.

"The mucous lining of the *œsophagus* was puckered into longitudinal *rugæ* throughout its whole extent, except for the last ¾ths of an inch, where the *rugæ* were transverse.

"The length of the tongue from the *epiglottis* was 3⅞ inches, its breadth ¾. Its *apex* was flat and round, and the middle of the anterior portion of its *dorsum* or upper surface covered with retroverted *papillæ*, a line of fungiform *papillæ* occupying each side of the

root, between which three isolated *papillæ* appeared very distinct, forming the three angles of a triangle. The submaxillary glands were 1½ in length, ½ inch in breadth, and ¼ in thickness.

"To the above details I am able, through the kindness of Mr. Rymer Jones, to add a description of the organs of generation, illustrated by a sketch, which that gentleman was so obliging as to make from the parts dissected. In removing the skin from the animal the penis had been injured.

"The bladder was 1½ inch in length and ¾ in breadth, its shape being oval. The muscular coat was thick. The fibres were gathered into strong transverse *rugæ* on the anterior and posterior aspects of the *viscus*, while laterally they formed two longitudinal bands, each ¼ inch in breadth, running from the *fundus* to the neck. Beneath the transverse groups of fibres another set was found affecting a longitudinal direction.

"The end of the *penis* being deficient,—what remained measuring 1¼ inch,—the *urethra* measured 5 inches in length; the length of its prostatic portion being 2¾ inches, of the membranous ¾, of the spongy 1½. Its circumference at the neck of the bladder and throughout the prostatic portion was ¼ of an inch, at the membranous portion only 1½ line, at the bulbous portion it was again dilated to ¼ of an inch. The lining membrane presented no folds, but was perforated along the whole prostatic portion by innumerable microscopic apertures arranged in parallel rows, through which on squeezing the prostate its secretion oozed.

"The ureters entered the bladder by two little apertures placed close together immediately above its neck.

"The *vasa deferentia* terminated by two small orifices upon the under surface of the *urethra*, about 2 lines from the commencement of its prostatic portion.

"The prostate, 2¾ inches in length, inclosed the commencement of the *urethra* for that extent, with a glandular envelopment $\frac{3}{16}$ths of an inch in thickness. Its commencement was marked by a decided line of black matter, and the first half inch of its extent was tinged by the same dark substance, resembling in colour the section of a bronchial gland. The succeeding inch was of a creamy white hue, while the last portion presented a dingy green tinge. Its ducts have been described.

"Cowper's glands were two in number on each side, flask-shaped, of the size of large peas, soft in texture, of a white colour, and wrapped in a fibrous envelope. The ducts from the glands on each side joined before entering the *urethra*, and the four opened by two orifices, at the commencement of the bulbous portion of that tube.

"The bulb of the *corpus spongiosum* was divided into two parts, each of an oblong shape, ⅝ths of an inch in length, and ¼ in thickness; the *parietes* formed by a strong muscle constituting nearly the whole mass.

"The *crura penis* were unattached to the *ischia*, but were enveloped in a muscular sac, the walls of which were the eighth of an inch in thickness."

In illustration of the notes, preparations were exhibited of the stomach and *cæcum*, as was also the drawing above referred to of the organs of generation and bladder.

September 9, 1834.

Joseph Cox Cox, Esq., in the Chair.

A letter was read, addressed to the Secretary by Dr. E. Rüppell, and dated Frankfort, August 10, 1834. It was accompanied by specimens of *Magilus antiquus*, Rupp., including both the shell and the animal, and of the shell and animal of a new genus of *Pectinibranchiated Gasteropodous Mollusca*. The latter was accompanied by a description by Dr. Rüppell, who characterizes it under the designation of

LEPTOCONCHUS.

Testa tenuis, pellucida, subglobosa, spirâ depressâ, subobsoletâ: *aperturâ* magnâ, subovali, extremitatibus in contrarium versis, marginibus haud coalitis, dextro tenui anticè subexpanso: *columellâ* nullâ, *umbilico* nullo, anticè truncatâ, contortâ.

Animal proboscide elongato, retractili: *tentaculis* duobus, complanatis, trigonis, internè ad basin coalitis, externè in medio oculos gerentibus: *pede* mediocri, *operculo* nullo: *pallio* ad marginem circulari, haud appendiculato, ad latus sinistrum subproducto: *foramine branchiali* submagno.

The colour of the shell which constitutes the type of this new genus is constantly a slightly sordid milk-white. It is sulcated externally by numerous longitudinal undulated closely set lines, the outer whorls encroaching on the spire of the earlier ones so as almost to obliterate it.

Length of the adult shell, $14\frac{3}{4}$ lines; greatest breadth, $12\frac{1}{2}$; length of the young shell, $7\frac{1}{2}$; breadth, 6.

Individuals of all ages have the shell thin and fragile, and constantly occur imbedded in the calcareous mass of polypes, having a communication with the sea by only a moderate opening. They are found in the Red Sea, and are most frequently met with in *Meandrina Phrygia*.

To distinguish the shell of *Leptoconchus* from that of *Magilus* it is sufficient to observe that in the latter the two margins of the aperture are always united, while in the former genus they are always disunited. The animals are distinguished by the possession and the want of an *operculum*, and by the difference in the *proboscis*; the *siphon* of *Magilus*, moreover, does not occur in *Leptoconchus*.

Dr. Rüppell suggests that the systematic place which should be assigned to this genus is near the *Ianthinæ*. The number of the *tentacula*, the oral *proboscis*, the mantle destitute of *siphon*, the pectinated *branchiæ* composed of closely heaped pyramids, and the absence of *operculum*, are so many marks of affinity; to which may be added some of the characters of the shell: but he states himself to be perfectly aware that the difference between the habitations of

these genera is so wide as to afford no confirmation of the correctness of this approximation.

A letter was read, addressed to the Secretary by B. H. Hodgson, Esq., Corr. Memb. Z.S., and dated Nepal, March 4, 1834.

It commences by remarking on the difficulty experienced by Zoologists in the determination of distinctive marks adequate for the separation of the genera *Antilope*, *Capra*, and *Ovis*; and then refers to the instances in which the writer has shown that the character of *Antilope* founded on the presumed absence of cavities in the cores of the horns connected with the frontal sinuses is incorrect. The value of the characters which are generally admitted by authors as distinguishing between the genera *Capra* and *Ovis* may, he conceives, be tested by a comparison of the wild race of either genus which belongs to the Himalaya.

"For the last year," Mr. Hodgson proceeds, "I have had alive in my garden a splendid specimen of the mature male of each; and I have frequently compared them together in all respects of manners and of structure. As the *Goat* in question, as well as the *Sheep*, is new, I will begin with a synoptical description of the two, and then proceed to notice the points of difference and of agreement existing between them.

Tribe Capridæ, *H. Smith.*

Genus Capra, *Linn.*

Species *Capra Jhâral.*—The *Jhâral* of the Nepalese.

"Affined to the *Alpine Ægagri* and to *Capra Jemlaica*. Adult male 50 inches long from snout to rump, and 33 high. Head finely formed and full of beauty and expression, clad in close short hair, and without the least vestige of a beard. Facial line straight. Ears small, narrow, erect, rounded at the tips, and striated. Eye lively. Between the *nares* a black moist skin. *Nares* themselves short and wide. Knees and *sternum* callous. Tail short, depressed, wholly nude below. Animal of compact powerful make, with a sparish, short, and bowed neck; deep barrel and chest; longish, very strong, and rigid limbs, supported on perpendicular pasterns, and high compact hoofs: false hoofs conic and considerably developed. Attitude of rest gathered and firm, with the head moderately raised, and the back sub-arched. Shoulders decidedly higher than the croup. Fore quarters superb, and wholly invested in a long, flowing, straight, lion-like mane, somewhat feathered vertically from the crown of the withers, and sweeping down below the knees. Hind quarters poor and porcine, much sloped off from the croup to the tail, and the skin much constricted between the hams behind. Fur of two sorts: the outer, hair of moderate harshness, neither wiry nor brittle, straight, and applied to the skin, but erigible under excitement, and of unequal lengths and colours; the inner, soft and woolly, as abundant as in the *Wild Sheep* and finer, of one length and colour. Horns 9 inches long, inserted obliquely on the crest of the frontals, and touching at the base with their anterior edges; subcompressed,

subtriangular, and uniformly wrinkled across, except near the tips, where they are rounded and smooth, keeled and sharpened towards the points, obtusely rounded behind; the edge of the keel neither nodose nor undulated, but smooth, or evanescently marked by the transverse wrinkles of the horns. The horns are divergent, simply recurved, and directed more upwards than backwards.

"Colour of the animal a saturate brown superficially, but internally hoary blue, and the mane, for the most part, wholly of that hue. Fore arms, lower part of hams, and backs of the legs, rusty. Entire fronts of the limbs, and whole face and cheeks, black-brown; the dark colour on the two last parts divided by a longitudinal line of pale rufous; and another before the eye, shorter. Lips and chin hoary, with a blackish patch on either side below the gape. Tip of tail and of ears blackish. Tongue and palate, and nude skin of lips and muzzle, black. *Iris* darkish red hazel. Odour very powerful in the mature male at certain times.

"Found in the wild state in the Kachâr region of Nepal, in small flocks or solitarily. Is bold, capricious, wanton, eminently scansorial, pugnacious, and easily tamed and acclimatised in foreign parts.

"Remarks. *Jhâral* is closely affined by the character of the horns to the *Alpine Ægagri*, and still more nearly, in other respects, to *Capra Jemlaica*. It differs from the former by the less volume of the horns, by their smooth anterior edge, and by the absence of the beard; from the latter, by the horns being much less compressed, not turned inwards at the points, nor nodose. *Jhâral* breeds with the *domestic Goat*, and more nearly resembles the ordinary types of the tame races than any wild species yet discovered.

Genus Ovis, *Linn.*

"Species *Ovis Nâhoör*, Mihi.—The *Nâhoör* of the Nepalese. New? Variety of *Ovis Musmon*?

"Closely affined to *Ovis Musmon*, of which it is probably only a variety. Adult male 48 inches from snout to rump, and 32 high. Head coarse and expressionless, clad entirely in close short hair, without beard on the chin or throat, or any semblance of mane. Chaffron considerably arched. Ears medial, narrow, erect, pointed, striated. Eye dull. Moist space between the *nares* evanescent. *Nares* narrow and long. Knees and *sternum* callous. Tail medial, cylindrico-depressed, only half nude below. Structure moderately compact, not remarkable for power. Neck sparish, bowed, with a considerable dip from the crown of the shoulders. Limbs longish, firm, but slender, not remarkable for rigidity, and supported on lax pasterns, and on hoofs lower and less compact than the *Goat's*; false hoofs mere callosities. Attitude of rest less gathered and firm, with the head lower, and the back straight. Shoulders decidedly lower than croup. Fore quarters not more massive than the hind, nor the extremities stronger. Fur of two sorts: the outer, hair of a harsh, brittle, quill-like character, serpentined internally, with the salient bows of one hair fitting into the resilient bends of another; externally straight, porrect from the skin, and very abundant; of medial uniform length all over the body; the inner coat, soft and woolly,

rather spare, and not more abundant than in the *Goat*. Horns 22 inches along the curve, inserted high above the orbits on the crown of the forehead, touching nearly at the base with their whole depth, and carrying the frontal bones very high up between them, the parietals being depressed in an equal degree*. The horns diverge greatly, but can scarcely be said to be *spirally* turned. They are first directed upwards considerably before the facial line, and then sweep downwards with a bold curve, the points again being recurved upwards and inwards. They are uncompressed, triangular, broadly convexed to the front, and cultrated to the back. Their anterior face is the widest, and is presented almost directly forwards: their lateral faces, which are rectilinear, have an oblique aspect, and unite in an acutish angle at the back. They are transversely wrinkled, except near the tips, which are round and smooth.

"The colour of the animal is a pale slaty blue, obscured with earthy brown, in summer overlaid with a rufous tint. Head below, and inside of the limbs and hams, yellowish white. Edge of the buttocks behind and of the tail pure white. Face and fronts of the entire limbs and chest blackish. Bands on the flanks the same, and also the tip of the tail. Tongue and palate dark. Eye yellow hazel. No odour.

"Is found in the wild state in the Kachâr region of Nepal, north of the *Jhâral*, amid the glaciers of the Himalaya, and both on the Indian and Tibetan sides of the snowy crests of that range: is sufficiently bold and scandent, but far less pugnacious, capricious, and curious than the *Jhâral*. Much less easily acclimatised in foreign parts than he is, in confinement more resigned and apathetic, and has none of the *Jhâral's* propensity to bark trees with his horns, and to feed upon that bark and upon young shoots and aromatic herbs. I have tried in vain to make the *Nâhoŏr* breed with tame *Sheep*; because he will not copulate with them. The female of the species has the chaffron straight; and the horns short, erect, subrecurved, and greatly depressed. The young want, at first, the marks on the limbs and flanks, and their nose is straight.

"Remarks. Differs from *Ovis Musmon*, to which it is closely allied, by the decided double flexure of the horns, their presence in the females, and the want of a tuft beneath the throat.

"Having now completed the descriptions of the *Wild Goat* and the *Wild Sheep*, I shall proceed to the exhibition of the points of difference and of resemblance between the two, beginning with the former.

Goat.	*Sheep.*
Whole structure stronger and more compact.	Less so.
Limbs thicker and more rigid.	Feebler and more slender.

* The *Goat's* skull has the same form, but less strikingly developed; and unless I am mistaken, this form of the skull would afford a just and general mark to separate *Ovis* and *Capra* from *Cervus* and *Antilope*. There is a gradation of characters in this respect among the *Antelopes* tending to the *Caprine* type in their general structure.

Goat.	*Sheep.*
Hoofs higher and more compact.	Lower and less so.
False hoofs well developed.	Evanescent.
Head smaller and finer.	Larger and heavier.
Facial line straight.	Chaffron arched.
Ears shorter and rounded.	Longer and pointed.
Tail short, flat, nude below.	Longer, less depressed, and half nude only.
Withers higher than croup.	Croup higher.
Fore legs stronger than hind.	Fore and hind equal.
Croup sloped off.	Not so.
Odorous.	Not so.
Nose moister, and *nares* short and wide.	Less moist, longer, and narrower.
Horns of medial size, keeled, and turned upwards.	Horns very large, not keeled, and turned to the sides.
Eye darker and keener.	Paler and duller.
Hair long and unequal.	Short and equal.
Back arched.	Back straight.
Bears change of climate well.	Bears it ill.
Is eminently curious, capricious, and confident.	Is incurious, staid, and timid.
Barks trees with its horns, feeding on the peel, and on aromatic herbs.	Does not bark trees, and is less addicted to aromatics.
In fighting rears itself on its hind legs and lets the weight of its body fall on the adversary.	In fighting runs a-tilt, adding the force of impulse to that of weight.

" The *Goat* and *Sheep* have in common, hair and wool; no beard; no suborbital sinuses; evanescent muzzle; no inguinal pores; horns in contact at the top of the head; knees and *sternum* callous; angular and transversely wrinkled horns; striated ears; two teats only in the females; horns in both sexes; and, lastly, incisors of precisely the same form.

" Of the various diagnostics, then, proposed by Col. Hamilton Smith, it would seem that the following only can be perfectly relied on to separate *Ovis* from *Capra*: slender limbs; longer pointed ears; chaffron arched; *nares* long and oblique; very voluminous horns, turned laterally with double flexures. I should add myself, the strong and invariable distinction,—males not odorous,—as opposed to the males odorous of the genus *Capra*. But, after all, there are no physical distinctions at all equivalent to the moral ones so finely and truly delineated by Buffon, and which, notwithstanding what Col. H. Smith urges in favour of the courage and activity of *Sheep*, will, for ever, continue to be recognised as the only essential diagnostics of the two genera."

September 23, 1834.

Dr. Marshall Hall, in the Chair.

A letter was read, addressed to the Secretary by John Hearne, Esq., Corr. Memb. Z.S., and dated Port au Prince, July 16, 1834. It accompanied a present of "an *Alligator* from the river Artiboniti," which is referrible to the *Crocodilus acutus*, Cuv.; and of some *Doves*. These are the *little Ground Dove* or *Ortolan* of the English residents in Hayti, *Columba passerina*, Linn.; and the *red-legged Partridge*, as it is called in that island, *Col. mystacea*, Temm. Mr. Hearne adverts to some other animals which he has observed in Hayti, and expresses his hopes of succeeding in bringing or sending them to England.

The Secretary adverted to some other animals lately added to the Menagerie, and which he regarded as interesting either in a scientific point of view, or on account of their not having been previously contained in the collection. They included the *silky Monkey*, *Midas Rosalia*, Geoff., of which a specimen has recently been presented by T. Manton, Esq.; the *Javanese Ichneumon*, *Herpestes Javanicus*, Geoff.; the *African Moufflon*, *Ovis Tragelaphus*, Geoff., presented by Sir Thomas Reade, His Majesty's Consul-General at Tunis; and a remarkably darkly coloured variety of the *European Bear*, *Ursus Arctos*, Linn., presented by R. H. Beaumont, Esq.

Among the *Birds* there have been added a pair of the *pied Pigeon* of New Holland, *Columba armillaris*, Temm.; a pair of the *Capercailzie* or *Cock of the Woods*, *Tetrao Urogallus*, Linn., obtained from Norway and presented to the Society by J. H. Pelly, jun., Esq.; a pair of the *Buffonian Touraco*, *Corythaix Buffonii*, Le Vaill.; and a specimen of the *naked-legged Owl* of the Indian Islands, *Ketupa Javanensis*, Less., (*Strix Ketupu*, Horsf.,) presented by James Harby, Esq., and stated to have been brought from Manilla.

Among the *Reptiles* there have recently been added an interesting collection of *Tortoises* from China, presented by John Russel Reeves, Esq., of Canton, and including specimens of the *three-banded Box-Tortoise*, *Cistuda trifasciata*, Gray; of *Spengler's Terrapin*, *Geoemyda Spengleri*, Gray, (*Testudo Spengleri*, Walb.); of the *Emys Sinensis*, *Em. Reevesii*, and *Em. Bealii*, all lately described by Mr. Gray; and also of the *Platysternon megacephalum*, Gray. A *Crocodile* apparently referrible to the *Crocodilus cataphractus*, Cuv., is also at present living in the Menagerie: its nuchal plates constitute a series continuous with those of the back, but consist of only four rows instead of five, the number existing in the individual on which the species was originally founded. The specimen is stated to have been brought from Fernando Po.

Mr. Ogilby called the attention of the Meeting to a specimen of

an *Irish Otter*, which he at the same time presented to the Society in the name of Miss Anna Moody of the Roe Mills near Newtown Lemavaddy, by whom it was preserved and mounted. On account of the intensity of its colouring, which approaches nearly to black both on the upper and under surface; of the less extent of the pale colour beneath the throat as compared with the *common Otter, Lutra vulgaris*, Linn., as it exists in England; and of some difference in the size of the ears and in the proportions of other parts; Mr. Ogilby has long considered the *Irish Otter* as constituting a distinct species; and he feels strengthened in this view of the subject by the peculiarity of its habitation and manners. It is, in fact, to a considerable extent a marine animal, being found chiefly along the coast of the county of Antrim, living in hollows and caverns formed by the scattered masses of the basaltic columns of that coast, and constantly betaking itself to the sea when alarmed or hunted. It feeds chiefly on the salmon, and as it is consequently injurious to the fishery, a premium is paid for its destruction; and there are many persons who make a profession of hunting it, earning a livelihood by the reward paid for it and by disposing of its skin. Mr. Ogilby stated his intention of comparing it minutely with the *common Otter* as soon as he should be enabled to do so by the possession of entire subjects, and especially of attending to the comparison of the osteological structures. He added that he proposed to designate it, provisionally, as the *Lutra Roensis*, in honour of the lady by whom it was presented.

Mr. Owen read a "Description of a recent *Clavagella*," founded on the examination of an individual brought home by Mr. Cuming and imbedded in siliceous grit. The portion of rock contained the whole of the expanded cavity excavated for the abode of the animal, together with the fixed valve of its shell and about an inch of its calcareous tube: the loose smaller valve was detached from the soft parts. Mr. Owen describes in detail the fixed valve, which corresponds to the left side of the animal's body; the attachment to it of the adductor muscles, two in number; its passage into the calcareous tube by a continuance of the shelly substance; the tube itself, which communicates with the posterior part of the chamber next the side which corresponds with the ventral surface of the animal; and the free valve. He regards it as probable that the animal of this species, having penetrated into the rock for a certain distance, then becomes stationary, and limits its operations to enlarging its chamber to the extent required for the development of its ovary: this enlargement takes place in the dorsal, dextral, and anterior directions.

The soft parts of *Clavagella* form an irregularly quadrate mass, convex anteriorly, rather flattened at the sides, and slightly narrowing towards the posterior end, from which the smooth rounded *siphon* is continued. This contains the anal and branchial canals, which are separated by a strong muscular *septum*, but do not project as distinct tubes: in this respect *Clavagella* agrees with *Gastro-*

chæna and *Aspergillum*. The mantle is a closed sac, having only an opening for the passage of the *siphon* and a small slit at the opposite end for the passage of a rudimentary foot: the use of this slit in *Clavagella* is obviously different from that assigned by M. Rüppell to the corresponding structure in *Aspergillum*.

Mr. Owen describes the mantle and its structure; the *siphon*; and the thick mass of muscular fibres at the anterior part of the mantle, which forms probably one of the principal instruments in the work of excavation: he also notices the great development, as compared with the size of the animal, of the adductor muscles. He then proceeds to the *viscera*, which generally agree with the typical structure in other *Bivalves*. The digestive system, which accords with that which is usual in *Acephalous Mollusca*, is described; as are also the respiratory and circulating systems, the principal nervous *ganglia*, and the ovary.

The paper was accompanied by drawings illustrative of the several structures described in it.

The specimen described belongs to the species termed by Mr. Broderip *Clavagella lata*.

October 14, 1834.

William Yarrell, Esq., in the Chair.

A letter was read, addressed to the Secretary by Sir Robert Ker Porter, Corr. Memb. Z.S., dated Caraccas, July 24, 1834. In reference to the *Tortoises* (*Testudo Carbonaria*, Spix,) presented to the Society by the writer in the spring of the present year (see p. 41), it stated that they are regarded as a great delicacy at Caraccas, and sold as such in the market. It also stated that some eggs of *Curassows*, or *Powies*, spoken of in a previous letter, had been placed under a hen, but had not produced young, having, as Sir Robert imagines, been by some accident injured in the shell. He had, however, a few days previously to the date of his letter, placed another, just laid by the bird, and hoped to be more successful, in which case he promises to give some particulars relative to the experiment.

A letter was read, addressed to the Secretary by the Hon. Byron Cary, dated His Majesty's ship Dublin, Sept. 25, 1834, giving some particulars relative to a large specimen of the *Tortoise* from the Gallapagos Island, presented by the writer to the Society. The specimen weighs 187 lbs. and measures in length, over the curve of the dorsal shell 3 feet 8½ inches, and along the ventral shell 2 feet 3½ inches, its girth round the middle being 6 feet 3½ inches. It is consequently much smaller than several specimens of the *Indian Tortoise* from the Seychelles Islands which have at different times been exhibited in the Society's Garden; the weight and measurements of one of which are given in the Proceedings of the Society for 1833, p. 81. The lateral compression of the anterior part of the dorsal shell, and the elevation of its front margin, by which the *Gallapagos Tortoise* is distinguished from the *Indian*, are in this specimen strongly marked.

The following notes by Mr. Martin of the dissection of a specimen of the *Mangue* (*Crossarchus obscurus*, F. Cuv.) were read.

"The dissection was strongly confirmatory of the justice of the position claimed for the animal, notwithstanding its plantigrade mode of progression, between the *Ichneumons* and the *Suricates*. To the latter indeed it bears in its general external aspect and characters a marked affinity; in both we find the pupil circular, and the muzzle elongated, pointed, and moveable. Nor is there much less correspondence in their general anatomy. Fortunately the notes of the dissection of two *Suricates*, which were living for a considerable period in the possession of the Society, have enabled me to make an accurate comparison. The notes to which I allude are by Mr. Owen, and will be found in the First Part of the 'Proceedings of the Committee of Science and Correspondence' for 1830–1, pp. 39 and 51.

"The *Mangue* which I had the opportunity of examining was a

female, and measured in the length of its body 1 foot: the tail was imperfect. The animal was in good condition; indeed it was rather too much loaded with fat to be perfectly active. On the *abdomen* being opened the liver and the small intestines presented themselves, the latter being covered by an extensive *omentum*; the stomach was concealed beneath the liver. The liver was tripartite, with a *lobulus Spigelii*, and consisted of one large right, and two left lobes; the latter together not exceeding in size the single one on the right. On the under surface of the right lobe, near the edge, lay the gall-bladder, almost globular in shape, and measuring nearly $\frac{1}{4}$ths of an inch from the *fundus* to the neck. It was full of dark greenish bile. At the distance of $\frac{1}{4}$ths of an inch from the neck, the biliary duct was joined by the hepatic: the *ductus choledochus communis* then continued on for more than $\frac{1}{4}$ an inch, and entered the *duodenum* about $\frac{1}{4}$ of an inch below the *pylorus*. The spleen, flat, elongated, and narrow, occupied the usual situation, and was enveloped in a fold of *omentum*, giving, when stretched out, a width of $1\frac{1}{4}$ inch. On turning back the stomach, the pancreatic gland was seen, having a large process situated beneath the spleen and stomach; the portion immediately covered by the latter dilating and forming a ring, attached to the *duodenum* for the distance of 3 inches. In the *Suricate*, this *viscus* is very similar, both in figure and situation. Mr. Owen observes that "a transverse portion extends from the spleen behind the stomach to the *pylorus*; it then divides and forms a circle, which lies in the concavity of the great curve of the *duodenum*;" and subsequently notices its resemblance to "the neutral symbol of the entomologist ρ.' Such also is the figure of the *pancreas* of the *Mangue*.

"The stomach was very muscular, with longitudinal *striæ* along its larger curvature, and singularly contracted in the middle. It is to be observed, however, that it was perfectly empty: when distended with air, the *striæ* and contraction disappeared.

"The small intestines did not much exceed a common quill in circumference; they decreased in size from the *duodenum*, which was very delicate. The small intestines measured 4 feet $2\frac{1}{4}$ inches, and the large $4\frac{1}{4}$ inches, without bands, or *sacculi*. The *cæcum* was 1 inch in length and pointed. On each side of the *anus* were situated two follicles of the size of a small horsebean, containing a thick unctuous, but nearly inodorous matter. They opened externally on the verge of the *anus*.

"The kidneys, of which the right was rather higher than the left, were of the usual shape, and 1 inch in length. Their cortical structure was very distinct; the *tubuli* terminated in one large conical *papilla*. On the outer surface there ramified an arborescence of small veins, as in the *Cat*, but by no means so beautifully and regularly distributed. In this respect also the *Mangue* agrees with the *Suricate*, as well as with the *Viverridæ* generally. The supra-renal glands were flat and oval; their external coat was grey; and beneath this was spread an inner layer, resembling liver in colour and texture.

"The bladder was small and contracted: the *uterus* measured ¼ an inch, its *cornua* 1¼ inch, and the *vagina* 1½ inch, its internal lining being puckered longitudinally.

"The lungs consisted of three lobes on the right, and two on the left side: in the *Suricate* there are four on the right and three on the left. The heart is obtuse at its *apex*, and of a thick rounded figure, being ⅓ths of an inch from the base to the *apex* and 1½ in breadth across the base. The tongue was 2 inches long, smooth at the sides, but covered in the centre towards the tip with retroverted sharp bristly *papillæ*: at the base were three isolated *papillæ* forming a crescent, thus ∘∘∘. The sublingual glands were of the size of hazel-nuts. The *epiglottis* was pointed and curled forwards: the number of rings in the *trachea* was thirty-eight. The thyroid glands were situated on each side of the twelve upper rings of the *trachea*; they were of large size, measuring ⅓ths of an inch in length. The *œsophagus* exhibited longitudinal *rugæ* along its inner surface.

"In the disproportion between the large and small intestines; in their small circumference; in the form of the *cæcum*; in the venous ramifications on the surface of the kidneys; as well as in other minor points; we cannot fail to observe the close similarity, not alone between the *Mangue* and the *Suricate*, but between both these animals and the *Viverridæ* in general."

A collection was exhibited of skins of *Birds*, formed by B. H. Hodgson, Esq., Corr. Memb. Z.S., in Nepal, and presented by him to the Society. These birds were brought under the notice of the Meeting by Mr. Gould, who, at the request of the Chairman, pointed out the most interesting among them, both as regarded the Society's collection, and with reference to their novelty or the peculiarities of their form. As, however, Mr. Hodgson himself purposes to describe at length the characters and habits of the several species in his proposed 'Zoology of Nepal,' Mr. Gould abstained from entering more particularly into those topics.

A paper was read "On *Clavagella*, by W. J. Broderip, Esq." It was accompanied by drawings illustrative of the new species described in it.

The author commences by a history of the genus from the time when Lamarck established it for the reception of four fossil species, two of which he had previously referred to his genus *Fistulana*. A recent species was subsequently described and figured by Mr. G. B. Sowerby, in his 'Genera of Recent and Fossil Shells,' under the name of *Clav. aperta*; and a second recent species, *Clav. Australis*, has since been described and figured by the same conchologist; M. Audouin has noticed another recent *Shell* which he refers to this genus; and some details have been published by M. Rang of an additional recent species, his *Clav. Rapa*. The collection of Mr. Cuming furnishes another recent species, the anatomy of which formed the subject of a paper read by Mr. Owen at the last Meeting of the Society; there exists yet another in that of Mr. Isaac Lyon Goldsmid; and another in those of Mr. Cuming and Mr. Miller.

A close examination of the recent species which he has observed has convinced Mr. Broderip that although one valve of the shell is always fixed or imbedded in the chamber formed in the hard surrounding substance, the tube is not necessarily continued into a complete testaceous clavate shape, and that consequently the character assigned by Lamarck to the genus requires emendation. The fixed valve is in all these species continued on to the tube. In Mr. Cuming's the perforated shelly plates are situated not far from the throat of the tube, one on either side; while in Mr. Goldsmid's the perforated plate is single, and seated at the anterior or greater end of the ovate chamber, being in the smaller individual joined laterally to the anterior ventral edge of the fixed valve, and in the larger one wholly isolated from it. In all the specimens the anterior edge of the fixed valve is surrounded by the naked wall of the chamber.

After remarking on the difficulty of clearly defining species where the roughness or smoothness of the surface of the shell and even its shape may depend upon the greater or less degree of hardness of the material of which the chamber is formed; where colour also is absent; and from specimens of which the tubes are broken; Mr. Broderip proceeds to suggest the following distinguishing characters. The first two may, he remarks, hereafter prove to be mere varieties, although he is strongly disposed to regard them as constituting distinct species:

Clavagella elongata. *Clav. camerâ elongato-ovatâ; valvâ liberâ elongatâ, subtrigonâ, convexâ, externè concentricè valdè rugosâ, intùs nitente; umbone acuto.*

Hab. in Oceano Pacifico?

Mus. Goldsmid.

The wall of the coral chamber against which the free valve rested gives as exact an impression of the external rugosities of that valve as if the valve had been applied to a surface of wax.

Clavagella lata. *Clav. camerâ rotundato-ovatâ; valvâ liberâ latiusculâ, subtrigonâ, subconvexâ, externè concentricè rugosâ, intùs nitente; umbone subrotundato.*

Hab. in Oceano Pacifico.

Mus. Cuming.

Both valves are nacreous internally; and the muscular impressions, especially in the fixed valve, are very strong.

Clavagella Melitensis. *Clav. testâ subrotundatâ, rugosâ, intùs subnitente; tubo longitudinaliter corrugato.*

Hab. ad Melitam.

Muss. Cuming, Miller.

It is not impossible, from its locality, that this may turn out to be M. Audouin's species, if that should prove to be a true *Clavagella*. M. Sander Rang's remarks, however, go far to show that a Sicilian *Shell* referred to this genus, has been incorrectly so referred, in as much as it has no fixed valve. The one described above has the fixed valve continued on to the shelly tube as in the other recent species of the genus *Clavagella*.

Mr. Broderip conjectures that *Clavagella* may be in its very young state a free *Bivalve*, floating at large until it arrives at some vacant hole that suits it, when it attaches one valve to the wall of the hole, and proceeds to secrete the tube or siphonic sheath, to enlarge the chamber according to its necessities, and to secrete the shelly perforated plate which is to give admission to the water at the practicable part of the chamber. The excavation may probably be assisted by the secretion from the glands observed by Mr. Owen, and evidently cannot be effected in the greater end of the chamber by mere mechanical attrition; but the solvent secretion must be one of extensive powers to act on such different substances as siliceous grit, the coral of an *Astræopora*, calcareous grit, and argillo-calcareous tufa, in which respectively were found the *Clav. Australis*, *Clav. elongata*, *Clav. lata*, and *Clav. Melitensis*.

Adverting to the different depths at which these several species were found, which varied from near low-water mark to sixty-six feet, Mr. Broderip remarks, that inferences as to the state of submersion of a rock during the lifetime of the fossil species which there occur, ought consequently to be made with caution by the geologist.

In conclusion he observes, that though the genus *Clavagella* is in its recent state at present rare, it is in all probability widely diffused; and suggests to collectors a careful examination of masses of coral and submerged perforated rocks with a view to the further elucidation of the habits and structure of these and other interesting animals.

October 28, 1834.

Richard Owen, Esq., in the Chair.

Living specimens were exhibited of a species of *Bee* from South America, together with portions of its Comb, contained in the fissure of a log of wood. They were presented to the Society by Mr. Bigg, who stated, in a note accompanying the specimens, that they were found about three weeks since on splitting a log of peachwood from the Brazils for the use of a dye-house, on the premises of Mr. Applegath, a calico-printer at Crayford in Kent. The wood had been previously lying in the docks, and had been perhaps eighteen months from the Brazils.

Mr. Curtis, to whom specimens were submitted for examination, states that they belong to the genus *Trigona*, Jur., and form a very pretty and apparently undescribed species.

Mr. Yarrell exhibited preparations of both sexes of *Syngnathus Acus*, Linn., and *Syngn. Typhle*, Ej., in illustration of the following extract from the manuscript notes of the late John Walcott, Esq., author of 'A Synopsis of British Birds,' 'History of Bath Fossils,' and 'Flora Britannica Indigena.' This manuscript, which is voluminous, and relates wholly to British Fishes, was written during the author's residence at Teignmouth, in the years 1784 and 1785, and has been forwarded by his son William Walcott, Esq., of Southampton, to Mr. Yarrell, for his use in a projected work on 'British Fishes.'

"*Syngnathus Acus* and *Typhle*.—The male differs from the female in the belly from the vent to the tail fin being much broader, and in having for about two thirds of its length two soft flaps, which fold together and form a false belly. They breed in the summer, the females casting their roe into the false belly of the male. This I have asserted from having examined many, and having constantly found, early in the summer, roe in those without a false belly, but never any in those with; and on opening them later in the summer there has been no roe in (what I have termed) the female, but only in the false belly of the male."

The specimens exhibited of females of *Syngn. Acus* and *Typhle* had no anal pouch, and the opened *abdomen* exposed two lobes of *ova* of large size in each. The anal pouch is peculiar to the males, and is closed by two elongated flaps. On separating these flaps and exposing the inside, the *ova*, large and yellow, were seen lining the pouch in some specimens, while in others the hemispheric depressions from which the *ova* had been but lately removed were very obvious. In each of these the opened *abdomen* exhibited true *testes*.

Mr. Walcott adds: "They begin to breed when only between 4 and 5 inches long." A specimen of *Syngn. Acus*, nearly 16 inches long, was exhibited, indicating, probably, its extreme growth. A female

of the same species, only 4 inches long, was also shown, the *abdomen* of which contained two lobes of enlarged *ova*, which, to all appearance, would have been deposited in a few days.

Specimens of males and females of *Syngn. Ophidion*, Linn., were also exhibited. In this species neither male nor female possesses an anal pouch, but the *ova* are carried by the male in hemispheric depressions on the external surface of the *abdomen*, anterior to the *anus*. All the specimens examined having these external depressions proved to be males, with the *testes* in the *abdomen* very obvious: those without external depressions proved to be all females, internally provided with two lobes of enlarged *ova*. The males of this species, when taken by Mr. Yarrell from the sea, had one *ovum* of the size and colour of a mustard-seed fixed in each cup-shaped depression, but time and the effects of a long journey had removed them. Dr. Fleming in his 'History of British Animals,' page 176, states the length of *Syngn. Ophidion* at about 5 inches: some of Mr. Yarrell's specimens measured 9 inches.

Mr. Yarrell further stated that the males of *Syngn. Acus* carry their living young in the anal pouch, even after they have been hatched there. He had been frequently told by fishermen that on opening them they had found the living young within the pouch, which they called the belly; and that if these young were shaken out into the water over the side of the boat, they did not swim away, but when the parent fish was held in the water in a favourable position, the young would again enter the pouch.

It was observed by M. Agassiz, that the fact of the males of certain species of the genus *Syngnathus* carrying the *ova* in a peculiar abdominal pouch, after their exclusion by the female, had been noticed on the Continent by Eckström, Retzius, and Marcklin; and that he had himself made the same observation.

M. Agassiz exhibited drawings of several species of *Lepisosteus*, together with some of the details of their internal organization; and, at the request of the Chairman, explained his views with regard to their systematic arrangement and structure, as well as to their relations with various genera of fossil fishes, and the coincidence of some parts of their internal anatomy with that of *Reptiles*. He described two new species observed by him in the British Museum, taking his characters principally from the form and sculpture of the scales, the presence or absence of the short rays at the base of the caudal and other fins, and the variations in the form and disposition of the teeth. In reference to their internal structure, he particularly called the attention of the Meeting to the large and regular slit by which the swimming-bladder communicates with the *pharynx*; which he regarded as bearing even a closer resemblance to the entrance of the *trachea* of the pulmoniferous *Vertebrata* in general, than the aperture by means of which the lungs communicate with the *pharynx* in the *Perennibranchiate Amphibia*. He conceived, therefore, that the anatomy of these fishes offers a conclusive argument in favour of the theory, long since proposed, that the swimming-bladder of *Fishes* is

analogous to the lungs of the other *Vertebrata*. He spoke of the number of the cæcal appendages as greater in *Lepisosteus* than in any other fish which he had dissected; and referring to certain fossil bodies by which geologists have long been puzzled, and which have been regarded as fossil worms, he stated his opinion, from the close resemblance between the two, that they are in reality the cæcal appendages of the fossil fishes, in whose company they are generally found.

Mr. Gray exhibited young shells of *Argonauta Argo* and *Arg. hians*, with the view of calling the attention of the Society to a new argument in favour of the opinion that the animal (*Ocythoë*) found in the shells of this genus is parasitic. This argument is founded on the size of what Mr. Gray has termed the *nucleus* of the shell, viz. that original portion of it which covered the animal within the egg, and which is usually found to differ in surface and appearance from the remainder of the shell formed after its exclusion from the egg. In the specimens exhibited Mr. Gray described the *nucleus* as blunt, rounded, thin, slightly and irregularly concentrically wrinkled, and destitute of the radiating waves which are common to the adult shells of all the species of this genus. These waves he stated to commence immediately below the thin hemispherical tips, and he therefore entertained no doubt that those tips constituted the *nucleus* of the shell, and covered the embryo of the animal at the period of its exclusion from the egg. Judging from the size of this portion of the shell, which in one of the specimens measured nearly one third of an inch in diameter, and was consequently many times larger than the largest eggs of the *Ocythoë* found within the *Argonaut* shells, Mr. Gray inferred that it must have been produced by an animal whose eggs are of much greater magnitude. The *Ocythoë* cannot therefore, he conceived, be the constructor of the shell, and its true artificer still remains to be discovered. Mr. Gray further remarked, with reference to Poli's statement that he had observed the *rudiment* of a shell on the back of the embryo of *Ocythoë* examined by him, that he has himself uniformly found, in all the eggs of *Mollusca* which he has examined, the shell well developed, even before the development of the various organs of the embryo. With respect to the argument derived from the want of muscular attachment, he observed that the animal of *Carinaria* (to which he considered it probable that that of *Argonauta* is most nearly related), although firmly attached to the shell while living, separates from it with the greatest ease when preserved in spirits, being from its gelatinous nature very readily dissolved. These circumstances, he conceived, might fairly account for the animal of *Carinaria* having been, until very recently, unknown, and for that of *Argonauta* still remaining undiscovered.

November 11, 1834.

Dr. Marshall Hall, in the Chair.

A specimen was exhibited of a species of *Monacanthus*, Cuv., remarkable for having on each side of the body, about midway between the pectoral and caudal fins, a bundle of long and strong spines directed backwards. The species was figured in Willughby's 'Historia Piscium,' and a description of it by Lister is contained in the Appendix to that work; but it appears not to have been noticed by subsequent observers, and to have been altogether overlooked or rejected by systematic writers. Lister's specimen of the *Fish* was preserved in the collection of William Courten, the founder of the museum which became subsequently the property of Sir Hans Sloane, and eventually formed the basis of the British Museum: that brought under the notice of the Meeting belongs to the Museum of the Army Medical Department at Chatham, and was exhibited with the permission of Sir James Macgrigor. It was accompanied by a description by Staff-Surgeon Burton, which was read.

Monacanthus Hystrix. *Mon. lateribus in medio 6—7-spinosis, spinis validis longioribus.*

Guaperva Hystrix, *List., in Will. Hist. Pisc., App. p.* 21. *Tab. S.* 21.

"Length 7 inches. Colour black. Skin crowded with rough grains; a smooth spot behind the gills; towards the tail assuming the character of rhomboid scales, but the granular form continued over the caudal fin. On the sides, about one third of its length from the tail, is fixed a cluster of six or seven strong free spines from ¼ to 1 inch in length, capable of erection and depression.

"Dorsal spine very strong, about 1¼ inch long, subtriangular, with serrated edges, and grained, except towards the point: when not erected it is lodged in a deep groove on the back. Extremity of the *pelvis* salient, and terminating in two sharp short spines. Second dorsal fin broad and 2 inches long; anal similar, but shorter.

"In front of the eyes a small *fossa* covered with a membrane, except in its centre, where it is perforated by a minute olfactory *foramen*.

"Teeth in the upper jaw eight, the two middle incisors placed directly in front of the second pair, in a groove of which they are lodged, so that no part of these last are visible externally, except a small process at the cutting edge; the outer teeth trigonal. The teeth of the lower jaw differ materially from the generic character, their number being only four, of which the two middle ones are by far the largest in the mouth. On this account, and also on account of the nature of its covering,—which partakes of the granular character of that of *Monacanthus* and *Aluterus*, Cuv., and of the rhom-

boidal scales of *Balistes*, Ej.,—this fish might be regarded as the type of a distinct subgenus among the *Balistidæ*.

"The strong dorsal spine, the spinous processes of the pelvic bones, and the cluster of lateral spines, added to the tough indurated *epidermis* of this fish, form an armour excellently adapted for its protection against its more powerful enemies.

"It is an inhabitant of the Indian Ocean, frequenting the shores and coral reefs. The present specimen was brought from the Mauritius by Dr. Hibbert, Surgeon, 99th Regiment. This species is stated to be also found abundantly on the western coast of Australia, where it is known to the settlers by the name of "leather-jacket," —a denomination which is probably applied to it in common with other species of *Balistidæ*."

Mr. Gray exhibited a drawing of this specimen, and stated his intention of publishing a figure of it in the concluding Number of the 'Illustrations of Indian Zoology,' which is about to appear.

Mr. Gray called the attention of the Meeting to two new species of *Sturgeon*; one from China, of which he exhibited a specimen, and the other from the Mississippi, of which he showed a drawing taken from a specimen in the British Museum. The former species belongs to the same section of the genus with the *Acipenser glaber* of Marsigli, characterized by its conical muzzle, and the smooth and silvery nature of the skin between its 5 rows of plates. It was sent to England by Mr. John Russell Reeves, and is distinguished by the following characters:

Acipenser Sinensis. *Acip. lævis, supernè brunneus; rostro gracili, conico, acuto, mutico; fronte arcuato; scutis seriei dorsalis* 15—16, *radiatim sulcatis, altè carinatis, carinâ posticè unidentatâ, anterioribus gradatim minoribus, duobus ultimis ecarinatis; serierum lateralium brevioribus, carinâ posticè bidentatâ; caudâ supernè serie radiorum simplicium, ad latera squamis angustis tectâ.*

Hab. in Chinâ.

Scuta dorsalia 16; lateralia superiora 40—41, inferiora 13—14.

The other species was stated by Mr. Gray to belong to a new section intermediate between the true *Sturgeons* and the *Spatulariæ*, having a broad expanded muzzle, flat above, shelving on the sides, and concave, and furnished with a central ridge beneath.

Acipenser cataphractus. *Acip. brunneus, squamis parvis rugosis caudam versùs majoribus lævioribusque; rostro depresso apice spatulato, carinâ laterali occipiteque ad latera spinosis; scutis rugosis, acutè carinatis, carinâ posticè unidentatâ; vertebralibus posterioribus muticis, lateralibus posterioribus multo majoribus.*

Acipenser cataphractus. *Rapp, MSS.*

Hab. in fluvio Mississippi.

The beards are 4 in number; and the hinder part of the body elongated, slender, and depressed. The snout is composed of a large number of small long bones, radiately grooved, owing perhaps to the

youth of the specimen. It has a group of six recurved spines just behind the *apex*, and a series of small spines on the ridge which runs on each side from the *apex* to the anterior angle of the eye. There is also a small blunt spine on each side of the middle of the frontal region; and two others are placed on the bones over the hinder part of the gill-flap. The latter form the commencement of a series of carinated shields. The small scales are rough; and the shields forming the lateral lines are radiately grooved, and furnished with a sharp continued keel, terminating posteriorly in a spine. The larger plates on the hinder part of the body are smooth, with a few longitudinal ridges, and emarginate at the *apex*. There are 17 plates on the dorsal ridge, of which the third is the smallest; 47 or 49 in the upper lateral series, among which the anterior are much the smallest, their length increasing gradually as they approach the tail, and this increase being more marked after passing the ventral, and again after passing the anal, fins; and 15 or 16 in the lower lateral series.

The exhibition was resumed of the *Shells* collected by Mr. Cuming on the Western Coast of South America, and among the Islands of the South Pacific Ocean. Those exhibited at the Meeting were accompanied by characters by Mr. G. B. Sowerby, and comprehended the following apparently undescribed species of the

Genus Fissurella.

Fissurella maxima. *Fiss. testâ ovato-oblongâ, depressiusculâ, crassâ; intùs albâ, margine lato, undulato, pallescente fusco articulato; extùs radiatim sulcatâ, rugosâ, albido-cinerascente fusco radiatâ; aperturâ dorsali ovatâ: long. 5, lat. 3·4 poll.*

Hab. ad Valparaiso.

In the young shells the internal margin is proportionally broader than in those which are more fully grown: in some specimens this margin shows a very great development of crystalline structure.

Found on exposed rocks and under stones at low water.—G. B. S.

Fissurella grandis. *Fiss. testâ ovato-oblongâ, elevatiusculâ, posticè latiore, crassâ; intùs albâ, margine latiusculo, subundulato, cinerascente; extùs lævigatâ, purpureo-nigrâ, radiis numerosissimis saturatioribus; aperturâ dorsali majusculâ, oblongâ, extùs latiore, anticè subdeclivi: long. 4, lat. 2·6 poll.*

Hab. ad Valparaiso et ad Insulam Chiloe sub lapidibus littoralibus.—G. B. S.

Fissurella limbata. *Fiss. testâ ovato-oblongâ, depressiusculâ, posticè latiore, crassiusculâ; intùs albâ, margine latiusculo, subundato, pallescente, lineâ internâ purpureo-nigrâ; extùs lævigatâ, rosaceo-fuscescente, radiis rufescentibus; aperturâ dorsali elongatâ, medianè subcoarctatâ: long. 3, lat. 1·9 poll.*

Hab. ad Valparaiso.

In young shells the internal line of the margin is broader and more deeply coloured than in the more fully developed specimens. Nearly all the fully grown shells are so deeply eroded as to have lost almost

all traces of coloured rays. The younger shells, which retain the coloured rays, are found in exposed situations at low water.

A representation of the inside of this shell has been given in my 'Genera of Recent and Fossil Shells', under the name of *Fiss. picta*, Lam., from which it is nevertheless very distinct.

Found on exposed rocks.—G. B. S.

FISSURELLA BIRADIATA (Frembly MSS.). *Fiss. testâ ovatâ, anticè subacuminatâ, elevatiusculâ, crassiusculâ; intùs albâ, margine latiusculo, purpurascenti-fusco; extùs radiatim striatâ, purpurascenti-fuscâ, plerumque radiis duobus (utroque latere unico) pallescentibus; aperturâ dorsali oblongâ: long.* 3·8, *lat.* 2·7 *poll.*

Hab. ad Valparaiso sub lapidibus littoralibus.

In this, as well as in several others, the margin varies somewhat in width; it is, however, generally broader in the young shells. The fully grown specimens sometimes lose the two light-coloured rays.

Found also at Iquiqui in Peru.—G. B. S.

FISSURELLA LATA. *Fiss. testâ ovali, elevatiusculâ, crassiusculâ; intùs albâ, margine latiusculo, pallescente, rosaceo-maculato; extùs cinerascente, radiatim costellatâ, costellis subtuberculatis, radiis coloratis purpureo-rufis; aperturâ dorsali ovato-oblongâ: long.* 3·3, *lat.* 2·5 *poll.*

Hab. ad Insulam S. Mariæ, Chilensis.

This species approaches, in form and colouring, very nearly to *Fiss. picta*, Lam.

Found in exposed places.—G. B. S.

FISSURELLA PULCHRA. *Fiss. testâ ovato-oblongâ, depressâ, anticè angustiore, crassiusculâ; intùs albâ, margine latiusculo, subundulato, purpurascenti-fusco; extùs purpureo-cinerascente, radiis rufo-purpureis maculisque albis et violaceis concinnè pictâ; aperturâ dorsali centrali, posticè inclinatâ: long.* 2·5, *lat.* 1·6 *poll.*

Hab. ad Valparaiso.

OBS. Testa junior radiatim subcostellata.

Variat testâ totâ extùs purpurascenti-fuscâ, unicolore.

Found on the rocks.—G. B. S.

FISSURELLA ORIENS. *Fiss. testâ ovato-oblongâ, depressâ, crassiusculâ; intùs albâ, margine angustiore, plerumque pallescente; extùs pallidâ fusco nigro vel roseo radiatâ; aperturâ dorsali oblongâ, medianè latiore: long.* 2·7, *lat.* 1·6 *poll.*

Hab. ad Insulam Chiloe sub lapidibus littoralibus.

Variat testâ extùs obsoletè pictâ, margine interno paullò latiore.

Hab. ad Valparaiso, rupibus adhærens.—G. B. S.

FISSURELLA CHILENSIS. *Fiss. testâ ellipticâ, depressâ, radiatim costellatâ, costellis rugosis; intùs albâ, margine lato, pallescente, nonnunquam fusco maculato; extùs cinerascente, radiis fuscis pallidis plerumque pictâ; aperturâ dorsali oblongâ, subcentrali: long.* 2·4, *lat.* 1·8 *poll.*

Hab. ad Valparaiso.

Found on rocks in exposed situations at low water.—G. B. S.

Fissurella obscura. *Fiss. testâ ovato-oblongâ, radiatim costatâ, costellis obtusis, latiusculis; intùs virescente, margine undulato, crenulato, pallidiore; extùs coloribus variis radiatim pictâ, punctis nigris nonnullis prope aperturam dorsalem radiantibus; aperturâ dorsali subelongatâ, medianè latiore, rimâ internâ rufo marginatâ: long.* 1·1, *lat.* 0·7 *poll.*

Hab. ad Insulas Gallapagos sub lapidibus littoralibus.—G. B. S.

Fissurella virescens. *Fiss. testâ ovatâ, elevatiusculâ, radiatim costatâ et striatâ; intùs virescente, margine pallidiore, undulato et crenulato; extùs pallidè virescente fusco-virescente obscurè radiatâ, margine costellis crenato; aperturâ dorsali oblongâ, extùs utrinque coarctatâ: long.* 1·8, *lat.* 1·4 *poll.*

Hab. ad Panamam.

Found in exposed situations at low water.—G. B. S.

Fissurella nigropunctata. *Fiss. testâ ovatâ, elevatiusculâ, anticè angustiore, costellato-radiatâ; intùs virescente, margine pallidiore, crenulato, nigro punctato; extùs pallidè virescente, punctulis elongatis nigris confertim digestis radiatâ; aperturâ dorsali oblongâ, lateribus extùs subconnatis: long.* 1·6, *lat.* 1·1 *poll.*

Hab. ad Insulas Gallapagos.

Variat testâ intùs albâ; rimâ aperturæ dorsalis nigro marginatâ.
Hab. ad Insulam Lobos sub lapidibus littoralibus.—G. B. S.

Fissurella macrotrema. *Fiss. testâ ovato-oblongâ, elevatiusculâ, anticè angustiore, radiatim striatâ; intùs virescente, margine nigro variegato; extùs plerumque virescente rufo fusco vel nigrescente radiatâ; aperturâ dorsali elongatâ, lateribus extùs coarctatis, utrinque unidentatis: long.* 1·4, *lat.* 0·9 *poll.*

Hab. ad Insulas Gallapagos.

Variat testâ extùs purpurascenti-nigrâ.
Hab. ad Insulas Gallapagos.

Variat etiam testâ extùs virescente, radiis rufescentibus obscuris.
Hab. ad Lambeyeque.

Variat iterum testâ extùs rosaceo-virescente, radiis rufis; aperturæ dorsalis margine interno roseo.
Hab. ad Insulam Lobos sub lapidibus littoralibus.—G. B. S.

Fissurella affinis, Gray. *Fiss. testâ ovato-oblongâ, elevatiusculâ, anticè angustiore, radiatim plùs minùsve muricatim striatâ, nonnunquam ferè lævigato-striatâ, plerumque purpurascenti-nigrâ; intùs albâ, margine angusto, nigricante; aperturâ dorsali parvâ, ovali: long.* 1·7, *lat.* 1·2 *poll.*

Hab. ad Insulas Mexillones et Lobos, et ad Iquiqui.

Variat testâ rufescenti-nigrâ.
Hab. ad Valparaiso.

Obs. Testæ juniores pallidæ, radiatim pictæ.—G. B. S.

Fissurella microtrema. *Fiss. testâ ovatâ, depressiusculâ, radiatim scabroso-striatâ; intùs virescente, margine angustissimo, nigricante; extùs fuscâ, obscurè subradiatim coloribus variis pictâ;*

aperturâ dorsali minimâ, margine limbi interni nigricante: long. 0·9; *lat.* 0·6 *poll.*

Hab. ad Real Llejos, Americæ Centralis.

The dorsal perforation in this species is so small, and the coloration so dark, that it is difficult at first sight to perceive that it is really a *Fissurella*.

Found under stones.—G. B. S.

Fissurella inæqualis. *Fiss. testâ oblongâ, tenui, subdepressâ, latere antico brevi, postico longo; intùs albicante, margine albo nigroque vario, crenulato; extùs radiatim striatâ, concinnè decussatâ, olivaceâ albicante subradiatim variegatâ; aperturâ dorsali anticâ, oblongâ, utrinque bidentatâ: long.* 1·1, *lat.* 0·6 *poll.*

Hab. ad Guacomayo et ad Insulas Gallapagos sub lapidibus littoralibus.—G. B. S.

Fissurella Pica. *Fiss. testâ oblongâ, tenui, subdepressâ, latere antico brevi, postico longo; intùs albicante, margine crenulato; extùs radiatim striatâ, concinnè decussatâ, albâ olivaceo variegatâ; aperturâ dorsali anticâ, elliptic â, ferè circulari, parvâ: long.* 1·, *lat.* 0·57 *poll.*

Hab. ad Sanctam Elenam et ad Insulas Gallapagos.

Variat testâ albicante, radiatim olivaceo fasciatâ.

Found on dead shells in from six to eight fathoms water.—G. B. S.

Fissurella Chemnitzii. *Fiss. testâ ovato-oblongâ, depressiusculâ, crassiusculâ, lateribus subcompressis, extremitatibus levatis; intùs albâ, impressione musculari prope marginem conspicuâ; extùs radiatim subsulcatâ, subdecussatâ, pallescente roseo subradiatâ; aperturâ dorsali magnâ, ovali, rimâ internâ latâ: long.* 2·2, *lat.* 1·4 *poll.*

Hab.?

The only specimen I have ever seen of this species was in the Tankerville Collection, from which, after several vicissitudes, it has at length found its way to Mr. Cuming's.

This remarkable shell is represented by Martini (I. t. xi. f. 100), whose figure is cited by Lamarck as a representation of *Fiss. Græca*.—G. B. S.

Fissurella latimarginata. *Fiss. testâ ovato-oblongâ, depressâ, crassiusculâ, anticè angustiore; intùs albâ, margine lato rufescenti-nigro, crenulato; extùs radiatim creberrimè striatâ, rufescenti-nigrâ; aperturâ dorsali oblongâ: long.* 2·8, *lat.* 1·8 *poll.*

Hab. ad Valparaiso et ad Iquiqui.

Found on the rocks.—G. B. S.

Fissurella trapezina. *Fiss. testâ subtrapeziformi, rotundato-angulatâ, anticè angustiore, depressâ, extremitatibus levatis; intùs albâ, impressione musculari prope marginem remotâ, margine incrassato; extùs concentricè subsulcatâ, pallidâ fusco radiatâ; aperturâ dorsali magnâ, latâ, anticè latiore: long.* 0·95, *lat.* 0·8 *poll.*

Hab. ad Caput Bonæ Spei.

This exceedingly rare species has existed in our collections for many years.—G. B. S.

Fissurella æqualis. *Fiss. testâ oblongâ, depressâ, extremitatibus ferè æqualibus; intùs albâ, margine incrassato, impressione musculari prope marginem remotâ; extùs lævi, albicante fusco radiatâ, vel fuscâ albicante radiatâ; aperturâ dorsali magnâ, oblongâ, latâ: long.* 0·85, *lat.* 0·5 *poll.*

Hab. ad Sanctam Elenam.

Found on dead shells in from six to ten fathoms.—G. B. S.

Fissurella fulvescens. *Fiss. testâ oblongâ, depressâ, fulvescente, extremitate anticâ angustiore; intùs lacteâ, margine subincrassato, subreflexo; extùs lævigatâ, radiatim substriatâ et rufo pictâ; aperturâ oblongâ, lateribus obsoletè bidentatis: long.* 1·6, *lat.* 0·9 *poll.*

Hab. ad Valparaiso sub lapidibus littoralibus.—G. B. S.

Fissurella nigrita. *Fiss. testâ ovali, depressâ, lateribus subcompressis, extremitatibus levatis; intùs albâ, marginibus postico lateralibusque incrassatis; extùs nigrâ, radiatim striatâ; aperturâ dorsali magnâ, ovali, margine lævi, albo: long* 1", *lat.* 0·6 *poll.*

Hab. ?—G. B. S.

Fissurella aspera. *Fiss. testâ ovali, altiusculâ, asperâ, posticè longiore; intùs cinerascente, margine albo, crenulato, extùs costellis numerosis radiantibus decussatim muricatis; aperturâ dorsali circulari ante verticem elevatam positâ: long.* 1", *lat.* 0·8 *poll.*

Hab. ad Pacosmayo.—G. B. S.

Fissurella asperella. *Fiss. testâ ovali, depressiusculâ, asperellâ; intùs virescente, margine crenulato; extùs cinerascente, striis numerosis radiantibus, radiisque coloratis rufo-cinerascentibus; aperturâ dorsali oblongâ, dente utrinque extùs elevato: long.* 0·85, *lat.* 0·5 *poll.*

Hab. ad Insulam Lobos sub lapidibus littoralibus.—G. B. S.

Fissurella mutabilis. *Fiss. testâ ovato-oblongâ, coloribus variis plerumque subradiatim pictâ, altiusculâ, posticè longiore; intùs albâ, margine lævi; extùs radiatim striatâ; aperturâ dorsali ovato-elongatâ, medio plerumque latiore: long.* 1", *lat.* 0·55 *poll.*

Hab. ad Caput Bonæ Spei.

Many specimens of this species were among the late Mr. G. Humphreys' collections, labelled by him "Brazil? Thalacker."—G. B. S.

Fissurella Panamensis. *Fiss. testâ ellipticâ, elevatâ, decussatâ, posticè longiore; intùs lactescente, margine crenulato; extùs costellis radiantibus decussatis, plerumque muricatis, albicante cinerascenti-fusco variè pictâ; aperturâ dorsali minimâ, subovali: long.* 0·6, *lat.* 0·4 *poll.*

Hab. ad Panamam.
Found on dead shells in from six to ten fathoms.—G. B. S.

Fissurella Ruppellii. *Fiss. testâ oblongo-ovatâ, elevatâ, decussatâ, lateraliter subdepressâ, posticè longiore; intùs albâ, margine crenulato; extùs albicante, radiis plerumque nigris, nonnunquam viridescenti-nigris, concinnè pictâ, costis costellisque alternantibus submuricatis radiantibus ornatâ; aperturâ dorsali parvâ, ovatâ, posticè subquadratâ, anticè infra verticem positâ, intùs posticè depressione distinctâ: long.* 0·9, *lat.* 0·6 *poll.*
Hab. ad Insulam Nevis, *Capt. Powers*: in Sinu Arabico, *Rüppell.*
A specimen of this pretty species was lately obtained by Mr. Cuming from M. Rüppell. About twenty were in the collections of the late Mr. G. Humphreys.—G. B. S.

Fissurella Clypeus. *Fiss. testâ ovatâ, depressâ, crassiusculâ, pallescente fuscescenti-nigro radiatâ; intùs albâ, margine subcrenato, pallescente nigro articulato; extùs radiatim subcorrugatâ; aperturâ dorsali oblongâ: long.* 1·15, *lat.* 0·75 *poll.*
Hab. ad Sanctam Elenam.
A single specimen is in Mr. Cuming's Collection.—G. B. S.

Fissurella crenifera. *Fiss. testâ ovato-oblongâ, subdepressâ, posticè latiore, subquadratâ; intùs albâ, margine incrassato, crenato et crenulato; extùs radiatim costatâ et striatâ, radiatim variè pictâ, costis muricatis; aperturâ dorsali oblongâ, medianè subcoarctatâ, extùs dente duplicato laterali munitâ: long.* 0·6, *lat.* 0·3 *poll.*
Hab. ad Real Llejos sub lapidibus littoralibus.—G. B. S.

A Letter was read, addressed by Capt. P. P. King, R.N., Corr. Memb. Z.S., to W. J. Broderip, Esq., and dated New South Wales, April 13, 1834. It gave some account of the Oceanic Birds observed during the late voyage of the writer from Europe to New South Wales, and more particularly of those of the genus *Diomedea*, Linn.

"From the meridian of the island of Tristan d'Acunha to that of the island of St. Paul's, on about the parallel of 40° of south latitude, we were daily surrounded by a multitude of oceanic birds.—Of the *Petrel* tribe the *Cape Pigeon, Procellaria Capensis*, Linn., was most abundant: but the *Proc. vittata* (vel *cærulea*) frequently was observed; as was also a small black *Petrel* which I do not recollect to have before seen.

"Of the genus *Diomedea* the species which I regarded as the *spadicea, chlororhynchos* and *fuliginosa* of Authors, were the most remarkable. Near Tristan d'Acunha the first (*Diom. spadicea*) most abounded: between the Cape and the longitude of 30° East the second (*Diom. chlororhynchos*) became more numerous: and in the neighbourhood of St. Paul's their place was supplied by the *Diom. fuliginosa*. Where one species abounded, the others were only occasionally seen; from which it may be inferred that each species breeds in distinct haunts. Occasionally two or three varieties of the *Diom.*

exulans, Linn., the *large wandering Albatross*, attended the ship, but they rarely remained beyond the day. *Diom. exulans* varies very much in plumage; generally, however, the head, neck, back, and wings are more or less mottled grey, and the breast, *abdomen*, vent, and *uropygium* snowy white; the bill is horn-coloured and the feet yellow.—We saw a bird that might be referred to M. Lesson's *Diom. epomophora*, if that is really a distinct species.—Another of very large size was near us for two days, which, with the exception of the back of the wings and tips of the under side of the pen feathers and extremity of the tail being black, was of a snowy white colour."

Capt. P. P. King transmitted with his Letter characters and descriptions of three of the species of *Albatross* observed by him, including those which he regarded as the *Diomm. spadicea* and *chlororhynchos*; together with drawings of these two species. The descriptions were read, and the drawings exhibited. The former agree essentially with the descriptions from the same specimens, recently published in his 'Wanderings in New South Wales,' &c., by Mr. George Bennett, who was a fellow voyager with Capt. King. The reference of these to the species quoted is, however, provisional only, as they differ in some important particulars from the original descriptions of those species: it is therefore probable that they are rather to be viewed as indicating races hitherto unnoticed by zoologists.

Mr. George Daniell stated some facts that had fallen under his observation with reference to the habits and economy of two British species of *Bats*, the *Pipistrelle, Vespertilio Pipistrellus*, Geoffr., and the *Noctule, Vespertilio Noctula*, Schreb., dwelling more particularly on those connected with the feeding of the former, and with the period of gestation and mode of parturition of the latter.

With regard to the former species, he stated that in July 1833 he received five specimens, all of pregnant females, from Elvetham, in Hampshire. Many more were congregated together with them in the ruins of the barn in which they were taken, but all the rest escaped. They had been kept in a tin powder canister for several days, and on being turned loose into a common packing-case, with a few strips of deal nailed over it to form a cage, they exhibited much activity, progressing rapidly along the bottom of the box, ascending by the bars to the top, and then throwing themselves off as if endeavouring to fly. They ate flies when offered to them, seizing them with the greatest eagerness, and devouring them greedily, all of them congregating together at the end of the box at which they were fed, and crawling over, snapping at, and biting each other, at the same time uttering a grating kind of squeak. Cooked meat was next presented to them, and rejected; but raw beef was eaten by them with avidity, and with an evident preference for such pieces as had been moistened with water. This answered a double purpose: the weather being warm, numbers of *blue-bottle Flies, Musca vomitoria*, Linn., were attracted by the meat; and on approaching within range of the bat's wings were struck down by their action,

the animal itself falling at the same moment with all its membranes expanded, and cowering over the prostrate fly, with its head thrust under in order to secure its prey. When the head was again drawn forth, the membranes were immediately closed, and the fly was observed to be almost invariably taken by the head. Mastication appeared to be a laboured operation, consisting of a succession of eager bites or snaps, and the sucking process (if it may be so termed) by which the insect was drawn into the mouth being much assisted by the looseness of the lips. Several minutes were employed in devouring a large fly. In the first instance the flies were eaten entire; but Mr. Daniell afterwards observed detached wings in the bottom of the box. These, however, he never saw rejected, and he is inclined to think that they are generally swallowed. A slice of beef attached to the side of the box was found not only to save trouble in feeding, but also by attracting the flies to afford good sport in observing the animals obtain their own food by this new kind of bat-fowling. Their olfactory nerves appear to be very acutely sensible. When hanging by their posterior extremities, and attached to one of the bars in front of the cage, a small piece of beef placed at a little distance from their noses would remain unnoticed; but when a fly was placed in the same situation they would instantly begin snapping after it. The beef they would eat when hungry; but they never refused a fly. In the day-time they sometimes clustered together in a corner; but towards evening they became very lively, and gave rapid utterance to their harsh, grating notes. One of them died on the fifth day after they came into Mr. Daniell's possession; two on the fourteenth: the fourth survived until the eighteenth; and the fifth until the nineteenth day. Each was found to contain a single *fœtus*.

On the 16th of May, 1834, Mr. Daniell procured from Hertfordshire five specimens of the *Vespertilio Noctula*, four females and one male. The latter was exceedingly restless and savage, biting the females, and breaking his teeth against the wires of the cage, in his attempts to escape from his place of confinement. He rejected food and died on the 18th. Up to this time the remaining four continued sulky; but towards evening they ate a few small pieces of raw beef, in preference to flies, beetles, or gentles, all of which were offered to them: only one of them, however, fed kindly. On the 20th one died, and on the 22nd two others, each of which was found to be pregnant with a single *fœtus*. The survivor was tried with a variety of food, and evincing a decided preference for the hearts, livers, &c. of fowls, was fed constantly upon them for a month. In the course of this time large flies were frequently offered to her, but they were always rejected, although one or two *May Chafers*, *Melolontha vulgaris*, Fab., were partially eaten. In taking the food the wings were not thrown forward as in the *Pipistrelle*; and the food was seized with an action similar to that of a dog. The water that drained from the food was lapped, but the head was not raised in drinking, as Mr. Daniell had observed it to be in the *Pipistrelle*. The animal took considerable pains in cleaning herself, using the posterior ex-

tremities as a comb, parting the hair on either side from head to tail, and forming a straight line along the middle of the back. The membrane of the wings was cleaned by forcing the nose through the folds and thereby expanding them. Up to the 20th of June the animal fed freely, and at times voraciously, remaining during the day suspended by the posterior extremities at the top of the cage, and coming down in the evening to its food: the quantity eaten sometimes exceeded half an ounce, although the weight of the animal itself was no more than ten drachms. On the 23rd, Mr. Daniell, observing her to be very restless, was induced to watch her proceedings. The uneasiness was continued for upwards of an hour, the animal remaining during all this time in her usual attitude suspended by the posterior extremities. On a sudden she reversed her position, and attached herself by her anterior limbs to a cross wire of the cage, stretching her hind legs to their utmost extent, curving the tail upwards, and expanding the membrane interposed between it and the posterior extremities, so as to form a perfect nest-like cavity for the reception of the young. In a few moments the snout of the young one made its appearance, and in about five minutes the whole of its head was protruded. The female then struggled considerably until the extremities of the *radii* had passed, after which the young one by means of a lateral motion of its fore limbs relieved itself. It was born on its back, perfectly destitute of hair, and blind; and was attached by an umbilical cord of about two inches in length. The female then licked it clean, turning it over in its nest, and afterwards resuming her usual position, and placing the young in the membrane of her wing, proceeded to gnaw off the umbilical cord and eat the *placenta*. She next cleaned herself, and wrapped up the young so closely as to prevent any observation of the process of suckling. The time occupied in the birth was 17 minutes. At the time of its birth the young was larger than a new-born mouse, and its hind legs and claws were remarkably strong and serviceable, enabling it not only to cling to its dam, but also to the deal sides of the cage. On the 24th the animal took her food in the morning, and appeared very careful of her young, shifting it occasionally from side to side to suckle it, and folding it in the membranes of the tail and wings. On these occasions her usual position was reversed. In the evening she was found dead; but the young was still alive, and attached to the nipple, from which it was with some difficulty removed. It took milk from a sponge, was kept carefully wrapped up in flannel, and survived eight days, at the end of which period its eyes were not opened, and it had acquired very little hair. From these observations it is evident that the period of gestation in the *Noctule* exceeds thirty-eight days.

Mr. Daniell also exhibited skeletons of the male and female of the *Pipistrelle* and *Noctule Bats*, forming part of his own collection, for the purpose of pointing out a peculiarity in the female, connected, as he conceives, with the mode of parturition just described. This peculiarity consists of a prolongation of the *os calcis* along the mar-

gin of the membrane extended between the hinder extremities and the tail, of much greater length and strength in the female than in the male. By means of this process Mr. Daniell believes the female to be capable of giving greater tension to the pouch formed of that membrane for the reception of the young in the act of parturition.

November 25, 1834.

William Yarrell, Esq., in the Chair.

A Letter was read, addressed to the Secretary by Keith E. Abbott, Esq., and dated Trebizond, June 20, 1834. It referred to a collection of skins of *Birds* made by the writer in his immediate neighbourhood, and presented by him to the Society. The number of species contained in the collection is twenty, one only of which was comprised among those previously transmitted by Mr. Keith Abbott, and exhibited to the Society at its Meeting on June 24, 1834. Mr. Abbott states that he proposes to continue the collection of such zoological subjects as he can procure in the neighbourhood of Trebizond, for the purpose of transmitting them to the Society.

The *Bird-skins* presented by Mr. Keith Abbott were exhibited, and Mr. Gould, at the request of the Chairman, brought them severally under the notice of the Meeting, observing on each of them as regarded its geographical distribution. The exhibition was regarded as a continuation of that which took place on June 24, (page 50,) and comprised the following species not then enumerated, making in the whole fifty-three species observed in the vicinity of Trebizond.

Falco Tinnunculus, Linn. Inhabiting Europe generally, and the adjacent continents of Asia and Africa, but not America.

Otus vulgaris, Cuv. Inhabiting Europe generally, and found also in India and Africa.

Sylvia Rubecula, Linn. Mr. Gould has no recollection of having seen this familiar bird before, either from Asia or Africa.

Emberiza Cia, Linn. Inhabiting the southern provinces of Europe and the high lands of India. It does not visit England, nor has it been seen from Africa.

Alauda arvensis, Linn. Inhabiting Europe generally. Mr. Gould has no recollection of having seen it in collections either from India or Africa, but it doubtless inhabits the border lands of the latter continent as well as of Asia.

Corvus Monedula, Linn. This bird is principally confined to Europe: it does not occur in America. A species nearly allied inhabits India.

Picus medius, Linn. A common species in Norway, Sweden, and part of the central portions of Europe; but not hitherto observed in collections from India or Africa.

Ardea Garzetta, Linn. Inhabiting the southern portions of Europe: it is also found in India and Africa, but not in America. It was once common in England.

Scolopax major, Linn. Inhabiting Europe generally, but probably not America. Mr. Gould has not yet seen it from India.

Tringa variabilis. This bird is very generally dispersed, being

common both in America and Europe: Mr. Gould has also seen it from India and Africa. It breeds in England.

Charadrius Pluvialis, Linn. Inhabiting Europe and the adjoining portions of Africa and Asia, but not America.

Charadrius Himantopus, Linn. Inhabiting Europe, particularly the southern parts, and Asia and Africa, but not America; its place in the latter continent being filled by a species nearly allied to it. It occasionally visits England.

Anas Querquedula, Linn. Inhabiting India as well as Europe: common in the Himalayan range.

Anas Fuligula, Linn. Found in all temperate countries of the old continent, but not hitherto in America.

Clangula vulgaris, Flem. Though common in England during the winter, the proper locality of this bird is in the high northern latitudes. Mr. Gould has not previously seen a specimen from so southern a *habitat* as the present.

Mergus Albellus, Linn. Similarly circumstanced with the last, although apparently still more arctic, as it visits England only in severe winters.

Podiceps cristatus. Found in nearly all the temperate regions of the globe.

Mr. Gray exhibited a specimen of a *Reptile* from New South Wales, which he regarded as constituting the type of a new genus nearly related to *Bipes*, Latr. He characterized it under the name of

LIALIS.

Caput elongatum, fronte plano, squamis parvis subimbricatis vestitum: *irides* lineares, verticales: *aures* oblongæ, conspicuæ.

Corpus subcylindricum, attenuatum: squamis dorsalibus ovatis, convexis, lævibus; ventralium seriebus duabus intermediis majoribus.

Pedes duo, postici, obsoleti, acuti, ad basin 2—3-squamati.

Anus subposticus: *squamæ præanales* parvæ; *pori subanales* utrinque quatuor per paria dispositi.

This genus is very nearly allied to *Pygopus*, Merr., but may be readily distinguished from it by the characters above given. In *Pygopus* the head is short, more rounded in front, and covered with regular shields: the pupil is subcircular: the feet are broad, ovate, blunt, and covered with three rows of scales: the vent has five large oblong scales in front of it: and the subanal pores form a continuous series.

LIALIS BURTONIS. *Li. suprà pallidè cinerascenti-brunnea, nigro minutissimè punctata; subtùs pallidè cacaotico-brunnea; strigâ albâ utrinque a labio superiore supra oculos per nucham, alteráque latiore a labio superiore per latera ad caudæ apicem ductis.* Junior. *Strigis colli lateralibus obsoletis.*

OBS. Epidermide remotâ subalbida est strigis lactescentibus.

Hab. in "Novâ Cambriâ Australi." Dr. Mair.—Muss. Chatham et Brit.

The dotting on the upper surface is produced by two or three black points on each of the scales. The upper streak passes along the keels on each side of the face and terminates on the back of the neck. The lower streak separates the dark colour of the under, from the pale of the upper, surface, and is edged beneath along its whole extent by a narrow brown line; in its anterior portion it is brown above.

The scales are smooth, and marked with four slight lines. The front lower labial plate is rather larger, with one pair of small mental plates and an odd one behind it: there are four pairs of long trigonal arched scales on each side of the lower jaw, of which the anterior is small and the posterior the largest, each with a small linear scale at its outer tip, which is next the small, broad, low labial plates; the hinder ones having two or three series of broad low plates under them. The dorsal scales are margined. The superciliary plates are triangular, and of moderate size. The scales of the front of the muzzle are very small, with two odd ones behind them, and one in the middle between the nostrils. The eyes are circular, and surrounded by a series of small scales. Eyelids none?

Mr. Gray also exhibited a specimen of the *New Holland Ibis* of Dr. Latham, for the purpose of directing the attention of the Meeting to the spatulate form of the feathers of its neck; a form of feather which he believes not to have been previously recorded as occurring in any *Grallatorial Bird*. In this instance they are elongated, lanceolate, and bear some resemblance to straws. The specimen was obtained from the neighbourhood of Macquarrie River.

Mr. Gray subsequently exhibited adult specimens of the *Geoemyda spinosa* and *Emys platynota*, two species of *fresh-water Tortoise* recently described by him from young individuals at the Meetings of the Society on June 24 and August 26 (pages 54 and 99). He pointed out in detail the peculiarities of the adult animals and shells, which he is about to describe in his 'Synopsis of Indian Animals'; and demonstrated on the specimen of the former the existence of those characters on which he had founded the genus *Geoemyda*, and which he had previously had occasion to observe in *Ge. Spengleri* alone,—his knowledge of the animal of *Ge. spinosa* having at the time of his proposing the genus been limited to the figure published by Mr. Bell.

In the adult individual exhibited the *sternum* was concave; and Mr. Gray, in calling particular attention to this point, took occasion to remark on it as evidencing, in an additional character to those already adverted to by him, the affinity of *Geoemyda* to the *Land Tortoises*, that genus and the genus *Cistuda*, Say, being the only genera among the *Emydidæ* that possess the concavity of *sternum* which is common to most of the species of *Testudinidæ*.

A Paper was read "On *Nycteribia*, a genus of wingless *Insects*, by J. O. Westwood, Esq., F.L.S., &c.'

The author commences by remarking on the existence of certain

groups of animals, generally limited in extent, which exhibit in their organization, with reference to the groups to which they naturally belong, such anomalies as have constantly proved a source of perplexity to the systematists who have endeavoured to assign to them their real place in the system of nature. In many instances the anomaly involves the transition from the structure of one group to that of the adjoining ones; such instances constituting the osculant groups of Mr. W. S. MacLeay in his 'Horæ Entomologicæ'. Of these osculant groups some exist between the great divisions of the animal kingdom; others among the classes of which each of these great divisions is composed; others again between the orders, the families, and the minor subdivisions. The genus *Nycteribia* is thus osculant not between the families or even the orders of a class, but between two of the classes themselves of the *Annulose* Sub-kingdom —the *Arachnida* and the *Haustellata*. It is remarkable, moreover, for being exclusively confined to a parasitic existence on that equally anomalous group, the *Chiroptera* among the *Mammalia*.

Notwithstanding the comparatively unattractive appearance of the insects of this genus, the singular peculiarities of their structure have drawn upon them the attention of Latreille, Hermann, Dr. Leach, M. Léon Dufour, and Mr. Curtis, who have severally contributed much to the general stock of information respecting them. But the minuteness of the objects themselves, their unfitness for accurate examination when dried and shrivelled as specimens usually are in cabinets, their comparative rarity, and other causes, have rendered the descriptions of those distinguished entomologists in some instances unsatisfactory; and it is with the view of fully elucidating the organization of the genus and of adding to its history such facts as he has been enabled to ascertain, that Mr. Westwood offers to the Society his account of *Nycteribia*, to which he adds a Synopsis of the whole of the species that have hitherto been observed, including the characters of several not hitherto described. He enumerates the sources from whence his materials have been derived; and then proceeds to describe in great detail the structure of a new species brought from Dukhun by Col. Sykes,—a species peculiarly adapted for the purpose, both on account of its comparatively large size, 2½ lines in length, and of the fitness of the individuals for minute examination owing to their having been preserved in spirit. Of this species he has examined three individuals, all of which are females in different stages of gestation. From the *abdomen* of the one which was most advanced Mr. Westwood extracted without difficulty a hard organized white mass, nearly as large as the *abdomen* itself, of an oval form, with traces of five articulations on the sides of the body, and having at its broader end three small circular spots placed in a triangle, with two smaller ones seated at a greater distance from them. That this was the young of the *Nycteribia* in its *pupa* state cannot, he conceives, be doubted: and it may consequently be regarded as proved that these insects are pupiparous, as has indeed been conjectured from their evident connexion with the *Hippoboscidæ*.

The whole of the external organization of Col. Sykes's *Nycteribia*

is described by Mr. Westwood in the greatest detail, and with continual references to those portions of the descriptions published by his predecessors, which are either vague, or incorrect, or in which they are contradictory to each other. The principal points which he has endeavoured to elucidate, in addition to the transformations which these insects undergo, are the distinction of the sexes, and consequently the sexual characters and the different organization of the *abdomen* in the sexes; the structure of the mouth, *antennæ*, and eyes; the separation of the *metasternum* and the *abdomen*; the situation and construction of the spiracles; and the nature of the serrated organs between the base of the anterior and intermediate legs. The sexual distinctions appear especially to have been misunderstood, and the author takes great pains to explain them in each of the species respectively which he has been enabled satisfactorily to examine.

Mr. Westwood concludes his Paper by a Synopsis of the Species of the

Genus Nycteribia.

Nycteribia Sykesii. *Nyct. rufo-picea, thoracis tegumento dorsali abdomineque obscurè albicantibus; hoc tuberculis minutissimis nigris undique tecto tuberculis quatuor majoribus in quadrangulo centrali dispositis, segmentis (unico basali excepto) destituto, apiceque pilis rigidis ferrugineis elongatis obtecto; pedibus elongatis subcompressis paullò dilatatis, breviter setosis; femoribus magis ferrugineis, coxis anticis elongatis tibiisque apicem versus attenuatis; pectinibus thoracis elongatis; oculis e tuberculis quatuor compositis.* (♀)

Long. corp. lin. 2¼.—Species maxima.

Hab. in Indiâ Orientali.—In Mus. D. Sykes.

Nycteribia Hopei. *Nyct. abdomine concolore nitido, in medio obsoletè 5-articulato, ovato-conico-depresso, segmento ultimo conico-truncato, apice lateraliter setigero subtùs stylis duobus conico-elongatis inflexis armato.* (♂)

Long. corp. lin. 2.—Præcedenti valdè affinis, at minor. An illius mas?

Hab. in Indiâ Orientali, apud Bengaliam.—In Mus. D. Hope.

Nycteribia dubia. *Nyct. fusco-castanea, pedibus magis castaneis; coxis anticis elongato-conicis, femoribus tibiisque subcylindricis; thorace subtùs irregulariter rugoso; pectinibus thoracis lateralibus elongatis; abdomine* ("♀" *Latr.* ♂?) *ovato, 6-annulato, segmento postico conico-elongato posticè attenuato et truncato.*

Long. corp. circiter lin. 2., Latr.

Nycteribia Blainvillii, *Latr., in Nouv. Dict. d'Hist. Nat., tom.* xxiii. *nec Leach.*

Hab. in Insulâ Isle de France dictâ. Latr.—India?—In Mus. olim Latreille.

The alleged diversity of sex, the difference of *habitat*, and the nearly cylindrical legs, induce the belief that this species is distinct from the last, with which however it offers a close resemblance both specifically and sexually.

Nycteribia Blainvillii, Leach. *Nyct. "pedibus longis tenuibus femoribus tibiisque apicem versus gradatim attenuatis"; obscurè ochraceo-livida; abdomine (apice excepto) fusco, elongato-conico, depresso, segmentis sex apice setigeris, ultimo longiore subrotundato.* (♂)

Long. corp. lin. 1. (1¼ secundum Leach.) "Minor *Phthiridia Hermanni.*"—Leach.

Hab. in Insulâ Isle de France dictâ.—In Mus. Brit.

Nycteribia Roylii. *Nyct. obscurè nigra, pedibus fuscantibus elongatis vix compressis, coxis anticis brevibus; abdomine ovato-conico, depresso, 5-articulato, apice subtruncato, stylis duobus incurvis subtùs armato; capite compresso.* (♂)

Long. corp. lin. 1¼.

Hab. in Indiâ Orientali.—In Mus. D. Royle.

Nycteribia Dufourii. *Nyct. pedibus elongatis, coxis abbreviatis; oculis rotundatis sessilibus simplicibus; abdomine* ♀ *ovali, apice setigero, segmentis destituto, suprà paribus tribus serierum setarum brevium rigidarum instructo;* ♂ *? oblongo, 6-articulato, apice subtùs stylis destituto?*

Long. corp. lin. 1¼ ♀. lin. 1. ♂?

Nyct. Vespertilionis, *Dufour, in Ann. des Sci. Nat., Avril* 1831, *pl.* 13. *fig.* 4.

Hab. in *Vespertilione murino* Galliæ.

Nycteribia pedicularia, Latr. *Nyct. fusca; corpore suprà pedibusque flavo-rufescentibus; thorace subtùs fusco-rufescente, lineâ longitudinali mediand nigrâ; pedibus longis arcuatis, coxis anticis brevibus subcylindricis, femoribus tibiisque valdè compressis ferè ellipticis; pectinibus lateralibus thoracis brevibus; abdomine setis rigidis armato.*

Nyct. Vespertilionis, *Latr., Gen. Crust., &c., vol.* iv. *p.* 364. *pl.* 15. *fig.* 11. *Id., in Nouv. Dict. d'Hist. Nat., tom.* xxiii.

Latreille's original name is restored to this species, it being considered as distinct from any of the others, with the exception perhaps of Hermann's *Nyct. Vespertilionis.*

Nycteribia vexata. *Nyct. pallidè ferruginea; pedibus elongatis, coxis anticis brevibus; abdomine* ♂ *8-articulato, testaceo, ovato-conico, apice subrotundato, subtùs stylis ad apicem duobus incurvis alteroque intermedio armato.*

Long. corp. lin. 1—1¼.—Specimen aliud (♂? siccitate contractum? vel ♀??) abdomine ad apicem emarginato à cl. Hermanno descriptum est.

Nyct. Vespertilionis, *Herm., Mem. Apt., pl.* 5. *f.* 1.

Hab. in *Vespertilione murino* Europæ.

The insect described by Hermann under the name of *Nyct. Vespertilionis* may be considered, without hesitation, as specifically distinct from our two British species, as well as from *Nyct. Dufourii*, in the structure of the male. It may possibly, however, be identical with *Nyct. pedicularia.*

NYCTERIBIA JENYNSII. *Nyct. pallidè ochraceo-flavescens, setis pectinibusque thoracis et abdominis basi nigris; palpis longè setosis; oculis sessilibus, rotundatis, simplicibus; pedibus elongatis tenuibus, coxis anticis brevioribus, femoribus tibiisque paullò compressis; abdomine ovato, seriebus sex transversis setarum rigidarum (segmenta totidem indicantia) notato, segmento ultimo laminis duabus elongatis incurvis contiguis styloque carnoso intermedio subtùs terminato.* (♂)

Long. corp. lin. 1¼.

Hab. in Chinâ.—In. mus. nostr. Amicissimè communicavit Rev. Leonard Jenyns.

NYCTERIBIA LATREILLII, Leach. *Nyct. pallidè ochracea; pedibus perbrevibus, femoribus tibiisque valdè dilatatis setis obscuris elongatis, tarsorum articulo primo reliquis conjunctim vix longiore; thoracis pectore latiore et breviore; pectinibus thoracis unguibusque nigris; abdomine* ♂ *6-articulato, segmento ultimo longiore, conico-truncato, subtùs laminis duabus distantioribus elongatis incurvis et ad ventrem adpressis, styloque intermedio armato;* ♀ *ovali absque appendiculis, apice inciso, subtùs articulo basali distincto, seriebusque sex transversis setarum rigidarum instructo, segmenta? indicantibus.*

Long. corp. lin. ¾. (1¼ secundum Leach.)

Hab. in *Vespertilione murino* Angliæ.—In Muss. Brit., DD. Stephens, Jenyns et Curtis.

The references of this species to Linnæus and Olfers, given by Dr. Leach, must be considered as dubious. Frisch (vol. ii. pt. 5. pl. 5.) has represented an insect, which, from the shortness of the legs, may possibly be intended for this species. That it is not the species figured by Latreille in the 'Histoire Naturelle' and the 'Genera Crustaceorum,' (with which it is doubtfully considered as synonymous by Dr. Leach,) is evident from the length and slenderness of the legs in the figures contained in those works.

NYCTERIBIA BIARTICULATA. *Nyct. pallidè ochracea, abdomine obscuriore; pedibus elongatis dilatatis longè setosis, setâ unicâ ad basin tibiarum longissimâ, coxis anticis brevibus; abdomine* ♀ *quasi 2-articulato, segmento primo suprà longiùs producto, stylis duobus caudalibus elongatis cylindricis porrectis ad apicem longè setosis;* ♂ *6?-articulato subtùs ad apicem stylis duobus incurvis ad ventrem adpressis; thorace subtùs concolore.*

Long. corp. lin. 1¼. (2 secundum Leach.)

Phthiridium biarticulatum, *Herm., Mem. Apt., pl.* 6. *f.* 1. ♀

Phthiridium Hermanni, *Leach, Zool. Misc., vol.* iii. *pl.* 144. ♂. ♀.

Celeripes Vespertilionis, *Mont., in Linn. Trans., vol.* ix. *p.* 166.

Nycteribia Vespertilionis, *Mont., in Linn. Trans., vol.* ix. *t.* 3. *f.* 5 ♀.

Hab. in *Rhinolopho Ferro-equino* Angliæ, Germaniæ, Italiæ.—In Muss. Brit. et D. Stephens.

Obs. Species distinctissima, sectionem peculiarem in genere constituens.

Hermann's trivial name for this species has been restored, as well in justice to that author as with the view of obviating the confusion which has arisen from his chief description having been derived from a different species.

Mr. Westwood's Memoir was illustrated by numerous magnified figures of the different species and of the details of their external structure.

December 9, 1834.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of three species of the genus *Bulinus*, Lam., which were regarded by Mr. G. B. Sowerby as previously undescribed. He characterizes them as follows:

Bulinus leucostoma. *Bul. testâ ovatâ, ventricosâ, anticè latiore, posticè obtusâ; anfractibus quatuor, primis longitudinaliter subsulcatis, ultimo maximo, lævi, omnibus olivaceo-fuscis, suturâ pallidiore, crenulatâ; aperturâ oblongâ, posticè acuminatâ, peritremate reflexo, albo: long.* 2·6, *lat.* 1·4 *poll.*

Hab. in provinciâ Peruviæ Xagua dictâ. *D. Matthews.*—Mus. D. Miller.

Mr. Gray is of opinion that this is *Bul. granulosus* of M. Rang.

Bulinus badius. *Bul. testâ ovatâ, ventricosâ, posticè subacuminatâ; anfractibus quinque, rotundatis, longitudinaliter striatis, fulvescentibus fusco fasciatis, fasciis interruptis; umbilico minimo; aperturâ ovatâ, posticè subacuminatâ; peritremate tenui, acuto: long.* 1·, *lat.* 0·6 *poll.*

Hab. in provinciâ Peruviæ Xagua dictâ. *D. Matthews.*—Muss. DD. Miller, Cuming, et Sowerby.

Bulinus bicolor. *Bul. testâ oblongâ, posticè subacuminatâ, pallescente, fasciis interruptis fuscis; anfractibus quinque, subventricosis, ultimo majore; umbilico minimo; aperturâ subovatâ, posticè acuminatâ; peritremate tenui, subacuto: long.* 0·9, *lat.* 0·4 *poll.*

Hab. in provinciâ Peruviæ Xagua dictâ. *D. Matthews.*—Muss. DD. Miller, Cuming, et Sowerby.

The specimens were brought to England by Mr. Miller, to whom the Society is indebted for their exhibition.

The reading was concluded of a Paper entitled "Notes on the Natural History and Habits of the *Ornithorhynchus paradoxus*, Blum.," by Mr. George Bennett, Corr. Memb. Z. S.; in which the author gives a detailed account of his inquiries and researches on the subject in question, made in the Colony of New South Wales, and in the interior of New Holland, at the end of 1832 and commencement of 1833. He commences by a description of the external character of the animal, as observed by him in the living and recent state; from which it appears that the greater or less degree of nakedness of the under surface of the tail is dependent on age, and is probably a result of the mode in which that organ trails upon

the ground; that the colour of the upper mandible above, in an animal recently taken out of the water, is of a dull dirty greyish black covered with innumerable minute dots, and the under surface of the lower white in the younger specimens, and mottled in the more aged, while the inner surface of both is of a pale pink or flesh colour; that the eyes are brilliant, and light brown; and that the external orifices of the ears, which are with difficulty detected in dead specimens, are easily discoverable in the living, the animal exercising the faculty of opening and closing them at will. When recent, and especially when wet, the *Ornithorhynchus* has a peculiar fishy smell, proceeding probably from an oily secretion. It is used as food by the Natives, by whom it is called, at Bathurst and Goulburn Plains, and in the Yas, Murrumbidgee and Tumat countries, by the names of *Mallangong* or *Tambreet*. Mr. G. Bennett is inclined to regard the two species usually described in modern books as not differing sufficiently from each other to justify their separation, and he therefore retains the name of *Orn. paradoxus* given to the animal by Professor Blumenbach, the universal adoption of which renders it inexpedient in this instance to recur to the older name of *Platypus* imposed on it by Shaw. He remarks on the distortions to which the exceedingly loose integuments are liable in the hands of stuffers unacquainted with the characteristic features of the animal, and gives the general result of his measurements, in the recent state, of fifteen specimens shot and captured alive, as averaging in the males from 1 foot 7 to 1 foot 8 inches, and in the females from 1 foot 6 to 1 foot 7 inches, in total length. One male specimen, shot near the Murrumbidgee River, measured 1 foot 11¼ inches; and a female, shot in the afternoon of the same day in the same part of the river, measured only 1 foot 4 inches. In these specimens the relative proportions of the beak and tail were subject to considerable variation.

Mr. G. Bennett's observations were commenced on the 4th of October 1832, at Mundoona in the Murray County, on a part of the Yas River running through the estate of Mr. James Rose. The *Water-Moles* (as these animals are called by the Colonists,) chiefly frequent the open and tranquil parts of the stream, covered with aquatic plants, where the steep and shaded banks afford excellent situations for the excavation of their burrows. Such expanses of water are by the Colonists called "ponds." The animals may be readily recognised by their dark bodies just seen level with the surface, above which the head is slightly raised, and by the circles made in the water around them by their paddling action. On the slightest alarm they instantly disappear; and indeed they seldom remain longer on the surface than one or two minutes, but dive head foremost with an audible splash, reappearing, if not alarmed, a short distance from the spot at which they dived. Their action is so rapid, and their sense of danger so lively, that the mere act of levelling the gun is sufficient to cause their instant disappearance; and it is consequently only by watching them when diving, and levelling the piece in a direction towards the spot at which they seem likely to

reappear, that a fair shot at them can be obtained. A near shot is absolutely requisite; and when wounded they usually sink immediately, but quickly reappear on the surface.

A male specimen was shot, and brought out by the dog, on the following morning. In a few minutes it revived, and ran along the ground, instinctively endeavouring to regain the water, but did not survive more than twenty-five minutes. On this individual Mr. G. Bennett made various experiments, with the view of ascertaining the truth of the reports so extensively circulated of the injurious effects resulting from wounds inflicted by the spur. In no way, however, could he induce the animal to make use of its spurs as weapons of offence; although in its struggles to escape, his hands were slightly scratched by the hind claws, and even, in consequence of the position in which he held it, by the spur also. The result of several subsequent repetitions of the experiment with animals not in a wounded state was the same. The natives, too, never seem fearful of handling the male *Ornithorhynchus* alive.

On the evening of the same day a female was shot, which died almost immediately on being taken out of the water. In this specimen the mammary glands were scarcely observable on dissection; but the left *uterus* was found to contain three loose *ova* of the size of swan-shot. The right *uterus* was less enlarged, exhibited less vascularity, and contained no *ova*. Preparations of the generative organs of this individual, and of two other impregnated females which were subsequently obtained, were forwarded by the author to Mr. Owen, by whom they have been particularly described in the 'Philosophical Transactions' for 1834, p. 555.

The next day three other specimens were shot: a male and two females. In the former the *testes* were found not to be larger than very small peas, and the same fact was observed in a specimen afterwards shot in the Murrumbidgee; whereas in that first obtained, they were nearly of the size of pigeons' eggs. For this difference at the same season it seems difficult to account. The left *uterus* of one of the females was found to contain two *ova*, and that of the other a single *ovum*, of the size of buck-shot. As before, no *ova* were found in the right *uterus*.

On the morning of the 7th of October, Mr. G. Bennett proceeded, in company with a native, to the banks of the river to see the burrow of an *Ornithorhynchus*, from which the natives had taken the young during the previous summer. The burrow was situated on a steep part of the bank; and its entrance, concealed among the long grass and other plants, was distant rather more than a foot from the water's edge. Its whole extent was not laid open, the natives contenting themselves with digging down upon it at stated distances, their operations being guided by the introduction into the burrow of a stick which indicated its direction. It took a serpentine course, and measured about twenty feet in length: the termination was broader than any other part, nearly oval in form, and strewed with dry river-weeds, &c. From this nest the native stated that he had taken in the previous season (December) three

young ones, about six or eight inches in length, and covered with hair. In addition to the entrance above spoken of, the burrows have usually a second below the surface of the water, communicating with the interior just within the upper aperture. After exhibiting this burrow, the native proceeded to explain the means employed in tracking the *Mallangongs*. He pointed out on the moist clay of the banks foot-marks leading to a burrow, from the bottom of which, on inserting his arm, he drew forth some lumps of clay, which bore evident marks of the animal's recent passage. He declared, however, that the inhabitant was absent, and Mr. G. Bennett was induced, by this information, to abstain from further investigation. A female specimen, shot in the evening of the same day, was found to have two *ova*, about the size of or rather smaller than buck-shot, in the left *uterus*; and in this, as in all the other female specimens, much difficulty was experienced in finding the mammary glands. The contents of the cheek-pouches and stomachs always consisted of river insects, very small shell-fish, &c., comminuted and mingled with mud or gravel, which latter, Mr. G. Bennett suggests, may be required to aid digestion. River-weeds were never observed to form part of the food; but Mr. George MacLeay informed the author that in a situation in which water-insects were very scarce he had shot *Ornithorhynchi* with river-weeds in their pouches.

Similar excursions were made on the 8th and 9th of October; and on the latter day one of the burrows was explored. The entrance of this burrow was situated on a moderately steep bank, abounding with long wiry grass and shrubs, at the distance of about five feet from the water's edge: its course lay in a serpentine direction up the bank, approaching nearer to the surface of the earth towards its termination. At this part it was expanded to form a chamber sufficiently capacious for the reception of the animal and her young, and measured one foot in length by six inches in breadth. Its whole length, from the entrance to the termination, was twenty feet; narrowing as it receded from the entrance, where it measured one foot three inches in depth, and one foot one inch in breadth, and in the intermediate part becoming scarcely larger than the usual breadth of the animal when uncontracted.

From this burrow a living female was taken, and placed in a cask, with grass, mud, water, &c.; and in this situation it soon became tranquil, and apparently reconciled to its confinement. Hoping that he had now obtained the means, should his captive prove to have been impregnated, of determining the character of the excluded product, Mr. G. Bennett set out on his return for Sidney, on the 13th of October, carrying the living *Ornithorhynchus* with him in a small box, covered with battens, between which only very narrow intervals were left.

The next morning, tying a long cord to its leg, he roused it and placed it on the bank of the river, in order to indulge it with a bathe; and a similar indulgence was granted to it on the second day of its journey. On these occasions it soon found its way into the water, and travelled up the stream, apparently delighting in those places

which abounded most with aquatic weeds. When diving in deep and clear water, its motions were distinctly seen: it sank speedily to the bottom, swam there for a short distance, and then rose again to the surface. It appeared, however, to prefer keeping close to the bank, occasionally thrusting its beak into the mud, from whence it evidently procured food, as on raising the head, after withdrawing the beak, the mandibles were seen in lateral motion, as is usual when the animal masticates. The motions of the mandibles were similar to those of a duck under the same circumstances. After feeding, it would lie sometimes on the grassy bank, and at others partly in and partly out of the water, combing and cleaning its coat with the claws of the hind feet. This process occupied a considerable time, and greatly improved its sleek and glossy appearance. After its second excursion it was replaced in the box, which was not opened again until the following morning, when it was found to have made its escape.

Although the summer season was now far advanced, Mr. G. Bennett determined to return to the interior and renew his investigations. On the 15th of November he again arrived at Mundoona, where he found that the river had fallen greatly, and sought in vain for the *Water-Moles* in the spots in which they had a few weeks before been so abundantly seen. Some burrows were also examined, but without success. On the 21st he proceeded to Gadarigby, on the Murrumbidgee, where his exertions were more successful, several specimens being obtained; but the only female shot was young and unimpregnated. On the 27th he returned to Mundoona, where a female had been shot the previous day, the uterine organs of which afforded evidence that the young had been just produced. The abdominal glands were large, but no milk could be expressed from them; the fur still covered the portion of integument on which its ducts terminated; and there was no appearance of projecting nipple. No such projection was observed in any of the specimens in which the secretion of milk was demonstrable. Two other females were procured at the same place; but both proved to be unimpregnated.

On the 8th of December Mr. G. Bennett quitted Mundoona for the banks of the Murrumbidgee, and near Jugiong, on the latter river, had an opportunity of inspecting the burrow of an *Ornithorhynchus*, containing three young ones, which appeared to have not long previously been brought forth. They were only thinly covered with hair and measured in length about 1¾ inch. No fragments of shells were observable in the burrow, nor anything that could lead to the supposition of the young having been excluded while yet in the egg. A want of spirit in which to preserve these interesting specimens unfortunately prevented their conveyance to Sidney.

On the 28th of December the author visited a part of the Wollondilly River, in the neighbourhood of Goulburn Plains, called by the Natives Koroa, in order to explore the burrow of an *Ornithorhynchus* which had there been discovered. The termination of this burrow was thirty-five feet from the entrance; and Mr. G. Bennett states

that burrows have been observed of even fifty feet in length. It was found to contain two young specimens, of the dimensions of 10 inches from the beak to the extremity of the tail. The nest consisted of dry river-weeds, the *epidermis* of reeds, and small dry fibrous roots, strewed over the floor of the terminal cavity. An old female was captured soon after on the banks of the river, in a ragged and wretched condition, which was conjectured to be the mother. But little milk could be pressed from her abdominal glands, as might have been expected in the parent of such well-grown young ones. She died at Mittagong, on the 1st of January, but the young ones survived until some time after their arrival in Sidney.

Mr. G. Bennett proceeds to describe in detail their habits in a state of captivity. Their various attitudes, when in a state of repose, are strikingly curious, and were illustrated by the exhibition of sketches made from the life. The young were allowed to run about the room; but the old one was so restless, and damaged the walls of the room so much by her attempts at burrowing, that it was found necessary to confine her to the box. During the day she would remain quiet, huddled up with her young ones; but at night she became very restless, and eager to escape. The little ones were as frolicsome as puppies, and apparently as fond of play: and many of their actions were not a little ludicrous. During the day they seemed to prefer a dark corner for repose, and generally resorted to the spot to which they had been accustomed, although they would change it on a sudden apparently from mere caprice. They did not appear to like deep water, but enjoyed exceedingly a bathe in shallow water, with a turf of grass placed in one corner of the pan: they seldom remained longer than ten or fifteen minutes in the water at one time. Though apparently nocturnal, or at least preferring the cool and dusky evening to the glare and heat of noon, their movements in this respect were so irregular as to furnish no grounds for a definite conclusion. They slept much, and it frequently happened that one slept while the other was running about, and this occurred at almost all periods of the day. They climbed with great readiness to the summit of a bookcase, placing their backs against the wall and their feet against the bookcase; and thus, by means of their strong cutaneous muscles and of their claws, mounting with much expedition to the top. Their food consisted of bread soaked in water, chopped egg, and meat minced very small; and they did not seem to prefer milk to water. One of the young ones died on the 29th of January 1833, and the other on the 2nd of February, having been kept alive in captivity for nearly five weeks.

December 23, 1834.

Lieut.-Col. Sykes in the Chair.

Drawings were exhibited of four *Fishes* of the River Quorra, made by Lieut. Allen, Corr. Memb. Z. S., from specimens obtained by him during his late voyage up that river into the interior of Africa. They exhibit the forms of *Lates*, Cuv.; *Mormyrus*, Ej.; *Sudis*, La Cép; and *Notopterus*, Ej.; and thus tend, in common with the specimens from the same expedition exhibited at the Meeting of the Society on June 10 (page 45), to illustrate the analogy borne by the *Fishes* of the rivers of Western Africa to those of the Nile.

A specimen was placed on the table of a *Toucan*, apparently hitherto undescribed, and forming part of the collection of N. C. Strickland, Esq., by whom it was communicated for exhibition.

Mr. Gould, at the request of the Chairman, pointed out its distinguishing characteristics. By its comparatively short bill, which is furrowed on the sides, and broad and flattened on the *culmen*, with the base of the under mandible extending obliquely beyond the line of the eye; by the shortness and roundness of its wings, of which the fourth quill-feather is the longest, the fifth, sixth, and seventh being nearly of the same length; and by the comparative shortness of the tail, which is less decidedly graduated than in the typical *Pteroglossi*; this bird agrees with the species described in Mr. Gould's 'Monograph of the *Ramphastidæ*,' as the *Pter. prasinus*, Licht., and *Pter. sulcatus*, Swains. With those species Mr. Gould proposes to associate it in a group, to be designated, on account of the grooved bills of the *Birds* comprised in it, *Aulacorhynchus*. From the other two species it is readily distinguishable by the white band nearly surrounding the base of its bill, and by the blood-red spot on the rump. The latter character affords the trivial name of the species, which may, for the present, be inserted in the account of the *Toucans* given by Mr. Gould at the Meeting of July 8, 1834, (page 78,) immediately before the *Pter. prasinus*, Licht.

PTER. HÆMATOPYGUS. *Pter. suprà subolivaceus, infrà cærulescenti-viridis, pectore saturatiore; uropygio coccineo; rectricibus quatuor intermediis brunneo apiculatis.*

Long. tot. 14 *poll.*; *rostri*, 2¾; *alæ*, 4¾; *caudæ*, 5¼; *tarsi*, 1¼.

DESCR. Rostrum saturatè castaneum albo ad basin subcinctum. Orbitæ rubræ. Pedes olivaceo-brunnei. Sexus uterque, sicut in *Pter. prasino* et *Pter. sulcato*, similis.

The precise part of South America in which this bird was captured has not been ascertained.

Col. Sykes, when reading to the Society, in 1832, his Catalogue of the Birds of Dukhun, not having exhibited the nest and eggs of the *Lonchura Cheet*, and of that species of *Tailor-bird* which he denominated *Orthotomus Bennettii*, brought them under the notice of the Society on the present occasion.

The nest of the *Lonchura Cheet* is a perfect hollow ball, made of a delicate *Agrostis*, with a lateral hole for the entrance of the birds. It contained ten oblong minute white eggs, $\frac{1}{10}$ths of an inch long by $\frac{9}{10}$ths in diameter. It was found in the fork of a branch of the *Mimosa Arabica*.

The nest of the *Orthotomus Bennettii* was lodged in the cavity formed by sewing the edges of two leaves together: the nest itself also was attached to the leaves by threads passing through the leaf and the bottom of the nest, and there were appearances of the end of the thread being knotted outside. The nest is composed of very delicate fibres of *Indian Hemp* and grass. It contained two minute oblong crimson eggs, $\frac{7}{10}$ths of an inch long by $\frac{5}{10}$ths wide.

Col. Sykes also exhibited an egg of the *fluviatile Tortoise* of Dukhun, *Trionyx Indicus*, Gray. It is a perfect sphere, $1\frac{4}{10}$ inch in diameter: the calcareous shell is of a peculiar alabaster-like whiteness. He found seven eggs with shells in the oviducts, and twenty-seven without shells, nearly of the size of the preceding, in one specimen. He took occasion to mention that in the stomach and intestines of another specimen of *Trionyx*, he found not only the animals, but also angular fragments of considerable size of the shells of some scores of large *Uniones*.

A paper was read, entitled, "Description of some Species of *Chama*: by W. J. Broderip, Esq., Vice-President of the Geological and Zoological Societies, F.R.S., L.S., &c."

The author commences by remarking that the shells of the genus *Chama* appear to be subject to every change of shape and often of colour which the accidents of their locality may bring upon them, and that the distinction of the species must consequently be difficult, on account of their infinite variety. He then proceeds to describe those brought home by Mr. Cuming, and now in that gentleman's cabinet. The *Shells* referred to were exhibited in illustration of the characters and descriptions.

CHAMA FRONDOSA. *Chama testâ sublobatâ, lamellosâ, lamellis sinuosis frondosis, longitudinaliter plicatis et in utrâque valvâ cardinem versus biseriatis, maximis; intùs albidâ, limbo purpurascente, crenulato.*

Hab. ad Insulam Platam Columbiæ Occidentalis.

The ground colour of this beautiful *Chama* is a light pinkish purple, and the luxuriant and spreading longitudinally plaited foliations are yellow tinged and streaked with the ground colour. At the root of each foliation, on its lower side, there is generally a purplish transverse stripe.

It was dredged up from a rock of coral, to which it was adhering, at a depth of seventeen fathoms.

Var. a. *Testâ lamellis crebrioribus, frondibus brevioribus.*

Hab. cum præcedente.

Var. b. *Testâ totâ purpureâ, lamellis creberrimis, frondibus brevissimis.*

Hab. ad Mexico. (Gulf of Tehuantepec.)

Dredged up from sandy mud attached to *Aviculæ* (*Meleagrinæ*, Lam., *Margaritæ*, Leach,) at a depth of ten fathoms.

Chama pellucida. *Chama testâ albâ roseo seu rubro fucatâ vel strigatâ, lamellis frequentibus, frondibus elongatis pellucidis; intùs albâ, limbo crenulato.*

Hab. ad Peruviam. (Iquiqui.)

Dredged up attached to stones, *Mytili*, and turbinated shells, at a depth varying from nine to eleven fathoms, from a bottom of coarse sand, and also found under stones at low water mark.

In old specimens the foliations and *lamellæ* are completely worn down, and the shell has somewhat of a crystalline appearance;—indeed it is always semitransparent.

Chama lobata. *Chama testâ albâ, lobatâ, subrhomboideâ, radiatim striatâ, lamellis creberrimis, fimbriatis, foliaceis, striatis; limbo interno crenato.*

Hab. ad Insulam Nevis.

Found attached to small stones and shells, at Nevis in the West Indies, in sandy mud, and at a depth ranging from four to ten fathoms.

Chama Pacifica. *Chama testâ rubrâ purpureâ vel luteâ, lamellis creberrimis, foliis seu squamulis brevioribus interdum albidis; limbo interno crenato.*

Hab. in Oceano Pacifico. (Lord Hood's Island.—Pearl Islands.)

The infinite variety of this species in shape and colour defies description. In many points it agrees with Lamarck's *Chama florida*, but he describes the margin of that shell as entire, whereas the margin of *Chama Pacifica* is strongly crenated.

Mr. Cuming's specimens were obtained by diving. They were attached to *Aviculæ*, at a depth ranging from three to seven fathoms. Many shells of this species were brought to this country some years ago, from the Pearl Islands, by Mr. Samuel Stutchbury.

Chama imbricata. *Chama testâ lamellosâ, squamis imbricatâ, albidâ purpureo-fusco variâ; valvâ superiore subdepressâ, sublobatâ, sinu ab umbone usque ad limbum currente; intùs albidâ, limbo integro, sæpissimè nigro-purpureo.*

Hab. in Oceano Pacifico. (Lord Hood's Island.—Pearl Islands.)

This grows to a large size, and was obtained by diving, attached to *Aviculæ*, at a depth ranging from three to seven fathoms. There is generally a purple spot at the tip of the *umbo* of the upper valve.

This species was also brought home in considerable numbers by Mr. Samuel Stutchbury from the Pearl Islands.

Var. a. *Testâ nanâ, castaneâ albo strigatâ, intùs albâ.*

Hab. ad Insulas Gallapagos.

The examination of an extensive series has led Mr. Broderip to the conclusion that this dwarf, and at first sight widely differing, shell, is only a variety of *Chama imbricata*. The purple-brown is changed into chestnut striped with white, and hardly any scales are to be found on its wrinkled surface, except the double series which crown the ridge on each side of the depressed line, and sometimes a series or two on the affixed valve. This depressed line is not nearly so well marked as it is in the large variety, but it is to be observed on most of the specimens: some are absolutely without imbrications.

This variety was found attached to rocks and stones at low water.

Chama producta. *Chama testâ subpurpureâ, creberrimè lamellosâ, lamellis foliaceis, integris; valvâ inferiore enormiter productâ; limbo integro, purpureo.*

Hab. ad Mexico. (Gulf of Tehuantepec.)

The interior of the shell, which has something of the aspect of that of a *Gryphæa*, is white tinged with yellowish, and striped in the direction of the *lamellæ* with purple. The purple border on the smooth internal edge of the upper valve is of some width.

Dredged up from sandy mud at a depth of ten fathoms, attached to stones.

Chama corrugata. *Chama testâ corrugatâ, rubro-purpureâ albo variâ; intùs atro-purpureâ, limbo integro.*

Hab. in Americâ Centrali. (Real Llejos.)

Found attached to stones at low water. All the specimens which Mr. Broderip had seen turn from right to left.

Chama echinata. *Chama testâ albidâ purpureo variâ, spinis fornicatis echinatâ; intùs atro-purpureâ vel sub-rubrâ, limbo integro; dente cardinali rubro.*

Hab. in Americâ Centrali. (Puerto Portrero.)

The spines of this species, which are close set and well developed in youth, are entirely abraded in age, till nothing but corrugation is left externally. But as the animal advances in life the interior of the shell is richly painted, till in old age it arrives to an intensity of dark purple that it is hard to imitate with colours however rich. At this period the cardinal tooth becomes of the hue of the bone of the *red Coral* (*Isis nobilis*) used for ornamental purposes.

Found at low water attached to rocks.

Chama spinosa. *Chama testâ albâ interdum roseo vel purpureo umbonem versus valvæ superioris pictâ, spinis fornicatis creberrimis horridâ; intùs albâ, limbo integro.*

Hab. in Oceano Pacifico. (Lord Hood's Island.)

This pretty species was dredged up, attached to corals and *Aviculæ*, at a depth ranging from three to seven fathoms. The younger specimens are tinged towards the *umbo* of the upper valve with a delicate rose-colour. The *umbo* of the lower valve is often produced after the manner of that of *Chama unicornis*, Lam.

Chama sordida. *Chama testâ albidâ subroseo varié vel totâ subroseâ, creberrimè striatâ, hinc et hinc foliaceâ; intùs albâ, limbo crenulato.*

Hab. in America Centrali. (Isle of Cuña.)

This species, which varies much according to its age, but never appears to grow to a large size, was dredged up from a depth of eighteen fathoms, attached to rocks. Old specimens have the lower valve often very much produced.

A Note by Mr. George Bennett on the Nasal Gland of the *wandering Albatross, Diomedea exulans*, Linn., was read. It described in detail the gland situated in that bird above the orbit, as observed by the writer in 1832, and accorded with the account of it published by him in the Appendix to his 'Wanderings in New South Wales,' &c. It was illustrated by a drawing of his dissection of the head of an *Albatross*, made specially with the view of tracing the excretory duct of the gland, which he succeeded in doing for nearly two inches under the external plate of the upper mandible, in a direction towards the nostrils, but inclining slightly upwards, until he lost sight of it among the cellular substance of the bone. The writer notices the occurrence of a corresponding structure in other *Birds*, particularly among the *Natatores*, and refers to Müller for an account of the gland as it exists, in or near the orbit, in species of every order of *Aves*.

A specimen was exhibited of a *Kangaroo*, recently brought from New Holland, by Capt. Sir W. Edward Parry, R.N., and presented by him to the Society.

Mr. Bennett called the attention of the Meeting to it as representing a species not hitherto described, and distinguishable by its paler colour, which is generally of a slaty grey; by the whiteness of its tail throughout the greater part of the length of that organ; by the comparative length of the tail, which is here longer than the body, whereas in the ordinary *greater Kangaroo, Macropus major*, Shaw, it is shorter; by the comparative nakedness of the ears; by the great extent of the naked muzzle; and by a broad white stripe along each cheek. He stated it to be his intention to describe it in detail under the name of

Macropus Parryi. *Macr. rhinario lato; auriculis elongatis nudiusculis; caudâ corpore sublongiore, pilis rigidis brevibus incumbentibus vestitâ: notæo griseo; gastræo pallido; fasciâ genarum, caudâque pro maximâ parte, albis, hâc ad apicem nigrâ.*

Long. tot. a rostro ad caudæ apicem 5 ped. 4 poll.; *capitis*, 6 poll.; *auriculæ*, 4; *tarsi postici*, ad unguis longioris apicem, 10½; *caudæ*, 2 ped. 6 poll.

In a Note from Sir Edward Parry, which was read, it is stated that the animal in question is known to the natives in the neighbourhood of Port Stephens (lat. 32° S.) by the name of *Wŏllăroo*. This individual had been in his possession in New South Wales for two years previously to his embarkation for England, and was allowed to

range about at perfect liberty. It set out every night after dusk into the bush to feed, returning generally about two o'clock in the morning. In addition to what it obtained on these excursions, it ate meat, bread, vegetables, &c. Occasionally, but rarely, it ventured out in the daytime to a considerable distance, in which case it would sometimes be chased back by strange dogs: these, however, it always outstripped by its superior swiftness, until it placed itself under the protection of the dogs of the house. It died, from the effects of an accident, almost immediately after its arrival in England.

Detailed Notes of its dissection by Mr. Owen were read. The structure of its principal *viscera* corresponds in general with that of the same organs in the *greater Kangaroo*, but there are some differences observable in the anatomy of the two species. The puckering of the stomach, which is occasioned in *Macr. major* by three longitudinal bands, one extending on each side from the *œsophagus* along the lesser curvature, and the third passing along the line from which the great *epiploon* is continued to the spleen and transverse *colon*, depends in *Macr. Parryi* on the lateral bands alone, there being no mesial one. The different segments of the intestinal canal bear the same relative proportion to each other in both species; but the length of the several segments, and consequently of the whole canal, is less as compared with that of the body in *Parry's* than in the *greater Kangaroo*,—a fact which is in direct accordance with the more mixed nature of the food in the former. The spleen in *Macr. Parryi* was deeply notched at its free trenchant margin; in *Macr. major* it appears to be always entire. The mesial *cul-de-sac* of the *vagina* did not extend quite so far down in *Macr. Parryi*, as it does in the better-known species.

In the stomach were found two hair-balls of an oval shape, not rounded as they generally are in the *Ruminants*, which are most obnoxious to these formations. One of them was 3, and the other 2 inches in the long diameter. They were entirely composed of the hairs of the animal, matted together and agglutinated by the mucus of the stomach. Mr. Owen remarks on the interest which attaches to this resemblance to the *Ruminating* tribes, to which the *Kangaroos* make so near an approach in the complexity and magnitude of the stomach, and the simplicity of the *cæcum* and *colon*. He states that he has "more than once observed the act of rumination in the *Kangaroos* preserved in the Vivarium of the Society. It does not take place while they are recumbent, but when they are erect upon the tripod of the hinder legs and tail. The abdominal muscles are in violent action for a few minutes; the head is a little depressed; and then the cud is chewed by a quick rotatory motion of the jaws. This act was more commonly noticed after physic had been given to the animals, which we may suppose to have interrupted the healthy digestive processes: it by no means takes place with the same frequency and regularity as in the true *Ruminants*."

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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.

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PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY

OF LONDON.

PART III.

1835.

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OF

CONTRIBUTORS.

With References to the several Articles contributed by each.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 13, 1835.

William Yarrell, Esq., in the Chair.

A specimen was exhibited of the *brush-tailed Kangaroo, Macropus penicillatus*, Gray, which had recently been presented to the Society by Captain Sir Edward W. Parry. Mr. Bennett called the attention of the Meeting to its peculiarities, and remarked on the great hairiness of the tail, and especially on its want of robustness at the base, as indicating probably the type of a new genus, to be removed from among the *Macropi* on account of the diminished power of an organ which is so exceedingly strong among the typical *Kangaroos* as to execute, during the act of slow progression and while resting, the office of a third leg. In connexion with this peculiarity of tail, Mr. Bennett pointed out also a difference in the form of the third, or extreme lateral, incisor, as compared with the corresponding tooth in *Macr. major*, Shaw; *crania* of the two animals being exhibited for that purpose. The third incisor in *Macr. penicillatus* is bilobed, and approaches somewhat to the character of the corresponding tooth in *Macr. Parryi*, Benn.

A note by Sir Edward Parry, which accompanied the specimen, was read. The animal appears to be procurable with difficulty, as this individual was "the only one of the kind ever seen by Sir E. Parry. It was shot among rocks near Liverpool Plains, New South Wales. As several of the same kind were seen together on more than one occasion, they appear to be gregarious. They seemed to prefer the neighbourhood of rocky ground, in which they had holes, to which, when hunted, they retreated. The first intimation received of these animals by Mr. Hall was, that monkeys were to be seen in a particular situation: and the manner in which they jumped about, when he first approached a number of them, left the same impression on his mind. They were so wild that he found it impossible, on his first attempt, to obtain a specimen; and one which he had wounded escaped into its hole. Some months afterwards, however, after remaining on the spot a whole night for the purpose, he

succeeded in killing one towards daylight, which is the specimen now presented to the Society."

Mr. George Bennett stated that while in New South Wales he had heard of an animal called *Gúnar* by the natives, and found about the Beran Plains, which was described to him as in some degree resembling a *Kangaroo*, but differing from it in having a bushy tail, and in the form of the head, which was stated to resemble that of the *Hare*. He suggested the probability that the *Gúnar* and the *brush-tailed Kangaroo* might be specifically identical.

Extracts were read from a Letter addressed to the Secretary by M. Lesson, For. Memb. Z.S., and dated Rochefort, December 29, 1834. It was accompanied by the subjoined table of a distribution of the families of the *Acalepha*, Cuv., proposed by the writer.

ACALEPHA.

I. Without a central solid axis.
- A. Body simple, entire.
  - 1. Symmetrical, terminated at each pole by an opening. — 1. Beroidæ.
  - 2. Non-symmetrical: the upper pole disciform or umbrella-shaped, imperforate. — 2. Medusæ.
- B. Body multiple or aggregated.
  - *a*. Homogeneous.
    - 3. Composed of two pieces adhering together, and capable of separation from each other. — 3. Diphydes.
    - 4. Composed of numerous pieces aggregated together. — 4. Polytoma.
  - *b*. Heterogeneous.
    - 5. Animal furnished with appendages of different kinds.
      - * Vesicle small, regular, placed at the summit of a kind of stalk furnished with lateral *ampullæ* and terminal suckers. — 5. Physsophoræ.
      - ** Vesicle large, irregular, without stalk or *ampullæ*, but having terminal suckers and cirriferous processes. — 6. Physalia.

II. With a central cartilaginous axis.
- 6. Body simple, with suckers and lateral *tentacula*.
  - *a*. Body irregularly oblong, with a vertical *lamina* on its upper surface. — 7. Velellæ.
  - *b*. Body discoid, flat above. — 8. Porpitæ.

A letter was read, addressed to the Secretary by B. H. Hodgson, Esq., Corr. Memb. Z.S., and dated Nêpal, February 25, 1834. It gave a systematic and technical account of the *Chiru Antelope, Antilope Hodgsonii*, Abel, in conformity with the latest and most complete information possessed by the writer, and communicated by him to the Society at its Meeting on July 22, 1834. ('Proceedings', Part II. p. 80.)

January 27, 1835.

Lieut.-Col. Sykes in the Chair.

Extracts were read from a Letter addressed to the Secretary by J. B. Harvey, Esq., Corr. Memb. Z.S., and dated Teignmouth, January 22, 1835. It was accompanied by a large collection of *Shells* from the south coast of Devonshire, and by specimens of *Echinodermata* and *Crustacea* from the same coast, which the writer presented to the Society. It was also accompanied by drawings of a large specimen of *Caryophyllia Smithii*, now living in Mr. Harvey's possession: the drawings represent the animal shortly after feeding, when it is expanded sufficiently to contain the food, extending rather above the level of the coral and raised in the middle; and also as it appears three or four hours after having been fed, when it expands itself to the fullest extent, and ejects, in the form of *flocculi*, the crude undigested matter.

A Note was read from the Secretary of the United Service Museum, accompanying several skins of *Birds* transmitted for exhibition by direction of the Ornithological Sub-Committee of that Museum. The specimens were brought under the notice of the Meeting.

The exhibition was resumed of the *Shells* collected by Mr. Cuming on the western coast of South America and among the Islands of the South Pacific Ocean. Those brought before the present Meeting were accompanied by characters by Mr. G. B. Sowerby, and comprised the following species:

Genus Hipponyx.

"Of this remarkable genus Mr. Cuming brought home three species in such perfect condition, as respects the shell, as to possess both valves *in situ*. The two specimens which exhibit these three species appear to me so interesting that I shall venture upon a particular description of them. The first, of the species which I have named *Hipp. Mitrula*, is a group of about twenty individuals, of various sizes, from $\frac{1}{10}$ to $\frac{1}{2}$ an inch in diameter, adhering by their lower or flat valves to an irregular piece of stone; the attached valves as usual, are conformed to the irregularities of the surface of the stone, and when they have been at first attached to a cavity, they are hollow: the upper valves are also somewhat modified in form by the same cause, so as to be more or less regular according as the lower valve has adhered to a more or less smooth and even part of the

stone. The attached valves have not attained a great degree of thickness, consequently I do not suppose any one of the individuals to be of advanced age; there are, however, several which can only just have occupied their positions on the stone: these are not above $\frac{1}{10}$ part of an inch in diameter, and they show the perfect point of the upper valve, somewhat convoluted and inclined toward the anterior edge. Other individuals, which are placed in a cavity of the stone, are very regular in shape, but have their ridges slightly curved upwards in conformity with the nearly regular vesicular shape of the cavity. The edges of the *lamellæ* near the outer margin in most of the specimens are furnished with a thin fringe of *epidermis*, but the very young shells are destitute of this. An individual of *Hipp. subrufa* is observable among the group of *Hipp. Mitrula*: its *apex* is distinctly spiral and its *epidermis* hairy.

"The second specimen belongs to the species which I have named *Hipp. barbata*. This is a very complete specimen, and reminds me of the beautiful fossil species *Hipp. Cornucopiæ*; it is a small individual, having its attached valve very much thickened and adhering to a much larger one of the same species; its edge is much elevated and it is deeply concave; the free valve is rather smaller, and conical, and its edge is surrounded by the elevated edge of the attached valve."—G. B. S.

✓ HIPPONYX MITRULA. (Pileopsis Mitrula, *Lam.* Patella Mitrula, *Auct.*) *Hipp. testâ albâ, subconicâ, concentricè lamellosâ, lamellis subconfertis, radiatim striatis, epidermide pilosis.*

Hab. ad Insulam Peruvianam Lobos dictam.

Found upon stones, in seventeen fathoms' water, among coarse sand.—G. B. S.

✓ HIPPONYX SUBRUFA. (Pileopsis subrufus, *Lam.* Patella subrufa, *Dillw.*) *Hipp. testâ aurantiaco-rufescente, subconicâ, concentricè sulcatâ, radiatim striatâ, striis profundis, marginibus sulcorum crenulatis; vertice posticè inclinato.*

Hab. cum præcedente.—G. B. S.

✓ HIPPONYX RADIATA, Gray. *Hipp. testâ subdepresso-conicâ, fulvescente, radiatim costatâ, costis crebris, imbricato-squamosis; vertice postico.*

Hab. ad Panamam et ad Insulas Gallapagos.

Found attached to rocks alive, and the upper valves loose on the sands.—G. B. S.

✓ HIPPONYX BARBATA. *Hipp. testâ pallidè fulvâ, subelevato-conicâ, radiatim confertim striatâ; margine ventrali producto; epidermide piloso-barbatâ; margine interno crenulato.*

Hab. ad Insulas Maris Pacifici.

Found on the coral reefs around Toobouai, one of the Society Islands.—G. B. S.

Genus Mouretia.

Mouretia Peruviana. *Mour. testâ subdepresso-conicâ, albâ, radiatim striatâ; vertice centrali; epidermide corneâ, tenui.*
Hab. ad oras Peruviæ. (Cobija.)
Found on rocks at low water.—G. B. S.

Mouretia stellata. *Mour. testâ depressâ, squamiformi, albâ, radiatim costatâ; margine dentato.*
Hab. ad oras Americæ Centralis. (Real Llejos.)
Found on rocks at low water.—G. B. S.

Mouretia reticulata. *Mour. testâ subdepresso-conicâ, subrotundatâ, supernè reticulatâ, albâ.*
Hab. ad Valparaiso.
Found attached to shells in deep water, from forty-five to ninety fathoms.—G. B. S.

Genus Siphonaria.

Siphonaria costata. *Siph. testâ depressâ, fusco-nigricante, costis albicantibus, radiantibus, supernè obtusis; margine sinuoso: long.* 1·35, *lat.* 1·05 *poll.*
Hab. ad oras Americæ Centralis. (Guacomayo.)
On rocks in exposed situations at low water.—G. B. S.

Siphonaria radiata. *Siph. testâ subdepresso-conicâ, fusco-nigricante, costis albicantibus, radiantibus; margine crenato: long.* 0·9, *lat.* 0·75 *poll.*
Hab. ad littora Occidentalia Africæ. (Gambia.)
This differs from *Siph. costatâ* rather by its form than by any other character; this being only a slightly depressed cone, while the last is altogether very flat.—G. B. S.

Siphonaria lineolata. *Siph. testâ obliquè conicâ, fuscâ, lineolis numerosis, albidis, radiantibus: long.* 0·65, *lat.* 0·45 *poll.*
Hab. ad Paytam Peruviæ.
Variat *testâ majore, lineis albidis minùs conspicuis: long.* 1·05, *lat.* 0·8 *poll.*
Hab. ad Insulam Chiloe Chilensium.
On rocks in exposed situations.—G. B. S.

Siphonaria Pica. *Siph. testâ subobliquè conicâ, nigricante, radiatim costatâ et striatâ, costis albidis; margine crenato, internè albo maculato: long.* 0·8, *lat.* 0·7 *poll.*
Hab. ad Acapulco.
On rocks in exposed situations.—G. B. S.

Siphonaria subrugosa. *Siph. testâ subdepresso-conicâ, fuscescente, extùs albicante, radiatim costato-striatâ, rugulosâ; vertice subcentrali, nigro: long.* 0·8, *lat.* 0·6 *poll.*

Hab. ad oras Brasiliæ.
Found on rocks in exposed situations.—G. B. S.

Siphonaria læviuscula. *Siph. testâ subdepresso-conicâ, subobliquâ, extùs pallidâ, radiatim albido-lineatâ; intùs fuscescente; margine albicante: long.* 0·9, *lat.* 0·75 *poll.*
Hab. ad Valparaiso.
On rocks in sheltered places.—G. B. S.

Siphonaria maura. *Siph. testâ parvâ, depressâ, subovali, intùs nigrâ, margine albido articulato; extùs fuscescente, albido-radiatâ: long.* 0·55, *lat.* 0·45 *poll.*
Hab. ad Panamam.
Found on rocks.—G. B. S.

Mr. Owen read some Notes of a Dissection of a *long-tailed Dasyurus, Dasyurus macrourus*, Geoff., which recently died at the Society's Gardens.

The subject was a female, adult, weighing 3lbs. 8½ oz., and measuring from the extremity of the jaws to the root of the tail 1 foot 4 inches, the length of the tail being 1 foot 2½ inches, and that of the head 4 inches. The vaginal orifice and the *anus* were situated within a common outlet, just below the root of the tail. There were six nipples, arranged three on either side, describing three quarters of a circle, and seated within a slight fold of integument, of a corresponding shape, 3 inches anterior to the cloacal outlet.

The external oblique abdominal muscle terminated below in a strong tendon, which was folded inwards, like Poupart's ligament. The abdominal ring consisted of a slit, bounded externally by Poupart's ligament, and internally by the marsupial bone: 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 or boundaries of the abdominal rings. The *transversalis abdominis* and internal oblique muscle were distinct.

The stomach was simple, 4¼ inches in length and 8 inches in its greatest circumference. It was shaped as in the genus *Didelphis*, and had the *cardia* a little nearer to the *pylorus* than to the left extremity. It was principally nourished by the coronary arteries; the gastro-epiploics being very small and running along the posterior side of the stomach, and not along the greater curvature. The terminal part of the *œsophagus* was furnished with longitudinal *rugæ*. The commencement of the *duodenum*, to the extent of half an inch, was occupied by a zone of glands.

The *omentum* was of small size, extending from the stomach to the spleen, but not covering the intestines: it is possible that as these are short and wide, they do not require such a covering to facilitate their motion. It contained a little fat.

The mesentery was one continuous duplicature of the *peritonæum*, extending from the *pylorus* to the end of the *colon*, as in the *Rep-*

tilia. The vessels anastomose to form but one series of arches. The mesenteric glands were oblong, situated close to the *pancreas*, and exhibited, on being cut into, a dark colour.

The length of the intestines was 5 feet; their greatest circumference 2½ inches. They were destitute of *cæcum* and of any corresponding valve. Their diameter was nearly uniform throughout their whole length.

The anal glands, two in number, were of a spherical form, and half an inch in diameter. Their secretion was dark-coloured. A minute duct conveys it from each gland to the verge of the cloacal opening, which is a little prominent, and is surrounded by a strong *sphincter*.

The liver occupied the situation usual in the *Mammalia*. Its weight was 3 ounces 8½ drachms. It was tripartite, if the cystic lobe (which is deeply cleft) be considered as one division. The right division was partially cleft into three lobes: the cystic division was deeply cleft, with the gall-bladder loosely attached at the bottom of the fissure, not perforating the substance of the lobes as in *Didelphis*. The left division gave off the Spigelian *appendix*. All the lobes are irregularly notched. The abdominal *vena cava* perforated the liver. The gall-bladder was of a pyriform figure, pendent at its *apex* to two small folds of *peritonæum* which attach it to the liver. The *ductus communis* entered the *duodenum* 1 inch from the *pylorus*.

The *pancreas* was a broad, flattened, branched gland, with a process given off at the splenic end from the main body, so as to produce, in a transverse section, the figure of the letter T. The pancreatic duct joined the biliary just at its termination. The spleen was situated sinistrad and dorsad of the stomach: its weight was 6½ drachms. Its form was compressed, trihedral and T-shaped, as in the *Kangaroo*, but its lesser process was not so long as in that animal. Mr. Owen considers this form as indicative of a relation, hitherto unsuspected, between the *spleen* and the *pancreas*, the small process of the former corresponding to that of the latter.

The lungs were 3¼ inches in length; the right measured 1¾ and the left 1⅜ in breadth: their weight was 8¾ drachms. The right consisted of four lobes; the left but of one lobe. The *azygos* lobe was connected to the right lung by the large branches of blood- and air-vessels only, and not by continuity of substance.

The heart, measuring 1 inch and 10 lines in length and 1 inch and 3 lines in breadth, and weighing 9½ drachms, was situated near the middle of the chest. Its form was oblong, pointed at the *apex*. The right auricle rose high above the left. Both auricles had smooth short *appendices*. The *venæ cavæ* were two superior and one inferior. The primary branches of the *aorta* were two, the *arteria innominata* dividing into the right subclavian and the common trunk of the carotids.

The rings of the *trachea* were twenty-three in number and incomplete behind. The first of them rose convexly into the space below the cricoid cartilage. The *larynx* was protected by a large semicylindrical *epiglottis*, slighty emarginate at its *apex*, which extended

into the posterior *nares* above the soft palate, as in other *Marsupiata*. There were two large cuneiform cartilages. There was also a small *sacculus* beneath the *epiglottis*.

The soft palate terminated in a thin arched margin. The tonsils were oblong. The parotid glands were of moderate size and branched, and there was on each of them a small conglobated gland. The submaxillary glands were flattened, of the size of nutmegs, and situated in front of the neck. There was no sublingual gland. A thick row of labial glands extended along the lower lip. The tongue measured 3 inches in length, and had, at the distance of 1 inch from the *epiglottis*, three fossulate *papillæ*. The thyroid glands were separate, each of them being of the size of a horse-bean.

The supra-renal glands were oblong, of the size of horse-beans, and placed anterior to the kidneys: on a section they exhibited a light-coloured exterior layer, then a very dark-coloured substance, and internally became again light-coloured. The kidneys were seated high in the lumbar region, the right being half an inch higher than the left. Each had one pointed *papilla*. The weight of both was 13 drachms.

The ovaries, 3 lines in length and half a line in breadth, were of a flattened oval shape. In the right there was an ovisac coming forward.

There were two *masseter* muscles. The *flexor longus digitorum pedis*, or its analogue, was inserted into the *fibula*, and sent no tendon to the toes, the tendons to them being derived from the muscle analogous to the *flexor longus pollicis pedis*: it is consequently a rotator of the *fibula*, and is described by Home as a peculiar muscle in the *Koala*.

The morbid appearances observed consisted of small tubercles in the lungs and small cysts in the liver. There was a general increased vascularity over the alimentary canal; and the intestines contained bits of straw and bloody mucus.

Mr. Owen also read his Notes on the Anatomy of the *red-backed Pelican* of Dr. Latham, *Pelecanus rufescens*, Gmel.

"The following notes were made on the dissection of one of the smaller-sized grey *Pelicans*, which died at the Society's Gardens in April 1832. They are now brought forward in order that they may be compared with the results of the dissection of the one which took place at its Museum a few days ago.

"The *Pelican* which I dissected measured 3 feet 7 inches from the extremity of the beak to the vent, and 10¼ inches from the extremity of the upper mandible to the nostrils. These are almost concealed slits in the lateral grooves of the upper mandible, just anterior to the skin of the head. They will barely admit the flat end of a probe; and lead almost vertically to the internal apertures of the nasal cavity. The air-cells in the *Pelican*, as in the nearly allied *Bird* the *Gannet*, *Sula Bassana*, Temm., are remarkably extended and diffused over the body: the whole cellular tissue, even to the tips of

the wings and the end of the fleshy part of the legs, can be blown up from the *trachea*.

"The extent to which the skeleton of the *Pelican* is permeated by air has been particularly noted by Mr. Hunter in his celebrated Paper on the air-cells of Birds, in which he throws out a suggestion that it may assist the birds of this species in carrying heavy loads in their large *fauces*. This supposed relation of extended air-cells to a largely developed beak is borne out in the case of the *Hornbill*, in which every bone of the skeleton is permeated by air, but is apparently contradicted by the *Gannet*: I say apparently, because, although the *rami* of the lower jaw do not, in this species, afford suspension to a capacious reservoir as in the *Pelican*, yet the bird may occasionally have to bear away a considerable load as, for instance, in a large fish seized by its mandibles, and a previous accumulation in its dilatable *œsophagus*.

"Mr. Hunter, it may be remembered, was doubtful on the first publication of his Paper as to the source from which the mandibles derived their gaseous contents: not that he was ignorant of the air-holes in the bones, as he is careful to tell us in the reprint of the Memoir in the 'Animal Œconomy', where he states that the lower jaw of the "*Pelican* is furnished with air, which is supplied by means of the Eustachian tube."

"To ascertain the correctness of this description I sawed across the left *ramus* of the lower jaw; but on blowing into the end of the part attached to the head, I found that the air did not escape as I had expected by the Eustachian tube, (the orifice of which is a slit, situated on the roof of the mouth, one inch behind the posterior or internal *nares*,) but filled, first the air-cells under the throat, and then, passing down the neck, raised the large air-cell above the *furculum*. On dissection I found that the air passed into the lower mandible immediately from an air-cell surrounding the articulation between the jaw and *os quadratum*; which received its air from the lungs by means of the cells passing along the neck and throat, &c. The authority of Mr. Hunter ought not to be set aside by the result of a single experiment; and the possibility of accidental rupture may be urged against the above observation; but it is at all events worthy of being recorded, and should be repeated when opportunity occurs, with the addition of blowing into the Eustachian tube, which I omitted to do.

"There is little to be added to the accounts already given in the works of Cuvier, and of Professor Tiedemann and Carus, of the digestive organs of the *Pelican*. The weak or thin-coated stomach, small *cæca*, and short intestines bespeak its animal diet, and the uniformly capacious *œsophagus*, as well as the superadded faucial bag, may be regarded as pointing to the piscivorous habits of this singular species. It is more difficult to assign the use of the globular cavity interposed between the gizzard and the *duodenum*, which the *Pelican* has in common with some of the piscivorous *Grallæ*, viz. those of the genus *Ardea*. In them the pyloric cavity is very small, but

in the *Pelican* it is fully as large in proportion as in the *Crocodiles*, which alone possess it among *Reptiles*. In the *Pelican* here described the pyloric cavity measured 1½ inch in diameter, communicated by a small transverse aperture with the gizzard, and by an opposite one, of smaller size and obliquely placed, with the *duodenum*. Its lining membrane is villous and vascular, and was in this instance tinged with bile, which must have entered by regurgitation, as none of the biliary ducts enter here.

"The *œsophagus* is continued into the *proventriculus* without any marked constriction, and the latter passes insensibly into the part analogous to the gizzard, which is comparatively of small size. The gastric glands are simple elongated follicles, closely compacted together, and extended over nearly the whole *proventriculus*.

"The *duodenum*, after making the usual fold, ascends on the right of the stomach; the intestine is then disposed in three or four coils upon a central mesentery, and then is strung on the edge of the mesentery in long and deep folds, from the last of which the *ileum* passes upwards behind the stomach, and then descends to join the *rectum*. At the point of junction were placed the *cæca*, each 1½ inch in length. The *rectum* is very short, and opens obliquely into a large urinary receptacle; as large, proportionately, as in the *Ostrich*. Before commencing the dissection, a quantity of very fluid urine, of a whitish colour and containing whitish flakes, escaped on pressure being made upon the sides of the *cloaca*.

"The *liver* is bilobed, the right lobe much larger than the left, in which the edges were rounded off. There is a gall-bladder, which contained bile of a yellow colour, not green as in *Birds* generally. The cystic, biliary, and hepatic ducts terminated in the end of the *duodenum*, close to which opened the duct of the *pancreas*. The latter gland was of a less elongated form than usual, being of a rounded figure, and not descending far into the fold of the *duodenum*. The spleen was placed behind the stomach, in length 1 inch, in breadth half an inch.

"The kidneys were of large size, being 4 inches long, 2 deep, and 1½ wide, and, which is very unusual in *Birds*, the right kidney was half an inch higher than the left. Many of the small superficial branches of the ramified ureter which characterizes the kidneys of the oviparous animals were beautifully conspicuous from their white opake contents. The supra-renal glands were of a light yellow colour, and of a rough or granular pulpy texture; the right adhered closely to the *vena cava*, the left as closely to the ovary, which seemed to be developed partly from the gland and partly from the coats of the left femoral vein. The largest *ova* were nearly of the size of peppercorns and about twenty in number: there were innumerable smaller ones. The oviduct was narrow at its commencement, but gradually attained a diameter of about 4 lines; it passed along the anterior part of the left kidney, adhering thereto by its peritoneal ligament.

"As the *Pelican* belongs to that group of *Natatores*, the *Totipalmes* of Cuvier, which contains species approximating most closely

to the *Raptorial Birds*, and which are almost the only *Birds* of this order, as Cuvier observes, (Règne An., nouv. ed., i. p. 561,) that perch, I did not fail to try the common experiment suggested by Borelli's observations on the effect which bending the leg- and ancle-joints might have upon the toes: the latter, however, exhibited no corresponding inflection. In perfect agreement with this is the observation that the *Pelicans* do not perch when they go to rest."

February 10, 1835.

The Rev. John Barlow in the Chair.

A Letter was read, addressed to the Secretary by W. H. Rudston Read, Esq., giving an account of the habits of the *Hyrax Capensis*, Pall., as observed at the Cape of Good Hope, and also during a voyage thence to England in a specimen brought home by the Rev. Mr. Hennah of H. M. S. Isis, which was presented to the Society after its death by Mr. Read.

"The *Hyrax Capensis*," Mr. Read states, "is found at the Cape of Good Hope inhabiting the hollows and crevices of rocks, both on the summits and sides of hills, as well as near the sea-shore, even a little above high-water mark. It appears to live in families, and in its wild state is remarkably shy. In winter it is fond of coming out of its hole and sunning itself on the lee side of a rock, and in summer of enjoying the breeze on the top; but in both instances, as well as when it feeds, a sentinel is on the look-out (generally an old male), which gives notice, usually by a shrill prolonged cry, of the approach of danger, or even the least movement of any suspicious object. It lives on the young shoots of shrubs, the tops of flowers, herbs and grass, particularly of all those which are aromatic; which occasions the necessity of paunching the animal as soon as killed, in order to make it fit for eating. The stomachs of those shot by Mr. Hennah were always much distended with food scarcely masticated. In the flavour of its flesh it is very like a rabbit. A friend of mine kept two young ones alive for some time, which became very tame: they would find him out when lying on the sofa or in bed (for they were suffered to run about the house), and climbing up, shelter themselves on his breast within his waistcoat, or creep under the bedclothes at his back, and lying quiet enjoy the warmth. The one brought home by Mr. Hennah, when allowed to run unconfined about the room, was inclined to be sociable; but was restless and inquisitive, climbing up and examining every person or thing in the cabin, and startling at any noise, which caused it instantly to run and hide itself. But from confinement it became savage and snarling, and tried to bite when anything was put near its cage. Both wild and in restraint it is remarkably clean in its habits, always frequenting and depositing its dung in one place. From its faintly crying in its sleep we may conclude that it dreams. I have also heard it chewing its food by night, when everything has been quiet, and after going into its sleeping apartment. In its food it was pleased with variety, eating first a few leaves of one plant and then of another, and greedily licking salt when given to it. In its passage home its food was In-

dian corn bruised, bread, raw potato, and onion, with a small quantity of water, which in drinking it partly lapped and partly sucked up. It was very sensible of cold; for when a candle was placed near the bars of its cage, it readily acknowledged the little warmth given out by turning its side and sitting still to receive the full benefit of the rays of heat. I am inclined to think that the female does not produce more than two young ones at a time, from having observed in several instances but two following the old ones. Its name at the Cape is the *Dasse*, which is, I believe, the Dutch for a badger."

Mr. Martin's Notes of the dissection of the specimen of *Hyrax Capensis*, presented to the Society by Mr. Rudston Read, were then read.

"The dissection of the *Hyrax* by Mr. Owen ('Proceedings of the Committee of Science, &c.', Part II. p. 202.) is to be regarded as a confirmation of the anatomical details of this animal as given by Pallas, while at the same time it communicates several additional facts of great value. The present notes give nothing absolutely new; but may be of use as substantiating previous observations with regard to some very remarkable points of structure.

"The animal in question was young and of the male sex: its total length was 1 foot 4 inches, that of the head being 3¼ inches. On removing the skin, the *panniculus carnosus* was observed to be very strong, especially about the shoulders; and on opening the body, the smallness of the volume of the chest compared with that of the *abdomen* was very striking. The abdominal *viscera* presented themselves in the following order. The liver barely advanced from the right hypochondriac region as far as the epigastric, its left portion covering the cardiac portion of the stomach. Below the liver and to its left the stomach was seated, and below this were the *cæca*, of large dimensions, covering the small intestines, over the whole of which was spread an extensive *omentum*, arising from the great curvature of the stomach.

"The stomach measured in length about 4 inches, and was contracted in the middle: a fleshy sphincter of great thickness closed the pyloric orifice, and was distinctly to be felt. On inverting the stomach, with a view to preserve it thus in spirits, the extent of the cuticular lining of the cardiac portion was found to be 2¼ inches: it was irregularly corrugated, and terminated abruptly. Near its edge, towards the great curve of the stomach, were three or four open glands with orifices capable of admitting the tip of a quill. The pyloric portion was lined with the usual villous membrane.

"The liver consisted of four lobes and a *lobulus Spigelii*: it was healthy. There was no gall-bladder; but a biliary duct of 1½ inch in length was found to enter the *duodenum* half an inch below the *pylorus*: the origin of this duct is on the inner aspect of the liver at its base, a separate duct emerging from each lobe to form it by their mutual union.

"The small intestines were not much thicker than a quill for a considerable distance, but gradually increased in circumference: their length was 5 feet 7 inches, and consequently more than a foot greater than the measurement given by Mr. Owen. On their inner coat were observed the little *sacculi* noticed by Mr. Owen, as well as the remarkable *villi*, which are thickly set. The breadth of the mesentery was about 1½ inch. The first or true *cæcum* was contracted into folds by three longitudinal bands, and so made trifid at the extremity: its length was about 2¼ inches, its circumference 9. The entrance of the small intestine was succeeded by a sacculated portion (the bands of which were continued from the *cæcum*) contorted spirally, beyond which the intestine, abruptly turning and becoming at once smaller, assumed a sigmoid flexure, gradually enlarging as it proceeded till it merged into two cæcal appendages, of a conical figure with an enlarged base and a vermiform termination. The distance between the first *cæcum* and the base of these appendages was found to be 1 foot 7 inches. Below these cæcal appendages the large intestine measured 5½ inches in circumference; it, however, gradually but rapidly diminished in size. From this part to its termination the large intestine measured 2 feet 7 inches.

"The *pancreas* was small, irregular, and entirely embraced by the first fold of the *duodenum*: its secretion enters the intestine by two ducts, one terminating along with the biliary duct, the other ¼ths of an inch lower down.

"The spleen was broad and somewhat hatchet-shaped, having a projecting narrow slip from a semilunar base: its length was 2 inches, its breadth 1 inch.

"The heart was bifid at the *apex*; its length 1½ inch, and its breadth 1¼. The *larynx* was small; and the *trachea* consisted of 36 rings. The *œsophagus* was smooth. The thyroid glands were small and oval, and ½ inch long. The tongue was 2½ inches in length, smooth, with an elevated projection in the middle, and an obscure furrow running down it, from which diverged transversely several arched depressions. The palate was deeply furrowed with alternate transverse ridges and depressions on each side of a middle line, the ridges on one side corresponding to the depressions on the other.

"The kidneys were flattened; in length they measured 1¾ inch, in breadth ¾: the *tubuli uriniferi* converged into one large conical *papilla*. The ureters entered the *fundus* of the bladder, not on its dorsal side, (for it lay flat and empty,) but laterally on the edge, piercing the bladder obliquely, as described by Mr. Owen. The supra-renal glands were small greyish bodies, about the size of a pea. The *testes*, the *vesiculæ seminales*, the double prostate gland, and the *penis* were as described by Mr. Owen.

"The *sternum* consisted of six distinct osseous pieces, independent of the xiphoid cartilage, which was shaped like a spade: its length was 2¼ inches exclusive of the cartilage. The true ribs were seven in number on each side, and the false ribs fourteen. The cer-

vical *vertebræ* were seven, the dorsal twenty, the lumbar nine, the sacral *vertebræ* (immediately united to the iliac bones) two, and the coccygeal ten, making the total number of *vertebræ* forty-eight. The measurement from the end of the *sternum* to the *ossa pubis*, the animal lying stretched in an easy posture, was 7 inches: the length of the portion of the vertebral column occupied by the heads of the true ribs, 1¼ inch; and that of the portion of the vertebral column occupied by false ribs, 3¾ inches."

Preparations were exhibited of the *cæcum*, of the urinary bladder, and of other *viscera*, in illustration of the foregoing notes.

The following Notes by Mr. Martin, of the dissection of a *red-backed Pelican, Pelecanus rufescens*, Gmel., which recently died at the Society's Gardens, were also read. They refer to the male bird of a pair, the female of which was examined in 1832 by Mr. Owen, whose notes of the dissection were read at the last Meeting.

"The bird was a male, and had been for many years in the Menagerie.

"On removing the skin, a wide space occupied by cellular tissue distended with air, was found to intervene between it and the muscles. This tissue was thin, and subdivided irregularly into numerous cells communicating with each other. Beneath the great pectoral muscle, which was very extensive, there was also a large air-cell, but undivided.

"The osseous structure was light and thin, and the bones of the extremities were remarkable for the extent of their internal cavities and the thinness of their external walls. The *os furcatum* was largely spread, and firmly soldered to the keel of the *sternum*, keeping the shoulders widely apart. The clavicles, or what are regarded as the analogues of the coracoid processes in *Mammalia*, were large, and broadly expanded at their point of union with the *sternum*. The *sternum* was short in proportion to its breadth, measuring 4¼ inches longitudinally, and the same across, in a straight line, that is, not following the concavity of its inner surface: its keel was comparatively but little developed; it is thrown forwards, however, as far as possible, and projects in a point where it is ossified to the *os furcatum*. Its greatest depth is 1 inch 2 lines.

"On exposing the *viscera* they were found to occupy a truly abdominal situation, being placed in a small compass and as far backwards as possible. The *œsophagus* passed on for a considerable distance internally, before entering the *proventriculus*.

"The inferior *larynx* was destitute of muscles: the bone of divarication was strong and well defined.

"The liver consisted of two lobes, a large and a small one, united by a broad flat process ¾ths of an inch in length. The large lobe measured 2¾ inches in length and 2 in breadth; the thickness of its substance being 1 inch. The small lobe was 1¼ inch long and ¾ broad.

" The *pancreas* consisted of two lobes united by an intervening slip or narrow portion, through which passed an hepatic duct running from the liver to the intestine.

" The biliary and hepatic ducts entered the intestine a foot below the stomach (gizzard) as follows:

1st, Hepatic duct;
2nd, Pancreatic duct;
3rd, Cystic duct.

" The intestines were thin and worm-like, their mean diameter being $\frac{1}{4}$th of an inch. Their total length was 8 feet.

" The *vena portæ* ran close to the *pancreas*, and was dilated into a large sinus before entering the liver.

" The lining membrane of the gullet was thrown into longitudinal *plicæ* throughout its whole length, but they became larger and less numerous towards the lower part, and the membrane itself increased in toughness and density as it approached the *proventriculus*. The muscular tunics consisted of an internal longitudinal and external circular layer of fibres; these fibres on the pouch were very fine and delicate, but became stronger and more distinct as the gullet proceeded from this extensible portion.

" The appearance and shape of the *proventriculus* were very remarkable; instead of its being a gradual dilatation of the gullet, it commenced abruptly, and its *parietes* were firm and muscular, insomuch that it might readily have been mistaken at first for a gizzard. Its length, including that of the gizzard (which forms with it a common cavity), was 5 inches, and its circumference 4. The internal membrane was puckered into longitudinal *rugæ*, and was studded with closely set glands of the size of large pin-heads. The longitudinal muscular fibres were remarkably strong, and a muscular slip proceeding obliquely from the side of the gizzard attached the pyloric enlargement to it.

" The pyloric enlargement was about the size of a common garden-bean. A passage $\frac{3}{4}$ths of an inch in circumference and $\frac{3}{4}$ths long, turning up abruptly, led to it from the stomach. The lining membrane of this passage was thrown into longitudinal folds. The lining membrane of the pyloric cavity itself was thin, and not at all coriaceous, and the muscular tunic fine. A valvular fold encircled the opening into the succeeding portion of the *pylorus*.

" The *testes* were as large as peas, or rather larger, white and oval.

" The cervical *vertebræ* were 15 in number.

With reference to the bony union of the *os furcatum* to the *sternum* observed in this *Pelican*, Mr. Martin remarks that " in the *Adjutant*, *Ciconia Argala*, Vig., though the keel of the *sternum* is much more extensive, deep, and strong, the *os furcatum* much resembles that of the *Pelican*, and is in like manner ossified to its anterior *apex*. In the *common Heron*, *Ardea cinerea*, Linn., the *os furcatum* is feeble, but is also united by bone to the *apex* of the keel of the *sternum*: at

its point of union a projection or short process is directed upwards; the keel of the *sternum* is here very ample. These are birds not so much of rapid as of untiring powers of flight, which, unlike that of the impetuous *Falcon*, is sweeping and majestic. In the *Falconidæ* the *os furcatum*, though very strong, does not at all approach to the form of a triangle, as in the birds alluded to, but describes a figure not unlike that of a horse-shoe, and a considerable space intervenes between it and the keel of the *sternum*."

A Paper was read, entitled, "Characters and Descriptions of a new Genus of the Family *Melolonthidæ*: by John Curtis, Esq., F.L.S., &c."

In a collection of *Insects* recently received by the author from Lima is contained a beautiful series of the one constituting the type of his proposed new genus

ANCISTROSOMA.

Antennæ capite breviores.

Clypeus, in mare præsertim, emarginatus.

Thorax acutè marginatus, hexagonus; dente brevi in baseos medio armatus.

Pedes longissimi, robusti.

The stoutness of its legs and the sharp lateral edges of its *thorax* distinguish *Ancistrosoma* from all the neighbouring genera: the male is further characterized by an acute, rather long, and slightly curved spine near the base of the *abdomen* beneath. Its natural situation is probably between *Diphucephala*, Dej., the males of which have a bilobed *clypeus*, and *Macrodactylus*, Latr., which is very similar to it in habit, and has also very long legs; but these in *Macrodactylus* are slender, while in *Ancistrosoma* they are robust. Neither *Diphucephala* nor *Macrodactylus* possesses the little tooth at the base of the *thorax* lapping over the *scutellum*, a structure which is, however, met with in *Ceraspis* as well as in *Ancistrosoma*; but in *Ceraspis*, independently of the other differential characters, the *antennæ* and club are long.

ANCISTROSOMA KLUGII. *Anc. ferrugineum, suprà piceo-nigrum; thoracis margine elytrorumque strigis sex albidis.*

Long. maris 12 lin.; fœminæ plerumque minor.

Hab. in *Mimosæ* floribus apud Huanuco prope Lima, Peruviæ.

Of the three streaks on each of the *elytra*, the sutural one does not reach so far as the base, the second extends neither to the base nor to the tip, and the outer one is still shorter: they consist of broad punctured furrows, white with short hairs.

The cocoon of the *pupa* is ovate, hard, and in texture somewhat like that of *Trichiosoma Lucorum*, Leach; its *operculum* is semiorbicular, with a broad hinge and narrow rim: the shell of the *pupa* is similar to that of other *Melolonthidæ*.

Mr. Curtis describes in great detail the several parts of this *In-*

sect, and illustrates them by an extensive series of drawings, which were exhibited; as were also specimens of the *Insect* itself.

Mr. Curtis also communicated a Paper "On a species of *Moth* found inhabiting the *Galls* of a Plant, near Monte Video." The galls in question were collected by Mr. Earle (who accompanied Captain Fitzroy in H. M. S. Beagle,) in the month of December, about fifteen miles westward of the town, on a sort of underwood shrub, which Mr. David Don, on the examination of the small branches, and of a single leaf, thinks may probably be a species of *Celastrus*. Of the figures in illustration of the paper exhibited to the Meeting, one represents a branch supporting two of the galls, which are sometimes clustered five or six together. They arise where the attachment of leaves or flowers is indicated, and are therefore most probably produced by the transformation of the buds themselves, acted on by the *stimulus* of the insect secretions. On the side of each gall is a round aperture, with an *operculum* accurately fitted to it, which may easily be picked out with the point of a penknife. This *operculum* is equally convex on its outer surface with the rest of the gall, and is of the same thickness; but its internal diameter is less than that of its external surface, which forms a broader rim. Around the orifice the margin of the gall is thickened and a little raised. Within each of the entire galls was found a *pupa* attached to the base by its tail, with its head close to the *operculum*; which, it should seem, gives way by a slight expansion or elongation of the *pupa* when just ready to hatch, and the cast skin is left sticking in the passage.

Mr. Curtis observes that he was very much surprised to find on examination that the *pupæ* contained in these galls belonged not to the *Hymenoptera* but to the *Lepidopterous* order; an occurrence hitherto almost unprecedented. The characters of the *Insect*, as far as could be detected from the imperfect state in which it was found, are as follows:

Cecidoses.

Caput parvum.

Antennæ corpus longitudine æquantes, graciles, ciliatæ, articulis elongatis numerosis: in capitis vertice prope oculos insertæ.

Thorax squamulis depressis vestitus.

Abdomen subrobustum, ovato-conicum.

Pedes longi; *tibiis* anticis spinâ prope apicem munitis, intermediis posticisque ad apicem calcaratis, his densè squamulatis et in medio præterea bi-spinosis; *tarsis* 5-articulatis, articulo basali longissimo; *unguibus pulvillis*que minutis.

Alæ sublanceolatæ.

Cecidoses Eremita. *Cec. cinereus; alis anticis saturatè brunneo maculatis, densè ciliatis; posticis albidis.*

Hab. prope Monte Video. *Pupa* in gallis *Celastri?* abscondita.

From the stoutness of the body Mr. Curtis is inclined to refer the

Moth to the *Tortricidæ*; if belonging to *Pyralidæ* or *Crambidæ*, its *palpi* should be more strongly developed, but neither they nor the *maxillæ* were discoverable.

Figures of the imperfectly developed moth and of several of its parts, as well as of the galls and their *opercula*, together with specimens of the latter, were exhibited in illustration of the paper.

February 24, 1835.

William Yarrell, Esq., in the Chair.

A Letter was read from Lady Rolle, addressed to the Secretary, giving an account of the birth of two young *Monkeys*, the produce of a pair of *Ouistitis* (*Jacchus penicillatus*, Geoff.) in her Ladyship's possession. The parents were obtained in London during the last summer, and the young were produced on the 1st of January: one was born dead, but the other still survives, being about six weeks old. It appears likely to live, and is every day put on the table at the dessert, and fed upon sweet cake. Lady Rolle states that the mother takes great care of it, exactly in the manner described by Edwards in his 'Gleanings,' p. 151, pl. 218; where the animal is figured and described under the name of the *Sanglin*.

It was observed that young of the same species had been born at the Society's Gardens, but not living; and that a female in the collection of the President, the Earl of Derby, at Knowsley, had produced, about the same time as Lady Rolle's, two living and healthy young ones, which are still thriving.

Mr. Gould exhibited a living specimen of the *red-billed Toucan*, *Ramphastos erythrorhynchus*, Gmel., which had recently come into his possession.

The exhibition was resumed of the new species of *Shells* contained in the collection of Mr. Cuming. Those brought at the present Meeting under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby.

Genus Venus.

Venus Columbiensis. *Ven. testâ rotundato-ellipticâ, crassâ, cinereo albidoque variegatâ, radiatim costatâ, costis plurimis, planulato-rotundatis, quam interstitia duplò latioribus; latere antico breviore, costis decussatim squamosis, squamulis brevibus, obtusis; lateris postici costis rugosis; partis intermediæ costis sublævibus; intùs albicante: long.* 2·2, *lat.* 1·3, *alt.* 1·9 *poll.*

Hab. ad Sanctam Elenam Columbiæ Occidentalis.

Found in coarse sand at low water.—G. B. S.

Venus subimbricata. *Ven. testâ cordato-subtrigonâ, crassâ, fusco albidoque radiatim lineatâ vel variegatâ, costellis radiantibus confertis, costis subimbricatis decussantibus, prope umbonem lamelliferis; latere antico breviore, impressione cordatâ anticâ magnâ; latere postico longiore, declivi, planato, depresso; margine ventrali rotundato, intùs denticulato: long.* 1·6, *lat.* 1·, *alt.* 1·6 *poll.*

Hab. ad Portam Portreram Americæ Centralis.

Found in fine sand in thirteen fathoms.

Variat *testâ parvâ longiore, costis decussantibus omnibus lamelliferis: long.* 0·8, *lat.* 0·4, *alt.* 0·7 *poll.*
Hab. ad Acapulco.—G. B. S.

VENUS UNDATELLA. *Ven. testâ rotundato-ellipticâ, crassâ, albidâ fusco maculatâ punctatâ et undatim pictâ, costellis radiantibus confertis, aliisque decussantibus undulatis sublamellosis; latere antico breviore, postico subdeclivi, marginibus depressis; margine ventrali rotundato, intùs crenulato: long.* 1·6, *lat.* 1·, *alt.* 1·5 *poll.*
Hab. in Sinu Californiensi. (Island of Tres Marias.)
Found on the shore.—G. B. S.

VENUS DISCREPANS. *Ven. testâ ellipticâ, crassâ, albicante, fusco subradiatim pictâ; latere antico breviore, subproducto; postico subdeclivi; marginibus depressis; costis concentricis posticè lamellosis, medio obtusis, latiusculis, anticè sublamellosis; umbonibus subprominentibus; margine ventrali rotundato, intùs denticulato: long.* 1·4, *lat.* 0·8, *alt.* 1·25 *poll.*
Hab. ad oras Peruviæ. (Islay.)
The blunt, rather broad, concentric ribs of the middle part of each valve are speckled with brown on their upper surfaces, and delicately crenulated on their ventral margins.
Found in muddy sand at a depth of sixteen fathoms.—G. B. S.

VENUS MULTICOSTATA. *Ven. testâ ellipticâ, ventricosâ, crassâ, concentricè multicostatâ, costis reflexis, crassis, anticè undulatis, medio crenatis, posticè alternatim interruptis, subirregularibus, subundulatis; marginibus dorsali rectiusculo, ventrali rotundato; impressione cordiformi anticâ distinctâ: long.* 4·3, *lat.* 2·7, *alt.* 3·7 *poll.*
Hab. in Sinu Panamæ.
This is perhaps the largest species known. It is a very handsome shell, of a pale fawn colour, with several darker rays, somewhat divided into spots.
Found in coarse sand at low water.—G. B. S.

VENUS PERUVIANA. *Ven. testâ obovatâ, crassâ, concentricè costatâ, costis crassiusculis, sublamellosis, anticè reflexis, medio reflexis, fulvo articulatis, posticè deflexis, tenuioribus; latere postico quam anticum duplò longiore, marginibus depressis, planatis; margine ventrali rotundato, intùs lævi: long.* 2·3, *lat.* 1·2, *alt.* 1·9 *poll.*
Hab. ad oras Peruviæ. (Ancon.)
Found in soft mud at a depth of five fathoms.—G. B. S.

VENUS AUSTRALIS. *Ven. testâ ovato-subtrigonâ, crassiusculâ, fulvescente maculis angulosis subtrigonis subradiatim pictâ, concentricè lamellosâ, lamellis concinnis confertis, tenuibus, obtusis, pulcherrimè radiatim decussatis, prope latera elevatioribus; marginibus dorsali subelevato, ventrali rotundato, intùs denticulato: long.* 1·1, *lat.* 0·55, *alt.* 0·9 *poll.*
Hab. ad oras Australiæ. (Swan River.)—G. B. S.

Venus spurca. *Ven. testâ ovatâ, crassâ, sordidè fulvâ fusco radiatim maculosâ, concentricè subobsoletè costellatâ, costellis obtusis, prope latera subinterruptis; margine ventrali intùs denticulato: long.* 1·1, *lat.* 0·6, *alt.* 0·9 *poll.*

Hab. ad Valparaiso.

Found in coarse sand at a depth of from thirty to fifty fathoms.—G. B. S.

Genus Cytherea.

Cytherea radiata. *Cyth. testâ subtrigonâ, subæquilaterâ, gibbosâ, pallescente brunneo radiatâ et undulatim pictâ, lævi, epidermide corneâ crassiusculâ plus minusve indutâ; lateribus antico posticoque ventrem versus rotundatis; margine ventrali rectiusculo, intùs lævi: long.* 2·5, *lat.* 1·5, *alt.* 2· *poll.*

Hab. ad oras Columbiæ Occidentalis. (Salango and Xipixapi.)—G. B. S.

This species belongs to that division of the genus which has four cardinal teeth, and is destitute of the cordiform anterior impression.

Found in sandy mud at a depth of nine fathoms.—G. B. S.

Cytherea unicolor. *Cyth. testâ ovato-subcordiformi, crassiusculâ, brunnescente, lævi, politâ; lateribus antico posticoque concentricè sulcatis, sulcis medio obsoletis; latere postico longiore, versus partem ventralem subacuminato; margine ventrali lævi, intùs purpurascente: long.* 1·6, *lat.* 0·75, *alt.* 1·3 *poll.*

Hab. ad Real Llejos Americæ Centralis.

Variat *testâ majore, albicante.*

Found in coarse sand at a depth of six fathoms.—G. B. S.

Cytherea concinna. *Cyth. testâ ovato-subcordatâ, crassiusculâ, rubente albicante radiatâ; latere postico longiore, subacuminato; costellis numerosis, concentricis, obtusis, concinnis, confertis: long.* 1·6, *lat.* 0·8, *alt.* 1·2 *poll.*

Hab. ad Panamam.

Found at a depth of ten fathoms in fine sand.—G. B. S.

Cytherea squalida. *Cyth. testâ ovato-subcordatâ, crassiusculâ, lævi, pallidè fuscâ, nonnunquam maculis irregularibus saturatioribus; epidermide fuscâ; latere postico longiore, prope partem ventralem subacuminato: long.* 2·7, *lat.* 1·3, *alt.* 2· *poll.*

Hab. ad Sanctam Elenam.

This shell bears some resemblance to *Cyth. maculosa*. It has generally a very dull and dirty aspect. One of the several varieties in Mr. Cuming's collection is rather agreeably ornamented with concentric purple bands.

Found in sandy mud at a depth of six fathoms.—G. B. S.

A paper was read by Mr. Owen, entitled, "Description of a Microscopic *Entozoon* infesting the Muscles of the Human Body." The author observes, that upwards of fifteen different kinds of internal parasites are already known to infest the human body, but none have been found of so minute a size, or existing in such astonishing num-

bers, as the species about to be described. The muscles of bodies dissected at Saint Bartholomew's Hospital had been more than once noticed by Mr. Wormald, the Demonstrator of Anatomy at that establishment, to be beset with minute whitish specks; and this appearance having been again remarked in that of an Italian, aged 45, by Mr. Paget, a student of the hospital, who suspected it to be produced by minute *Entozoa*, the suspicion was found to be correct, and Mr. Owen was furnished with portions of the muscles, on which he made the following observations.

With a lens of an inch *focus* the white specks are at once seen to be cysts of an elliptical figure, with the extremities in general attenuated, elongated, and more opake than the body (or intermediate part) of the cyst, which is sufficiently transparent to show that it contains a minute coiled-up worm. On separating the muscular *fasciculi*, the cysts are found to adhere to the surrounding cellular substance by the whole of their external surface, somewhat laxly at the middle dilated part, but more strongly by means of their elongated extremities. When placed on a micrometer, they measure $\frac{1}{5}\frac{1}{0}$th of an inch in their longitudinal and $\frac{1}{1}\frac{1}{0}\frac{1}{0}$th of an inch in their transverse diameter, a few being somewhat larger, and others diminishing in size to about one half of the above dimensions. They are generally placed in single rows, parallel to the muscular fibres, at distances varying from $\frac{1}{2}$ a line to a line apart; but sometimes a larger and a smaller cyst are seen attached together by one of their extremities, and they are occasionally observed slightly overlapping each other.

If a thin portion of muscle be dried and placed in Canada balsam, between a plate of glass and a plate of talc, the cysts become more transparent, and allow of the contained worm being more plainly seen. Under a lens of the *focus* of $\frac{1}{2}$ an inch, the worm appears to occupy a circumscribed space of a less elongated and more regularly elliptical form than the external cyst, as if within a smaller cyst contained in the larger: it does not occupy more than a third part of the inner space. A few of the cysts have been seen to contain two distinct worms; and Mr. Farr, who has paid much attention to the subject, exhibited a drawing of one of the cysts from this subject, containing three distinct worms, all of nearly equal size. Occasionally the tip of one of the extremities of the cyst is observed to be dilated and transparent, as though a portion of the larger cyst were about to be separated by a process of gemmation; and these small attached cysts are seen of different sizes, and, as it were, in different stages of growth. This appearance, however, Mr. Owen conceives to be explicable without a reference of a power of independent vitality to either of the adherent cysts. The cysts are composed of condensed and compacted *lamellæ* of cellular tissue; but a few are hardened by the deposition of some earthy salt, so as to resist the knife and to produce a gritty sensation when broken under pressure.

When removed from the interior of the cyst, which, on account of the minuteness of the object, is a matter of some difficulty, the worm is usually found to be disposed in two or two and a half spiral coils. When straightened it measures from $\frac{1}{7}\frac{1}{5}$th to $\frac{1}{3}\frac{1}{0}$th of an inch in length,

and from $\frac{1}{700}$th to $\frac{1}{800}$th of an inch in diameter: a high magnifying power is consequently required for its examination. It is round and filiform, terminating obtusely at both extremities, which are of unequal sizes, and tapering towards one end for about a fifth part of its length, but continuing of uniform diameter from that point to the opposite extremity. As it is only at the larger extremity that he has been enabled to distinguish an indication of an orifice, Mr. Owen regards that as the head. He states that this indication has been so constant in a number of individuals examined under every variety of circumstance, that he has no hesitation in ascribing a large transverse linear orifice or mouth to the greater extremity.

The recently extracted worm, observed by means of a Wollaston's doublet, before any evaporation of the surrounding moisture has affected its integument, presents a smooth transparent external skin, inclosing a fine granular and flaky substance or *parenchyma*. It is obvious that the test of coloured food cannot here be applied to elucidate the form of the digestive organs, but there is no appearance of the *parietes* of an alimentary canal floating in a visceral cavity and distinct from the integument of the body, nor was any trace of an orifice observed at the smaller extremity. Mr. Owen was also unable to detect in any instance a projecting *spiculum* or hook at either extremity, or any appearance of the worm having been torn from an attached cyst. Its transparency is such as not to admit of a doubt as to its wanting the ovarian and seminal tubes, and the other characteristics of the complicated structure of *Filaria, Ascaris*, and the *Nematoid Entozoa* generally. It is not of a rigid texture, but is extremely fragile, and exhibits when uncoiled a tendency to return in some degree to its former state.

Mr. Owen refers to the genus *Capsularia* as established by Zeder, and rejected by Rudolphi, (who considers its species as belonging either to *Filaria* or *Ascaris*,) for the purpose of contrasting the complicated organization of the worms composing it with the extremely simple structure of the encysted worm under consideration. The circumstance of being inclosed in cysts he stated to be common to many very differently organized genera of *Entozoa*. There are few, indeed, with the exception of those which live upon the mucous surfaces of the body, that do not, by exciting the adhesive inflammation, become inclosed within an adventitious cyst of condensed cellular substance. He regards the simple type of structure exhibited by the minute animal now for the first time described as approximating it to the lower organized groups of the *Vers Parenchymateux* of Cuvier; and both from its locality and from the constancy of its cysts, he regards it as manifesting a relation of analogy to the order *Cystica* of Rudolphi. From all the genera of that order, however, it differs in the want of the complex armature of the head, and of the dilated vesicle of the tail. At first sight it seems indicative of an annectant group which would complete the circular arrangement of the *Entozoa* by combining the form of the *Filariæ* of the first, with some of the characteristics of the *Cysticerci* of the last, of Rudolphi's orders. Unfortunately the class *Entozoa*,

as it now stands, is so constituted that an animal may be referred to it without much real or available knowledge of its organization being thereby afforded: it embraces animals with the molecular, and others with the filiform, condition of the nervous system; conditions which are accompanied by different types of the digestive system, and which indicate not merely differences of class, but even of primary division, in the animal kingdom. Mr. Owen considers the animal under consideration as being most nearly allied to that form of the *Polygastric Infusoria* which is exhibited by the lower organized *Vibriones* of Müller, and of which Ehrenberg has composed his genera *Vibrio*, *Spirillum*, and *Bacterium*; and that, like the seminal *Cercariæ*, it may be regarded as an example from the lowest class of the animal kingdom having its *habitat* in the interior of living animal bodies. Referring it, however, provisionally, to the class *Entozoa*, in which it would indicate a new order, its generic character may be thus given:

TRICHINA.

Animal pellucidum, filiforme, teres, posticè attenuatum: ore lineari, ano discreto nullo, tubo intestinali genitalibusque inconspicuis. (In vesicâ externâ cellulosâ, elasticâ, plerumque solitarium.)

TRICHINA SPIRALIS. *Trich. minutissima, spiraliter, rarò flexuosè, incurva; capite obtuso, collo nullo, caudâ attenuatâ obtusâ.* (*Vesicâ externâ elliptică, extremitatibus plerumque attenuatis elongatis.*)

Hab. in *hominis* musculis (præter involuntarios) per totum corpus diffusa, creberrima.

Mr. Owen further states that within about a fortnight of the former case, a second body similarly affected had been brought into the dissecting-room of Saint Bartholomew's Hospital; and some notes were furnished by Mr. Paget, who first observed the worms in the Italian, with regard to the cases of the two patients while living in the Hospital. From these it appeared that both had died after long and debilitating illness, producing great emaciation, unaccompanied, however, with any eruption on the skin, or any greater loss of muscular power than would probably have arisen from the diseases of which they died. The occurrence of two cases in the same dissecting-room within so short a period of each other, and the recollection of similar appearances being not unfrequently present in other bodies dissected there, combined with an account published in the Medical Gazette for February 2, 1833, of very small *Cysticerci* occurring in the muscles of a subject at Guy's Hospital, which cannot but be considered referrible to the same cause, render it highly probable that a sufficient number of observations will soon occur to elucidate this curious disease. In two of the cases the emaciation was accompanied by external, and in the third by internal, ulceration; but no connexion was traced between the worm and any of the symptoms of the disease.

In a portion of muscle placed, after it had reached a state of incipient putrescence, in spirit of wine for three days, the worms, when pressed out from their cysts, exhibited languid, but sufficiently evi-

dent motions, consisting in the tightening and relaxation of their coils: and more languid motions were afterwards noticed in some specimens that were examined a fortnight after the death of the subject from which they were obtained.

Mr. Owen enters at some length into the question of the origin of the cyst, and after comparing its structure and connexions with various more or less analogous productions, he states his opinion that the cyst is adventitious, foreign to the *Entozoon*, and composed of the cellular substance of the body infested, morbidly altered by the irritation of the worm.

The reading of the paper was accompanied by the exhibition of drawings showing portions of the infested muscle, with magnified representations of the cysts and of the worms contained within them; and specimens of the objects themselves were also placed upon the table for examination with the aid of Mr. Pritchard's microscope, lent by him for that purpose.

Mr. Owen also read a Paper "On the Anatomy of *Linguatula Tænioides*, Cuv." After referring to the observations on the anatomical structure of this highly organized *Entozoon*, published by Cuvier and Rudolphi, he proceeds to state the results of his own dissection of a fine specimen, 3½ inches in length, for which he was indebted to Mr. Langstaff. The whole body is invested with a smooth, transparent, rather fine cuticle, which, from maceration, and probably slight decomposition, had become detached. In this *epidermis* there exist no marks of an annulate structure; but the *cutis*, or muscular *parietes* of the body, is distinctly divided into segments slightly overlapping each other, and most obvious on the sides of the body, which are its thickest and most muscular portions. The dorsal and ventral *parietes*, on the contrary, are so transparent as to allow of the contained parts being readily seen through them.

The most essential difference between *Linguatula* and the *Cestoidea*, among which it was first placed by Chabert, consists in the generative organs being androgynous, with the oviduct continued from one end of the body to the other. Rudolphi, uncertain with regard to the structure of the digestive organs, placed it among the *Trematoda*; but the specimen under examination affords conclusive evidence of the justice of Cuvier's removal of it to the *Nematoidea*. The alimentary canal commences at the central *foramen*, or true mouth, and runs straight to the opposite extremity of the body, terminating immediately above the orifice of the genital tube; the *œsophagus* being ⅓rd of a line in length, and opening into a suddenly dilated canal, which continues with little variation of diameter to the *anus*.

At the distance of a line posterior to the mouth, on the ventral aspect of the body, the narrow extremities of two elongated vesicles, 3 lines in length and more than ¼ a line in diameter, adhere firmly to the integument, the remainder hanging freely in the abdominal cavity. These Mr. Owen considers to be analogous to the impregnating glands of the hermaphrodite *Rotifera*, &c. The ovary, which is distinct from the tube so called by Cuvier and Rudolphi, is a nar-

row, elongated, minutely granulated body, extending along the mesial line of the dorsal *parietes* of the body for the extent of its two anterior thirds: about $\frac{1}{4}$ an inch from the head it gives off two slender capillary tubes, which unite below the origins of the lateral nerves, and enter the commencement of the oviduct. The commencement of this tube, formed by the junction of the two ducts just mentioned with those of the seminal vesicles, is very narrow: in the greater part of its course it is coiled in numerous and complex gyrations around the intestine, but towards the lower third of the body its coils become fewer and more distant, the brown *ova* are seen in scattered masses, and at length it runs parallel with the intestine straight to the *anus*. It is widest at the commencement of the coils; then becomes narrower; and afterwards continues of the same diameter to its termination.

The cerebral *ganglion* mentioned by Cuvier was very conspicuous in the specimen here described: it is situated between the mouth and the commencement of the oviduct, and is consequently sub-œsophageal. Eight pairs of nerves may be distinguished going from it in a radiated manner. This radiated disposition of the nervous system is similar to that which obtains in the *Slug* (*Limax*); and it may also be observed that the disposition of the muscular system in *Limax* is analogous to that of *Linguatula*, being most developed at the sides of the foot, and least along the middle line, which is thin and semi-transparent when viewed against the light. If it were allowable to trace further the analogy of form subsisting between genera so widely separated, the two *fossæ* with their little hooks on either side the mouth of *Linguatula*, might be compared with the two depressions, which, when the *tentacula* are retracted, may be seen in the same situation in the head of the *Slug*. It is the superior organization of these parts, required for its superior powers of locomotion, that renders necessary the further development of the nervous system in the *Slug*; and the completion of the cerebral ring and the development of the supra-œsophageal *ganglia* constitute the chief difference between it and *Linguatula* in this part of their organization. In like manner the action of the muscles in the *Slug* occasions waste, and demands a proportionate supply of new material; and hence the necessity of the superaddition of a sanguineous system for the carriage of the restorative molecules, of a more complex digestive apparatus for their supply, and of respiratory and secretory organs for the elimination of the waste parts of the body. In *Linguatula*, on the contrary, the sphere of action being limited to a dark cavity, the necessity for the superadded structures does not exist; its food, already animalized, requires only a simple canal to complete its assimilation; neither heart nor vessels are conspicuous; and it is probable that nutrition is effected by transudation and imbibition.

The reading of Mr. Owen's Paper was accompanied by the exhibition of drawings in illustration of the structures described in it,

March 10, 1835.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of several species of *Trogon*, partly from the Society's collection, and partly from that of Mr. Gould; and, at the request of the Chairman, Mr. Gould called the attention of the Meeting to some of the more interesting among them.

One of them was the *Bird* represented by M. Temminck, in his 'Planches Coloriées', under the name of *Trog. fasciatus*; and on this Mr. Gould remarked, that having had an opportunity of examining the drawing made by Forster, on which Pennant's original description was founded, he had ascertained that it represented a species altogether distinct from M. Temminck's *Bird*, and much more nearly resembling *Trog. Malabaricus*. As the name of *Trog. fasciatus* must necessarily remain with the species originally described under it, the one figured by M. Temminck requires another designation; and Mr. Gould proposed for it that of *Trog. Temminckii*.

Another, was the splendid species figured by M. Temminck, in the same work, under the name of *Trog. pavoninus*, a name by which it is now generally known; but on referring to M. Spix's 'Avium Brasiliensium Species Novæ,' the original description and figure of *Trog. pavoninus*, Spix, appear to Mr. Gould to have reference to a totally different species, distinguishable by its smaller size, by the absence of crest from its head, by the comparative shortness of its hinder back plumes (which do not extend more than a few inches beyond the tail), and by the whole of the tail-feathers being black. The species exhibiting the peculiarities just adverted to will, of course, retain its original name of *Trog. pavoninus*; for the other Mr. Gould proposed that of

Trogon resplendens. *Trog. plumis capitis notæique laxis, lanceolatis, illius cristam efformantibus, hujus posterioribus longissimis, tripedalibus; suprà et ad guttur pectusque splendidè aureoviridis; ventre crissoque coccineis; rectricibus sex intermediis nigris, cæteris albis ad apicem tantummodo nigris.*

Fœm.? vel Junior? *Capite, gutture, pectoreque obscurè viridibus; dorso viridi; ventre cinerascenti-brunneo; crisso coccineo; capite subcristato; tectricibus caudæ superioribus brevioribus; rectricibus externis tribus utrinque albis nigro fasciatis.*

Rostrum flavum, in fœminâ? juniori? nigrum: *tarsi* brunnei.

Hab. in Mexico in provinciis Austrum spectantibus.

Mr. Gould also characterized two species, hitherto apparently undescribed.

Trogon ambiguus. *Trog. capite guttureque nigris; pectore, cervice, dorso, caudæque tectricibus superioribus viridibus; alis brunneo-nigris, in medio cinereis lineis gracilibus flexuosis transversim notatis; rectricibus duabus intermediis proximarumque duarum utrinque pogoniis externis cupreo-viridibus, harum pogoniis internis omniumque apicibus nigris, reliquis ad basin nigris, ad apicem albis, in medio albis maculis parvis numerosis sparsis nigris.*

Long. tot. 12 unc.; *alæ*, 5¼; *caudæ*, 7¼.

Rostrum flavum: *tarsi* brunnei.

Hab. in Mexico in plagis Septentrionalibus.

This *Bird* is very nearly related to *Trog. elegans*, a species characterized by Mr. Gould at the Meeting of the Society on April 8, 1834, (Proceedings, Part II. p. 26). It differs by having the outer tail-feathers obscurely and finely dotted, while in *Trog. elegans* they are marked by strong and well-defined bars; and by having the middle of the wing much more finely and minutely barred than the latter bird. These distinctions, although apparently trivial, having been observed by Mr. Gould in many specimens, and the individuals seen by him of *Trog. ambiguus* having been brought exclusively from the northern, while those of *Trog. elegans* have all been collected in the southern states of Mexico; he is induced to regard the two *Birds* as being, very probably, specifically distinct.

Trogon citreolus. *Trog. vertice, collo, dorso, guttureque cærulescenti-viridibus; rectricibus duabus intermediis ad apicem, proximarum duarum utrinque pogoniis internis, reliquisque ad basin nigris, his apicem versus albis; ventre citrino in aurantiacum vergente; alis brunnescenti-nigris, rectricum pogoniis externis albo fimbriatis.*

Fœm. *Capite, gutture, dorsoque saturatè cinereis; rectricibus sex intermediis brunnescenti-nigris: in cæteris mari simillima.*

Long. tot. 10½ unc.; *alæ*, 5¼; *caudæ*, 6; *rostri*, a rictu ad apicem, 1.

Rostrum cœrulescenti-corneum.

Hab.

This species differs from *Trog. violaceus* by its smaller size, the lighter colour of its under surface, and the great extent of the white at the ends of the outer tail-feathers.

Mr. Owen commenced the reading of a Paper "On the comparative Osteology of the *Orang* and *Chimpanzee*." He stated that he was indebted to Mr. Walker for the opportunity of examining and describing in detail the skeleton of an adult *Chimpanzee*, obtained by that gentleman a few years since from the west coast of Africa, which had enabled him to compare it with that of the young animal. This comparison evidenced in that species a series of changes, in the advance towards maturity, analogous to those which take place in the *Orang* and the *Pongo*, and consequently afforded a strong confirmation of the opinion which regards the latter animal as the adult of the former.

The general appearance and proportion of the *Chimpanzee*, Mr. Owen remarks, are unquestionably the most anthropoid that the *Quadrumanous* order presents; but many marked and essential differences are observable upon a close comparison. The skull of the adult is of a narrow elongated ovate figure, slightly contracting towards the anterior part, which is, as it were, truncated, from the depth and direction of the *symphysis* of the lower jaw. Compared with the rest of the body it is of small size, owing to the arrested development of the cerebral portion, which, as in other *Quadrumana*, is altogether posterior, the face sloping forwards in the adult animal, at an open angle, as in the *Baboons*. Its exterior surface is devoid of the intermuscular frontal and sagittal crests which give so strong a carnivorous character to the skull of the *Orang*. The extent of the origin of the temporal muscles is, however, readily traceable by a slightly elevated ridge of bone: it differs considerably in the adult and in the fœtal skulls, but exactly accords with the increase in the power of mastication required for the due action of the large permanent teeth. It is possible that the slight development of the intermuscular crest may be a sexual character; for in an adult female *cranium* of the *Orang*, the crest was scarcely more prominent than in the *Chimpanzee*: in the latter, however, its development is less to be expected, in consequence of the smaller comparative size of the canine teeth. The muscular impressions on the occipital region are also less strongly marked than in the *Orang*, in which the occipital *foramen* is nearer the posterior plane and its position is more oblique. There is a greater proportion of brain behind the *meatus auditorius externus* in the *Chimpanzee* than in the *Orang*, and this disproportion is much greater in the adult than in the young. Considerable changes also take place in the relations of the *meatus auditorius* with the glenoid cavity for the articulation of the lower jaw, in consequence of the increased development of the maxillary apparatus, while the *cranium* remains nearly stationary; and a process, of which the rudiment is perceptible in the young animal, co-extending in downward growth with the changed position of the articulation, becomes interposed between the condyle and the *meatus*, and affords a support against backward dislocation. In the *cranium* of the negro, a similar process may be traced in a rudimental condition, anterior to the *fissura Glaseri*, as in the young *Chimpanzee*.

The *zygoma* is proportionally weaker than in the *Orang*. But the most remarkable characteristic of the skull of the *Chimpanzee*, both in the young and adult states, is the large projecting supra-orbital ridges, which being continued into each other across the *glabella*, form a sort of barrier between the head and face. The cranial sutures, which are obliterated in the adult *Orang*, *syndactylous Ape*, and more or less in the *Baboons*, are for the most part persistent in the *Chimpanzee*, as in the human subject. Enough of the squamous suture remains to show that the anterior angle of the temporal bone joins the frontal, and separates the parietal and sphenoid bones, as in the young. The condyloid processes are proportionately smaller than in the human subject, and their articular sur-

face is directed more outwardly. The *foramen magnum* is thrown back to about the middle of the posterior third of the base of the skull, and its plane is inclined from before upwards at an angle of 5°. There are no posterior condyloid *foramina*. The styloid process is represented by a very small tuberosity. A considerable space intervenes between the *foramen magnum* and the bony palate, which itself equally exceeds the corresponding portion of the human skull. The zygomatic arches are opposite to the middle third of the *cranium* as seen from below, in which position also the contraction of the skull between the *zygomata* offers a marked distinction from that of *Man*.

In the front view of the *cranium*, the threatening supraciliary ridges almost hide the cephalic cavity from view; and the latter, instead of forming a broad back-ground to the face, as in the young *Chimpanzee*, and still more in *Man*, is surpassed in breadth by the lateral boundaries of the orbits and the zygomatic arches. The orbits are seated higher than in the *Orang*, and are larger in proportion; but their plane is more perpendicular, and they are wider apart. In neither the *Chimpanzee* nor the *Orang* is there a supraorbitary *foramen*, but its place is marked by a slight groove. The lachrymal bones are entirely confined to the orbit. A character by which the *Chimpanzee* approximates more closely than the *Orang* to the human subject is found in the nasal bone, which projects in a slightly arched form beyond the interorbital plane, and exhibits at its lower margin a trace of its original separation into two lateral portions: it is anchylosed with the *os frontis* and the suture obliterated. The malar bones are largely developed, and two or three small *foramina* are observable in the process on the outside of the orbit. The contour of the upper jaw from the nasal aperture to the incisor teeth is almost straight, while in the *Orang* it is rendered concave by the greater development of the alveolar processes of the intermaxillary bones. The obliteration of the sutures between these bones and the upper maxillary takes place at a much earlier period in the *Chimpanzee* than in the *Orang*; although in the young animal, when the first dentition is complete, traces of the original separation are still visible. The situation of the *foramina incisiva* is always indicative of the original extent of these bones, and in no *Mammal* do they approximate so closely to the incisive teeth as in *Man*. The infraorbitary canal opens upon the face by a single *foramen*: Mr. Owen has observed a second in one young specimen, but never more. In the *Orang* there are usually three or more, as in many of the inferior *Simiæ*. The lower jaw, like the upper, is characterized by its strength and relative size. Its *symphysis* recedes, but the depth at this part is much less than in the *Orang*. The *alveoli* advance more nearly to the level of the condyle, and consequently approximate proportionally to the structure of the brute; the mental *foramen* is single.

Mr. Owen next proceeds to notice the dental *formula* and the characters of the teeth; and observes particularly on the modifications in their arrangement and relative position consequent on the preponderating development of the *cuspidatus*. He also points out

the more important deviations which occur in the disposition and development of the different bones of the face in connexion with the same influential condition of the organs of mastication; and then continues his description of the skeleton of the *Chimpanzee* by passing to that of the trunk.

The number of the *vertebræ* is the same as in *Man*; but an additional rib subtracts one from the lumbar to be added to the dorsal series. The spines of the cervical *vertebræ* are simple and elongated; that of the third being the shortest, with the exception of the *atlas*, which, as usual, is without spine. The bodies of the lumbar *vertebræ* are proportionally smaller than in *Man*; a difference easily accounted for by the necessity of affording a basis for the support of the latter in the erect position; and the same recession from the *Bimanous* type is manifested in the narrow and elongated form of the *sacrum*. In the adult animal, but less conspicuously in the young, the iliac bones rise on either side of the last lumbar *vertebra*, and are partially attached to it. The coccygeal are anchylosed together, but not with the *sacrum*; three are distinctly visible in the young. Of the sacral *vertebræ* only the two superior are united to the iliac bones. The *pelvis* differs from that of *Man* in all those particulars which characterize the *Quadrumana*, and which relate to the imperfection of their means of maintaining the erect position. The iliac bones are long, flat, and narrow, the anterior surface stretching outwards almost parallel with the plane of the *sacrum*; the aperture is elongated and narrow; and the tuberosities of the *ischia* are broad, thick, and curved outwards. There is, however, a provision for a more extended attachment of the *glutæi* muscles in a greater breadth of the *ilia* between the superior spinous processes than is observed in the inferior *Simiæ*; and we may thence infer that the semi-erect position is more easily maintained in the *Chimpanzee*.

In the relative size and strength of the lower extremities, the *Chimpanzee* claims a much closer relationship to the human subject than the *Orang*. Both animals exhibit in this respect permanent conditions that are transitory in *Man*: in the *Orang* the legs have the curtailed proportions which they present in the human *fœtus* of four months' gestation; in the *Chimpanzee* they retain the relative size of the yearling infant. The *femur*, not more bent anteriorly than in *Man*, has its neck of equal comparative length, but standing out more obliquely from the shaft. In the adult, as well as in the young *Chimpanzee*, the depression in the head of the *femur* for the attachment of the *ligamentum teres*, which is wanting in the *Orang* and the *Pongo*, is found to exist, notwithstanding the remark of Meckel to the contrary. The *tibia* and *fibula* are proportionally thicker and stronger than in *Man*; and the *patella* proportionally smaller. In their relative size and position the tarsal bones more closely resemble the corresponding bones of the human subject than those of any other *Quadrumanous* animal. The outer articulating surface of the *astragalus* is, however, of larger size, and a corresponding disproportion exists between the external and internal *malleolus*, the latter, from

its smaller size, presenting less resistance to the rotation of the *tarsus* inwards. The *os calcis* projects further backwards than in the lower *Simiæ*, but is more compressed laterally, and of much smaller proportional size than in *Man*. The *os naviculare* projects further downwards, and the internal cuneiform bone has a corresponding inclination below the level of the tarsal bones. But whilst the *Chimpanzee* exhibits the *Quadrumanous* characters in these particulars, and especially in the curtailed proportion and detached opposable condition of the *hallux*, it approaches more nearly to *Man* in the length and strength of that member. The whole foot is much longer than in the human subject; and the entire organization of the inferior members evidently bespeaks a creature destined to reside in forests, the modifications of the bony structure which add to the facility of climbing and grasping, rendering the entire frame more dependent on the upper extremities for the means of progression and support.

The size and expansion of the *thorax* is a marked character in the *Chimpanzee*: it has thirteen ribs on each side, and the last two pairs are proportionally longer than in *Man*, the end of the last not being pointed, but widened for the attachment of a cartilage. The *sternum* is flattened, but not so broad as in the *Orang*. The *harmonia* between its body and the *manubrium*, and those between the four single pieces of which the body is itself composed, remain visible in the adult skeleton. The clavicle is long and strong, and is not straight, as in the *Orang*, but sigmoidally curved, though in a less degree than in *Man*; while the *scapula*, on the other hand, recedes further from the human type than in the *Orang*. The *humerus* very closely resembles that of the human subject, but is proportionally longer and stronger, and has its twist more strongly marked and lower down on the bone. As the segments of the limbs recede further from the trunk they become subject to greater and more varied modifications. Thus the disproportionate length of the *humerus* is succeded by a still greater elongation of the fore-arm, the bones of which are also more curved from each other than in *Man*, and the inter-osseous space consequently enlarged. The bones of the *carpus* are the same in number as in the human subject; but the *trapezium* and *trapezoides* are proportionally smaller, while the *os pisiforme* nearly equals the *os magnum*. The thumb does not quite equal in length the metacarpal bone of the first finger, and is as slender and weak as it is short. Some little disproportion also exists between the relative lengths of the fingers; but taken together they are relatively stronger and more elongated than in *Man*.

After completing his detailed examination of the skeleton, Mr. Owen reverts to the changes which it undergoes in its progress to maturity, especially as regards the proportions of the head and face; and states that he has derived full confirmation of the identity of species in the young and adult *crania*, from a comparison of the crowns of the permanent teeth lodged within the jaws of the young *Chimpanzee* with those which had replaced the deciduous teeth in the older specimen. The resemblance in point of size and figure was exact, and left no room for doubt as to the point in question. The

succession takes place precisely as in the human subject, but the permanent teeth, and especially the incisors and canines, are proportionally longer. The particulars of their form and arrangement are given at length.

This portion of the paper was accompanied by an extensive series of admeasurements of the different parts of the skeleton in the adult and young *Chimpanzee*, compared with those of the young and adult *Orang*; and was further illustrated by numerous drawings, and by the exhibition of Mr. Walker's skeleton of the *Chimpanzee*, lent by him for the purpose.

The second portion of the paper commences with the remark that the opportunity which the rare and interesting skeleton of the adult *Chimpanzee*, in the possession of Mr. Walker, had afforded of tracing the changes of structure occurring in that *Ape*, in its progress to the adult condition, had induced the author to review the question relative to the identity of the young *Simia Satyrus* with the great *Pongo* of Borneo, formerly brought by him under the notice of the Society ('Proceedings of Committee of Science and Correspondence,' Part I. p. 9); and to consider the osteological structure of the latter, or adult *Orang*, with reference to that of its less powerful and more anthropoid congener, the *Chimpanzee*. This comparison would show that the number and value of the points of resemblance, or of approximation, to the *Bimanous* structure are in favour of the *Chimpanzee*; although in this, as in most other instances, there are some particulars of its organization indicative of a more marked relation with the inferior forms of the group than with those which rank immediately below it.

In common with the skull of the *Mandrill* that of the adult *Orang* is remarkable for its flattened *occiput*, formidable canine teeth, huge jaws, widely expanded zygomatic arches, and strongly developed cranial ridges; but it exhibits a marked distinction in its less brutalized expression, resulting from the more perpendicular slope of the face, the absence of the projecting supraciliary ridges, the greater expansion of the cerebral cavity, and the non-development of the supramaxillary ridges. Its *cranium* is less flattened at the *vertex* than that of the *Chimpanzee*; and but little exceeds in capacity that of the young at the period of acquiring its first permanent *molares*, the increase in size being chiefly dependent on the thickening of the walls of the skull. The ridges which circumscribe on the frontal bone the origin of the temporal muscles inclose a triangular space, the smoothness of which strongly contrasts with the irregular surface of the remainder of the *cranium*; and the interparietal crest rises, as in the *Hyæna* and other *Carnivora*, high above the general level. The situation of these ridges, with reference to the sutures, is only determinable by comparing the faint commencement of their growth in the young animal, very few traces of the sutures remaining in the adult skull. That between the *ala* of the sphenoid bone and the descending angle of the parietal, by means of which the frontal and temporal are kept separate, and which offers one of the few osteological differences in which the *Orang* has a closer approxima-

tion to the human structure than the *Chimpanzee*, is among those which continue to be marked even in the adult. The occipital *foramen* approaches in figure, position, and aspect, nearer to that of the lower *Mammalia*; the occipital condyles are more closely approximated anteriorly; the anterior condyloid *foramina* are double on each side; and the carotid *foramen* is situated more posteriorly, and is relatively smaller, than in the *Chimpanzee*. The petrous portion of the temporal bone is smaller, while the glenoid cavity forms a much larger proportion of the base of the skull. This cavity, if such it may be called, presents a quadrate, almost flattened surface, slightly concave in the transverse, and slightly convex in the antero-posterior direction, affording an interesting correspondence with the structure of the molar teeth, and indicative of the vegetable diet of the animal. The styloid and styliform processes are wanting, as in the *Chimpanzee*; the mastoid is represented by a protuberant ridge, and its cellular structure is visible in consequence of the thinness of the external table. The ant-auditory process is more developed than in the *Chimpanzee*, and the margins of the auditory *foramina* are smoother.

On the bony palate, the relative positions of the *foramina incisiva* correspond with the increased development of the laniary teeth, and consequently deviate in a proportionate degree from their positions in the *Chimpanzee* and in the human subject. Two or three *foramina* remain on either side and indicate the original separation of the incisive bones; and similar indications of the original *harmoniæ* between the incisive and maxillary bones are seen on the anterior part of the skull. In the *Chimpanzee* the obliteration of these sutures takes place some time before the temporary teeth are shed; in the *Orang* they remain until the permanent teeth are almost fully developed: in the human subject the intermaxillary bones can be traced as distinct elements only in the early periods of fœtal existence, when they were first detected by the poet Gœthe. In the *Orang* no part of the *os nasi* projects, as in the *Chimpanzee*, beyond the plane of the nasal processes of the superior maxillary bones; and there are no traces of its original separation at the mesial line, while in the *Chimpanzee* such traces are usually found, and Dr. Traill observed two distinct *ossa nasi* in the young of that species dissected by him. The lachrymal bones are proportionally larger than in *Man*; but, as in the *Chimpanzee* and the higher *Quadrumana*, they are confined to the orbit, the whole outer boundary of which has a more anterior aspect than in the *Chimpanzee*, and is relatively broader and stronger, but with the oblique posterior edge less developed. The interorbital space is relatively narrower, the disproportion increasing with the development of the superior maxillary bones, and evidencing a still further departure from the human form. There are three infra-orbital *foramina* instead of one; the upper maxillary bones are much more largely developed in consequence of the great size of the laniary teeth; and the incisor teeth project more obliquely forwards than in the *Chimpanzee*.

"In all the peculiarities," Mr. Owen observes, "of the *Orang's*

skull, which are independent of the changes consequent on the second dentition, we find an exact correspondence between the *Simia Satyrus*, or young animal, and the *Pongo*, or adult. The *crania* equally exhibit the absence of the projecting supraciliary ridges; the presence of the double anterior condyloid *foramina*; the numerous infra-orbitary *foramina*, and those in the malar bone; the same disposition of the cranial sutures; the same form of the *os nasi*; and contraction of the inter-orbital space. The character of the lower jaw by which it differs from the *Chimpanzee*, viz. the greater height and breadth of the *rami*, and the greater depth of the *symphysis*, are equally manifested in the young as in the old *Simia Satyrus*. In following out the same observations with regard to the germs of the permanent teeth in the young *Orang*, the same satisfactory results are obtained in reference to their identity with those which are fully developed in the old animals, as were previously detailed in the account of the *Chimpanzee*."

Mr. Owen then proceeds to describe in detail the appearances presented by the germs of the permanent teeth, and to compare them with the adult; and concludes this part of his subject by some observations on the apparent confusion in which these germs lie hidden within the jaw, and on the admirable and orderly arrangement by which the most perfect regularity is established in their ultimate position. Applying these observations to the replacement of the teeth in man, he inquires, how it happens that when the chances of disarrangement are so much fewer, the mal-position of the permanent teeth is of so frequent occurrence, and finds the solution of this problem in a mischievous interference with the agents to which the necessary changes have been entrusted. "The means by which the growth of the permanent teeth are kept in due restraint are too often prematurely removed by anticipating the natural period of the extraction of the temporary teeth; the act of extraction accelerates the growth of the concealed teeth, both by the removal of the check which nature has imposed upon it, and by the irritation induced in the surrounding parts; and their full development being consequently acquired before the jaws have been sufficiently enlarged, they occupy more or less of the relative position which they had when half formed within their bony cavities."

The conditions of the superior development of the spinous processes of the cervical *vertebræ* in the *Orang*, are obviously the backward position of the occipital *foramen*, the disproportionate development of the face, and the general anterior inclination of the *vertebræ* themselves. Those of the sixth and seventh *vertebræ* have a slight inclination towards the head, indicating that the centre of motion in this region is nearer the head than in *Man*. The whole of the cervical region is proportionally shorter, and consequently better adapted to support the head; and the entire vertebral column has one general curve dorsad from the *atlas* to the commencement of the *sacrum*, where there is a slight curve in the contrary direction. As in *Man*, the number of the dorsal or costal *vertebræ* is twelve, and this constitutes one of the more important differences between the *Orang*

and the *Chimpanzee*. That of the lumbar *vertebræ* is four, as in the *Chimpanzee*, in the skeleton of the *Pongo* preserved in the Museum of Comparative Anatomy at the Garden of Plants, and in the trunk of the skeleton of the adult *Orang* in the collection of the Society; in which latter, as the bones remain connected by their natural ligaments, there is no room for supposing a *vertebra* to have been accidentally lost. The additional lumbar *vertebra* in the skeleton of the *Pongo* in the College of Surgeons, on which some stress has been laid, as indicative of its specific difference from the young *Orang*, which has uniformly presented but four, indicates its abnormal character by its form and situation. The human subject occasionally presents a similar *lusus* in the addition of a sixth lumbar *vertebra*. The spines of these *vertebræ* are much shorter than in the *Chimpanzee*: as in the latter, the *sacrum* is longer, narrower and straighter than that of *Man*. Five sacral *vertebræ* are perforated for the passage of the spinal cord; three are imperforated, and are consequently coccygeal: the latter are anchylosed together, but not with the *sacrum*, in the adult.

The *ilia* are as much expanded as in the *Chimpanzee*, but flatter; and the *ischia* are less extended outwards, corresponding with the smaller development of the lower extremities. Both the *ischia* and *ossa pubis* resemble those of the *Chimpanzee*, in their more elongated form; and the whole *pelvis* equally deviates from the *Bimanous* type in its position with regard to the trunk. The form of its superior aperture is an almost perfect oval, the antero-posterior diameter of which is to the transverse as three to two; and the axis of the brim forms, with that of the outlet, a much more open angle than in the human subject. The chest is amply developed, equalling in size that of the human subject, except in being somewhat narrower from side to side. The ribs are narrower and less flattened, but their curvature is nearly the same as in *Man*; the twelfth is much longer, and has a long cartilage at its free extremity. The *sternum* is short, but broader than in the *Chimpanzee*: it is composed, below the *manubrium*, of a double series of small bones, seven or eight in number. This composition, always seen in the young *Orang*, is sufficiently obvious in the adult *Pongo* in the Museum of the College of Surgeons, but much less so in that of the Garden of Plants at Paris. In the young *Chimpanzee* the *sternum* is composed of a single series of bones; while in the human subject, although at an early period of ossification, a single series only of ossific centres appears: at a later stage the lower part of the *sternum* is frequently seen to be composed of a double series.

The clavicles are almost straight; and the *scapula* also differs from that of the *Chimpanzee* in its greater breadth, and from that of *Man* in the inclination of its spine towards the superior *costa*, in the *acromion* being narrow and claviform, and in the absence of the flattened and over-hanging margin of the spine. Other differences exist in the comparative dimensions and features of the supra- and subspinal *fossæ*, in the inclination of the coracoid process, and in the direction of the glenoid cavity. But the principal feature in the

organization of the *Orang*, and that in which it differs most from the *Chimpanzee*, consists in the relative length of the upper and lower extremities, the arms in the former reaching to the heel. The articular surface of the head of the *humerus* forms a complete hemisphere; and in some specimens that bone is perforated between the condyles. The principal peculiarities in the fore-arm consist in the large space between the *radius* and *ulna*, occasioned by the outward curve of the former, and in the absence of the acute margin on its ulnar aspect. The proportion borne by the *radius* to the *ulna* is in *Man* as 11 to 12; in the *Orang* as 36 to 37. The bones of the hand offer the same elongated form, with the exception of those of the thumb, which does not reach to the end of the metacarpal bone of the fore-finger. Those of the *carpus* have their ossification completed at a later period than in *Man*, and allow a freer motion upon each other: the *os pisiforme* is divided into two. Of the fingers, the proximal *phalanges* are more curved than in *Man*, and the distal more pointed, not expanding to afford support for an extended surface of delicate touch.

As the upper extremity of the *Orang* exceeds in length that of the *Chimpanzee*, so the lower differs as much in the contrary respect; preserving throughout life much less than the fœtal proportions of the human subject. The *femur* has a straight shaft, no depression on the head, a shorter neck forming a more obtuse angle with the shaft, and no *linea aspera* posteriorly. The inner condyle not being produced beyond the outer, the axis of the *femur* is in the same line with that of the *tibia*, as in the *Chimpanzee*. The inward curve of the *tibia* occasions a much larger space between it and the *fibula* than in *Man* or in the *Chimpanzee*. The *patella* is smaller in proportion than in *Man*, of an oval shape, and with a single articulating surface. The bones of the *tarsus* are numerically the same with those of the *Chimpanzee*, and have the same general form, but admit of freer motion on each other. A greater degree of obliquity in the articulating surface of the *astragalus* causes the whole foot to be turned more inwards; and the *os calcis* has still less projection backwards than the *Chimpanzee*. The internal cuneiform bone recedes most from the human type in having a greater development towards the tibial aspect, and in having the surface of articulation for the *hallux* below the range of the other metatarsal bones, all of which are much longer and more bent and have greater interspaces than the human. That of the *hallux* extends very little beyond the middle of that of the second toe, and stands off from it at an acute angle. The peculiarity of the structure of the *hallux* first noticed by Camper, in seven out of eight *Orangs* observed by him, viz. its possessing no ungueal *phalanx* and consequently no nail, loses much of its importance as a specific character from the fact that the individual dissected at the Society's Museum a few years since had very perfect, but small, black nails, and two *phalanges*, and that the same number of *phalanges* exist in the natural skeleton of Lord Amherst's *Orang* in the Museum of the College of Surgeons. The *phalanges* of the other toes are remarkably elongated, and those of the first

series are curved. The middle toe is longer than the rest, while in the *Chimpanzee* it barely surpasses the second. The concavity of the great toe is turned more towards the other toes than in the *Chimpanzee*, (in which that toe is also longer, having always two *phalanges* in addition to the metatarsal bone,) is set more forwards on the internal cuneiform bone, and has its concavity directed more towards the sole of the foot. The resemblance to the human foot is consequently greater in the *Chimpanzee* than in the *Orang*.

In conclusion Mr. Owen adverted to a fine specimen of the skull of a *Pongo* in the possession of Mr. Cross, of the Surrey Zoological Gardens, which presents the following differences when compared with the skull of the *Pongo* in the Museum of the College of Surgeons.

It is shorter in the antero-posterior diameter, and rises higher at the *vertex*. The supraorbitary ridges are more prominent; the plane of the orbits is more vertical, and their lateral exceeds their perpendicular diameter. The profile line of the skull is concave between the *glabella* and incisor teeth, while, in the specimen in the Museum of the College, it is almost a straight line between the same parts. The *symphysis* of the jaw from the interspace of the mesial incisors to the origin of the *genio-hyoidei* muscles, measures $2\frac{1}{2}$ inches in Mr. Cross's specimen, but equals $3\frac{1}{4}$ inches in the *Pongo* in the College Museum. There is also a remarkable difference in the position of the zygomatic suture. In the *Pongo* of the College Museum it commences at the distance of a quarter of an inch from the orbital process of the malar bone, and extends obliquely backwards to within $1\frac{1}{4}$ inch of the origin of the zygomatic process of the temporal bone. In Mr. Cross's specimen the same suture commences 8 lines from the orbital process of the malar bone, and extends to within 10 lines of the origin of the temporal zygomatic process, so that it is much nearer the middle of the *zygoma*.

With these differences, however, there exist the same form and proportions of the teeth, and the same peculiarities of the *foramina* and sutures which distinguish the *Orang* from the *Chimpanzee*. So that although the difference in the shape and general contour of the two skulls, is greater than is usually observable in those of other wild animals, yet Mr. Owen does not consider them sufficient to afford grounds for a distinction of species. He thinks it, however, probable that they may be indicative of varieties of the *Orang* inhabiting distinct localities, and remarks that it would be interesting with that view to compare the *crania* of ascertained specimens from Borneo and Sumatra, to which Islands this very remarkable species appears to be confined.

March 24, 1835.

William Yarrell, Esq., in the Chair.

A Letter was read, addressed to the Secretary by W. Willshire, Esq., Corr. Memb. Z. S., dated Mogadore, February 19, 1835, and referring to the skin of an *Aoudad, Ovis Tragelaphus*, Geoff., presented by the writer to the Society, and also adverting to his endeavours to obtain the animal which, from the description of it given by the Arabs of the Desert, Mr. Willshire conceives must be the *Antilope Leucoryx* described by Pennant.

The exhibition was resumed of the new species of *Shells* contained in Mr. Cuming's collection. Those brought on the present evening under the notice of the Society, completed the genera *Venus* and *Cytherea*, which had been commenced at the Meeting on February 24, (page 21). The *Shells* now exhibited were accompanied by characters by Mr. Broderip and Mr. G. B. Sowerby.

Genus Venus.

Venus tricolor. *Ven. testâ ovato-ellipticâ, crassiusculâ, radiatim costellatâ, costellis decussatis; maculis interruptis fuscis, irregularibus, radiatim dispositis; margine dorsali medio subangulato; impressione cordiformi anticâ parvâ; intùs violaced, margine ventrali denticulato: long.* 1·7, *lat.* 0·75, *alt.* 1·3 *poll.*

Hab. ad oras Americæ Centralis. (Puerto Portrero.)

Found in sandy mud at from eleven to thirteen fathoms.—G. B. S.

Venus histrionica. *Ven. testâ obovatâ, pallidè fulvâ, radiatim costellatâ, costellis plerumque duplicatis, concinnè decussatis, asperis; maculis interruptis fuscis irregularibus radiatim pictâ; margine dorsali rectiusculo, posticè subangulato; impressione cordiformi anticâ magnâ; intùs albicante, margine ventrali denticulato: long.* 1·8, *lat.* 1·, *alt.* 1·4 *poll.*

Hab. apud Real Llejos, Americæ Centralis, et ad Sanctam Elenam.

Found in muddy sand at low water.—G. B. S.

Venus fusco-lineata. *Ven. testâ obovatâ, albicante, radiatim costellatâ, costellis anticè subdecussatis; lineis undatis, subobliquis, radiisque duobus fuscis nonnunquam pictâ; margine dorsali rectiusculo, posticè subangulato; latere antico brevi, impressione cordiformi anticâ parvâ; intùs purpurascente, margine ventrali denticulato: long.* 1·5, *lat.* 0·8, *alt.* 1·2 *poll.*

Hab. ad oras Americæ Centralis. (Guacomayo.)

Found in sandy mud at a depth of thirteen fathoms.—G. B. S.

Venus Chilensis. *Ven. testâ obovatâ, pallidâ, radiatim costellatâ, costellis (medianis præcipuè) planulatis, (anticis posticisque præcipuè) decussatis; maculis, lituris, strigilisque pallidè fuscis ornatâ; margine dorsali rectiusculo, subdeclivi, posticè subangulato; latere antico breviore, impressione cordiformi parvâ; intùs albicante, margine ventrali denticulato: long.* 2·8, *lat.* 1·5, *alt.* 2·4 *poll.*

Hab. ad oras Chilenses. (Valparaiso Bay.)
Found in coarse sand at low water.—G. B. S.

VENUS LENTICULARIS. *Ven. testâ lenticulari-subtrapeziformi, crassâ, opacâ, pallidâ, lævi, lineis concentricis anticè posticèque distinctis, medio obsoletis, prope umbonem elevatiusculis; margine dorsali subrotundato, posticè subangulato; impressione cordiformi elongatâ, parvâ, impressâ; intùs albidâ, margine ventrali lævi: long.* 3·1, *lat.* 1·5, *alt.* 2·7 *poll.*
Hab. ad oras Chilenses. (Valparaiso Bay.)
Found in coarse sand at low water.—G. B. S.

VENUS ASPERRIMA. *Ven. testâ obovatâ, crassiusculâ, opacâ, albicante, radiatim costellatâ, costellis numerosis, decussatis, asperis; latere antico breviore; margine postico dorsali declivi, rectiusculo; impressione cordiformi anticâ elongatâ: long* 2·, *lat.* 1·, *alt.* 1·65 *poll.*
Hab. ad Insulam Lobos dictam.
Found in fine sand at low water.—G. B. S.

VENUS COSTELLATA. *Ven. testâ obovatâ, turgidâ, fuscescente, costellis lamellosis, reflexis, posticè magis eminentibus, concentricis ornatâ; lineis radiantibus impressis albis decussatâ; impressione cordiformi anticâ distinctâ, marginibus medianis elevatiusculis; intùs albâ, margine ventrali crenulato: long.* 2·6, *lat.* 1·5, *alt.* 2·3 *poll.*
Hab. ad Valparaiso, Chilensium, et ad Callao, Peruviæ.
OBS. Testa nonnunquam unicolor, nonnunquam prope apices concinnè punctulata.
Found in coarse sand at a depth of from six to fifteen fathoms.—G. B. S.

VENUS OPACA. *Ven. testâ oblongâ, subquadratâ, subturgidâ, lævi, opacâ, albidâ, pallidissimè purpurascente; latere antico breviore, rotundato, concentricè ruguloso, postico subrotundato, suprà infràque subangulato; margine interno integerrimo; ligamento permagno: long.* 3·4, *lat.* 1·6, *alt.* 2·5 *poll.*
Hab. ad oras Chilenses. (Conception and Maule.)
Found in sandy mud at low water.—G. B. S.

VENUS VARIABILIS. *Ven. testâ oblongo-subtrigonâ, tenuiusculâ, lævi, politâ, albâ, strigilis lineisve angularibus fuscis variè pictâ; intùs albâ, margine integerrimo: long.* 1·3, *lat.* 0·7, *alt.* 1·1 *poll.*
Hab. in Australiâ. (Swan River.)—G. B. S.

VENUS DISCORS. *Ven. testâ obovali, crassiusculâ, radiatim confertim striatâ, anticè rugis decussatâ, albâ fusco-nigricante instrata, coloribus valvæ alteræ diversimodo ordinatis; lineâ dorsali elevatiusculâ; intùs albâ, posticè violaceo tinctâ, margine ventrali crenulato: long.* 1·9, *lat.* 1·1, *alt.* 1·6 *poll.*
Hab. ad Sanctam Elenam, Americæ Meridionalis, et ad Guacomayo, Americæ Centralis.
The disparity in the arrangement of the colouring in the two valves is a remarkable peculiarity in this species.
Found in sandy mud at from six to nine fathoms.—G. B. S.

VENUS CYPRIA. *Ven. testâ oblongâ, subtrigonâ, concentricè lamellosâ, lamellis crassis, obtusis, posticè tenuioribus, subappressis, albâ fusco radiatâ; linea dorsali rectiusculâ, declivi; areâ posticâ latâ, fuscatâ; impressione cordiformi anticâ conspicuâ, fuscâ; margine ventrali intùs integerrimo: long.* 0·75, *lat.* 0·4, *alt.* 0·6 *poll.*

Hab. ad Insulam Platæ, Columbiæ Occidentalis.

Found among coral sand in seventeen fathoms.

This appears to be a near relation to the Linnean *Venus Paphia.*—G. B. S.

VENUS CRENIFERA. *Ven. testâ ellipticâ, asperâ, albicante fusco maculatâ et variè pictâ, lamellis concentricis, brevibus, confertis, striis radiantibus confertissimis decussatis; margine ventrali crenulato; dente cardinali antico magno, elongato: long.* 1·4, *lat.* 0·8, *alt.* 1·2 *poll.*

Hab. ad Sanctam Elenam.

Variat *testâ subfuscâ, unicolore, striis radiantibus nonnullis elevatis costiformibus.*

Hab. ad Paytam, Peruviæ.

Found in the sand at low water.—G. B. S.

VENUS LEUCODON. *Ven. testâ ellipticâ, cinerascente, crassiusculâ, concentricè costellatâ, costellis lævibus, reflexis, radiatim striatâ, striis numerosis, confertis: areâ dorsali posticâ lunulâque fuscis; margine interno ventrali denticulato, denticulis albis, interstitiis nigricantibus: long.* 1·35, *lat.* 0·7, *alt.* 1·15 *poll.*

Hab. in Sinu Californiensi. (Guaymas.)

Found in coarse sand at low water.—G. B. S.

VENUS CALIFORNIENSIS. *Ven. testâ globosâ, crassâ, albente, concentricè multi-lamellosâ, lamellis crassiusculis lateraliter subcrenulatis, costis creberrimis cancellatâ; areâ posticâ infossâ, grandi; lunulâ magnâ, tumente; intùs albâ, impressionibus muscularibus posticis violaceo fucatis; limbo interno crenato: long.* 2·9, *lat.* 1·7, *alt.* 2·7 *poll.*

Hab. in sinu Californiæ. (Guaymas.)

From about the middle of the valve the concentric *lamellæ* begin to approach nearer and nearer, till, in old specimens, they hide the radiated ribs, and at length, at the ventral border which is covered with an *epidermis*, they become mere smooth lineations. The internal violaceous spots are not always on the posterior muscular impressions, but sometimes only in their immediate neighbourhood.

Found in sandy mud at low water.—W. J. B.

VENUS COMPTA. *Ven. testâ subtrigonâ, planiusculâ, crassâ, lamellis concentricis lateraliter crenulatis, crassiusculis, radiatim creberrimè costellatâ, albente lineis flavo-castaneis inscriptâ; areâ posticâ incisâ, spadiceo strigatâ; lunulâ pallidiore; intùs albâ, limbo crenato: long.* 2·3, *lat.* 1·2, *alt.* 2· *poll.*

Hab. ad Peruviam. (Bay of Sechura.)

A fine species. It was dredged up in coarse sand and mud at a depth of seven fathoms.—W. J. B.

VENUS ORNATISSIMA. *Ven. testâ subglobulosâ, radiatim creberrimè costatâ, lamellis concentricis valdè elevatis, crispo-plicatis, spadiceo-albente; intùs albâ, limbo interno crenulato: long.* 1·6, *lat.* (*lamellis inclusis*) 1·1, *alt.* 1·4 *poll.*

Hab. ad Panamam.

This unique and highly ornamented shell was dredged up from sandy mud at a depth of ten fathoms.

The regular radiating ribs, each of which, as it advances from about the middle of the valve to the ventral border, has a depression in the middle, and the crisply plaited well-developed concentric frill-like *lamellæ*, render it the most curious in point of workmanship of any of the species.—W. J. B.

VENUS MACTRACEA. *Ven. testâ subglobulosâ, lineis concentricis, elevatis, acutis, subdistantibus ornatâ, albâ; limbo interno lævi: long.* 1·5, *lat.* 0·9, *alt.* 1·3 *poll.*

Hab. ad Valparaiso.

This unique shell was dredged from sandy mud at a depth of twenty fathoms. I have given it the trivial name of *Mactracea* because it reminds the spectator of some of the lamellated species of that genus.—W. J. B.

VENUS PULICARIA. *Ven. testâ subtrigonâ, lineis concentricis, elevatis, creberrimis, subtilissimè plicatis ornatâ, albâ spadiceo inspersâ; areâ dorsali vel posticâ nigro-spadiceo strigatâ, lunulâ fuscâ; intùs purpurascente, limbum versus crenulatum albente: long.* 1·8, *lat.* 1·, *alt.* 1·4 *poll.*

Hab. ad Columbiam Occidentalem. (Chiriqui and Tumaco.)

The scattered spots are often arranged in angular figures, and being more intense in some parts than others, the valves present a somewhat radiated appearance.

Dredged up from sandy mud at a depth of three fathoms.—W. J. B.

VENUS OBSCURA. *Ven. testâ subglobosâ, lineis concentricis crenulatis horridâ, albente obscurè maculatâ; intùs albâ, limbo crenulato: long.* 0·7, *lat.* 0·5, *lat.* 0·7 *poll.*

Hab. in Oceano Pacifico. (Lord Hood's Island.)

Found in coral sand at low water.—W. J. B.

Genus CYTHEREA.

CYTHEREA LUBRICA. *Cyth. testâ subrotundato-cordatâ, lubricâ, subviolaceâ, intùs albâ, anticè et supernè subconcentricè lineatâ, lineis elevatis; limbo interno lævi: long.* 1·7, *lat.* 0·8, *alt.* 1·4 *poll.*

Hab. in Americâ Centrali. (Puerto Portrero).

This species, which is of moderate size, was dredged up by Mr. Cuming from coral sand at a depth of thirteen fathoms. The concentric somewhat elevated lines are comparatively small and close at the upper part of the valve near the *umbones*, and gradually widen out till they become distant and strongly marked at the anterior part of the valves, the middle and posterior parts of which are without any lineations. The whole shell has a shining slippery appearance. —W. J. B.

CYTHEREA ALTERNATA. *Cyth. testâ subrotundato-trigonâ, lineis concentricis elevatis acutis frequentibus ornatâ, albâ spadiceo radiatâ; aream dorsali vel posticâ lunulâque spadiceo-violaceis; intùs albâ, umbones versus spadiceo-violaceo obscurè nebulosâ; limbo interno lævi: long.* 1·4, *lat.* 0·8, *alt.* 1·2 *poll.*

Hab. ad Columbiam Occidentalem. (Monte Christi.)

This species was dredged up in sandy mud at a depth of seven fathoms. The size of the specimen is rather less than that of the preceding.—W. J. B.

CYTHEREA TORTUOSA. *Cyth. testâ obliquè cordatâ, posticè sublobatâ, lineis frequentibus subconcentricis obtusis posticè irregularibus, albâ umbones versus subspadiceo-albâ: long.* 1·6, *lat.* 0·85, *alt.* 1·2 *poll.*

Hab. ad Panamam, et ad Xipixapi.

Var. testâ roseo rufoque pulcherrimè subradiatim pictâ.

Lamarck refers to no figure for his *Cyth. albina*, but only says that it has some likeness to the *Pectunculus* figured in Lister's Conchology, *t.* 263, *f.* 99. Part of Lamarck's description would apply to the shell now before me, but the term "striis exiguis" is inapplicable to the blunt and coarse lines with which the shell under description is marked concentrically, and as there is no notice taken of the posterior sublobation, I must conclude that Lamarck's *Cyth. albina* is not my *Cyth. tortuosa.*

Dredged up from sandy mud at a depth of six fathoms.—W. J. B.

CYTHEREA AFFINIS. *Cyth. testâ ovato-oblongâ, planiusculâ, lineis distantibus elevatis subacutis concentricis, albente violaceo radiatâ, posticè vix sublobata; aream posticâ violaceâ, lunulâ pallidâ; intùs albâ, limbo interno lævi; epidermide fuscâ tenui: long.* 1·6, *lat.* 0·7, *alt.* 1·1 *poll.*

Hab. ad Colombiam Occidentalem. (Xipixapi.)

This species, which approaches the last, differs from it in the following particulars. The shell is much flatter, the elevated, regular, concentric, somewhat sharp lines are much more distant, (especially as they recede from the *umbones,*) than the irregular, close-set, blunted lineations, almost amounting to rugosities, of *Cyth. tortuosa.* There is an approach to lobation towards the dorsal or posterior border; but it is not nearly so strongly marked as in *Cyth. tortuosa.* Still it may be a variety of *Cyth. tortuosa.*

Dredged up from sandy mud at a depth of ten fathoms.—W. J. B.

CYTHEREA DIONE, *var.*

Though varieties of this species have, for a long time, been known in this country, I am not aware that they have ever been recorded. The descriptions of Linnæus and Lamarck and the figures quoted by them, apply to the variety found in the West Indies, which is comparatively small with the *lamellæ* high and sharp and the spines close-set and short, the prevailing tinge of the shell being of a somewhat vinous or purplish flesh-colour. A dark-coloured long-spined variety of this and a white one, also with long spines, the spines in both being very close-set, were dredged up from sandy mud at a depth of nine fathoms at Salango in West Colombia.

Var. β. *Pallida, aread dorsali vel posteriori lunuláque violaceis; lineis concentricis anticè lamellatis, alibi rotundatis irregularibus, rugarum formam referentibus; spinis distantibus longissimis.*

This variety, of which Mr. Cuming possesses a specimen with the lower spines an inch and a half long, grows to a large size. It was dredged up at Tumbez, in Peru, from soft mud at a depth of five fathoms.

Var. γ. *Violacea; anticè et ad umbones sublamellosa, alibi lævis; spinis valdè distantibus, crassiusculis, mediocribus.*

This variety, which is almost entirely of a violet colour excepting the two white streaks which mark the line of the spines in each valve, and some white about the neighbourhood of the lower part of the anterior border, grows also to a large size. It is smooth with the exception of a few concentric lines at the *umbones* and a few *lamellæ* towards the anterior border. The spines are distant, indeed in the specimen before me there are hardly any in the place where the interior rows usually are, there being but one on one side and none on the other, with the exception of a few towards the *umbones* on both sides. The outer spines, as well as the inner one, are thick and strong but comparatively short, the longest being hardly seven eighths of an inch long in a specimen of about the same size as that from which the description of variety β was taken. Var. γ was dredged up from sandy mud at a depth of seven fathoms at San Blas in the gulf of California.

There are many gradations of colour, &c. between the varieties. I possess a specimen of variety β very nearly white, with the exception of the lunule. All the varieties are subject to have the spines, or at least some of them, tortuous.—W. J. B.

Cytherea vulnerata. *Cyth. testâ subglobosâ, lineis concentricis creberrimis lævibus, albente fasciis angustis purpureo-sanguineis hinc et hinc ornatâ; lunulâ et aread posticâ sub-atropurpureis; limbo ventrali rubro, intùs subcrenulato; epidermide subfuscâ; intùs albâ subroseo suffusâ: long.* 1·6, *lat.* 0·9, *alt.* 1·4 *poll.*

Hab. in Americâ Centrali. (Real Llejos.)

The ruddy lines which occasionally gird this whitish shell, and its red border, give this species a pleasing appearance. It was dredged up from sandy mud at a depth of six fathoms.—W. J. B.

Cytherea planulata, var. suffusa. *Cyth. planulata, testâ æquilaterali, trigonâ, radiis omnino suffusis; latere postico clauso.*

Hab. ad Salango.

This differs from *Cyth. planulata*, (Zool. Journ., V. p. 48,) in being more equilateral, rather more gibbose, in having the coloured rays spread all over the shell, and in being closed posteriorly. The anterior side in *Cyth. planulata* is the longer.

Found in sandy mud at a depth of nine fathoms.—G. B. S.

Cytherea argentina. *Cyth. testâ subtrigonâ, lævi, albâ, subæquilaterali, latere antico paullò breviore, postico subacuminato; margine dorsali postico rectiusculo, declivi, ventrali rotundato; epidermide tenui, cornea, extùs velutinâ, albâ, quasi argentatâ, indutâ: long.* 2·5, *lat.* 1·4, *alt.* 2·1 *poll.*

Hab. ad Sinum Nocoiyo, Americæ Centralis.
Found in sand banks at low water.—G. B. S.

CYTHEREA PANNOSA. *Cyth. testâ obovatâ, crassiusculâ, lævi, albicante maculis strigis lineisve angulatis luridis obscurè pictâ; apicibus subprominentibus: long.* 1·15, *lat.* 0·6, *alt.* 0·9 *poll.*
Hab. ad oras Chilenses. (Coquimbo.)
Found in sandy mud at low water.—G. B. S.

CYTHEREA PALLESCENS. *Cyth. testâ obovatâ, tenui, pallidè lutescente, lævi, concentricè striatâ; latere antico breviore, apicibus subprominulis; intùs albâ; impressione cordiformi anticâ elongatâ, distinctâ: long.* 1·4, *lat.* 0·8, *alt.* 1·1 *poll.*
Hab. ad Insulam Annaan.
Found in coral sand.—G. B. S.

CYTHEREA INCONSPICUA. *Cyth. testâ obovatâ, crassiusculâ, lævi, albidâ, concentricè striatâ, striis exilissimis, epidermide tenuissimâ, pallidè subfuscâ; apicibus subprominulis; impressione cordiformi anticâ ovatâ, inconspicuâ: long.* 1·2, *lat.* 0·65, *alt.* 1·*poll.*
Hab. ad Paytam, Peruviæ.
Found in sandy mud at low water.—G. B. S.

CYTHEREA MODESTA. *Cyth. testâ ovatâ, crassiusculâ, lævi, concentricè sulcatâ, sulcis obsoletiusculis; albâ fusco et fusco-purpurascente variâ; apicibus subprominulis; latere postico longiore, declivi: long.* 0·9, *lat.* 0·5, *alt.* 0·7 *poll.*
Hab. ad Xipixapi, Americæ Meridionalis.
Found in sandy mud in from nine to eleven fathoms.—G. B. S.

CYTHEREA PECTINATA, var. immaculata. *Cyth. pectinata, testâ pallescente unicolore, intùs lutescente.*
Hab. ad Insulas Oceani Pacifici. (Lord Hood's Island, one of the Paumotu group.)—G. B. S.

Specimens were exhibited of numerous *Thrushes*, chiefly inhabitants of the Himalayan Mountains and of India; and Mr. Gould, at the request of the Chairman, brought them under the notice of the Meeting, principally with the view of indicating those of the former district as constituting a new form in the family *Merulidæ*, Vig., for which he proposed the generic name

IANTHOCINCLA.

Rostrum ferè ut in *Cinclosomate* et *Turdo* sed magis robustum: mandibulâ superiore ad basin setigerâ.
Nares basales, ovales, apertæ.
Alæ breves, concavæ, rotundatæ; remigibus 6tâ 7mâque longioribus, omnibus mollibus.
Cauda subelongata, concava, rotundata; rectricibus mollibus.
Tarsi elongati, robusti.
Hallux digitum medium longitudine subæquans, ungue forti subæquali munitus.

Typus genericus. *Cinclosoma ocellatum*, Vig.
Montium Himalayæ Incolæ.

The chief distinguishing characteristics of the genus *Ianthocincla* are the comparative length of the *tarsus*; the length of the hinder toe, and the great length of the claw by which it is terminated; the roundness, concavity, softness, and yielding character of the wings and tail; and the peculiar fullness, lightness, and downiness of the whole of the plumage, and particularly of that of the back and rump. The downy nature of the covering is alluded to in the generic name.

The following species may be referred to it.

1. Ianthocincla ocellata.
   Cinclosoma ocellatum, *Vig., in Proc. Comm. Sci. Zool. Soc., Part I. p. 55.—Gould, Cent. Him. Birds, Pl. xx.*
2. Ianthocincla variegata.
   Cinclosoma variegatum, *Vig., in Proc. Comm. Sci. Zool. Soc., Part I. p. 56.—Gould, Cent. Him. Birds, Pl. xvi.*
3. Ianthocincla erythrocephala.
   Cinclosoma erythrocephalum, *Vig., in Proc. Comm. Sci. Zool. Soc., Part I. p. 171.—Gould, Cent. Him. Birds, Pl. xvii.*
4. Ianthocincla squamata. *Ianth. brunnea, plumis lunulâ nigrâ ad apicem notatis; uropygio sordidè castaneo; alis caudâque nigris, rectricibus ad apicem ochraceo-flavis.*

   Long. tot. 9½ unc.; *rostri*, 1; *alæ*, 4; *caudæ*, 4½; *tarsi*, 1⅜. *Rostrum tarsi*que brunnei.

   The inner webs of each of the primaries and the outer edges of the first seven of them are margined with a light silvery grey; the secondaries have the same parts of a dull ochre yellow becoming more ferruginous towards the shoulders.

5. Ianthocincla chrysoptera. *Ianth. saturatè brunnescenti-cinerea, alis fasciâ castaneâ notatis; fronte, facie, gutture, auribusque sordidè cinereo-albentibus; vertice nuchâque nitidè ferrugineis; scapularibus pectoreque arenaceo-rubris, hoc saturatiore, plumis lunulâ castaneâ ad apicem notatis; caudâ suprà saturatè aureo-olivaceâ, infrà brunneâ; remigum pogoniis externis nitidè aureo-olivaceis.*

   Long. tot. 10—10½ unc.; *rostri*, ¾; *alæ*, 4; *caudæ*, 5; *tarsi*, 1⅛. *Rostrum pedes*que brunnei.

   The specimens exhibited of this and the preceding species were recently presented to the Society, with other selected *Birds*, by Sir Philip Grey Egerton.

6. Ianthocincla rufogularis. *Ianth. suprà olivacea, posticè et ad caudam rufescenti tincta, plumis nigro apiculatis; vertice fasciâque alarum mediâ nigris; strigâ a rictu ad oculum jugulo que albis; gulâ crissoque rufis; pectore sordidè albescente brunneo-nigricante maculato; ventre brunnescenti-cinereo; rectricibus prope apicem rufo-castaneum nigro fasciatis.*

   Long. tot. 10 unc.; *rostri*, 1; *alæ*, 3⅝; *caudæ*, 4½; *tarsi*, 1⅜. *Rostrum* flavescenti-brunneum; *pedes* brunnei.

   The ends of the secondaries are banded with black, and their external margin is silvery white.

April 14, 1835.

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

Mr. Gould, at the request of the Chairman, exhibited, from the collection of the President, the Earl of Derby, a specimen of a species of *Toucan*, which he regarded as hitherto undescribed. It belongs to the same group with the other *grooved-billed Toucans*, and is consequently referrible to the genus recently proposed by Mr. Gould (Proceedings, Part II. p. 147), under the name of *Aulacorhynchus*. He pointed out the characters which distinguish it from the other species of the genus, and proposed for it the name of

AULACORHYNCHUS DERBIANUS. *Aul. viridis, suprà in subaureum, ad occiput in cæruleum vergens; ptilis inferioribus flavescentibus; rectricibus duabus intermediis brunneo apiculatis; guld albidâ.*

Long. tot. 14½—15 unc.; *rostri*, 3⅜; *alæ*, 5; *caudæ* 5.

DESCR. Rostrum robustum, magis quam in congeneribus angulatum, ad basin (nisi culminis) lineâ albâ cinctum, nigrum in castaneum anticè posticèque transiens. Orbitæ rufescentes. Pedes saturatè plumbei.

Mr. Gould remarked that the colouring of the extremities of the tail-feathers would alone suffice to distinguish from each other the four species at present known in this genus. In *Aul. sulcatus* the tips of the tail-feathers are not marked by any peculiar colour: in *Aul. Derbianus*, the two, and in *Aul. hæmatopygus*, the four, intermediate tail-feathers are tipped with brown: while in *Aul. prasinus* the whole of the tail-feathers are tipped with brownish red.

The exhibition was resumed of the hitherto undescribed *Shells* contained in the collection of Mr. Cuming. Those brought at the present Meeting under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby. They consisted of the following species and varieties of the

Genus MONOCEROS.

MONOCEROS IMBRICATUM, var. *Costis transversis, confertis, numerosis, imbricato-squamosis, squamulis ferè obsoletis: long.* 2·2, *lat.* 1·3 *poll.*

Hab. apud Terra del Fuego.

Found on rocks.—G. B. S.

MONOCEROS CRASSILABRUM, var. album. *Testâ totâ albâ: long.* 2·, *lat.* 1·4.

Hab. apud Valparaiso.

Found on rocks at low water.—G. B. S.

Monoceros costatum. *Mon. testâ ovatâ, crassâ, albicante castaneo suffusâ; anfractibus convexis, spiraliter costatis, costis subsquamosis; spirâ brevi; labro crasso, extùs subcastaneo, intùs ruguloso; dente basali brevi: long.* 1·3, *lat.* 0·9 *poll.*

Hab. ad oras Chiliæ. (Conception.)

Found under stones at low water.—G. B. S.

Monoceros cymatum, Sow. *Mon. testâ ovatâ, crassâ, rugosâ, fuscâ nigro albidoque strigatâ et variegatâ; anfractibus quatuor ventricosis, rugis ultimi quatuor vel quinque latis, obtusis, spiralibus; spirâ exsertiusculâ; labro crasso, extùs sinuoso, intùs dentato, dentibus* 4–6 *albis: long.* 1·7, *lat.* 1·1 *poll.*

Monoceros cymatum, *Sow., in Tankerville Catalogue, No.* 1888.

Buccinum cymatum, *Solander, MS. ined.*

Icon. Monoceros lugubre, *Sow., Genera of Shells, No. V. f.* 3.—*Wood, Suppl. t.* 4. *Buccinum, f.* 11. 12.

Hab. ad littora Californiensia.

Several rows of white teeth may be seen to remain within the aperture, each of which has formed the inner edge of the outer lip at the particular period of growth to which it respectively belonged. —G. B. S.

Monoceros acuminatum. *Mon. testâ ovato-acuminatâ, crassiusculâ, fuscescente; anfractibus quinque vel sex, ventricosis, spiraliter costellatis, costellis interstitiisque squamuliferis decussatis; labro extùs fusco, intùs albo, lævi; spirâ elongatâ, acuminatâ: long.* 2·, *lat.* 1·1 *poll.*

Hab. ad oras Chiliæ. (Baldivia.)

This may be only a variety of *Mon. imbricatum.*—G. B. S.

Monoceros globulus. *Mon. testâ subglobosâ, castaneâ, lævi, crassiusculâ; spirâ acuminatâ; anfractibus quatuor vel quinque, ultimo maximo, ventricosissimo; labro intùs subincrassato, albo, margine externo castaneo: long.* 1·4, *lat.* 1· *poll.*

Hab. ad oras Chiliæ. (Maulé.)

Found in the clefts of rocks.—G. B. S.

Monoceros punctulatum, Gray. *Mon. testâ ovatâ, crassâ, lævigatâ, albidâ punctulis numerosis castaneis spiraliter seriatis pictâ; labro incrassato, extùs crenulato, albo, intùs dentato; dentibus quinque obtusis, albidis; aperturâ intùs fuscescente: long.* 1·1, *lat.* 0·65 *poll.*

Hab. ad Insulam Cocos, Oceani Pacifici Septentrionalis.

Found on the rocks.—G. B. S.

Monoceros unicarinatum. *Mon. testâ ovato-oblongâ, crassiusculâ, albicante fusco variegatâ; anfractibus quatuor vel quinque, spiraliter costatis, interstitiis concinnè decussatis, carinâ unicâ posticâ; labri margine crenulato, intùs lævi: long.* 0·8, *lat.* 0·5 *poll.*

Hab.

Monoceros citrinum. *Mon. testâ ovatâ, crassâ, lævi, citrinâ; apice acuminato; anfractibus quinque, superioribus plerumque unicarinatis, carinâ obtusâ, ultimo gibboso; labro crasso, plerumque lævi, ætate intùs dentato, dentibus validis, albis: long.* 1·4, *lat.* 1· *poll.*

Variat *anfractu ultimo transversim costellato, costellis squamulosis.*

Hab. apud Coquimbo.

Found in the crevices of rocks.—G. B. S.

Specimens were exhibited of various *Hymenopterous Insects*, partly from the collection of the Rev. F. W. Hope, and partly from that of Mr. Westwood. They were accompanied by characters by Mr. Westwood.

Genus Plagiocera, *Klug, Jahrb. fur* 1834.

Plagiocera apicalis. *Plag. fulvo-lutescens; capite viridi-nigro, antennis nigris; pedibus albidis, apice tarsorum fusco; abdominis segmentis quatuor apicalibus purpureo-nigris; alis flavidis, stigmate apiceque latè fuscis.*

Antennarum, nervorum alarum, et unguium structura ut in *Plag. thoracicâ.*

Long. corp. lin. 7¼. Exp. alar. lin. 16.

Hab. in Americâ Meridionali. Rio Janeiro.—In Mus. Dom. Hope.

Obs. Genus *Plagiocera Cimbicidas* cum *Hylotomidis* arctè conjungit.

Genus Prionopelma, *Westw.* (Fam. *Chalcididæ.*)

Caput latum, anticè subtridentatum.

Antennæ 11-articulatæ; articulis 2do et 3tio fere æqualibus, minutis, reliquis 8 longitudine sensim decrescentibus.

Abdomen subsessile, oviductu corpore fere duplo longiore, vaginulis pilosis.

Pedes graciles, intermediis crassioribus cum tibiis paullo curvatis, calcari valido armatis, tarsis intermediis dilatatis.

Obs. Genus *Callimomem* (oviductu elongato) cum *Eupelmo* (pedibus intermediis) conjungens.

Obs. Genus *Phlebopenes*, Perty (Del. An. Art. Bras., 3.), cum *Callimomi* fortè conjungendum.

Prion. viridis. *Prion. aureo-viridis purpureo nitens; abdomine nitido; femoribus viridi-nigris, tibiis tarsisque obscurioribus, geniculis pedum intermediorum albidis; antennis nigris; alis pallidè fulvescentibus, in medio paullo obscurioribus, nervis fuscis.*

Long. corp. lin. 3¼; oviductus, 5¹. Exp. alar. lin. 6.

Hab. in Brasiliâ.—In Mus. Dom. Hope.

Genus Fœnus, *Fab.*

Fœnus Australis. *Fœn. piceo-niger, punctatissimus, thorace varioloso; capite anticè, thoracis abdominisque lateribus, corporeque toto subtùs picco-ferrugineis; antennis nigris; pedibus picco-ferrugineis,*

femoribus suprà lineâ nigrâ notatis; mandibulis elongatis, similiter dentatis, dente valido interno basali, dentibusque tribus parvis ante apicem positis; alis vix coloratis apicibus nonnihil infuscatis.

Long. corp. lin. 7¼. Exp. alar. 9.

Hab. in Novâ Hollandiâ.—In Mus. Westw.

Genus Thoracantha, *Latr.*

Thoracantha flabellata. *Thor. nigro-cœrulea, nitida; scutello abdomen longè superante, nitidissimo, acutissimo, ad apicem in spinas duas gracillimas desinente, longitudinaliter striato; thorace transversim striato; alis sub scutello omnino occultatis; antennis nigris* 12-*articulatis, articulis duobus basalibus fulvis, reliquis nigris et singulis* (*ultimo elongato excepto*) *ramum longum emittentibus; pedibus fulvis.*

Long. corp. (scutello incluso) lin. 2¾.

Hab. in Brasiliâ.—In Mus. Dom. Swainson.

Genus Campylonyx, *Westw.* (Fam. *Proctotrupidæ.*)

Caput latum, oculis valdè prominulis, fronte emarginato.

Antennæ ♀ graciles, elongatæ, apicem versus parum incrassatæ.

Thorax valdè elongatus, continuus, collare longius quam latum.

Metathorax longus, bicanaliculatus.

Pedes antici valdè elongati, raptorii, tarsorum unguiculis maximis recurvatis.

Alarum nervi ut in genere *Anteone*.

Abdomen ovale.

Obs. A genere *Gonatopo* differt thorace continuo et alato, ab *Anteone* thoracis et antennarum structurâ.

Campylonyx Ampuliciformis. *Camp. niger, punctatus; abdomine lævi nitido; antennis* (*nisi ad basin*), *pedibus* (*nisi femoribus et tibiarum apice*), *collaris lateribus, marginibusque segmentorum abdominalium testaceo-rufescentibus; capite anticè obscurè flavescente; alis brevibus pallidè flavescentibus, fasciis duabus fuscis ornatis.*

Long. corp. lin. 4. Exp. alar. lin. 3.

Hab. "humi luco de Feuillent, 8 Julii, 1807," prope villam "Lyons" Galliæ.—In Mus. Com. De Jeanii.

Genus Trigonalys, *Westw.*

Caput magnum, planum, anticè latius.

Mandibulæ validæ, 3-dentatæ.

Palpi elongati.

Antennæ capitis cum thorace longitudine, graciles, filiformes, ad apicem attenuatæ, 24-articulatæ.

Thorax ovatus.

Abdomen convexum, anticè et posticè attenuatum, vix pedunculatum, apice incurvo.

Alæ cellulâ 1 marginali, 4 submarginalibus, quarum 1mâ majore,

2dâ elongato-triangulari, 3tiâ parvâ, nervum 2dum recurrentem excipiente.

Pedes graciles, haud spinosi, tarsis simplicibus.

Obs. Genus anomalum familiæ dubiæ. Caput et antennæ *Lydæ*, abdomen *Mutillæ*. Alarum nervi fere ut in *Myrmosâ* dispositi.

Trigonalys melanoleuca. *Trig. nigra, punctata, subpubescens; capite anticè et lateraliter maculisque duabus parvis posticis, thorace posticè, abdominisque basi albis; alis anticis in medio fuscis.*

Long. corp. lin. 4. Exp. alar. lin. 7.

Hab. in Americâ Meridionali. Bahia.—In Mus. Brit. et Westw. Communicavit Dom. Turner.

Genus Diamma, *Westw.* (Fam. *Mutillidæ*.)

Corpus oblongum, nitidum, apterum.

Caput subhorizontale, fere rotundatum.

Mandibulæ elongatæ, curvatæ, graciles, dentibus tribus minutis internis.

Antennæ breves, convolutæ, ad apicem graciliores.

Thorax elongatus, binodosus.

Abdomen elongatum, convexum, segmentis basalibus subcoarctatis.

Pedes breviusculi, spinosi.

Obs. Genus *Myrmecodi* affine.

Diamma bicolor. *Diam. niger, purpureo cyaneoque nitens; antennis, pedibus, mandibulisque rufis, his ad apicem nigris.*

Long. corp. lin. 9½.

Hab. in Novâ Hollandiâ.—In Mus. Westw.

Genus Meria, *Ill.*

1. Meria Klugii. *Mer. tota nigra, nitida; alis nigris, dimidio apicali purpurascente; collari oblongo-quadrato; scuto mesothoracico lineis quatuor brevibus longitudinalibus impresso; metathorace scabroso; abdomine nitidissimo, elongato; alis cellulis submarginalibus completis tantum duabus* [*2dâ triangulari minutissimâ in Meriis veris pedunculatâ, in hac specie obliteratâ*]; *aculeo longissimo.*

Long. corp. lin. 9½. Exp. alar. lin. 12.

Hab. apud Sierra Leone.—In Mus. Dom. Hope.

2. Meria Spinolæ. *Mer. nigra, nitida; capite rufo, ore antennisque nigris; abdomine utrinque maculis tribus parvis albis; alis fuscis, dimidio apicali obscuriore iridescente; tarsis piceis; alarum nervis ut in Meriis veris.*

Long. corp. lin. 7½. Exp. alar. lin. 10¾.

Hab. apud Sierra Leone.—In Mus. Westw. Communicavit Dom. Hope.

3. Meria Millefolii, *St. Farg. & Serv., in Encycl. Meth.*, x. 394., a Klugio sub nomine *Mer. nitidulæ*, anno 1810, in tomo 2do libri 'Beiträge zur Naturkunde' descripta.

4. Meria rufiventris, *Klug, loc. cit., tab. iv. fig.* 7.

5. Meria Latreillei, *Fabr.*, (Bethyllus). Tiphia tripunctata, *Panz.* Tachus staphylinus, *Jur.*

6. Meria dimidiata, *Spin.* (Tachus).

Obs. Meria dichroa, *Perty, Del. An. Art. Bras., t.* 27. *f.* 13, haud congenerica.

The following Notes, extracted by Sir Robert Heron, Bart., from his Journal, were read.

1814.—For a good many years I have attended to the habits of *Peafowl*, and for the last eleven have written down my observations. I find the individuals to differ as much in temper as human beings: some are willing to take care of the young ones of others, whilst some have pursued and killed them, and this whether they had a brood of their own or not. Some cocks have assisted in the care of young ones, whilst others have attacked them. An early hen frequently has a brood herself the next year. Age makes no difference in the number of the brood. I have had six from a hen a year old, and one from an old hen. The hens have frequently a great preference to a particular peacock. They were all so fond of an old pied cock, that one year, when he was confined in view, they were constantly assembled close to the trellice walls of his prison, and would not suffer a japanned peacock to touch them. On his being let out in the autumn, the oldest of the hens instantly courted him, and obtained proofs of his love in my presence. The next year he was shut up in a stable, and the hens then all courted his rival; for the advances in these birds are always made by the female.

The japanned breed are, I believe, a variety originating in England. In Lord Brownlow's numerous breed of common, white, and pied, the japanned suddenly, in my memory, appeared amongst them. The same thing happened in Sir J. Trevelyan's flock of entirely the common sort; also in a breed of common and pied given by Lady Chatham to Mr. Thoroton: and in both cases to the extinction of the previously existing breed.

1821–2.—A black Poland cock, belonging to my friend and neighbour Mr. Kendall of Barnsley, was seized last winter, near the house, by a fox, but his screams being heard by the servants, he was rescued, desperately wounded, with the loss of half his feathers. In time the remainder of his feathers came off, and he is now become perfectly white. This seems to have some relation to the human hair becoming white at once from fear.

1827.—Mr. Reid, near York, has two Water Tortoises, brought over from the siege of Belleisle, which commenced in 1761: one of them, having wandered, was missing for sixteen years, when it was found on cleaning out another pond. They are both alive, and very tame.

1833, *April* 20.—This morning I found a large white Gold-fish in great distress. A large male toad had fastened itself upon the

head and shoulders of the fish. On removing the toad, the fish swam away, apparently unhurt.

Colonel Sykes read a paper "On the *Quails* and *Hemipodii* of India," which he illustrated by the exhibition of a very extensive series of those *Birds*, belonging partly to his own collection, which was made in Dukhun, and partly to that of the Society, which has been enriched by specimens from various Indian localities.

The author prefaces his descriptions of the species by some general observations on generic distinctions and characters, and illustrates his remarks by commenting on some of the genera and species constituting the genus *Tetrao* of Linnæus and his followers. He shows that the form of beak alone is inadequate as a mark of generic distinction, and that the form, and number, and size of the toes and nails, are not always of themselves to be regarded as sufficient for generic characters. Passing to the characters deriveable from the combined consideration of the beak and feet, on which Brisson's system was founded, he remarks on some incongruous associations which were thereby occasioned. Size, the most convenient mode (in his estimation) of distinguishing the *Quails* from the *Partridges*, cannot, he remarks, be admissible as affording adequate grounds for generic distinction. Habits, also, present many difficulties in defining associations into genera; those assigned by authors to an entire group belonging frequently to only one or a few of the species included in it, while in some cases, such as that of the *common Quail*, the habits differ in different localities; that bird being in Europe migratory, while in India (and probably in China also) it is stationary: its solitary habits, except at a particular season, are preserved in India, but its evident congener, the *Cot. textilis*, is never flushed without a second being found within a few paces. Plumage, although in many genera there is an evident tendency to assume a particular livery, is evidently unsuitable for general adoption as affording adequate grounds for generic distinction, however useful it may be in the discrimination of species.

After passing in rapid review the genera adopted by M. Temminck in the family of *Tetraonidæ*, and offering brief remarks on the validity of the several groups, Colonel Sykes proceeds to state that having felt himself disappointed in his attempts to form a just and precise estimate of generic differences from external characters only, he sought in internal organization, in the form of the tongue, and in the colour of the *irides* for additional guides and evidences of affinities or dissimilarities. As regards the former of these, he turned his attention principally to the stomach, the *cæca*, the proportional length of the *cæca* to the intestine, and the proportional length of the intestine to the body. Notes of these several particulars, as observed by him in India in nearly two hundred species of animals, are now in his possession; from which he extracts and arranges in a tabular form such as relate to the *Quails* and *Hemipodii*, and, by way of further illustration, such also as relate to some species of *Perdix*, *Francolinus*, *Columba*, and *Pterocles*.

Colonel Sykes then describes in detail the following species, accompanying his descriptions by observations on their habits, and on such other points connected with them as appear to him to be interesting.

Genus *Coturnix*.

1. *Coturnix dactylisonans*, Mey.
2. *Coturnix textilis*, Temm.
3. *Coturnix erythrorhyncha*, Sykes, in Proc. Comm. Sci. Zool. Soc., Part II. p. 153.—(Perdix, *Mey.*)
4. *Coturnix Argoondah*, Sykes, Ibid.—(Perdix, *Mey.*)
5. *Coturnix Pentah*, Sykes, Ibid.—(Perdix, *Mey.*)

Genus *Hemipodius*.

6. *Hemipodius pugnax*, Temm.
7. *Hemipodius Taigoor*, Sykes, Ibid., p. 155.
8. *Hemipodius Dussumier*, Temm.

April 28, 1835.

William Yarrell, Esq., in the Chair.

The Chairman exhibited a portion of the vertebral column of a *Sole, Solea vulgaris,* Cuv., which had been sent to him by Sir Thomas Phillipps, Bart., for the purpose of illustrating the manner in which reunion takes place after fracture of the long spinous processes of the caudal *vertebræ*. Each end of the fractured bones is enlarged, and appears to have become a new centre of ossification, from whence processes have been sent out to join the neighbouring one; and where, as in this instance, several adjoining bones have partaken of the injury, the new processes have, in more than one place, united the broken portion, not to that with which it was originally connected, but to the bone immediately preceding or following it: the new bone exhibiting no appearance of disease, but possessing altogether a healthy character.

Mr. Gray exhibited a specimen of a *Toad,* which he had recently received from Swan River, whence it was sent to him by Joseph Wright, Esq. Believing it to be hitherto undescribed, he characterized it as the

Bombinator Australis. *Bomb. brunneus; fronte, superciliis, guttis dorsi sparsis, vittâ lumbari, maculâ ad basin artuum alteráque ad basin pedum, maculisque majoribus irregularibus mentalibus ventralibusque flavis.*

Hab. in Australiâ.

The back is generally smooth, and has some small smooth tubercles arranged along it in longitudinal series. The toes are four in number on the anterior feet, and five on the posterior: they are slender, free, and unequal.

Mr. Gray remarked, that the form of *Toad* to which the name of *Bombinator* has been given had not previously been met with beyond the limits of Europe; and added, that this Australian species agreed with the European, not only in the essential characters of the group, but in the tone and nature of its colouring, and was only specifically distinguishable by the mode in which the markings were distributed on its surface.

Mr. Gray also exhibited some specimens of the genus *Echinus,* as restricted by Lamarck and modern authors; and proceeded to explain his views with regard to its subdivision into what he considers four natural genera, adapted to facilitate the distinction of the species of this extensive group. He regards this distinction as of the more importance, in as much as some of the characters which had been

used for this purpose, such as the number of the *tesseræ*, and of the pores in the *ambulacra*, have been found to be inconstant; the number of these increasing, as they are now known to do, with the age of the specimens. He proposed to divide the *Echini* as follows:

Genus 1. Arbacia.

Corpus depressum.
Areæ ambulacrorum angustissimæ: *ambulacra* angusta, recta, singulo e serie simplici tesserarum biporosarum superpositarum efformato.
Tesseræ ovariales et *interovariales* mediocres.
Anus valvis quatuor spiniferis tectus.

This genus corresponds with *Echinus* section A. of M. de Blainville, and contains *Arbacia pustulosa* (*Echinus pustulosus*, Lam.), *Arb. punctulata* (*Ech. punctulatus*, Lam.), &c.

Genus 2. Salenia.

Corpus subsphæricum.
Areæ ambulacrorum angustissimæ: *ambulacra* angusta, recta, singulo e serie simplici tesserarum biporosarum superpositarum efformato.
Tesseræ ovariales et *interovariales* maximæ.
Anus subexcentricus.

This genus is known only in the fossil state, and has hitherto even been confounded with *Cidaris*, but its tubercles are not pierced. It comprehends *Salenia scutiger* (*Cidaris scutiger*, Munst., Goldf. Petref., t. 49. f. 4.—Park., Org. Rem., t. 12. f. 13.; *Echinus petaliferus*, Desm.) and two or three other allied species in Mr. Gray's collection.

Genus 3. Echinus.

Corpus plus minusve depressum.
Areæ ambulacrorum latitudine dimidium arearum extraambulacralium æquantes: *tesseræ ambulacrales* tripliciter biporosæ.
Tesseræ ovariales et *interovariales* mediocres.
Anus subcentralis, squamosus; squamis spiniferis.

The ambulacral *tesseræ* in this genus may be regarded as being each composed of three doubly pierced pieces: of these the upper is placed in the middle of the upper edge of the *tessera*; the next below it, on the middle of the outer edge; and the lowest on the lower part of the inner edge of the plate: so that when the plates are together, forming the *ambulacra*, the pores appear to form oblique lines, each composed of three double pores, the inner upper double pore of each line belonging to the plate above the other two double pores.

This genus contains the sections B*. C. E. and G. of M. de Blainville. The species may be divided into two very distinct sections, thus:

1. *Ambulacris angustioribus: poris mediocribus approximatis.*
   a. *Ore subintegro.*

Of this section *Ech. esculentus* may be regarded as the type.

On this species Mr. Gray incidentally remarked that it is extremely variable in shape, becoming very high and subconical in the adult age, when it is *Ech. Melo*, Lam.; and being often subangular, in which condition it is *Ech. subangulosus*, Ejusd.

   b. *Ore profundè inciso.*

Ech. excavatus, Lam.; *Ech. Pileolus*, Lam.; &c.

2. *Ambulacris latis: poris inter se tuberculis parvis sejunctis: ore 5-inciso.*

Ech. ventricosus, Lam.; &c.

Genus 4. Echinometra.

Corpus plus minusve depressum, sæpè oblongum.
Areæ ambulacrorum mediocres: *tesseræ ambulacrales* quinquariam vel ultra biporosæ.
Tesseræ ovariales et *interovariales* mediocres.
Anus subcentralis, squamosus; squamis sæpe spiniferis.

In this genus the ambulacral plates may be considered as being composed of five or more doubly pierced pieces, which form an arched line round the outer edge of the *tessera*, with a single pair of pores at its lower inner angle.

The spines with which the species of this genus are furnished are often of very unequal size, and they are of very variable form, some of the larger ones being very long, as in *Echinometra trigonaria*; and others very short and truncated, as in *Ech. atrata*.

Mr. Gray stated that he had formerly separated from the *Echini* some of the species of this genus which are peculiar for their oblong form, and that the genus so proposed by him had been adopted by M. de Blainville; but a much more extended examination has convinced him that individuals of the same species vary from roundish to oblong: and, therefore, having observed many round species agreeing with oblong ones in the peculiar character of the *ambulacra*, he has united them to the former, under the same name. It is to be remarked, as throwing doubt on the bilaterality of the *Echinidæ*, attempted to be established by M. Agassiz, that the spongy ovarial plate which that gentleman regarded as the mark of the hinder part of the *Echinidæ*, is always placed on one side or the other of the longer axis of the oblong species.

This genus will contain sections B**. D. and F. of M. de Blainville, as well as the *Echinometra* of that author, and many new species which are as yet undescribed.

Mr. Gray subsequently exhibited a specimen of a new genus of *Corals*, which he had recently received from the coast of Montserrat in the West Indies. The coral in question is formed almost entirely of rather large transparent rough fusiform *spicula*, which are irre-

gularly placed side by side along the stems, and are imbedded in the animal matter: the *spicula* are so abundant as to render the coral very hard, and to give it much of the appearance of a mass of arragonite, of which it has also the form. Its stem is irregularly cylindrical, rather crooked, and slightly tapering: it throws off a rather thinner branch a little below the middle of the main stem; and both the main stem and its branch end in a hemispherical head, the upper surface of which is covered with forty or fifty rather large conical tubercles, each terminating in a small central mouth. These tubercles are formed of *spicula* resembling those of the stem, the points of which arm the *apices* of the cones. The central cones are the largest and most distinct, and the marginal ones are smaller, and more or less confluent. The stem when broken exhibits similar *spicula* and a few internal cells, but it has no distinct central *axis*: the conical tubercles of the head are hollow, and they doubtless inclose and give exit through their central mouths to the *Polypes* which form the coral.

This coral appears to be most nearly allied to the genus *Zenia* (of which *Alcyonium floridum* of Esper is the type), and agrees with it in having no distinct *axis*, and in having the whole surface covered with large *spicula*, and the *Polypes* protruded from tubular cells at the end of the branches. It differs, however, from that genus in its *spicula* being much more abundant, and the coral consequently more solid, and by no means spongy; and in being less branched, with the polype-cells forming a hemispherical head, instead of a bunch of small branches. For these reasons Mr. Gray is led to consider it as forming a new genus, which, until the animal is known, he is induced to place next to *Zenia*, with the following characters:

Genus Nidalia.

Corallium fixum, cylindricum, subramosum, subsolidum, spiculis calcareis densè indutum; apice capitato, hemisphærico, e papillis conicis inæqualibus spiculiferis formato.

Nidalia Occidentalis. *Nid. corallio albido, subramoso.*

Hab. in littore Oceani Atlantici apud Montserrat in Indiâ Occidentali.

The specimen described is now in the collection of the British Museum.

May 12, 1835.

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

A letter was read, addressed to the Secretary by P. L. Strachan, Esq., and dated Sierra Leone, February 22, 1835. It referred to some *Alligators* sent from that country by the writer several months since, all of which died on their passage. It also stated that he had forwarded to the Society a *Mud Turtle* (*Trionyx?*), which, he hoped, would prove acceptable.

A letter was read, addressed to the Secretary by A. MacLeay, Esq., Colonial Secretary, New South Wales, dated Sydney, October 25, 1834. It stated that the writer had, in consequence of the application made to him, set on foot inquiries respecting that interesting *Bird* of New Zealand, the *Apteryx Australis*, Shaw; and that he had succeeded in obtaining a skin of it, (destitute, however, of the legs,) which he had forwarded to the Society. The specimen was exhibited.

The skin presented by Mr. MacLeay to the Society was obtained by him from the Rev. W. Yate, who writes to him as follows, dated Waimate, March 10, 1834: "About six weeks ago I had one of these birds in my possession, the second I have seen in the Land. I kept it nearly a fortnight, and in my absence it died. One of my boys took off the skin; the legs rotted off. I have very great pleasure in sending you the skin as it is. Should I ever meet with another, I will do all I can to preserve it for you. Its food is long earth-worms. It strikes with its bill on the ground, and seems to know by the sound where its prey lies. It then thrusts its bill into the ground, draws up the worm, and swallows it whole and alive. They kick very hard, and their legs are remarkably strong for the size of the bird. They are very rare in New Zealand, but are found in the greatest numbers at Hiku Rangi, the mountain which you mention."

Mr. MacLeay adds, that he has applied to other friends on the subject, and that, should he succeed in procuring further information, he will communicate it to the Society.

He concludes by expressing his intention of forwarding to the Society the white-fleshed Pigeon of the Colony, which, he conceives, would be a great acquisition in England: it is certainly, he says, far superior to Partridge.

Colonel Sykes, in illustration of the extended geographical distribution of some species of *Birds*, called the attention of the Meeting to a collection of *Bird-skins*, formed at the Cape of Good Hope by Captain Spiller, R.A., and presented by that gentleman to the Society. The principal object had in view was the demonstration of the identity of many species of *Birds* existing in Southern Africa, with those which Colonel Sykes had himself obtained in Dukhun. By the juxtaposition of the Cape *Birds*, and of those killed by himself in India, he showed that the following species exist equally in both those countries: several of them are also common to Europe.

Falco Tinnunculus, Linn.—South Africa, India, and Europe.
Milvus Govinda, Sykes.—South Africa and India.
Strix Javanica, Horsf.—*Strix flammea*, Linn.? Universal?
Alcedo rudis, Linn.—South Africa and India.
Oriolus melanocephalus, Linn.—South Africa and India.
Coracias Indica, Linn.—South Africa and India.
Upupa minor, Shaw.—South Africa and India.
Cinnyris Mahrattensis, Cuv.—South Africa and India.
Ardea Caboga, Penn.—South Africa, India, and Europe.
Nycticorax Europæus, Steph.—South Africa, India, and Europe.
Limosa Glottoides.—South Africa and India.
Gallinago media, Ray.—South Africa, India, and Europe.
Rhynchæa Capensis, Steph.—South Africa and India.
Cursorius Asiaticus, Lath.—South Africa and India.
Himantopus melanopterus, Horsf.—Universal.

Colonel Sykes remarked that he had previously, while illustrating his 'Catalogue of the Birds of Dukhun', read before the Committee of Science and Correspondence in 1832, shown the specific identity of many European and Indian *Birds*, especially in the orders *Grallatores* and *Natatores*.

"Some account of a hybrid *Bird* between the cock *Pheasant, Phasianus Colchicus*, Linn., and the *grey Hen, Tetrao Tetrix*, Ej., by Thomas C. Eyton, Esq.," was read. It was illustrated by the exhibition of the preserved skin of the bird, and also of a drawing made from it.

"For some years past a single *grey Hen* has been observed in the neighbourhood of the Merrington covers, belonging to Robert A. Slaney, Esq., but she was never observed to be accompanied by a *black Cock*, or any other of her species. In November last a bird was shot on the manor adjoining Merrington, belonging to J. A. Lloyd, Esq., resembling the *black game* in some particulars, and the *Pheasant* in others. In December another bird was shot in the Merrington covers, resembling the former, but smaller: it is now in my collection, beautifully preserved by Mr. Shaw of Shrewsbury.

"The hybrid bird in my possession, which is a female, may be thus shortly described:

"*Tarsi* half-feathered, without spurs, of the same colour as in the *Pheasant*. Bill resembling that of the *Pheasant*, both in colour and shape. *Irides* hazel. Crown and throat mottled black and brown. Neck glossy black, with a tinge of brown. Breast of nearly the same colour as that of the cock *Pheasant*, but more mottled with black. Tail of the same colour as in the *grey Hen*; centre tail feathers longest; under tail coverts light brown.

"The plumage of this bird is very curious; as some parts of it resemble either sex of both *black game* and *Pheasant*.

"I had an opportunity of examining the body after it was taken from the skin, and of comparing it with the *black game* and the *Pheasant*.

"The following are some remarks which I made on its anatomy:

"Left oviduct very imperfect; the ovaries very small; the eggs scarcely perceptible, and very few in number.

"The *sternum* approaches nearer to that of the *black Grouse* than of the *Pheasant*; but the bone is not so massive, the anterior edge of the keel is more scolloped, and the bone between the posterior scollops is not so broad as in the *black game*.

"The *os furcatorium* is that of the *Pheasant*, being more arched than in the *black game*, and having the flat process at the extremity next the *sternum* broader.

"The *pelvis* is exactly intermediate between the two, having more solidity, and being both broader and longer than in the *Pheasant*; but resembling that of the *Pheasant* in having the two processes on each side of the caudal *vertebræ*, which serve for the attachments of the levator muscles of the tail.

"The subjoined Table shows some comparative measurements between the hybrid bird in question, the cock *Pheasant*, and the *grey Hen*.

	Grey Hen.		Hybrid Bird. Female.		Male Pheasant.	
	Ft.	In.	Ft.	In.	Ft.	In.
Length of the *tarsus*	0	$2\frac{2}{10}$	0	$2\frac{3}{4}$	0	$3\frac{1}{10}$
Length of the middle toe	0	$2\frac{1}{10}$	0	$2\frac{1}{2}$	0	$2\frac{9}{10}$
Expansion of the wings	2	0	2	2	2	$4\frac{1}{2}$
Length of the middle tail feathers	0	4	0	$7\frac{1}{4}$	1	$7\frac{1}{4}$
Length of the intestinal canal from vent to gizzard	4	2	3	$5\frac{1}{4}$	4	0
Length from the vent to the *cæca*	0	6	0	$5\frac{1}{2}$	0	$4\frac{1}{2}$
Length of the *cæca*	2	0	2	0	0	$8\frac{1}{2}$

Mr. Gray exhibited, from his own collection, specimens of a *Coral*,

known to some of the English residents at Canton by the name of the *Glass Plant*. He stated that it appeared to him to be most nearly related to *Gorgonia*, although it differed widely from that genus by its axis consisting, not of a single calcareous stem, but of a congeries of almost innumerable siliceous filaments, slightly twisted together into the form of a rope. Each of these filaments, however, is composed, like the stem of *Gorgonia*, of very numerous concentric *laminæ*, which are easily separated from each other by exposure to heat, such as the flame of a candle, when the fibre splits down one side, leaving the inner *laminæ* exposed. Near their upper extremity the filaments have a wrinkled appearance, and are furnished with numerous barbs, directed backwards; towards the base they taper gradually, and become much attenuated. The crust bearing the polypes surrounds the mass of siliceous filaments, and a thin portion of it probably envelopes each of the component filaments of the rope, as it may be termed: the bark is of a leathery substance, and includes a number of small *spicula*: its outer surface is sandy: it is furnished with large, distinct, flat-topped tubercles, from which the polypes are doubtless emitted, as they are from the somewhat similar tubercles of the bark of the genus *Eunicea*. Towards the lower end of the stem the crust is discontinued; and this part is imbedded in a species of *Sponge*, which, if essential to the coral, is, however, independent of it, the sponge occurring without the coral, but the coral not having yet been found without the sponge. The coral seems to be affixed only by the intervention of the sponge, and is not flattened out at the base, like *Gorgonia*, for attachment to other bodies. In *Pennatula*, which is affixed by the insertion of its lower undilated end into yielding substances, the polypiferous crust is continued to the extremity of the stem, and does not cease, like that of the *glass-rope Coral*, at the point of immersion.

Mr. Gray remarked that this *Coral* is peculiar, as being the only body, the animal nature of which is undoubted, that is yet known to secrete silica; the *spicula* and *axis* of all other *Corals* which have fallen under his observation being purely calcareous: he has not, however, yet had an opportunity of examining the *Gorgonia Briareus*, the axis of which is described by Ellis as consisting of numerous little purple glossy needles, but in the nearly allied *Alcyonium asbestinum* (the *spicula* of which closely agree with this description) he has ascertained that the *spicula* are calcareous. In the siliceous nature of its *spicula* the *Coral* in question agrees with some of the *Sponges*, *Tethyæ*, &c.

Mr. Gray stated that this curious production had occupied much of his attention several years since, and that he had delayed the publication of his views respecting it, in the hope of being enabled, by the acquisition of more copious materials, to clear up some points

which did not appear to him to be, at that time, capable of satisfactory elucidation. He characterized it as the type of a new genus.

HYALONEMA.

Corallium simplex, subcylindricum, ad basin attenuatum et in *Spongiâ* immersum, supra basin cortice coriaceo tuberculato tectum; tuberculis sparsis, depressis, polypiferis. *Axis* e spiculis numerosis, elongatis, filiformibus, subcontortis, siliceis constans.

Polypus ignotus.

HYALONEMA SIEBOLDI.

Hab. apud Japoniam, *Dr. Siebold.*

Specimens are contained in the British Museum, to which they were presented by John Reeves, Esq.; in the Museum at Leyden; and in the collection of Mr. Gray; the latter having been purchased from the Dutch Museum, through the kindness of Dr. De Haen. A few fibres of the axis formed part of the Sloanean Collection, when it was originally acquired for the British Museum, but their nature was altogether unknown.

May 26, 1835.

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

A letter was read, addressed to Mr. Vigors by Philip Poole, Esq., Assistant Surgeon, Madras Medical Establishment, and dated Travancore Residency, December 17, 1834. It accompanied a collection of skins of *Mammalia*, *Birds*, and *Reptiles*, amounting in number to upwards of a hundred, which the writer presented to the Society. "The whole of the animals were obtained in the forests about twenty miles inland from Kolun or Quilon, in the Travancore country." Mr. Poole expresses his readiness to collect other objects for the Society, and calls particular attention to the "red *Mangouste*, of which," he says, "I send both male and female: they are considered a great curiosity in India, and I have been told that they are only to be found in the Travancore country."

The several *Mammalia* contained in Mr. Poole's collection were then exhibited, and Mr. Bennett brought them in succession under the notice of the Meeting. The most interesting among them, he stated, was the *Ichneumon* especially referred to by the donor, which represented a species hitherto undescribed, and differing remarkably from the usual livery of the genus. While the *Herpestes fasciatus*, he observed, deviates from the nearly universal grizzled appearance of the fur which characterizes the *Ichneumons* generally, and approaches, by the cross bands of its back and loins, to the markings of the *Suricate*, *Ryzæna tetradactyla*, Ill., the species from Travancore is equally aberrant by the possession of a longitudinal dark dash on each side of the neck, which, in some degree, seems to approximate it in point of colouring, to the *Civets*, *Civetta*, Cuv.

The almost uniform colouring of Mr. Poole's specimens, which are destitute, except on the head, of any grizzled appearance, might have been regarded as an additional deviation from the ordinary characteristics of the group; but this Mr. Bennett showed, by the exhibition of a skin which had still more recently come into the Society's possession, is by no means universal throughout the individuals of the species, the skin last referred to (which is believed to have been imported from Bombay) being grizzled, as in the other *Ichneumons*, over the greater part of its surface, and having the uniform red colour limited to the extremity of the back and the contiguous part of the tail. Notwithstanding this discrepancy in the

colouring, he stated his conviction that the Bombay animal belongs to the same species with those from Travancore; agreeing, as they do, in the possession of the remarkable dark dash along the sides of the neck, in the broad dark tip of the tail and the uniform red of its base, and in the general proportions of the body.

He characterized the species in question as the

HERPESTES VITTICOLLIS. *Herp. grisea aut rubra; caudâ ad basin rubrâ ad apicem latè nigrâ; artubus vittâque ab aure ad scapulam ductâ nigris.*

Long. corporis cum capite 22 unc.; *caudæ* (sine pilis), 12½.
Hab. in Indiæ Orientalis partibus Austrum spectantibus.

Mr. Bennett stated his intention of giving a detailed description of this new species in some "Observations on the genus *Herpestes*, Ill.," which he was about to prepare, and in which he proposed to advert to the other *Ichneumons* in the Society's possession. He added, that a living individual of *Herp. fasciatus* had lately been, for a short time, in the Society's Menagerie, on its way to the collection of the President, the Earl of Derby, at Knowsley.

A skin was subsequently exhibited of a *Mammiferous* animal, which had lately been added to the Society's collection, and which Mr. Bennett regarded as the representative of a second species of his genus *Lagotis*. He pointed out the marks by which it is distinguished from the species on which the genus was originally proposed by him, and which was described in detail in the 'Transactions', vol. i. p. 35, and proposed for it, in allusion to one of the most striking of them, the name of *Lag. pallipes*. Its occurrence, he remarked, renders it necessary to characterize the two species of the

Genus LAGOTIS.

1. LAGOTIS CUVIERI, Benn. *Lag. auriculis caput longitudine æquantibus; vellere longiore; caudæ setis albidisque nigrisque; pedibus cinereis.*

Long. corporis cum capite 16 unc.; *caudæ* (præter pilos), 11½; *auriculæ*, 2¾; *pedis postici*, 3½.
Hab. in Peruviâ?

2. LAGOTIS PALLIPES. *Lag. auriculis capite subbrevioribus; vellere brevi; caudæ setis ferrugineis; ventre pedibusque fulvescentibus, his pallidioribus.*

Long. corporis cum capite 15 unc.; *caudæ* (præter pilos), 11; *auriculæ*, 2¼; *pedis postici*, 3.
Hab. in Chiliæ montosis.

Mr. Bennett stated his intention of preparing, in consequence of

the acquisition of this specimen, a short paper, which he proposed to entitle "Additional remarks on the Genus *Lagotis*, with some account of a second Species referrible to it."

Mr. Reeve exhibited specimens of two *Shells*, which he regarded as previously undescribed, and compared them with the species most nearly related to them, which he also exhibited.

The first of them is characterized by Mr. Lake as follows:

Cypræa subviridis. *Cyp. testá ovatá, pyriformi, subventricosá; dorso convexissimo, subviridi, fasciis duabus tribusve latis, fulvo brunneoque variè picto; basi convexá, pallidá; margine subincrassato, rufescenti-brunneo, extremitates versùs subproducto; ore lineari, sublato, posticè recurvo, dentibus submagnis subdistantibus, columellá convexá: long.* 1⅜, *lat.* ¾, *alt.* ½ *poll.*

Hab.

This shell seems to partake of the characters of *Cyp. Errones* and *Cyp. pallida*; having for the most part the colouring and marking of the former, and the form of the latter: it is, however, specifically distinct from either. It is of a ventricose pyriform shape; the back is of a light green colour, variously painted with yellowish brown; and the margin is of a reddish brown colour, darker towards the extremities.—L.

The second species is thus characterized by Mr. Reeve:

Lucina rugifera. *Luc. testá rotundatá, lenticulari, convexiusculá, albicante spadiceo-rufescente concentricè subfasciatá; striis radiatis elevatis aliisque concentricis rugosá; intùs albá; ano trigono, impresso, minimo: long.* 2¼, *lat.* 2, *alt.* 1 *poll.*

Hab. ad oras Novæ Hollandiæ.

This shell is closely allied to *Luc. tigerina*, (*Cytherea tigerina*, Lam.,) and appears at first sight to be the var. 3 of that species (Lam., Anim. sans Vert., nouv. ed., p. 219): but upon examination it is found to differ, principally in the longitudinal *striæ* being more elevated, and crossing the transverse *striæ*, and in the interior being perfectly white: it is also from a very different locality. There is in the collection of Mr. Cuming a specimen of the variety of *Luc. tigerina* above mentioned which answers exactly to Lamarck's description.—L. A. R.

Specimens were exhibited, partly from the collection of the Rev. F. W. Hope, and partly from that of Mr. Westwood, of various *Hymenopterous Insects*, which Mr. Westwood regarded as new to science. They were accompanied by the following characters by Mr. Westwood:

Genus Dirhinus, *Dalm.*

Dirhinus Mauritianus. *Dir. æneo-niger; capite thoraceque crassè punctatis, illius cornubus brevioribus obtusis; antennis nigris articulo* 1mo *ad basin et apicem piceo; tibiarum quatuor anticarum apicibus tarsisque omnibus testaceis; scutello in medio lævisculo; metathorace longitudinaliter* 4*-costato et utrinque angulato; abdomine nigro nitido, subtùs* (♀) *fornicato.*

Long. corp. lin. 2. Exp. alar. lin. 3.

Hab. in Insulâ Mauritii, *Dom. Templeton.*

Genus Metapelma, *Westw.* (Fam. *Chalcididæ.*)

Thorax ante alas elongatus, declivis.

Antennæ graciles, fere thoracis longitudine, apicem versus paullo crassiores, apice ipso obliquè truncato.

Abdomen compressum, oviductu exserto, abdominis longitudine.

Pedes intermedii longiores, femoribus paullo retrò-curvatis, tibiis calcari longo instructis, tarsis vix dilatatis subtùs ciliatis, articulo 1mo longiore: *postici* crassiores, tibiis tarsorumque basi valdè dilatatis compressis.

Obs. Genus *Eupelmo* affine.

Metapelma spectabilis. *Met. capite thoraceque viridibus cupreo nitentibus; antennis nigris; abdomine nigro, chalybeo purpureoque nitente; pedibus quatuor anticis ferrugineis viridi subnitentibus; tarsis intermediis fuscis ad basin albidis; pedibus duobus posticis fuscis, femoribus basi rufis, tibiis basi albis; oviductu nigro; alis pone medium nubeculâ vix infumatis.*

Long. corp. lin. 2¼; oviductûs, lin. 1. Exp. alar. lin. 3¾.

Hab. in Georgiâ Americæ.—In Mus. Brit.

Genus Schizaspidia, *Westw.* (Fam. *Chalcididæ.*)

Corpus breve, crassum.

Antennæ breves, crassæ, 13-articulatæ, articulis 2do et 3tio fere æqualibus, 4to–10mum internè serratis, reliquis tribus in unum coalitis.

Scutellum magnum, posticè supra abdomen productum et ejus dimidium basale superans, ad apicem furcatum.

Abdomen thorace paullo majus, suprà planum, pedunculo (fere tertiam partem abdominis longitudine æquante) ad thoracem affixum.

Obs. *Perilampum* (habitu) cum *Eucharide* (scutello armato) conjungens.

Schizaspidia furcifer. *Schiz. ænea; thoracis parte anticâ transversim striatâ; scutelli lateribus longitudinaliter sulcatis; abdo-*

minis dimidio basali cœruleo, apicali fulvo; antennis pedibusque fulvescentibus; alis maculâ substigmaticali fuscescente.
Long. corp. lin. 2¾. Exp. alar. lin. 4¼.
Hab. apud Bengaliam.—In Mus. Brit.
Variat magnitudine minore; antennis profundiùs serratis; thorace magis sulcato; abdomine toto fulvo. (An sexus alter? ♂?)

Genus Pentacladia, *Westw.* (Fam. *Chalcididæ.*)

Eulopho affinis: differt antennis 9-articulatis, articulo 2do parvo, 3tio–7mum ramum longum emittentibus, 8vo 9noque majoribus oblongo-ovalibus; abdomine compresso.

Pentacladia elegans. *Pent. splendidè purpureo-cœrulescens, antennis obscurioribus.*
Eulopho ramicorni dimidio longior.
Hab. ?—In Mus. Com. Dejean (olim Latreillii).

Genus Chalcitella, *Westw.* (Fam. *Chalcididæ.*)

Antennæ ad os insertæ, 12?–13?-articulatæ, articulo 2do brevi, 3tio et sex sequentibus paullo majoribus, valdè continuis, reliquis tribus vel quatuor massam elongato-conicam efformantibus.
Metathorax valdè declivis.
Pedunculus dimidium abdominis longitudine æquans, gracilis, cylindricus.
Femora intermedia ad basin gracilia, ad apicem subclavata; coxæ posticæ crassæ, longæ; femora postica maxima, subtùs 7-dentata.
Obs. Genus *Chalcidibus* typicalibus (ex. gr. *Sispes*) affine.

Chalcitella Evanioides. *Chalc. nigra, punctata; abdomine compresso, nitido; antennarum basi, geniculis et interdum pedunculo piceis; tibiis tarsisque magis testaceis.*
Long. corp. lin. 1¼. Exp. alar. lin. 2.
Hab. in Insulâ Mauritii, *Dom. Templeton.*

Genus Macroteleia, *Westw.* (Fam. *Proctotrupidæ.*)

Corpus longissimum, lineare.
Caput rotundatum, thoracis latitudine.
Antennæ in utroque sexu thoracis longitudine, 12-articulatæ, ♂ articulis fere æqualibus, submoniliformibus, ♀ articulis sex terminalibus clavam crassam oblongam efformantibus.
Thorax ovatus: *scutello* inermi.
Alæ abdomine multo breviores, nervis ut in genere *Pteromalo* dispositis.
Abdomen fere sessile, longissimum, longitudinaliter striatum, seg-

mentis quatuor basalibus æqualibus, depressum, marginatum; in ♀ longius et posticè valdè attenuatum: *oviductu* retracto.

Obs. Genus *Teleadi* affine.

Macroteleia Cleonymoides. *Macr. nigra; abdomine piceo; antennarum basi pedibusque rufescentibus;* (♂): ♀ *picea; capite antennarumque clavâ nigris; abdomine testaceo, apice nigro.*

Long. corp. ♂ lin. 1¼, ♀ 2⅔. Exp. alar. lin. 2½.

Hab. in Insulâ Mauritii, *Dom. Templeton.*

Genus Anodontyra, *Westw.* (Fam. *Scoliidæ.*)

Corpus elongatum: *abdomen*, articulis continuis, oblongo-ovatum, ad apicem inerme.

Antennæ graciles, 13-articulatæ, articulo 2ndo discreto, ♂.

Mandibulæ dente valido interno ante apicem armatæ.

Palpi maxillares elongati, 6-, labiales 4-articulati.

Alarum nervi fere ut in *Tengyra Sanvitali* dispositi.

Obs. *Tengyris* affinis: statura minus elongata quam in *Tengyris* et *Myzinibus* ♂.

Anodontyra tricolor. *An. nigra; collari anticè flavo lineato; segmentis abdominalibus 2do, 3tio et 4to ad marginem posticum flavo interruptè marginatis, subtùs etiam maculâ parvâ laterali ejusdem coloris notatis; tibiis tarsisque testaceis; alis fulvo-testaceis, ante apicem nubilo fuscescenti notatis.*

Long. corp. lin. 8¼. Exp. alar. lin. 14½.

Hab. in Chili.—In Mus. Dom. Hope.

Genus Sericogaster, *Westw.* (Fam. *Vespidæ*?)

Caput magnum, planum, quadratum: *oculi* integri, ovales.

Antennæ (♀) capite non longiores, in medio faciei insertæ, geniculatæ, 12-articulatæ, articulo 1mo longo, reliquis valdè continuis.

Labrum corneum, triangulare.

Mandibulæ mediocres, ante medium et sub apicem internè excisæ.

Maxillæ et *Mentum* elongatæ: *palpi maxillares* 6-, labiales (breviores) 4-articulati.

Labrum e lobis duobus parvis carnosis constans.

Thorax brevis: *scutello* haud elevato.

Abdomen ovale, subdepressum, segmentis continuis.

Pedes breves, antici (♀) haud fossorii, tibiis posticis spinosis.

Alæ anticæ cellulâ 1 marginali subappendiculatâ, cellulis 2 submarginalibus completis quarum 2dâ nervos duos recurrentes recipit.

Obs. Genus quoad affinitates dubium. *Ceramium* (habitu) *Philanthis* vel potius *Sapygis* (structurâ orali) quasi conjungens.

Sericogaster fasciatus. *Ser. niger; scutello, antennis, pedibusque rufescentibus; femoribus posticis ad basin apiceque antennarum piceis; abdominis segmentis flavo irregulariter marginatis.*
Long. corp. lin. 4¾. Exp. alar. lin. 6¾.
Hab. in Novâ Hollandiâ.—In Mus. Dom. Hope.

Genus Dorylus, *Fabr.*

Dorylus Orientalis. *A* Dor. helvolo *distinguitur, staturâ paullo graciliore, nervo recurrenti alarum anticarum pone medium areolæ submarginalis inserto, nervisque binis internis (posticarum) nervis duobus transversis connexis.*
Hab. in Indiâ Orientali.—In Mus. Westw. Communicavit Dom. W. W. Saunders, F.L.S.

Mr. Owen read a paper "On the Anatomy of *Distoma clavatum*, Rud.," an *Entozoon* of an intermediate grade of structure between the two subjects, *Trichina* and *Linguatula*, which he has recently brought under the notice of the Society: the one manifesting simply a homogeneous granular pulp enveloped in a transparent, thin, elastic tegument; and the other having distinctly developed nervous *ganglia* and filaments, a muscular tunic, a digestive canal contained in an abdominal cavity, ovaries, oviduct, and fecundating glands.

The specimen of *Dist. clavatum* examined by Mr. Owen measured 2 inches and 2 lines in length, and 1½ inch in circumference at its thickest part. Its outer integument was thin, crisp, and semitransparent; transversely and minutely wrinkled, and evidently fibrous in the same direction; and adhering but slightly, at least after maceration in spirit, to the succeeding layer. This latter tunic was evidently muscular, and was composed of longitudinal fibres: it adhered pretty closely to the membrane immediately inclosing the cellular *parenchyma* of the body, but was separable from it by careful manipulation. The muscular tunic was beautifully ornamented by tortuous vessels containing a dark-coloured fluid.

The anterior orifice is surrounded by a muscular sphincter, forming a suctorious disc, at the bottom of which is a minute orifice leading to the digestive tubes. These are two in number, and are continued, slightly enlarging and diverging from one another, to the cells at the posterior part of the body.

The large cup-like cavity, about 3 lines posterior to the anterior end of the animal, is simply for adhesion, and has no communication with the interior of the body; but immediately in front of it is a small transverse slit, concealed by the wrinkles of the integument, which forms the outlet of the generative organs.

At the posterior extremity of the body there is a minute central orifice, leading into a narrow cavity formed between two layers of a

villous membrane, extending vertically across the terminal dilated part of the animal. Between this cavity and the rest of the body no communication could be detected, on the most minute inspection. Its internal surface is of a yellowish white colour, and smooth. Its function is probably excretory, and it may, therefore, be regarded as exhibiting a rudimentary condition of the respiratory system. On each side of it is a large lateral cavity, internally black and minutely wrinkled, and filled (in the individual examined) with a dark brown fluid, similar in appearance to partly digested blood. This nutriment is conveyed to the lateral cavities by the intervention of the smaller cells anterior to those from the two alimentary canals leading from the mouth, and is distributed into the dark-coloured vessels of the muscular tunic: so that the lateral cavities, analogous to those which have been considered as chyle-receptacles in *Amphistoma*, &c., hold an intermediate position between the alimentary and the sanguiferous canals. The cells at the smaller end of the body were occupied by a yellow fluid, containing numerous *ova* of the same colour, many of which had thence passed into the tortuous oviduct.

Distoma is thus seen to possess, in addition to the cellular *parenchyma* of the body, the three systems of canals, digestive, vascular, and generative, which are usually met with in the *Trematoda*. An analogy to the *Leech* may be traced, not merely in the external suckers, but also in the form of the cells, which at the posterior part of the body communicate with, and form part of, the digestive apparatus, especially of the two last cavities, which very closely resemble the last pair of gastric *cæca* that occupy, in the *Leech*, a similar position.

The reading of the paper was illustrated by the exhibition of the animal described in it, and of drawings of its several parts.

Mr. Owen subsequently read "Some Remarks on the *Entozoa*, and on the Structural Differences existing among them; including Suggestions for their Distribution into other Classes."

The difficulty of assigning to the internal parasites of other animals a definite character, by which they may be distinguished as a class, is evident on a mere inspection of the definition proposed for the *Entozoa* by Cuvier: it rests chiefly on their *habitats*, and on certain negative properties, and attempts to combine with these a general resemblance of form. Rudolphi at one time imagined that he had overcome this difficulty, by denying to the *Entozoa* a nervous system; but he was subsequently under the necessity of regarding the *Nematoidea* as excluded from this definition, and he proposed to associate this portion of the *Entozoa* with the *Annelida*. But the possession by the *red-blooded Worms* of a distinct respiratory system would alone be sufficient to forbid this association, even if the essen-

tial character of ganglions on the nervous chords were not also present to negative it absolutely. As the *Nematoidea* differ from the *Parenchymatous Worms* by possessing a distinct nervous system as widely on the one hand, as they do from the *Annelida* in the form of that system on the other, Mr. Owen has been induced to associate them with those other classes of the *Radiata* of Cuvier which, while they are distinguished from the rest of the division by the undoubted presence of nerves, agree with the *Nematoidea* in manifesting these organs in the form of simple ungangliated disconnected chords.

The subdivision of Cuvier's *Radiata*, proposed by Mr. W. S. MacLeay, into two principal groups, the *Acrita* and the *Radiata*, may be regarded as consonant with the system of nature, although the latter, by the exclusion of the *Nematoidean Worms*, is too restricted as to its contents: the definition of the former group given by its proposer requires also modification, in consequence of the vast discoveries which have of late years been made in the organization of the animals comprised in it. Mr. Owen discusses the several characters assigned to the *Acrita*, and dwells particularly on the variations in the generative system which range from gemmation and spontaneous fission, observed only in this group in the animal kingdom; to the cryptandrous or productive form only, which occurs in the *Cystici* and *Cestoidea*; to the superaddition of a fecundating gland to the ovary, as in *Trematoda*; and to the separation of the sexes, as in the *Acanthocephala*: so as already to typify almost all the modes of generation by which the higher races of animals are perpetuated.

Mr. Owen regards the molecular and the filiform condition of the nervous system as respectively furnishing the primary characters of the *Acrita* and the *Radiata*; although traces of longitudinal nervous chords may be met with in *Echinorhynchus* and in the *Acalephæ*. Another distinction of great moment is the absence, in the *Acrita*, of a distinct abdominal cavity separating the digestive cavity from the *parietes* of the body; the digestive cavity in those animals, whatever may be its form, being essentially a simple excavation of the *parenchyma*. The vascular system, where traces of it are met with in the *Acrita*, corresponds with the digestive system in being equally devoid of proper *parietes*, and consisting of canals excavated in the parenchymatous substance of the body, in which a cyclosis of the nutrient fluids, analogous to that of plants, is observed, but no true circulation.

In the *Acrite* subkingdom, with the exception of the generative and digestive organs, all the other systems are more or less blended together, and the corporeal *parenchyma* seems to possess many functions in common. Where a distinct organ is eliminated, it is often repeated almost indefinitely in the same individual. Thus, in the *Polypi* the nutritious canals are supplied by a thousand mouths; in

the *Polygastrica* there is an analogous multiplication of the digestive cavity itself; the generative system becomes the subject of this repetition in the *Tæniæ*, each joint being the seat of a separate ovary; and the *Sponges*, which exhibit in their calcareous and siliceous *spicula* the first rudiment of an internal skeleton, repeat again and again, without modification, in the same individual the same *spiculum*. The *Acrita* offer, as it were, the germs of the higher animal forms, and sketch forth the ideas of the typical condition of the principal subdivisions of the animal kingdom.

As classes of *Acrita* Mr. Owen proposes to regard the *Polygastrica*, the *Spongiæ*, the *Polypi*, the *Acalephæ*, and the *Vers Intestinaux Parenchymateux* of Cuvier, for which latter he proposes the name of *Sterelmintha*.

Among the *Radiata*, for which he uses the name *Nematoneura*, he includes the *Echinodermata* and the *Rotifera*, together with the *Vers Cavitaires* of Cuvier; which latter he subdivides into the *Epizoa* and the *Cœlelmintha*, a term proposed by him to comprise all the *Nematoidea*, together with the genera *Linguatula* and *Sipunculus*.

He passes in rapid review the several systems of the *Cœlelmintha*, and remarks on the generative functions, that the same variations which are met with in the *Sterelmintha* occur in this series also. We have the simple female apparatus without male organs, or the cryptandrous type, in *Sipunculus*; the superadded male glands, but without reciprocal fecundation, in *Linguatula*; and the separate sexes in the *Nematoidea*.

In conclusion, Mr. Owen gives the following list, distributed according to his views of the

ENTOZOA HOMINIS.

Subregnum ACRITA.

Classis (INFUSORIA, Cuv.).

1.	*Cercaria Seminis*	cui locus Semen virile.
2.	*Trichina spiralis*	Musculi voluntarii.

Classis STERELMINTHA.

3.	*Echinocercus Hominis*	Hepar.
4.	*Cysticercus Cellulosæ*	Musculi et cerebrum.
5.	*visceralis*	Viscera generatim.
6.	*Tænia Solium*	Intestina tenuia.
7.	*Bothriocephalus latus*	Intestina tenuia.
8.	*Polystoma Venarum*	Venæ.
9.	*pinguicola*	Ovaria.
10.	*Distoma hepaticum*	Vesica fellea.

Subregnum Nematoneura.

Classis Cœlelmintha.

11.	*Ascaris vermicularis*	Intestinum rectum.
12.	*Lumbricoides*	Intestina tenuia.
13.	*Strongylus Gigas*	Ren.
14.	*Spiroptera Hominis*	Vesica urinaria.
15.	*Trichocephalus dispar*	Cæcum et intestina crassa.
16.	*Filaria branchialis*	Glandulæ branchiales.
17.	*Medinensis*	Substantia cellulosa.
18.	*Oculi*	Oculus.

June 9, 1835.

William Yarrell, Esq., in the Chair.

At the request of the Chairman, Mr. Thompson of Belfast exhibited numerous specimens of *Birds* and *Fishes*, some of which were new to the British, and many to the Irish, Fauna. With reference to these specimens, and to others not in his own possession, he read the following notes.

"Of the following species of *Birds*, *Fishes*, &c., the first four are additions to the British Fauna: the remainder are species hitherto unpublished in the Fauna of Ireland.

Canada Owl, *Surnia funerea*, Dum. An *Owl* of this species, preserved in the collection of Dr. Burkitt of Waterford, was taken on board a collier, a few miles off the coast of Cornwall, in March, 1830, being at the time in so exhausted a state as to allow itself to be captured by the hand. On the arrival of the vessel at Waterford, whither she was bound, the bird was given to a friend of Dr. Burkitt, with whom it lived for a few weeks, and then came into his possession. The very circumstantial account of the capture of this bird given by Captain Stacey of the collier, leaves no doubt of its accuracy.

Lough Neagh Coregonus. In September last a comparison of the Lough Neagh *Coregonus* with the *Vendace* of Loch Meben (whence I procured specimens, through the kindness of Sir William Jardine, Bart.,) proved to me that these species are distinct. The disagreement of the former with the *Gwiniad*, or *Coregonus* of Wales, as described by Pennant, was at the same time very obvious; and from the examination of an individual of the latter species (lately favoured me by Mr. Yarrell) and specimens of the Lough Neagh Fish, I am fully satisfied that they are specifically different.

From the *Gwiniad*, the *Pollan* or Lough Neagh *Coregonus* differs in the snout not being produced; in the scales of the lateral line; in having fewer rays in the anal fin, and in its position being rather more distant from the tail; in the dorsal, anal, and caudal fins being of less dimensions; and in the third ray of the pectoral fin being longest, the first being of the greatest length in the *Gwiniad*.

From the *Pollan*, the *Vendace* or Loch Meben *Coregonus* differs so essentially in its lower jaw being the longer, as well as in its being turned upwards, as to render it unnecessary to draw further comparison.

The *Pollan* is very uniform in size, its ordinary length being about 10 inches: none that I have ever seen exceeded 12. The relative length of the head to that of the body is as 1 to about 3¼: the

depth of the body equal to the length of the head: the jaws equal, both occasionally furnished with a few delicate teeth; the tongue with many teeth: the lateral line sloping downwards for a short way from the *operculum*, and thence passing straight to the tail: nine rows of scales from the dorsal fin to the lateral line, and the same number thence to the ventral fin; the row of scales on the back and that of the lateral line not reckoned: the third ray of the pectoral fin the longest. D. 2+12. P. 16. V. 1+11. A. 2+11. C. 19. B. 9.—*Vertebræ* 59.

Colour to the lateral line dark blue, thence to the belly silvery; dorsal, anal, and caudal fins towards the extremity tinged with black; pectoral and ventral fins of crystalline transparency, excepting at their extremities, which are faintly dotted with black. *Irides* silvery, pupil black.

As not one of the *Coregoni*, of which I can find descriptions, agrees with the Lough Neagh species, I am induced to consider it as new, and venture to propose for it the name of *Coregonus Pollan*, as by this trivial appellation it is invariably known in its native district.

Cephaloptera, Dum. A fish of this singular genus, taken about five years ago on the southern coast of Ireland, and thence sent to the Royal Society of Dublin, is at present preserved in their Museum. In breadth it is about 45 inches. The specimen being imperfect, and the characters of some of the species being ill defined, I hesitate applying to it a specific name. It somewhat resembles the *Ceph. Giorna*, as figured by Risso.

Physalia pelagica, Eschsh. On the 13th of March, 1834, a specimen of this *Physalia* was found by Miss Ball of Youghal, on the coast of the county of Waterford, near Ardmore. When taken up it exhibited great brilliancy of colour. To Mr. Gray I am indebted for the opportunity of consulting the work of Eschsholtz (Syst. der Acaleph.), according to which the *Phys. pelagica* of Lamarck differs from this, being identical with his *Phys. Caravella*. The *Phys. tuberculosa* of Lamarck is considered by Eschsholtz synonymous with his *Phys. pelagica*.

Orange-legged Hobby, Falco rufipes, Bechst. An immature specimen of this bird, shot in the county of Wicklow in the summer of 1832, forms part of the collection of T. W. Warren, Esq., of Dublin.

Snowy Owl, Noctua nyctea, Sav. About the 26th of March, 1835, one of these birds was shot near Portglenone, county Antrim, and came into possession of Dr. Adams of that place, who presented it to the Natural History Society of Belfast: the individual now exhibited is said to have been seen along with it. On the 21st of the same month a bird of this species was seen on an open or heath-covered moor about twenty miles distant from Portglenone, by two of my friends, within a few yards of one of whom it sprung, just as he had fired at a *Snipe*.

In Dublin I subsequently saw a specimen of this *Owl* which had been shot in the county of Mayo, also in the month of March; and I

am credibly informed that a few others were obtained about the same time in different parts of Ireland.

Great spotted Woodpecker, Picus major, Linn. A specimen of *Pic. major*, preserved in the Museum of the Royal Dublin Society, was shot in the vicinity of that city a few years since. In the manuscript Notes of the late Mr. Templeton it is stated that an individual of the same species was sent to him, in August, 1802, from the county of Londonderry.

Little Bustard, Otis Tetrax, Linn. Two birds of this rare species were seen in the county of Wicklow, on the 23rd of August, 1833, and one of them was shot by Mr. Reside, for whom it was set up by Mr. W. S. Wall, Bird Preserver, Dublin.

Velvet Scoter, Oidemia fusca, Flem. In December, 1833, a specimen of this *Duck* was killed at Clontarf, near Dublin. Its occurrence on the Irish coast in one or two other instances has been communicated to me.

Red-necked Grebe, Podiceps rubricollis, Lath. Dr. J. D. Marshall of Belfast informs me that a specimen of this bird, which he possesses, was procured in the neighbourhood of that town in the autumn of 1831.

Great Auk, Alca impennis, Linn. One of these birds, taken in 1834 off the coast of the county of Waterford, is preserved in the collection of Dr. Burkitt of Waterford. It lived in confinement for some months.

In Sampson's 'Londonderry' it is erroneously stated that *Alca impennis* frequents the rocks of that county as well as those of Donegal: the *Razor-bill, Alca Torda*, Linn., which is common to both counties, being omitted in Mr. Sampson's Catalogue, is, I presume, the bird alluded to under the name of *Alca impennis*.

Pomarhine Skua, Lestris Pomarhinus, Temm. Of this *Skua*, three specimens were procured in different parts of Ireland, within a short period, about the commencement of the winter of 1834–5. The first, purchased alive at Youghal, county Cork, on the 12th of October, was caught upon a hook, at sea, and lived for a few weeks, part of which time it was in the Garden of the Zoological Society of Dublin. The second specimen was shot in Belfast Bay, on the 18th of October, and is in the collection of Dr. J. D. Marshall. Both these individuals were immature. The third, an adult bird, was shot from among a flock of *Gulls*, in the Phœnix Park, Dublin, on the 5th of November, and, with the first mentioned, is in the possession of Robert Ball, Esq., of Dublin.

Sapphirine Gurnard, Trigla Hirundo, Linn., is commonly taken on the north-east coast of Ireland: it not unusually attains 2 feet in length. By the Howth (county Dublin) fishing-boats I have seen this species brought ashore in considerable quantity.

Lineated Gurnard, Trigla lineata, Linn. On the 28th of February,

1835, Dr. J. D. Marshall, being attracted by the peculiar colour of a *Gurnard* in Belfast Market, kindly communicated the circumstance to me, and on inspection of the fish, I found it to be the *Trigla lineata*, and learned that it had been taken in Strangford Lough. Its length is 16$\frac{7}{8}$ inches. On the 3rd of March I procured another specimen, but of smaller dimensions, from the same locality.

Long-spined Cottus, Cottus Bubalis, Euphr. This appears to be more common on the Irish coast than *Cott. Scorpius*, Linn. I have taken it off Down, and in Galway Bay, and have seen a specimen of Mr. Ball's from the harbour of Cork. Of eleven specimens of *Cott. Bubalis* and *Cott. Scorpius* examined by me, which were obtained in the north-east, the west, and the south of Ireland, and preserved without any regard to species, eight were of the former, and three of the latter.

One specimen of *Cott. Bubalis*, taken in Belfast Bay, and preserved in the Museum of that town, is 7 inches in length.

Pogge, Aspidophorus Europæus, Cuv. & Val., (*Cottus Cataphractus*, Linn.). Specimens of this fish, from the coast of Down, have been sent to me by Captain Fayrer, R.N.; and in Mr. Ball's collection is one from the coast of Cork.

Bonito, Scomber Pelamys, Linn. Of this species, rarely captured in the British seas, one taken on the coast of Wexford, some years since, was sent in a fresh state to the Royal Dublin Society, and is preserved in their Museum: its length is 29 inches.

Atherine, Atherina Presbyter, Cuv. This is taken plentifully on the coast of Down, especially in Strangford Lough. Of about forty specimens from this locality, which I examined in January last, the average length was 6$\frac{1}{4}$ inches; a few were 7, and one was 7$\frac{1}{4}$ inches long. Mr. Ball informs me that the *Atherine* is not unfrequently taken along with *Sprats* at Youghal, and that on the 14th of September last he saw a shoal of them at Portmarnock, county Dublin, where a stream had formed a pool in the sand below high-water mark.

Smooth Blenny, Blennius Pholis, Linn. This is more commonly to be met with than any other species of fish in the rocky pools on the north-east coast of Ireland: specimens have been sent to me from the south by Mr. Ball; and in Galway Bay, on the western coast, I captured a few individuals in June, 1834.

Wolf Fish, Anarrhichas Lupus, Linn., is occasionally taken on the eastern coast of Ireland. The Museum of the Royal Dublin Society contains a native specimen.

Black Goby, Gobius niger, Linn.? Of the *black Goby*, as generally recognised by British authors, a specimen taken at Youghal has been submitted to me by Mr. Ball. In a paper read before the Linnean Society last year, I showed that the *Gob. niger* of Pennant, and the fish to which Donovan applies the same name, are two di-

stinct species. To the latter Mr. Yarrell has since given the name of *Gob. bipunctatus*.

Sordid Dragonet, Callionymus Dracunculus, Linn. A specimen of this fish, taken at Youghal in August last by Mr. Ball, is in his collection.

Ballan Wrasse, Labrus maculatus, Bloch, occurs commonly, and of a large size, on the coasts of Down and Antrim, often attaining upwards of 20 inches in length.

Striped Wrasse, Labrus variegatus, Gmel., is occasionally taken on the Down and Antrim shores: a specimen from the south has been sent to me by Mr. Ball: and in the Museum of the Royal Dublin Society one is preserved, which was purchased in Dublin Market.

Goldfinny, Crenilabrus Cornubiensis, Yarr. I have seen but one Irish specimen of this fish, which was taken at Youghal by Mr. Ball. The proportion of spiny to soft rays in its dorsal fin is but 13+10; otherwise it agrees with this fish as commonly described.

Salmo ferox, Jard. & Selby. A large species of *Salmo*, found in Lough Neagh, and known there by the name of *Buddagh*, has long attracted attention.

In Harris's 'History of the County of Down', published in 1744, it is remarked (p. 236), 'This *Buddagh* seems to be the same fish found in the lake of Geneva, and called by Gesner and Aldrovandus *Trutta lacustris*.' In Sampson's 'Londonderry', and Dubourdieu's 'Down', it appears as *Salmo lacustris*. However, upon seeing a specimen of the Loch Awe trout, named *Salmo ferox* by Sir William Jardine and Mr. Selby, at the last Meeting of the British Association, I recognised it as identical with the *Buddagh* of Lough Neagh.

Small-headed Dab, Platessa microcephala, Flem., is occasionally brought from the Down coast to Belfast Market, where it is known by the name of *Lemon Sole*.

Whiff, Pleuronectes megastoma, Don., occurs, though very rarely, on the north-east coast of Ireland.

Pleuronectes punctatus, Penn. On the 25th of March, 1835, I procured a specimen of this fish, 6¼ inches in length, from Ardglass, county Down, where it must be very rare, being quite unknown to the fishermen.

Ocellated Sucker, Lepadogaster Cornubiensis, Flem. The only Irish specimen of this fish which I have seen was taken by Wm. H. Harvey, Esq., of Limerick, on the coast of Clare.

The number of fin-rays in this specimen differs very much from that stated by Pennant and Donovan to exist in the *ocellated Sucker*:

Pennant gives . . . . . D. 11. A. 9. V. 4;
Donovan . . . . . D. 11. A. 10. P. 17. C. 6;
Mr. Harvey's specimen has D. 20. A. 11. V. 4. P. 19. C. 14. B. 6;

and exhibits, in addition to the two filaments which appear before each eye, a third fleshy appendage placed nearer to the eye, and unconnected with the others.

Notwithstanding these discrepancies, the general accordance of Mr. Harvey's fish with the figures of the *ocellated Sucker* given by the authors above quoted, and its possessing the character whence the trivial name has been derived, make me unwilling, without further investigation, to consider the species distinct.

A notice of two specimens of *Lepadogaster bimaculatus*, Flem., having occurred to me on the coast of Down, was, early in the present session, communicated to the Linnean Society, it being at the same time remarked that the spots from which the species had obtained its scientific as well as trivial name were in both instances wanting. Since that time I, on one occasion, took upwards of a dozen specimens of this fish, by deep dredging in Belfast Bay: one or two of these were also immaculate.

Leptocephalus Morrisii, Penn. By the kindness of scientific friends I am enabled to mention the occurrence of six specimens of *Lept. Morrisii* on the coast of Ireland. Mr. Ball has thus written me respecting it: 'The first I saw was at Cove, in 1809. ..... I was at the capture of a second at Clonakilty, in 1811. I caught one myself at Youghal, in 1819, and procured another which was taken there. The fifth, the specimen which I have preserved, was taken in a shrimp-net, at Youghal also, in 1829; the four others having been found under stones, near low-water mark.' Dr. J. L. Drummond informs me that when in Bangor, county Down, in June, 1831, a specimen of *Lept. Morrisii*, about 4 inches in length, was brought to him: it had been just taken from a pool left in the sand by the ebbing tide, and was almost perfectly transparent.

Syngnathus Ophidion, Linn. Of this fish I have seen a few specimens, which were obtained by Mr. G. C. Hyndman at the entrance of Strangford Lough, in March, 1832.

Ammocœtes branchialis, Flem. I have specimens of this fish from the county of Kildare.

The oceanic shell *Ianthina exigua*, Sow., which was, I believe, for the first time noticed in 1834, as occurring on the English coast (Turton, in Mag. of Nat. Hist., vol. vii. p. 352), and never before on that of Ireland, was obtained in considerable abundance in September, 1834, at Kilkee, on the coast of Clare, by Mrs. James Fisher, of Limerick."—W. T.

Mr. Thompson also read the following notes respecting two *Birds*, which he regarded as interesting on account of the rarity of their occurrence.

Scolopax Sabini, Vig. The specimen exhibited of this very rare bird is one of the four individuals noticed by Mr. Yarrell in a paper on British *Snipes*, which appeared in the 'Magazine of Natural Hi-

story' for 1830 (vol. iii. p. 29). It is there merely mentioned as "a third specimen, lately mounted by a London bird preserver", and no particulars respecting it have yet appeared. It was shot by Captain Bonham of the 10th Hussars (who most kindly ordered it to be sent hither from Brighton for my inspection), at the end of November or beginning of December, 1827, near Garvagh, in the county of Londonderry, being the second individual killed in Ireland. In a letter to a mutual friend, Captain Bonham remarks of this bird, that it sprung from the side of a high heathery hill, from which *common Snipes, Scol. Gallinago,* Linn., were at the same time raised, but that it did not call as they do. His want of success in obtaining it before the third shot afforded Captain Bonham an opportunity of remarking its disregard for his presence, which was manifested by its alighting quite near again, after being fired at, in the manner of the *Jack Snipe, Scol. Gallinula,* Linn.

Larus Sabini, Sab. A third specimen of this bird occurred last autumn in Ireland. It was shot on or about the 15th of September, 1834, on the shore of Belfast Bay, near Claremont, the residence of Mrs. Clewlon, in whose possession it now is. It is a young bird of the year, and in plumage similar to the other two individuals of this species, which I had the satisfaction of announcing to the Linnean Society last year as having been obtained in Ireland.—W. T.

Mr. Thompson subsequently read the following notice respecting the

Larus Argentatoides, Swains. & Rich. "On submitting six mature specimens of the *Herring Gull* of the north of Ireland to a critical examination, similar to that pursued in the second volume of the 'Fauna Boreali-Americana' by Mr. Swainson and Dr. Richardson, I ascertained their identity with the *Lar. Argentatoides* of that work (vol. ii. p. 417). Between the largest and the smallest of these specimens there was a difference in total length of from 22½ to 24½ inches, and in their *tarsi* of from 27 to 32 lines. The second quill in two individuals, exhibited, in addition to the white tip, 'a round white spot on its inner web'; in this respect agreeing with the *Lar. Argentatoides* as described in the work referred to, and previously by C. L. Bonaparte in his 'Synopsis of the Birds of the United States' (Ann. of Lyc. of New York, vol. ii. p. 360); the second quill in three of these specimens wants this white spot, in which particular they agree with the *Lar. argentatus,* as contradistinguished by Bonaparte from the *Lar. Argentatoides*: the same quill in the sixth specimen is in an intermediate state, a round white spot, not more than ⅛ of an inch across, appearing on it in the one wing; the second quill of the other wing in the same individual exhibiting a white spot fully half an inch in diameter: thus proving that this marking is so inconstant that it should not be relied on as a character."—W. T.

Mr. Thompson finally exhibited, from the collection of Mr. Ball,

the first specimen of the *American Cuckoo, Coccyzus Americanus*, Bon., recorded in the British Catalogue ; and showed its identity of species by comparing it with an American specimen exhibited for that purpose.

He also exhibited one of the two specimens of the *Noddy, Sterna stolida*, Linn., noticed by him before the Linnean Society last year as having been obtained near the coast of Ireland.

The exhibition was resumed of the previously undescribed species of *Shells* contained in the collection of Mr. Cuming. Those brought on the present evening under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby, and comprised the following species of the

Genus Pinna.

Pinna rugosa. *Pinna testá magná, rudi, trigoná, longitudinaliter obtusè radiatim costatá, posticè latá, rotundatá; costis posticè squamiferis, squamis magnis, elongatis, irregularibus, subrecurvis, foliaceis, tubulosis; margine dorsali recto, antico ventrali subcoarctato: long.* 9·, *alt.* (*ad partem posticam*) 6· *poll.*

Hab. in Sinu Panamensi. (Isle of Rey.)

One of the specimens obtained by Mr. Cuming measures eighteen inches in length. They were procured from sand banks.—G. B. S.

Pinna maura. *Pinna testá oblongá, tumidá, fusco-nigricante, longitudinaliter radiatim costatá; costis parvis, obtusis, subobliteratis, posticè squamiferis, squamis fornicatis, subreflexis, ventralibus minoribus; margine dorsali rectiusculo, postico subrotundato, ventrali postico subventricoso, ventrali antico declivi: long.* 10·5, *alt.* (*ad partem posticam*) 5·5 *poll.*

Hab. apud Panamam.

Obtained from muddy banks.—G. B. S.

Pinna tuberculosa. *Pinna testá subtrigoná, altá, fusco-nigricante squamulis pallidioribus, obsoletè subradiatá, radiis squamuliferis, squamulis foliaceis, brevibus, posticè incurvis, fornicatis, tubercula simulantibus; margine dorsali recto, postico subdeclivi, ventrali subrotundato; angulis posticis rotundatis; vertice subadunco: long.* 8·, *alt.* (*ad partem posticam*) 6· *poll.*

Hab. apud Panamam.

Obtained, like the last species, from muddy banks.—G. B. S.

Pinna alta. *Pinna testá trigoná, flabelliformi, radiatim longitudinaliter costellatá; costellis angustis, muricatis (posticè præcipuè), squamulis paucis, longioribus, ventralibus subobsoletis; margine dorsali recto, postico alto rotundato, ventrali ventricoso; vertice subadunco: long.* 5·5, *alt.* (*ad partem posticam*) 4·5 *poll.*

Hab. in Sinu Honduras.

Found on sand banks.—G. B. S.

Pinna lanceolata. *Pinna testá lanceolatá, supernè radiatim lon-*

gitudinaliter costellatâ, infrà ferè muticâ; costellis distantibus, muricatis, squamuliferis, squamulis distantibus, subrecurvis, longioribus; margine dorsali recto, postico rectiusculo, subdeclivi, ventrali subventricoso: long. 7·75, *alt.* (*ad partem posticam*) 3·5 *poll.*

Hab. apud Puerto Portrero.

Dredged from sandy mud at a depth of thirteen fathoms.—G. B. S.

PINNA SQUAMIFERA. *Pinna testâ sublanceolatâ, corneâ, costellis paucis squamiferis longitudinaliter radiatâ, squamis subdistantibus, majoribus, latiusculis, subreflexis, rotundatis, hyalinis; margine dorsali recto, postico ventralique rotundatis, continuis; areâ ventrali rugosâ: long.* 6·, *alt.* (*ad partem posticam*) 3· *poll.*

Hab. ad Caput Bonæ Spei.—G. B. S.

PINNA AFRA. *Pinna testâ lanceolatâ, corneâ, subradiatim costellatâ et fusco pictâ; costellis subobsoletis, posticè squamuliferis, squamulis latiusculis, laxis, sparsis; margine dorsali ventralique æqualibus, postico brevi, subrotundato: long.* 6·, *alt.* (*ad partem posticam*) 2·5 *poll.*

Hab. ad Caput Bonæ Spei.—Communicavit Dom. Ed. Verreaux. —G. B. S.

Mr. Gray exhibited specimens of two *Corals*, which he regarded as the types of two genera not previously distinguished. He characterized them as follows:

ERRINA.

Corallium solidum, calcareum, durum.

Cellulæ tubulares, prominentes, supernè longitudinaliter fissæ, ad apices ramorum undique sparsæ: fossâ profundâ minimâ sæpe sub basin cellularum sitâ.

Polypus adhuc incognitus.

The type of this genus is the *Millepora aspera* of Esper (Supp., i. t. 18. Lam., ii. p. 201.).

It is probable that the *Mill. tubulifera*, Lam., and the *Mill. pinnata*, Ej., are also referrible to it.

ANTHOPORA.

Corallium durum, lapidosum; superficie granulosâ, scabrâ, vix porosâ.

Cellulæ sparsæ, subcylindricæ, suprà concavæ 6-radiatæ, infrà 6-lamellosæ; lamellis in centro stylifero coadunatis; stylo vix prominente; sulcis aliquibus minoribus inter radios.

The outer coat of the coral is hard and stony, and the centre of its branches is cellular, and formed of six-rayed branching stars. The stars are elongate, tubular, and chambered, like those of *Pocillopora*.

This genus agrees in the number of the plates of the cells, the central style, and the solidity of the coral, with M. de Blainville's

Sideropora, but differs from it in the rays of the stars not being produced. By the latter character, and by the number of its rays, it differs from the genus *Stylaster*, Gray. From *Stylopora*, Schweigg., it differs by the central style of the cells not being exserted, and by the coral being solid instead of porous.

The form of the stars is best seen at the tips of the branches, their mouths becoming in the older parts so contracted as to obscure the central style. When the coral is worn, the style is distinctly visible.

1. Anthopora cucullata. *Anth. corallio solido, ramoso; ramis compressis, subpalmatis, ad apices dilatatis rotundatis compressis; cellularum margine superiore producto, cucullato.* (*Animal viridescens*, Ehr.)
Millepora alcicornis, *Forsk.*
Millepora digitata, *Pall.*
Porites scabra, *Lam.*
Pocillopora Andreogyni, *Aud.*
Porites digitata, *Ehr.*
Hab.
The details of this species given by M. Savigny in the fourth Plate of the *Polypes*, forming part of the great work on Egypt, leave little to be desired for its elucidation.

2. Anthopora elegans. *Anth. corallio solido, ramoso; ramis subcylindricis rarissimè subcompressis, attenuatis, ad apices rotundatis; cellularum margine circulari.*
Porites subseriata, Ehr.?

Mr. Owen read a "Note descriptive of a new species of *Tapeworm*" discovered in the small intestines of the *Flamingo, Phœnicopterus ruber*, Linn., and to which he had given the name of *Tænia lamelligera* when he first brought it, in 1832, under the notice of the Committee of Science and Correspondence of the Society (Proceedings, Part II. p. 143). His principal object in again adverting to the subject was to lay before the Meeting a series of drawings which he had prepared of this remarkable *Intestinal Worm*, which bears generally a superficial resemblance to the *Annelidous Nereis lamelligera*, Pall.

Mr. Bell read a paper entitled "Observations on the Genus *Cancer* of Dr. Leach (*Platycarcinos*, Latr.), with Descriptions of three New Species."

He commences by remarking on the subdivisions which the increase of our knowledge has rendered necessary in the genus *Cancer* as established by Linnæus, and by giving his reasons for preferring the appropriation of that name, proposed by Dr. Leach, to the smaller group comprehending the *large edible Crab* of our coast, rather than the assigning to it the appellation of *Platycarcinos*, suggested by Latreille; a name which, in fact, is objectionable, independently of the peculiar fitness of the other, on account of the shells of the animals

of this group not being flat, as would seem to be implied by it. He then characterizes and describes the genus as now restricted: and subsequently characterizes the several species referrible to it, including the one generally known in the markets; a second, which was originally described by Say; and three others, now for the first time noticed, which were obtained by Mr. Cuming on the coast of Chili, and which form part of the Society's Collection, having been presented to it, together with the whole of his *Crustacea*, by that gentleman: the new species are also described in detail. Mr. Bell calls particular attention to the fact, that nearly every one of the structural characters indicated by Dr. Leach in the *common Crab* as specific, are, in reality, generic marks; all the known species agreeing, without exception, in the margin on each side having nine, or more properly ten, divisions (the last being obsolete); in the front being trifid; and in the carapace being granulated.

The characters of the species are as follows:

Genus Cancer, Leach.

1. Cancer longipes. *Canc. testâ leviter granulatâ, sparsim punctatâ; margine antico-laterali decem-lobato, lobis contiguis, ad marginem minutè denticulatis; manibus lævibus, extùs lineis quinque impresso-punctatis; pedibus longioribus; abdominis articulo ultimo æquilateraliter triangulari.*

Long. 3½; lat. 6 unc.

Hab. apud Valparaiso, *Dom. Cuming.*

Suprà pallidè ruber flavo obsoletè punctatus; subtùs flavescens. Chelarum apices nigrescentes.

2. Cancer Edwardsii. *Canc. testâ granulatâ; margine antico-laterali decem-lobato, lobis latis, contiguis, profundè dentatis; manibus suprà obsoletè tuberculoso-carinatis; maris abdominis articulo ultimo anticè producto.*

Long. 5¾; lat. 7½ unc.

Hab. apud Valparaiso, *Dom. Cuming.*

Suprà rufescenti-brunneus; subtùs flavus rufescente varius.

3. Cancer dentatus. *Canc. testâ granuloso-scabrâ, hispidâ; margine antico-laterali decem-dentato, dentibus lanceolatis, denticulatis; manibus tuberculoso-bicarinatis, extùs lineis quinque longitudinalibus granulatis; pedibus pilosissimis.*

Long. 4; lat. 5½ unc.

Hab. apud Valparaiso, *DD. Cuming et Miller.*

Suprà saturatè rufescenti-brunneus flavo (præsertim in junioribus) varius; subtùs rufus flavo varius.

4. Cancer irroratus, Say. *Canc. testâ leviter granulatâ; margine antico-laterali decem-lobato, lobis contiguis, quadratis, ad marginem denticulatis; manibus compressis, dentato-bicristatis.*

Hab. ad oras Floridarum, *Say*, et Americæ Australis, *DD. Cuming et Miller.*

5. Cancer Pagurus, Auct. *Canc. testâ granulatâ; margine antico-laterali decem-lobato, lobis quadratis, contiguis, integris; manibus lævibus.*
Hab. ad oras Magnæ Britanniæ et Europæ Occidentalis.

In illustration of Mr. Bell's paper the several *Crabs* described in it were exhibited, and it was stated that drawings of them would be prepared.

Mr. Bell subsequently read a paper "On *Microrhynchus*, a new Genus of *Triangular Crabs*." Its characters are thus given:

Microrhynchus.

Testa subtriangularis, posticè rotundata, anticè rostro brevissimo terminata.
Oculi pedunculo elongato multo crassiores, retractiles.
Orbita suprà unifissa, extrorsùm unidentata.
Antennæ exteriores ad latera rostri insertæ, articulo basilari rostro vix breviore.
Antennæ interiores in fossulâ integrâ anticè apertâ et ad apicem rostri ferè attinente locatæ.
Pedipalpi externi caulis interni articulo secundo cordiformi, anticè profundè emarginato.
Pedes antici maris corpore vix longiores, reliquis multo crassiores, digitis arcuatis; fœminæ minimi: *pedes octo posteriores* subconsimiles, corpore fere duplo longiores, unguibus leviter curvis.
Abdomen maris 7- fœminæ 5-articulatum (hujus articulis tribus ultimis conjunctis).
Genus *Camposciæ* affine, et verosimiliter *Camposciam* inter et *Inachum* collocandum.

1. Microrhynchus gibbosus. *Micr. testâ gibbosâ; rostro bifido.*
Long. testæ 6; lat. 5 lin.
Hab. ad Insulas Gallapagos dictas.
Flavescenti-albidus.

2. Microrhynchus depressus. *Micr. testâ depressâ, granulatâ; rostro minuto, triangulari, integro.*
Long. testæ 6; lat. itidem 6 lin.
Hab. cum præcedente.
Albidus carneo obsoletissimè tinctus.

The reading of the paper was illustrated by the exhibition of the specimens on which it is founded, and which form part of the same collection with the *Crabs* before referred to. Mr. Bell stated that he regarded it as part of a Descriptive Catalogue of the *Crustacea* of the western coast of South America, on which he is now engaged, and the materials for which will be chiefly furnished by the collection presented to the Society by Mr. Cuming.

June 23, 1835.

Dr. Horsfield in the Chair.

A letter was read, addressed to the Secretary by Keith E. Abbott, Esq., Corr. Memb. Z.S., dated Trebizond, February 14, 1835. It referred principally to a collection of skins of *Mammalia* and *Birds*, and of preserved *Reptiles*, *Fishes*, and *Insects*, formed chiefly in his neighbourhood by the writer, and presented by him to the Society. It also referred to some living animals presented by him at the same time. A portion of the collection was obtained by Mr. Keith Abbott from the vicinity of Erzeroun, to which city he states his intention of proceeding shortly with the view of taking up his residence there for some time.

The collection was exhibited.

Among the *Mammalia* Mr. Bennett pointed out, as apparently hitherto undescribed, a "field Rat", for which he proposed the name of

Mus latipes. *Mus caudâ corpore multo longiore ; suprà plumbeo-niger, subtùs pallidior ; pedibus cinereis.*

Long. corporis cum capite 5¼ unc. ; *caudæ*, 8 ; *auriculæ*, 8 lin. ; *pedis postici* cum unguibus, 1⅛ unc.

He remarked that this new species appears to be most closely allied to the *Mus Alexandrinus*, Geoff., with which it nearly agrees in the comparatively great length of its tail. Its colouring is, however, much darker than that of the species referred to. The hairs over the whole of the body are very long and silky : the short rigid hairs on the tail, as is stated to be the case also in *Mus Alexandrinus*, are comparatively numerous.

The other *Mammalia* comprised a *Shrew*, *Sorex* ; a *Hedgehog*, *Erinaceus* ; a *Marten*, *Mustela Foina*, Linn. ; and a *Badger*, *Meles Taxus*, Storr. The skin of the latter was remarked on as particularly interesting, not only on account of its eastern locality, but also for the softness and length of its comparatively dense fur ; for its greater paleness, depending on the extent of the whitish or fulvous tips of the separate hairs ; for the copiousness of the under soft woolly coat of fur with which the animal is covered at the base of the longer setaceous hairs ; and for the diminished breadth, as compared with ordinary European specimens, of the black marking of the under surface.

A specimen of a *Zorille*, *Mustela Zorilla*, Desm., contained in the collection, is apparently scarcely different, notwithstanding the great difference of locality, from an individual obtained, by the kindness of Sir Thomas Reade, from Northern Africa. Respecting this animal Mr. Keith Abbott states, "It is called, in Turkish, *Gheurjen*.

I had intended sending it to you alive, but it died a few days ago. It was sent to me from the neighbourhood of Erzeroun: I am not aware of there being any in this immediate neighbourhood. It was of a particularly savage nature, and although I had kept it for several months, I was never able to tame it in the least: it would bite whenever it could."

"I send you likewise," he adds, "a little *Marmot* alive in a small cage. It came from Erzeroun, in the neighbourhood of which, I understand, there are vast numbers." It is apparently very nearly allied to *Citillus concolor*, *Arctomys concolor*, Temm., but may probably, Mr. Bennett remarked, be specifically distinct. It may be characterized as follows:

CITILLUS XANTHOPRYMNA. *Cit. brunneo-grisescens flavo irroratus, subtùs albescens; prymnâ cauddque rufescenti-flavidis, hâc rotundatâ, brevi, pilosissimâ; pedibus lineâque oculum cingente albis; auriculis inconspicuis.*

Long. corporis circiter 7 unc.; *caudæ*, 2.

The *Birds* of the collection were brought under the notice of the Meeting, at the request of the Chairman, by Mr. Gould. He observed on each of them as regarded its geographical distribution, considering the exhibition as a continuation of those of June 24 and November 25, 1834. (Proceedings, Part II. pp. 50 and 133.) The following species, exhibited on the present occasion, were not comprised in either of the former collections: and the total number is thereby raised to sixty-seven species obtained in the neighbourhood of Trebizond, a locality which is particularly interesting on account of its intermediate position between Western Europe and India.

Alcedo Ispida, Linn. Inhabiting Europe generally, but not seen by Mr. Gould in collections from India or Africa.

Turdus musicus, Linn. Not previously observed out of Europe.

Curruca atricapilla, Bechst. Inhabiting Europe generally, but not met with in Indian collections.

Curruca cinerea, Bechst. Similarly circumstanced with the last.

Sylvia Trochilus, Lath. Inhabiting Europe generally, and the western portions of India.

Regulus cristatus, Cuv. Mr. Gould had not previously seen this bird, except in European collections.

Motacilla melanocephala. This is considered by some ornithologists as a variety of the *Mot. flava* of continental writers. It is never found in the western or northern parts of Europe.

Anthus pratensis, Bechst. Common throughout the whole of Europe, and tolerably so in the western parts of India.

Phœnicura Suecica, Jard. & Selb. Inhabits Europe and India. Only two specimens of it have been taken in England.

Querquedula Crecca, Steph. Dispersed over the whole of Europe, India, and the northern regions of Africa; but not found in America.

Colymbus Arcticus, Linn. Inhabits the whole northern hemisphere. The Trebizond specimen is young.

Larus canus, Linn. Inhabiting Europe generally.

Larus fuscus, Linn. Inhabiting the European and American seas.

Larus ridibundus, Linn. Inhabiting the whole of Europe, India, and North America.

The *Fishes* forwarded by Mr. Keith Abbott are all from the salt water. They include twenty species. Respecting them he writes: "Had I received your letter sooner I might have collected a great many more fishes, but the season was gone by. There is no fish-market in this place, and the people are by no means expert in the art of catching them. The only kind of fish caught in any quantity just now is the *Anchovy*, of which there are two specimens in the jar of spirits: these are taken in astonishing quantities. The *Herring*, *Mackarel*, and *Mullet* (*red* and *grey*), are very abundant in this sea; as likewise the *Turbot*, of which I send a specimen. *Salmon* and *Sturgeon* are likewise occasionally caught here."

In bringing these *Fishes* under the notice of the Society, Mr. Bennett remarked that there were among them several which required a more careful comparison with Mediterranean species than he had been, at present, enabled to give to them; but that the following appeared to him to be distinct from any which had hitherto been described.

TRIGLA PAUCIRADIATA. *Trigla pinnâ priore dorsali sex-radiatâ; sulco dorsali fortiter armato: pinnis pectoralibus magnis, internè cæruleis, fasciis undulatis apicem versus maculâque infra medium saturatioribus, hâc albo guttulatâ.*

D. 6, 16. A. 15.

Long. tot. 10½ unc.; *capitis*, 2½; capitis alt. 1½; cranii lat. 1.

Caput leniter declive: ossa suborbitalia anticè vix prominentia, dentibus tuberculisve parvis 4—5 munita.

DENTEX RIVULATUS. *Dent. ovali-oblongus; capite leniter proclivi; oculo majusculo: suprà aureus, maculis præsertim ad lineam lateralem nigrescentibus, vittis laterum argenteis flexuosis hinc et hinc cancellatis.*

D. 11+11. A. 3+9. P. 15.

Long. tot. 6½ unc.; alt. max. 1½.

A *Dent. macrophthalmo*, Cuv. et Val., differre videtur corpore magis elongato, capite vix tumido, oculo minore, pinnâ pectorali in medio magis elongato subrotundato, caudali magis bifurcâ; necnon coloribus picturâque, quâ *Scolopsidem cancellatum*, Benn., quodammodo simulat. Maxillæ inferioris, æquè ac superioris, dentes antici quatuor majores.

GOBIUS SORDIDUS. *Gob. pinnâ dorsali secundâ priore altiore; caudali pectoralique rotundatis: corpore vario; pinnis maculatis, anali ventralibusque nigro* (*illâ latè*) *marginatis.*

D. 6, 1+17. C. 13. A. 13. P. 17.

CRENILABRUS FRÆNATUS. *Cren. ovatus, guttatus punctatusque, fasciis quatuor nigrescentibus maxillam inferiorem cingentibus: pinnâ caudali rotundatâ.*

D. 14+10. A. 3+9.

Long. tot. 4$\frac{1}{7}$ unc.; alt. corp. 1$\frac{1}{7}$.

Totus, præter pinnis pectoralibus ventralibusque, varius; sed maculis insignibus nullis notatus. Dentes subæquales, commissuram versùs gradatim decrescentes.

ALOSA IMMACULATA. *Al. maxillis dentiferis, immaculatus; pinnis ventralibus dorsalis initio paullò posterioribus.*

D. 17. A. 18.

Long. tot. 10$\frac{1}{7}$ unc.; alt. max. 2$\frac{1}{7}$; long. capitis 2$\frac{1}{7}$; a rostro ad lineam initii pinnæ dorsalis, 4$\frac{1}{7}$.

RHOMBUS STELLOSUS. *Rhomb. subrotundus, utrinque tuberculoso-muricatus; oculis subdistantibus, intervallo vix convexiusculo; maxillâ superiore vix uncâ armatâ.*

Long. (pinnis exclusis) 7$\frac{1}{7}$ unc.; lat. 5.

A latere sinistro squamis parvis adhærentibus vestitus; tuberculisque osseis, magnis, acutiusculis, ad basin scabroso-dilatatis, sparsis, vix numerosis armatus: a latere dextro tuberculis itidem osseis, minoribus, acutiusculis, basin versus cute vaginatis, subnumerosis donatus. Capitis tubercula a latere dextro pauca, minima; a latere sinistro numerosa, majora, præsertim ad genam; inter oculos conferta. Pinna pectoralis rotundata, 12-radiata: caudalis etiam rotundata. Linea lateralis ad initium latè curva, dein recta. Os quadrato-prominulum.

Corpus e latere sinistro unicolor, nigrescens? Pinnæ fuscæ, hinc et hinc hyalescentes, nigrescente guttatæ et punctatæ.

SYNGNATHUS TYPHLOIDES. *Syngn. pinnis omnibus præditus; corpore heptagono; capite compresso, elongato, suprà plano; ano in medio.*

Long. tot. 8$\frac{1}{7}$ unc.; *capitis*, 1$\frac{1}{7}$.

A *Syngn. Typhle*, Linn., differt situ ani, longitudine capitis, præsertim ante oculos, numeroque radiorum et scutorum.

	Syngnathus Typhle.	Syngnathus Typhloides.
Long. a rostro ad humerum	1·4	1·75
ab humero ad anum	2·2	2·6
ab ano ad pinnam caudalem ..	4·3	3·9
capitis ante orbitam	·77	1·1
Alt. rostri minima	·15	·15
Scuta ante anum	17	17
post anum	36	33
Radii pinnæ dorsalis	43	35

In addition to the collections already referred to, Mr. Keith Abbott presented at the same time to the Society a "cock and two hens of the *Fowls* of Herat in Khorassaun, a breed which is," he believes, "unknown in Europe. They are young birds of the real Herat race." These, it was stated, are apparently identical with the *Kulm Fowl* of Dukhun and the *Malay Fowl*, the *Gallus giganteus*, Temm.

A large collection of skins of *Birds* formed at Travancore by P.

Poole, Esq., and presented by him to the Society, was exhibited. Mr. Gould, in bringing it, at the request of the Chairman, under the notice of the Society, remarked upon it as distinguished from all the collections which he had hitherto seen from India, by its possessing not even one European species, and only three or four which occur in Africa; a peculiarity probably attributable to its having been obtained in so southern a locality. He subsequently called the attention of the Meeting to each species contained in the collection, and pointed out among them several which he regarded as being hitherto undescribed.

A large drawing made in Madeira by Miss Young of the *Fish* described by the Rev. R. T. Lowe, in the Second Part of the 'Transactions' (page 123), under the name of *Alepisaurus ferox*, was exhibited. It was taken from a perfect specimen, and consequently showed the correct form of the caudal fin, a part which was mutilated in the individual originally described: its form is very remarkable, the upper lobe being greatly prolonged and falciform. The drawing also showed correctly the form of the outline of the high dorsal fin, which differs from that originally represented.

The exhibition was in illustration of a Paper entitled "Additional Observations on *Alepisaurus*: by the Rev. R. T. Lowe, Corr. Memb. Z.S."

The exhibition was resumed of the undescribed *Shells* contained in Mr. Cuming's collection. Those brought on the present occasion under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby and by Mr. W. Lytellton Powys. They comprised the following species.

Genus Pandora.

Pandora brevifrons, Sow., Species Conchyliorum, Part II. Tab. Pand. secund. figg. 25, 26. *Pand. testâ elongatâ, tenuissimâ, hyalinâ, albâ; latere antico breviore, rotundato, supernè subangulato; latere postico longiore, rostrato, subtruncato; margine dorsali recto, ventrali rotundato; dente in valvâ planulatâ unico, minimo: long.* 0·9, *lat.* 0·15, *alt.* 0·35 *poll.*

Hab. apud Panamam.

Obtained from a sandy bottom, at the depth of ten fathoms.—G. B. S.

Pandora arcuata, Sow., Ibid., figg. 27, 28. *Pand. testâ ovatâ, crassiusculâ, opacâ, margaritaceâ; latere antico breviore, rotundato, postico rostrato; margine dorsali arcuato, ventrali rotundato; linea impressâ obsoletâ ex umbone ad marginem ventralem decurrente: long.* 1·, *alt.* 0·6 *poll.*

Hab. apud Sanctam Elenam.

Found on the sands.—G. B. S.

Pandora discors, Sow., Ibid., figg. 29, 30. *Pand. testâ ellipticâ, depressâ, albicante, opacâ; latere antico breviore, postico altiore; margine dorsali postico subarcuato, antico rotundato, ven-*

trali rotundato posticè ventricoso; valvâ sinistrâ posticè radiatim lineatâ, carinâ prope marginem dorsalem posticum conspicuâ: long. 0·55, *lat.* 0·06, *alt.* 0·4 *poll.*

Hab.

PANDORA CEYLANICA, Sow., Ibid., figg. 20—22. *Pand. testâ elongatâ, depressâ, subflexuosâ, posticè rostratâ, margine superiore postico arcuato recurvo, anticè dilatatâ; dentibus duobus validis et laminâ marginali in valvâ planulatâ, dente unico fornicato in alterâ: long.* 1·1, *lat.* 0·1, *alt.* 0·6 *poll.*

Hab. in Mari Ceylanico, et apud Insulam Muerte, Colombiæ Occidentalis.

Mr. Cuming has a single specimen obtained, at the latter locality, from a depth of eleven fathoms.—G. B. S.

PANDORA RADIATA, Sow., Ibid., figg. 23, 24. *Pand. testâ ovatâ, depressiusculâ, albâ, margine superiore postico recto; latere postico longiore, subtruncato; margine ventrali rotundato; latere antico parvo; valvâ planulatâ radiatim rufo-lineatâ: long.* 0·6, *lat.* 0·15, *alt.* 0·35 *poll.*

Hab. apud Insulam Muerte, Colombiæ Occidentalis.

Dredged from sandy mud, at the depth of eleven fathoms.—G. B. S.

Genus BUCCINUM.

BUCCINUM MODESTUM. *Bucc. testâ ovato-fusiformi, albidâ aut luteo-rufescente, strigis longitudinalibus confluentibus rubro-castaneis ornatâ, anfractu ultimo albo fasciato, basi sulcato; anfractibus* 8, *spiraliter striatis et supernè lineis impressis bicingulatis; aperturâ elongatâ; labio externo varicoso, intùs leviter striato: long.* 1·15, *lat.* 0·5 *poll.*

Hab. ad oras Americæ Centralis.

Dredged from muddy gravel in the Bay of Montija, at a depth varying from seven to seventeen fathoms.—W. L. P.

BUCCINUM CUMINGII. *Bucc. testâ ovato-elongatâ, subturritâ, tenui, rufo-stramineâ, maculis parvis saturatioribus striisque albidis elevatiusculis transversis ornatâ; anfractibus* 7—8, *longitudinaliter costatis, costis anfractûs penultimi evanescentibus, ultimi nonnullis; columellâ subrectâ, infernè spiraliter plicatâ; labio externo tenui, intùs lævi: long.* 1·25, *lat.* 0·5 *poll.*

Hab. ad littora insularum Oceani Pacifici.

A single specimen of this very elegant and delicate species was collected by Mr. Cuming on the sands at Grimwood's Isle.—W. L. P.

BUCCINUM CATENATUM. *Bucc. testâ ovato-oblongâ, tenui, roseo-albicante, spiraliter tenuissimè striatâ, basi sulcatâ; anfractibus* 6—7, *convexis, superioribus longitudinaliter costatis, tribus ultimis maculis parvulis nivosis per series transversas dispositis; aperturâ lævi, nitidâ; labio externo subcrenulato: long.* 0·75, *lat.* 0·3 *poll.*

Hab.

I have only seen one specimen of this interesting species, which I have reason to believe was brought from the Mauritius.—W. L. P.

Buccinum succinctum. *Bucc. testâ ovato-pyramidali, tenui, spiraliter costatâ, inter costas tenuissimè striatâ, lacteâ; anfractibus 7—8, convexis, ultimo spirâ vix majore; aperturâ ovali; columellâ flexuosâ; labio externo intùs sulcato: long.* 0·75, *lat.* 0·3 *poll.*

Hab. ad littora Insulæ Mauritii.—W. L. P.

Genus Nassa.

Nassa nodifera. *Nassa testâ ovato-acuminatâ, subturritâ, albescente, longitudinaliter costatâ, et spiraliter impresso-striatâ; anfractibus supernè angulatis, costis ad angulum nodoso-tuberculatis; aperturâ albâ, nitidâ; labio externo intùs leviter striato: long.* 0·65, *lat.* 0·35 *poll.*

Hab. ad Insulas Gallapagos et ad littora Panamæ.

Found in coral sand in from six to ten fathoms.—W. L. P.

Nassa concinna. *Nassa testâ ovato-conicâ, peracutâ, pallidè fulvâ fasciis saturatioribus cinctâ, longitudinaliter creberrimè undatim plicatâ, striis impressis contiguis eleganter decussatâ; anfractibus 8—9, rotundatis, ad suturas granulis moniliformibus ornatis; aperturâ ovali; columellâ subrugosâ; labio extùs marginato, intùs sulcato: long.* 0·8, *lat.* 0·4 *poll.*

Hab. in Polynesiâ. (Toobouai.)

Collected on the reefs.—W. L. P.

Nassa dentifera. *Nassa testâ ovatâ, subventricosâ, olivaceâ, anfractu ultimo fasciâ pallidiore cinctâ, longitudinaliter granoso-plicatâ, decussatâ; aperturâ fusco-violaceâ; labio externo sinuoso, incrassato, basin versus denticulo unico instructo, intùs leviter sulcato: long.* 0·85, *lat.* 0·45 *poll.*

Hab. ad oras Americæ Meridionalis.

Dredged in the Bay of Arica, in ten fathoms, from a muddy bottom.—W. L. P.

Nassa festiva. *Nassa testâ ovato-globosâ, cærulescente, punctis variis et anticè lineis contiguis rubro-castaneis pictâ; anfractibus 8, longitudinaliter costatis et spiraliter sulcatis, ultimo ventricoso, spirâ peracutâ longiore; aperturâ albâ, rotundatâ; columellâ granoso-plicatâ; labio externo crasso, variciformi, intùs valdè sulcato: long.* 0·85, *lat.* 0·6 *poll.*

Hab. ad Panamam et ad Sanctam Elenam.

Dredged from sandy mud at a depth varying from six to ten fathoms.—W. L. P.

Nassa exilis. *Nassa testâ ovato-conicâ, basi subcompressâ, olivaceâ obscurè fasciatâ; anfractibus 7—8, convexis, spiraliter obsoletè striatis, suturis granulis moniliformibus infrà in costellas decurrentibus ornatis, costellis et striis anfractûs ultimi evanescentibus;*

aperturâ violaceâ; labio externo incrassato, intùs subsulcato: long. 0·65, *lat.* 0·3 *poll.*

Hab. sub lapidibus ad Paytam, Peruviæ.

The anterior part of the last volution, towards the lip, is smooth and free from ribs.—W. L. P.

NASSA PALLIDA. *Nassa testâ ovato-conicâ, sordidè albâ, canali fusco maculatâ; anfractibus* 8—9, *supernè subangulatis, longitudinaliter obliquè costatis, spiraliter sulcatis et rugoso-striatis; labio externo intùs striato; columellâ arcuatâ, callosâ: long.* 1·2, *lat.* 0·65 *poll.*

Hab. ad Panamam.

The ribs are not continued over the anterior part of the last volution towards the lip.

Dredged from sandy mud at a depth of six fathoms.—W. L. P.

NASSA SCABRIUSCULA. *Nassa testâ ovato-conicâ, acuminatâ, fuscâ luteo fasciatâ, longitudinaliter plicatâ, striis elevatis asperis spiraliter cancellatâ; aperturâ rotundatâ; labio externo albo, anticè fusco maculato, extùs marginato, intùs valdè sulcato: long.* 0·47, *lat.* 0·27 *poll.*

Hab. ad oras Americæ Centralis.

Dredged in sandy mud at a depth of twelve fathoms in the Bay of Montija.—W. L. P.

NASSA COMPLANATA. *Nassa testâ ovatâ, complanatâ, olivaceâ fasciis luteis cinctâ; anfractibus superioribus utrinque granosis, ultimo varicibus lateralibus et plicis graniferis dorso evanescentibus; aperturâ ovali; labio externo marginato, intùs sulcato: long.* 0·35, *lat.* 0·22 *poll.*

Hab. ad oras Colombiæ Occidentalis.

Found at Atacamas, under stones.—W. L. P.

Genus PURPURA.

PURPURA TÆNIATA. *Purp. testâ obovato-oblongâ, transversim tenuissimè striatâ, rufo-castaneâ fasciis fulvo-luteis cinctâ; spirâ brevissimâ; anfractu ultimo permagno; aperturâ elongatâ, subæquali, intùs lactea, peritremate castaneo lineis albidis radiato; columellâ planâ, pallidè castaneâ; labio externo intùs denticulato: long.* 0·9, *lat.* 0·62 *poll.*

Hab. in Oceano Pacifico. (Maldon Island.)

I am not aware of this interesting shell having been hitherto described. It bears a considerable resemblance to the *Purp. Vexillum* of Lamarck; but differs from that species in having a much shorter spire, in its very flat *columella*, and in the outer lip being more expanded and radiated. The bands also afford a ready mark of distinction: in *Purp. Vexillum* they are of a reddish brown on a lighter ground; whilst in *Purp. tæniata* the ground colour is dark chestnut, and the bands yellow.—W. L. P.

July 14, 1835.

William Yarrell, Esq., in the Chair.

Mr. Ogilby exhibited several rare and undescribed species of *Mammalia* and *Birds*, brought from the Gambia, on which he made the following observations:

"Through the kindness of Mr. Rendall, who has lately arrived from the Gambia, where his brother is lieutenant-governor of Fort St. Mary and the other British possessions in that neighbourhood, I am enabled to present the Society with the following account of a few new or rare species of *Mammals* and *Birds*; forming, however, but a very small portion of the valuable collection which Mr. Rendall has brought home with him. The collection, it is true, contains very few *Mammals*; these, however, are either altogether new to science or of very rare occurrence, and show how little we know of the zoology of the west coast of Africa.

Genus Colobus, *Ill.*

Colobus fuliginosus. This new and interesting species of a very obscure and imperfectly known genus, measures 2 feet 5 inches from the upper lip to the extremity of the tail, which organ is itself 2 feet 8 inches long. All the upper parts of the body are of a light smoky blue colour, very similar to that of the *common Mangabey*, (*Cercopithecus fuliginosus*, Geoff.), rather darker on the shoulders than elsewhere, and copiously tinged with red on the *occiput*: the colour of the back descends some way down on the external face of the fore arms and thighs, and also a short distance, but more obscurely, on the upper surface of the tail. With these exceptions, all the rest of the extremities, the arms, fore arms, thighs, legs, hands, feet and tail, are of a uniform light or brick red, and a more intense shade of the same colour extends up the fore part of the shoulders, and spreads over the breast, throat and whiskers, which latter are long, directed downwards on the cheeks, and backwards into long pointed tufts behind the ears, which are small, round, naked, and furnished with a distinct *helix*, in all respects like that of the human subject. The belly and flanks are of a dirty yellowish white, and a circle of black stiff hair passes over the eyes. The face, palms of the hands and soles of the feet are naked and of a violet colour; the callosities are of moderate size; the thumbs of the anterior extremities are wanting, but their situation is marked by a small nailless tubercle; the middle and ring fingers, both on the fore and hind hands, are of equal length, as are likewise the index and little fingers; and it is to be observed,

that the latter are united to the contiguous middle or ring fingers, respectively, through the greater part of the first *phalanx*, as in the *Siamang*, *Pithecus syndactylus*, F. Cuv. The face is short, the head round, and the whole form and habit of the animal similar to those of the *Semnopitheci*. The teeth are of the usual form and number, and there are large and very distinct cheek pouches. I was the more particular in making this last observation, because the organs in question had not been previously recorded as existing in the *Colobi*, and because M. Geoffroy St. Hilaire in his valuable lectures, of which it is a matter of great regret that so small a portion has been given to the public, even doubts their existence. Of this, however, there can be no longer any reasonable doubt; they are extremely apparent and rather capacious in the specimen now under description. The teeth of this specimen, a very old female, without even excepting the canines, which do not appear to have been remarkably large at any time, are worn almost down to the gums. Mr. Rendall possesses a second and younger specimen which, however, differs in no respect from that just described.

The arrival of these skins, probably the only perfect specimens of the genus *Colobus* in Europe, with the exception of that in the Leyden Museum, and of the specimens recently brought from Abyssinia by Dr. Rüppell, naturally led me to refer to the imperfect skins noticed by Mr. Bennett in the 'Proceedings of the Committee of Science and Correspondence' of this Society for 1832, page 122, and to examine generally the characters of the different species already described. The result of my investigation into this subject leads me to conclude that we at present possess sufficient indications of six distinct species of *Colobi*, which may be characterized as follows:

1. *Col. polycomos*, Schreb., "with the head and shoulders covered with long, coarse, flowing hair, of a dirty yellowish colour, mixed with black; body, arms and legs of a fine glossy blackness, covered with short hair; tail of a snowy whiteness, with very long hair at the end forming a tuft."

2. *Col. Ursinus*, with very long glossy black hair over the whole body and extremities, and a long snowy white tail slightly tufted at the end: described from two imperfect skins, without head or hands, the same as those noticed by Mr. Bennett in the 'Proceedings' for 1832. Mr. Bennett considered these skins as referrible to the *Col. polycomos*; and the general colour of the body and tail, as well as a slight appearance of grizzled or gray hair about the neck, where the head has been cut off, in both the specimens, would at first sight appear to justify his views; but the words of Pennant, (the only original describer of the species,) as quoted above, imply that the "long dirty yellowish hair," which he compares to a full-bottomed perriwig, grows from the shoulders and neck as well as the head, and expressly declare that the hair on the rest of the body, as well as on the legs, is short. Now in the specimens at present under consideration the very reverse of this is observable. The black hair of the

shoulders, as already observed, has a partial mixture of silvery white on the anterior face just where the head has been cut off; but it is not longer than the hair upon the rest of the body and limbs, which is moreover 5 or 6 inches in length, and in texture and appearance not unlike that of the *Ursus labiatus*. The whole animal in fact resembles a small *Bear*, and is covered with the same uniform, long, black, and glossy fur upon every part except the tail, which, at the root more particularly, is furnished with much shorter hair. Whether or not this species, like the *polycomos*, has the head ofa different colour from the body, is a subject for further observation: the white or silvery hairs already mentioned as still remaining about the shoulders, render it extremely probable that it has, but in no case can it form the striking contrast in length, nor present the long flowing mane or wig-like appearance ascribed to the animal observed by Pennant. Mr. Gould, who procured these skins for the Society, reported them as coming from Algoa Bay; we know enough of the zoology of that part of Africa, to render this account extremely doubtful, and the probability is, either that Mr. Gould was misinformed, or that he may have mistaken Delagoa Bay for Algoa, which, from the similarity of sound, might readily happen. If this conjecture should prove correct, it would follow that the *Col. Ursinus* was the analogue of the *Col. polycomos* on the opposite coast, and the conjecture receives further countenance from the fact of many other known species of *Mammals* having such analogues in the same localities.

3. *Col. Guereza*, Rüpp., with the head, face, neck, back, limbs, and basal half of the tail, covered with short black hair; the temples, chin, throat, and a band over the eyes, white; the sides, flanks from the shoulder downwards, loins and buttocks, clothed with long flowing white, which hangs down on each side like a loose garment; the tip of the tail furnished with a tuft of dirty white. Described and figured by Dr. Rüppell in his 'Neue Wirbelthiere.'

4. *Col. ferruginosus*, Geoff., "with a black crown; back of a deep bay colour; outside of the limbs black; cheeks, under part of the body, and legs of a very bright bay; tail black." This species, originally thus described by Pennant, was, like the *Col. polycomos*, brought from Sierra Leone.

5. *Col. fuliginosus*. Smoky blue above, dirty yellowish gray beneath; with the cheeks, throat, tail and extremities brick red. Brought from the Gambia.

6. *Col. Temminckii*, Kuhl, "with the hands, face, and tail, purplish red; rest of the members, clear red; belly, reddish yellow; head, neck, back, shoulders and outer face of the thighs, black." Habitat unknown: described from a specimen formerly in Bullock's Museum and now in that of Leyden. Notwithstanding some slight discrepancies, I agree with Mr. Bennett in referring to this species the two other skins of the Society's Collection, noticed by him in the Part of the 'Proceedings' already referred to. These skins

were procured at the same time, and most probably in the same locality, as those of the *Col. Ursinus*. They are equally imperfect; the hair of the shoulders and back, dead black, and without the beautiful gloss of the *Col. Ursinus*; on the flanks and over every part of the limbs the colour is a uniform maroon or clear purple red; the head and hands are wanting, but the maroon of the tail is much deeper than that of the legs and flanks, approaching almost to black, and, in the older of the two specimens, actually replaced by that colour on the terminal half of the tail. If the conjecture already thrown out with regard to the derivation of these skins should turn out to be well founded, and if the animal here described eventually proves to be identical in species with the *Col. Temminckii*, of which I see no just reason to doubt, it follows that the hitherto unascertained habitat of that species must be sought on the east coast of Africa. Fischer, probably induced to it by the authority of M. Temminck, has united the *Col. Temminckii* with the *Col. ferruginosus* or *bay Monkey* of Pennant; the short descriptive characters above given in the words of their original describers, leave no doubt as to the specific distinction of these two animals; in which, indeed, though the colours are the same in both, their distribution is reversed, the bay or red of the one occupying the same situation as the black of the other.

Genus Pteropus.

Two undescribed *Pteropi*, brought over by Mr. Rendall, present some modifications of dentition which have not been observed in other species, and which appear to indicate a subgenus, probably representing the common Asiatic forms on this coast of Africa. These animals have the incisors and canines of the same form and number as the rest of the genus, but there are only three *molares* in the upper and five in the lower jaw. The incisors are small and regular, the canines of intermediate size; the first false molar in the lower jaw is small and of the normal form, but the second in this jaw and the first in the upper are of the same form as the canines, and very little inferior to them in size, so that when the mouth is opened there appear to be four canines in each jaw; next follows in either jaw a tooth with a large fang upon the outer edge and a smaller one within, which is of intermediate form between the true and false molars; after which come two normal molars in the lower and one in the upper jaw. All the molars are separated from one another by a vacant space on each side; this gap is particularly large between the real and spurious canines or first false molars in the upper jaw, the corresponding space in the lower having, in its centre, the small false molar already mentioned.

Pteropus Gambianus.

Length from the nose to the centre between the thighs 6¾ in.
Length of the head from the nose to the root of the ear.. 1¾
Expanse of the wings ..... 1 f. 8 in.

The fur is of a very soft woolly texture, and of a uniform reddish mouse colour over every part, only rather lighter on the sides of the neck and belly than on the superior surface of the body. The wings are ample, naked except upon the thighs and arms, and of a light brown colour; there is no real interfemoral membrane; but the whole posterior face of the thighs and body is margined with a narrow band of integument about half an inch broad, and covered above with the same description of hair as the back. The ears are small, naked, erect and elliptical, and the eyes placed much nearer to them, and consequently at a greater comparative distance from the muzzle, than in the ordinary *Pteropi*.

Pteropus macrocephalus. The whole length of this species is barely 6 inches, the length of the head 2 inches, and the expanse of the wings about 1 foot 3 inches. The colour, form and appearance are much the same as in the last species, but the *Pter. macrocephalus* is at once distinguished by the great size of the head, as well as by the colour of the flying membranes which are very dark brown, nearly approaching to black. The canine teeth also, as well as the head, are of much larger size, and the interfemoral margin is narrower. Dr. Horsfield, from the great length of the head, thinks that this species may approximate to the *Macroglossus* of M. F. Cuvier, the *Pter. rostratus* of his own 'Zoological Researches in Java.' It is to be observed, however, that it differs in dentition from that animal, as well as from all other *Pteropi* hitherto described; and, with the *Pter. Gambianus*, may furnish the type of a new genus to those who regard such modifications as amounting to generic characters. Mr. Rendall's collection contains numerous specimens of both the species here described.

The only other *Cheiropter* brought home by Mr. Rendall is the *Megaderma Frons* of Geoffroy, well described by Daubenton; to whose account I shall only add, that the wings are of a deep orange colour, and the fur unusually long and soft.

Genus Herpestes, *Ill.*

Mr. Rendall has brought over specimens of two *Herpestes*, one of which, the *Herpestes Mongos* of Linnæus, very well figured and described by Buffon (Hist. Nat., tom. xiii. tab. 19.), deserves to be noticed, for the purpose of correcting the habitat of the species, which, upon Buffon's authority, has hitherto been given as India, but which Mr. Rendall's specimens clearly show to be the west coast of Africa. The mistake originally arose from Buffon's having identified the *Mangouste à bandes*, the species at present under consideration, with the *Mongos* of Kæmpfer, unquestionably an Indian species (the *Herpestes griseus* of authors), and still commonly called by that name in Upper India, where many natives and Europeans keep it in a semidomestic state, for the purpose of destroying vermin. Under these circumstances, though there are few cases in which

such a change is advisable, or even excusable, perhaps it would be better to follow the example of M. Desmarest in the 'Dictionnaire des Sciences Naturelles,' and substitute the specific name of *fasciatus* for that of *Mungos*, as regards this animal, reserving the latter name for the species to which it really belongs, and which is at present designated by the very vague term of *griseus*.

The other species brought by Mr. Rendall, and which I propose to call *Herpestes Gambianus*, is new to science, but is in some degree allied to the *Herp. vitticollis*, characterized by Mr. Bennett at a recent meeting of the Society (page 66). It is, however, much smaller than that species, measuring only 17 inches from the nose to the root of the tail, whilst the *Herp. vitticollis* measures fully 23; the tail also measures 13 inches in the latter animal, and only $9\frac{1}{2}$ in the former. The general colour of the body is that grizzled gray and brown, so common among the *Herpestes*, upon the upper parts, clearer upon the head, neck and shoulders, and copiously mixed with red upon the latter part of the back, hips and thighs, particularly upon the latter, which are nearly all red; the tail has a copious mixture of black, and is terminated by a small tuft of pure black; but this is only found at the extreme point, and does not extend over a considerable portion of the organ, as in *Herp. vitticollis*. The throat and sides of the neck are pale silvery brown; the breast, belly, and interior of the limbs, red; the feet alone, not the whole legs as in *Herp. vitticollis*, are black, and a stripe of dark brown extends from the ear to the shoulder, along each side of the neck. The hair lies smooth and close to the skin.

There are some peculiarities in the dentary system of these animals which are deserving of notice.

Herp. fasciatus and *Herp. Gambianus*. Teeth $\frac{6}{6} : \frac{1-1}{1-1} : \frac{5-5}{5-5}$. The incisors small, simple, and regular; the canines of moderate size; the first two false molars of the normal form; the third, carnassier, of rather small size compared with its analogue in genera more decidedly carnivorous, and the last two, in both jaws, tuberculous. The rudimentary false molar, mentioned by M. F. Cuvier, is wanting in both these species; nor can its absence be owing to the age of the specimens examined, as some were evidently young animals, though arrived at adult age. Its entire absence is further confirmed by the situation of the teeth respectively, in the reciprocal position of the jaws, the first inferior false molar filling up the entire vacant space between the corresponding superior tooth and the canine of the same jaw.

This system differs considerably from that ascribed to the *Herpestes* by M. F. Cuvier (Dents des Mammifères, i. 99.), but agrees in all respects with the description of M. Desmarest. The following, however, is equally foreign to the accounts of both these authors, and, were not all the other characters so perfectly accordant with those of *Herpestes*, would decidedly indicate a new genus. Indeed, it so stands

in my notes, under the name of *Mungos*, but with a note of interrogation, as I have only been able to examine a single specimen.

Mungos? vitticollis. (*Herpestes vitticollis*, Benn.) Teeth $\frac{6}{6}$: $\frac{1-1}{1-1}$: $\frac{6-6}{7-7}$. The incisors and canines have nothing remarkable either in form or number. The first false molar in either jaw is tuberculous; the second and third consist of one large conical fang in the centre, and a smaller tubercle on each side of it; then follows the carnassier, and after it two tuberculous teeth in the upper and three in the lower jaw. The first of these in the upper jaw is large and triangular; the second, short and broad, its latitudinal dimensions more than doubling its longitudinal; the three of the lower jaw are small, simple, rather distant from each other, and of cylindrical form.

This is a system of dentition which, as far as I am aware, is altogether peculiar, and if confirmed by the examination of other specimens, will undoubtedly form the type of a new genus. Perhaps further and more rigid examination may even detect different species from the different localities, as specimens have arrived for the Society from Travancore and Bombay, and one from Madras, at the British Museum.

Genus Sciurus, *Linn.*

Sciurus Gambianus. This animal belongs to that subgenus of *Squirrels* which are distinguished by having round untufted ears and long cylindrical tails, covered with short hair, and not distichated. The upper surface of the body and root of the tail are uniform mouse-coloured brown, with a slight shade of yellowish red, and everywhere pointed thickly with gray, from the hairs being separately annulated with black and yellowish white; all the under parts are uniform dirty white. The tail is long, covered with short hair, towards the root of the same uniform colour as the back, but annulated or fasciated from thence to the tip with numerous alternate bands of black and light grayish brown, precisely like those which mark the back of the *Ryzæna* and the *Herpestes fasciatus*. The whole length of the animal is about 9¼ inches, and the tail about the same. The ears are very short and rounded.

From Dr. Smith's description of his *Sci. Poensis*, I imagine it must approach this species in form, but is distinguished by its smaller size, different colour, and unannulated tail.

Of the numerous *Bird-skins* in Mr. Rendall's collection I shall only notice the two following, which appear to be new species, and which derive an additional interest from their generic affinities. The first I propose to call, out of compliment to the gentleman to whose kindness we are indebted for the present exhibition and description,

Numida Rendallii. This beautiful species, which Mr. Gould agrees with me in considering new to science, is of smaller size than the

common *Guinea Fowl*, and in this resembles the *Num. cristata*. The head and upper part of the neck are bare, the former covered with a wrinkled scalp-like skin, gathered into a small keel-shaped ridge in the centre, about half an inch in length, and not more than a quarter of an inch high. The neck is black, naked principally on the throat and sides, and covered on the back with glossy black hair, or rather small feathers, with the beards so fine as to be perceptible only upon close examination. The lower part of the neck and breast are covered with feathers of a beautiful violet colour without spots, clearest on the breast, but with a browner hue upon the upper surface. The back, shoulders, and rump are of the usual brown colour, speckled thickly with minute white spots, each surrounded with an intensely black ring, much smaller and more numerous than in the common species, and intermixed with an infinity of still more minute white points. The greater coverts of the wings and whole under surface of the body are black, with large white spots; the quill feathers spotted towards the shaft, and barred transversely on the lower margin only, and the tail feathers light gray, with white spots in a black ring, and interspersed with numerous black dots or points. The white spots of the coverts, quills, and belly, are not surrounded by black rings like those of the back and tail. This appears to be the common species on the banks of the Gambia.

Genus Gypogeranus, *Ill.*

A *Secretary* in Mr. Rendall's Collection offers some peculiarities, when compared with the common Cape animal, which at first induced me to believe that it might be a distinct species, and in this opinion I was in some manner confirmed by the more experienced and concurrent belief of Mr. Gould; but I confess that a more attentive comparison of specimens from both localities has considerably shaken my original opinion. I may remark, however, that still greater differences are indicated by Sonnerat in his figure and description of the *Secretary* of the Philippine Islands, and which, as far as I am aware, has not been noticed by more recent naturalists. Whether or not the *Secretaries* of these three localities, the Cape of Good Hope, the Gambia, and the Philippines, may eventually turn out to be really distinct, or only varieties of the same species, must be left for future observation; but it is at least useful to direct the attention of travellers, collectors, and zoologists to the subject, and with this intention I will here state the principal marks which appear to distinguish each, giving them provisionally specific names, derived from the localities which they respectively inhabit.

1. *Gyp. Capensis*, with the plume of long cervical feathers commencing upon the *occiput*, spreading irregularly over the upper part of the neck, narrow throughout the greater part of their length as if the beard had been cut on each side close into the shaft of the quill, and spreading only at the point. Inhabits the Cape of Good Hope.

2. *Gyp. Gambiensis*, with the cervical crest commencing some distance below the *occiput*, arranged in two regular series, one on each side of the neck, with the intermediate space clear, and composed of long spatule-shaped feathers, much broader throughout than in the last species, though similarly decreasing in width towards the root. In both these species the two middle feathers of the tail are considerably longer than the others. Inhabits Senegambia.

3. *Gyp. Philippensis*, with the cervical crest spread irregularly from the *occiput* to the bottom of the neck, the longest feathers being those situated the lowest, which is just the reverse of what we observe in *Gyp. Gambiensis*, and with the two exterior tail feathers the longest, so that the tail appears forked. This is apparent not only in Sonnerat's figure, but is expressly mentioned in his detailed description, and, if confirmed by future observation, is clearly indicative of a specific distinction. Inhabits the Philippine Islands. Described and figured in Sonnerat's 'Voyage à la Nouvelle Guinée,' p. 87, t. 50.

The colours of the three species or varieties here indicated do not seem to be materially different in other respects."—W. O.

A collection of skins of *Birds*, formed in Hayti by J. Hearne, Esq., Corr. Memb. Z.S., and presented by him to the Society, was exhibited. At the request of the Chairman, Mr. Gould brought the specimens severally under the notice of the meeting. They comprised sixteen species, two or three of which appeared to be hitherto undescribed; including a *Humming Bird*, which Mr. Gould believed to be the representative of a new species, allied to *Trochilus pectoralis*, Lath.

There was also exhibited the skin of the *Mammiferous* animal recently described by M. Brandt, in the Transactions of the Imperial Academy of St. Petersburgh, as the type of his new genus *Solenodonta*. It was obtained by Mr. Hearne in Hayti, where it is known as the *Agouta*. Respecting it Mr. Hearne writes, "The only quadruped, I believe, found on the island on the landing of Columbus was the *Agouta*, a little larger than, and somewhat resembling, a *Rat*, with an equally long tail and with a longer snout; whose food is chiefly grain, although the animal is carnivorous also; its hair is red. I had one alive intended for the Society, but it received a wound from a cat of which it died, and the skin is too miserably preserved, I fear, to be of use; but I shall bring it myself, or early send it; and I shall endeavour to get another alive, and in such state to send it to you."

The following note by H. Bruce Campbell, Esq., on a white variety of the *Blackbird, Turdus Merula*, Linn., recently presented by him to the Society and now living at the Gardens, was read.

"The curiosity which I have the pleasure to present to the Zoological Society, (a bird of the *common Blackbird* kind, the *Merle noir*

of M. Temminck, entirely white, including the plumage, beak, legs, and feet,) was discovered in June, 1832, near a farmhouse in the occupation of Mr. Owkam at Bilsthorpe, Nottinghamshire. There were two other young ones in the nest, the plumage of which, as well as that of the parent birds, was of the ordinary caste. The old birds made a second nest in the following month, near to the first one, in which four eggs were deposited; one of these was entirely different from the rest, resembling in colour the egg of the *common Duck*; this nest was unfortunately taken by some boys in the village; it is probable if this had not been the case, that there would have been produced a second extraordinary freak of nature.

"There is at the present time in the possession of the Rev. Joshua Greville at Weston Pavell, near Northampton, a pyeballed male bird of this species, the white preponderating; it is now six years old and an excellent songster. It was originally black, and when about two years old its plumage changed and became spotted black and white.

"It is said that these birds have been occasionally found white on the Alps and other high mountains, which alteration in colour is ascribed to the continued cold in those places, an effect which it is known is produced in the case of the *Ptarmigan*, &c. Albin mentions having had a bird of this species "finely mottled," sent to him by Sir Robert Abdy out of Essex. Buffon makes mention of a white *Nightingale*, and in the Museum at Oxford, there is a *Chaffinch* completely white. Many other instances of white varieties are furnished by authors and by collections.

"The present is a male bird, but though he has the quickly repeated chirp and all the habits of his kind, nature, when she altered her regular course and presented him with his snowy costume, seems therefore to have denied to him the usual vocal powers of his tribe: he is no warbler, but from his frequent fruitless attempts, it may be inferred, that he feels the dear price at which he has been permitted to wear his novel and attractive plumage."

With reference to an observation in the preceding note, Mr. Yarrell remarked that no inference could safely be drawn from the colour of the egg as to that of the bird to be produced from it: a deficiency of the superadded colouring, reducing the egg to its ground colour alone, being by no means an uncommon occurrence, and the product in such cases not deviating from the usual appearance of the race.

Mr. Cox added that he had at present under his care a nest of the *domestic Sparrow, Passer domesticus*, Briss., all of which, with one exception, exhibited the usual characters of their race: one, however, was entirely white. He stated his intention of presenting to the Society this variety, as soon as the young bird was sufficiently reared.

The following note by Sir Robert Heron, Bart., M.P., Vice-President, was read.

"My male *black Swan, Cygnus atratus,* died yesterday (June 29, 1835). He had been long going off, apparently through old age, though not more than fifteen; yet he has left four young ones, not three months old. His widow is still healthy, and does not appear to grieve much; nor did she pay any attention to him in his last days, probably because engaged with her young. They have hatched in all forty-four, and reared forty young ones. They were chiefly hatched in January, and always in an earthern wigwam built for them in a small island. Once there were two broods in a year, the next year only none."

July 28, 1835.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of eight species of *Mice* and *Rats*, collected in India by Walter Elliott, Esq. They were brought under the notice of the Meeting by Mr. Gray, who stated that five of them were hitherto undescribed. Of these he pointed out the distinguishing characteristics. Among them were three which, on account of their possessing a peculiarity in the structure of their molar teeth, he regarded as representing a section in the genus *Mus*, which might, perhaps, be considered deserving of generic distinction. The remaining species were the *Mus oleraceus*, Benn.; the *Mus platythrix*, Ej.; and the *Mouse* which Mr. Gray has figured, from Gen. Hardwicke's drawings, in the 'Illustrations of Indian Zoology,' under the name of *Arvicola Indica*: it is, however, really a *Mus*.

Mr. Gray stated that Mr. Elliott had made copious notes respecting the habits of the several species exhibited, and that it was his intention to communicate them to the Society. He added that Mr. Elliott's collection contained many other interesting specimens of *Mammalia*, as well as of other classes of animals; and that selections from it would be brought, from time to time, under the notice of future Meetings.

Mr. Gray also exhibited specimens of two remarkable species of *Partridge*, *Perdix*, Mey., which he regarded as previously undescribed. They were brought from the Gambia by Mr. Rendall, a selection from whose collection had been exhibited at the previous Meeting by Mr. Ogilby. Mr. Gray pointed out the distinguishing characteristics of the birds exhibited.

Mr. Gray subsequently exhibited, also from Mr. Rendall's collection, several *Shells* which appeared to him to be hitherto unnoticed, including an undescribed species of *Cryptostoma*, Blainv.

Among the *Shells* of the same collection was one that had been incrusted by a *Coral*, but in which the mouth had been preserved open in consequence of its having become the habitation of a *Pagurus*, the movements of which through the aperture had prevented that part of the shell from being involved in the general incrustation. Mr. Gray exhibited other specimens of analogous incrustations, some of which had been regarded by authors as constituting real species. The incrusting *Coral* is generally an *Alcyonium*, but in some cases it is a *Cellepora*.

The exhibition was resumed of the previously undescribed species of *Shells* contained in the collection of Mr. Cuming. Those brought on the present evening under the notice of the Society were accompanied by characters by Mr. G. B. Sowerby. They comprised the following species of the

Genus Pecten.

Pecten subnodosus. *Pect. testâ subæquivalvi, æquilaterali, auriculis inæqualibus; striis radiantibus numerosissimis, radiisque decem, crassis, rotundatis, alternatim nodoso-vesicularibus vel subnodosis; intùs plerumque purpureo signatâ: long.* 5·25, *lat.* 2·75, *alt.* 5· *poll.*

Variat α, *colore rufo-fuscescente, striis albis. Hab.* ad Sinum Californiæ.

β, *coloribus subvariegatis pictâ seu fuscâ, maculis albis utplurimum notatâ. Hab.* ad Insulam Platæ, Columbiæ Occidentalis.

γ, *testâ depressiore, colore aurantiaco nitente. Hab.* ad Sinum Tehuantepec, Mexicanorum.

Found in sandy mud and coral sand in from ten to seventeen fathoms.—G. B. S.

Pecten magnificus. *Pect. testâ subæquivalvi, æquilaterali, auriculis inæqualibus; striis radiantibus exiguis numerosissimis, radiisque tredecim, crassiusculis, rotundatis, nonnunquam subnodosis; intùs albâ purpureo marginatâ: long.* 5·5, *lat.* 2·, *alt.* 5·5 *poll.*

Variat α, *colore sanguineo nitente. Hab.* ad Insulas Gallapagos.

β, *testâ fuscâ, maculis albidis variegatâ. Hab.* ad Insulam Platæ, Columbiæ Occidentalis.

A single specimen of var. α was found in coral sand at a depth of six fathoms: var. β was also found in coral sand in seventeen fathoms. —G. B. S.

Pecten dentatus. *Pect. testâ valdè inæquivalvi, æquilaterali, auriculis æqualibus; valvâ planulatâ sulcato-radiatâ et striatâ, alterâ valdè convexâ, lævigatâ, radiatim sulcatâ, margine ventrali profundè dentato: long.* 3·75, *lat.* 1·5, *alt.* 3·5 *poll.*

Hab. ad Sanctam Elenam.

Found among sand and stones in twelve fathoms.

The flat valve is of a dark brown colour outside, white with a broad dark purple margin within; it falls deeply into the convex valve, whose margin is deeply cut between the ribs; this latter valve is of a brownish colour outside, and nearly white within.—G. B. S.

Pecten tumidus. *Pect. testâ subinæquivalvi, æquilaterali, auriculis magnis, subæqualibus; valvâ alterâ turgidâ, fusco rufescente albidoque variegatâ, radiatim* 18*-costatâ, costis supernè planulatis, interstitiis transversim striatis, alterâ turgidiore, albicante, radiatim sulcatâ, costis interstitialibus latioribus, planulatis, lateribus*

fusco-variis; marginibus ventralibus acutè dentatis: long. 1·75, *lat.* 1·, *alt.* 1·75 *poll.*

Hab. ad Sanctam Elenam et ad Salango, Columbiæ Occidentalis.

Found in sandy mud at from six to ten fathoms.—G. B. S.

PECTEN CIRCULARIS. *Pect. testâ suborbiculari, tumidâ, subæquivalvi, æquilaterali, fusco alboque variâ, auriculis magnis, subæqualibus; costis radiantibus octodecim interstitiis latioribus, arcuatim striatis; valvâ alterâ sulcis profundioribus: long.* 1·5, *lat.* 0·8, *alt.* 1·4 *poll.*

Hab. ad Sinum Californiæ. (Guaymas.)

Found in sandy mud at a depth of seven fathoms.—G. B. S.

PECTEN ASPERSUS. *Pect. testâ suborbiculari, depressiusculâ, subæquivalvi, æquilaterali, auriculis inæqualibus, dextrâ majusculâ; valvarum alterâ radiatim costatâ, pallescente seu albâ, costis quatuordecim majoribus, rotundatis, lævibus, alterâ radiatim costatâ, costis quindecim acutioribus, fuscis, punctulis cærulescentibus aspersis, interstitiis tenuissimè transversim striatis, pallescentibus: long.* 1·4, *lat.* 0·5, *alt.* 1·3 *poll.*

Hab. ad Tumbez, Peruviæ.

Dredged in soft mud at a depth of five fathoms. This species has sometimes a few irregular blotches of white sprinkled over the darker coloured valve.—G. B. S.

PECTEN SPINIFERUS. *Pect. testâ subovatâ, depressiusculâ, subæquivalvi, æquilaterali, auriculis inæqualibus, sinistrâ majore; valvis radiatim costatis, costis utriusque novem, latis, squamuliferis, squamulis fimbriatis; valvæ alterius marginibus dorsali, antico, posticoque spiniferis: long.* 0·9, *lat.* 0·25, *alt.* 0·9.

Hab. ad Insulam Lord Hood's dictam, Oceani Pacifici.

A single specimen of this beautiful little shell was taken on the reefs in coral sand.—G. B. S.

PECTEN PARVUS. *Pect. testâ subovatâ, depressiusculâ, subæquivalvi, æquilaterali, albicante, auriculis inæqualibus, graniferis; valvis radiatim costatis, costis octo inæqualibus, transversim striatis; interstitiis radiatim sulcatis et transversim striatis: long.* 0·7, *lat.* 0·25, *alt.* 0·8 *poll.*

Hab. ad Insulam Lord Hood's dictam, Oceani Pacifici.

Found in coral sand on the reefs.—G. B. S.

Genus XYLOPHAGA.

XYLOPHAGA GLOBOSA. *Xyl. testâ globosâ, margine dorsali postico declivi, valvis accessoriis majusculis: long.* 0·4, *lat.* 0·35, *alt.* 0·35 *poll.*

Hab. ad Valparaiso.

Found in a piece of wood dredged from a depth of a hundred fathoms.—G. B. S.

A paper was read comprising "Descriptions of a few *Invertebrated Animals* obtained at the Isle of France," by Robert Templeton, Esq. It was accompanied by coloured drawings of the new species described in it, which were exhibited.

Of these animals two belong to the *Radiated* division of the animal kingdom. They may be characterized as follows:

ACTINIA SANGUINEO-PUNCTATA. *Act. flavescenti-rufescens, punctis sanguineis confertis per series longitudinales numerosas dispositis ornata; ore guttis cæruleis quinque circundato; tentaculis viridescentibus, hyalinis.*

Hab. vix uncialis, super saxa.

XENIA DESJARDINIANA. *Xen. pallidè livido-cærulea; polypis* 8-, *rariùs* 9-*radiatis.*

Hab. super lapides prope Black River.

The mass from which the polypes arise is spread over the surface of the stones to the extent, in many places, of more than a foot. It is usually about an eighth of an inch in thickness, and appears to be composed of an infinite interlacing of tubular stems. From the sides of these stems are given off peduncles, each of which terminates in a disc having a central mouth and eight (rarely nine) rays. These rays are simple on their under or outer surface, pectinated along their edges, and furnished on the upper or inner surface with short processes, having cupped or sucker-like extremities. The discs are perpetually in motion, waving from side to side as though in search of objects; and when anything comes in contact with their rays or *tentacula*, the suckers instantaneously close in upon it, and the *tentaculum* doubles itself up like a finger and conveys the prey to the mouth: if the object be large, two or three of the *tentacula* are employed. When the prey is so large as not to admit of its being swallowed, the *tentacula* relax their hold and allow it to escape.

The remaining two belong to the *Annulose* type, and appear to represent two genera among the *Annelida*, nearly allied to the *Serpulidæ*.

ANISOMELUS.

Os tentaculis simplicibus octo, per paria dispositis, filiformibus, prehensilibus instructum.

Branchiæ? simplices, tentaculiformes, pedibus haud multo longiores, in segmentis corporis quatuor anterioribus sitæ.

Testa cylindrica, calcarea, erecta, ad basin in saxis immersa.

OBS. Numero et symmetriâ tentaculorum, necnon branchiarum simplicitate?, a *Terebellâ* cæterisque generibus affinibus distinguitur.

ANISOMELUS LUTEUS.

Long. corporis vix $\frac{1}{4}$ unc.

Hab. in saxis corallinis apud Black River.

Of the eight *tentacula* of this *Annelide*, one pair, that towards the ventral aspect, is short, and the opposite pair is long, being fully equal in length to the entire body: the intermediate pairs are intermediate also in length. When undisturbed, the animal projects from its tube or shell as far as the fifth or sixth segment, swinging itself from side to side, and moving its *tentacula* about. If anything is discovered suitable for food, the extremity of one or more of the *tentacula* is rolled around it, and by this means the substance is conveyed to the mouth. The *tentacula* are numerously ringed, and have in their interior a tube in which oval globules are distinctly seen moving to and fro, as the motions of the *tentacula* affect a few contiguous rings.

Piratesa.

Os tentaculis seu branchiis numerosis, longè ciliatis, subulatis, simplici serie dispositis, cinctum.

Testa cylindrica, calcarea, erecta, e saxo parum prominente.

Obs. Genus propter tentaculorum branchiferorum dispositionem a *Sabellâ*, Cuv., sejungendum.

Piratesa nigro-annulata. *Pir. brunnea, tentaculis pallidioribus nigro confertim interruptè annulatis.*

Hab. in saxis corallinis apud Black River.

The *cilia* of the *tentacula* arise in a single row along each edge of the upper surface, and turn in upon any substance that is seized so as to embrace it tightly: when at rest, they are doubled up into little coils or knots, and are only expanded when the animal is searching for food. When engaged in this operation it elevates itself out of the tube, turns the disc down with very deliberate motion towards the adjacent part of the stone, and apparently examines the surface with minute attention; the *tentacula* at this time being constantly moved about so as to ensure the entrapping of any animal that may rest within their reach.

August 11, 1835.

Dr. Horsfield in the Chair.

A letter was read, addressed to the Secretary by J. B. Harvey, Esq., Corr. Memb. Z.S., and dated Teignmouth, June 7, 1835. It referred to the writer's success in dredging over the rocky ground off Torquay, whence he anticipates that he shall obtain many interesting *Corallines* and *Asteriæ*. A selection from those already collected by him, including a specimen of the genus *Comatula*, accompanied the letter and were exhibited.

Mr. Harvey states that the specimen of *Caryophyllia Smithii*, referred to in a previous letter, (page 4,) is still living in his possession and is quite healthy. "The half one by the side of it, which was broken in forcing it from the rocks, is also alive, and has nearly reproduced the round shell: the cup was destroyed, at the time it came into my hands, for considerably more than half its circumference; in the course of the eight months which have since elapsed the reproduction has been such as nearly to complete the circumference of the cup. The *Pyrgomata* on the coralline are also alive."

Mr. Burton, at the request of the Chairman, placed upon the table a specimen of the species of *Ratelus* originally described by Pennant as the *Indian Badger*, and by Shaw under the name of *Ursus Indicus*. To aid in its comparison with the *Ratel* of the Cape of Good Hope, from which Mr. Burton regards it as distinct, he describes it in considerable detail.

"This animal, which evidently belongs to the last genus of Cuvier's arrangement of the *Plantigrades*, measures from the tip of the nose to the extremity of the tail 3 feet 3 inches, of which the head and neck occupy 11½ inches, leaving 21½ for the length of the body. The anterior extremity is 8 inches long, exclusive of the nails; the posterior about 6. The length of the head may be about 6½ inches; but the great thickness of the neck, the outline of which is continuous with the *vertex*, renders the exact occipital termination of the head imperceptible. From the extremity of the nose to the inner angle of the eye is 2 inches: from the same point to the external opening of the ear is 4½. From the comparative length of the body and limbs it results that the animal is very low on the legs (or, as the French authors term it, *trapu*), long in relation to its height, and necessarily higher before than behind. When standing, it cannot be computed at more than 9 or 10 inches high at the shoulder, and about 6 or 7 at the crupper.

"The head is rather small for the size of the neck and body. The eye is likewise remarkably diminutive, the distance between the extreme points of the *canthi* being less than half an inch, an opening which leaves little space for the eyeball externally. There

is no external ear: the rudiments of it may indeed be faintly traced in some parts surrounding the *meatus externus*; but these are level with the surrounding skin. Below there is a hard low ridge, or rather thickening of the integument, and on the opposite side of the opening, a small raised tubercle, which may be considered as vestiges of the *tragus* and *antitragus*; but beyond these obscure indications there is nothing conformable to the character of an auricle.

"The toes of the fore feet are five in number, and are armed with enormous claws or nails, of which the internal one rises so high on the foot that its extremity is parallel with the origin of the second: this last and the fourth are equal; the length of their nails about $1\frac{1}{4}$ inch: the nail of the middle one is the longest of all, being about $1\frac{1}{2}$ inch in length: the length of the outer one is nearly 1 inch. The superior aspect of the nail presents a surface of some thickness, rounded off at the edges; the under surface is concave, and the edge reduced to a mere line, except towards the point where the *laminæ* separate. The lateral surfaces of these nails are perfectly flat, so as to adapt them for accurate apposition to each other; and the toes being also short and flattened at their sides, it is to be concluded that the whole are closely approximated when the animal works in the ground, and that the foot is thus formed into a broad and powerful spathe.

"The character of the hind foot is essentially different: the toes are less developed, and the nails very short, and comparatively feeble. On the under surface the *laminæ* of the nails are separated to such an extent, that a deep oval *fossa* is formed between them. The plant of this foot protrudes so much that it is almost globular, in in consequence of which the short nails do not reach near the ground.

"The dental formulary is that of *Ratelus Capensis*. The teeth are fewer than in any other genus of the same tribe, as might be expected from the abruptness of the head anterior to the eyes, and the shortness of the mouth. The four middle incisors of the lower jaw are the smallest and most feeble: the two external ones of this range and the four middle ones of the upper jaw are somewhat larger and stronger. In this last the two outer incisors differ essentially from all the others, and partake of the character of canines. They are at least three times as large as the adjoining ones, strong, round, and curved inwards. The true canines are powerful teeth: those of the lower jaw, when the mouth is shut, are imbedded in a space between the upper external incisor and canine; the lower ones approximate closely to the external incisors. The front molar of the lower jaw is very small; the others gradually increase in size to the last, which is long, has two points, and a tuberculated surface behind. The great carnivorous tooth of the upper jaw has a tubercle or heel projecting inwards: the breadth of the posterior tooth of this jaw exceeds its length; so that in these characters it approaches the *Mustelidæ*.

"The colour of the animal is black with the exception of the back and upper parts of the head and neck, although a few black hairs thinly scattered along the middle of the back give a faint gray

tint to the super-vertebral region, which, however, is soon lost in the white of either side. White also prevails along the dorsal aspect of the tail to within an inch of its termination, where it is lost in the black of the point. The margin of the white colour forms a concave line across the face, whence, descending along the side of the neck, ribs, flanks, and rump, it meets the line of the opposite side on the tail. The remaining parts, including the extremities, are, as before stated, more or less black.

"As the animal approaches the *Ursine* tribe in its form and plantigrade movement and the *Weasels* in its dentition, so with respect to its integuments it bears some analogy to the *Porcine Pachydermata*. The skin is tough, thick, and hard; the hairs are long, loose, coarse, and scanty, without vestige of the finer wool which immediately envelopes the skin of so many other animals. They are, however, much thicker on the upper than on the lower surface both of the body and limbs. On the posterior parts of the thighs they are so long as almost to form tufts; on the front of the fore legs they are also very long, and their course is here directly across the limb. On the sides of the neck the lay of the black hairs is precisely vertical, thus meeting the white ones, whose course is longitudinal, exactly at right angles. Round the opening of the ears there is a peculiar circular ring of hairs, about half an inch in breadth, which bears a rude similitude to the feathered circles surrounding the eyes of the nocturnal birds of prey. The face and jaws are nearly naked, scarcely any traces of hair being observable in these parts: the whole ventral aspect is also remarkably destitute of this covering. A few long black hairs are here and there met with on the chest, belly, and under surface of the extremities, but not in sufficient quantity to conceal the skin. There is also a line along the inferior surface of the tail entirely denuded of hair. The integuments round the *anus* are naked, and dilated into a kind of circular bag or pouch, though not to a considerable extent. The specimen from which this description is taken is a male.

"It is impossible to examine this animal, even in the most cursory manner, without coming to the conclusion that it is wonderfully adapted for making its way beneath the surface of the earth. The powerful fore leg, armed with enormous claws; the cuneiform head; the face deprived of hair; the minute and sunken eye; the entire absence of external ear; the strong and muscular neck and shoulder; the comparative diminution of the posterior extremities, whereby the bulk of the hinder parts is lessened; the naked *abdomen*;—all unite to characterize it preeminently as a digger. And in fact, among the population of its native regions, it is said that it seeks its choicest food in the cemeteries, and such is its dexterity in tearing open the graves of the dead, that no tomb is sacred from its attacks. The latter part of this account is probably in some degree overstated; but it has, at all events, in those parts obtained the appellation of the *Gravedigger*. The generic term of Storr, *Mellivora*, although it may suit the African species, is consequently peculiarly inappropriate in reference to this.

"It is a native of the upper provinces of Bengal, where, however,

it is said to be rare. The present specimen, which is in excellent condition, was brought from thence by Dr. Sandham, surgeon of the 11th Light Dragoons, by whom it was presented to the Museum of the Army Medical Department. It is brought under the notice of this Society with the sanction of the Director General, Sir James McGrigor, Bart.

"This animal has been almost entirely neglected by systematic writers. It was alluded to by Pennant, but in so short, vague, and unsatisfactory a manner, that it is impossible to form any distinct notion of it. Shaw followed and copied the few words of Pennant which relate to it, and termed it *Ursus Indicus*. Lastly, the late General Hardwicke, whose talents and perseverance made him familiar with the natural history of Northern India, published some account of it in the 11th volume of the 'Linnean Transactions'. But it does not appear that he considered it as different from the *Rat. Capensis*, or was sufficiently aware of its peculiarities to enable him to erect it into a distinct species. A specimen formerly living in the collection of this Society was understood to have been brought from Madras.

"In the synopsis of *Mammalia*, in Griffith's translation of the 'Animal Kingdom', there is merely a note stating that the *Ursus Indicus* of Shaw is probably a variety of the *Ratel*. The French authors have entirely neglected it; neither the Baron nor M. F. Cuvier makes any mention of it. M. Lesson, still later, asserts that there is but one species in this genus; 'On n'en connaît qu'une seule espèce,—Ratel du Cap.'"—E. B.

Mr. Burton subsequently exhibited a specimen of an *Agriopus*, Cuv., which he regarded as hitherto undescribed. He characterized it as the

AGRIOPUS UNICOLOR. *Agr. brunneo-fulvus; dentibus setaceis maxillaribus; radiis mollibus pinnæ dorsalis quatuordecim, analis decem.*

"This *fish* bears a general resemblance to *Agr. torvus*, Cuv. & Val., the type of the genus. Its length is nearly similar, but the body is more slender and compressed, particularly towards the middle. The lower outline is sufficiently regular. The dorsal line from the eighth to the fourteenth spinous ray is somewhat concave, if, however, this effect be not produced by imperfect stuffing. The eyes protrude less than in *Agr. torvus*. The profile furnishes one of the most marked distinctions between the two species: that part between the eyes, instead of being vertical, slopes considerably; and the line of the snout, in place of descending in an angle of about forty-five degrees, is very nearly horizontal, or in a line with the body. The mouth is somewhat deeper.

"The next remarkable variation is in the teeth. The observation which Cuvier and M. Valenciennes have applied to those of *Agr. torvus*—'c'est à peine si l'on sent aux mâchoires quelques petits dents en velours'—is by no means applicable here. On the contrary, they are very conspicuous, rather 'en carde' than 'en

velours', and are irregularly crowded on the maxillaries. Those towards the angle of the mouth are somewhat longer. The lines of ossific granulations, which, passing forwards from the superciliary ridges, unite in an angle on the forehead, are much more distinct: the appearance of those clustered on the posterior suborbitary and temporal bones is much the same in both species. The upper division of the border of the *operculum* approaches nearer to a semicircular form.

"The attachment of the pectorals and ventrals, as well as their general form and number of rays, is also alike. The dorsal presents some variations; the height of the first spine being only two fifths of that of the second, the latter and the fourth equal, and the third somewhat the longest of all. The emargination in the membrane between the second, third, fourth, and fifth spinous rays is obviously deeper. The number of soft rays exceeds that of *Agr. torvus* by one, being fourteen in number. The anal has also one additional ray.

D. 21 + 14; A. 1 + 10; P. 1 + 8; &c.

The caudal has nothing worthy of note, unless its termination is more lunated; but this distinction must be received with caution, as the injury commonly sustained in this part by dried specimens renders its character equivocal.

"The skin is smooth, equally free from scales, warts, tubercles, or protuberances of any kind, with the exception of the granulations on the head before mentioned. It is of a yellowish brown colour throughout, darker on the upper part of the head, and above the lateral line; lighter below, the lightest part being immediately posterior to the *operculum*. This description is taken from the dried specimen; what variations occur in the fresh subject I have no means of ascertaining. Towards the superior edge of the dorsal, and over the ventrals and caudal, the colour becomes yet darker: the pectorals incline to blackish. The black bars and blotches which prevail throughout the dark ground colour of *Agr. torvus* are entirely absent in this species. The lateral line is nearly straight, marked as it passes along the anterior part of the body by distant and obscure tubercles, all traces of which disappear at the commencement of the soft dorsal. These are the principal distinctions between this fish and *Agr. torvus*, with which it has probably hitherto been confounded.

"A remark of Cuvier and M. Valenciennes in the 'Histoire Naturelle des Poissons,' supposes the existence of other species, although the little there said is not applicable to this: 'Parmi nos individus, il s'en trouve un dont la peau est toute brune,' (so far only it accords with our description) 'mais relevée partout en petites bosselures arrondies, comme des verrues peu saillantes. Nous ne savons s'il appartient à une espèce différente, ou si ce n'est qu'une variété.' It may not unreasonably be assumed from the above description that this is a distinct species, under which impression it has been brought under the notice of this Society.

"It is an inhabitant of the Cape seas, from whence the present

specimen, which forms part of the collection of the Army Medical Department at Chatham, was brought."—E. B.

Mr. Gray exhibited various species of the Linnean genus *Venus*, in illustration of the subdivisions into other generic groups which appeared to him to be, in the present state of the science, valid. He pointed out the characters of these several genera; referred to the types of each; and noticed many hitherto undescribed species contained either in his own collection or in that of the British Museum.

Mr. Bennett called the attention of the Society to a *Paradoxure* now living at the Gardens, which he regarded as previously undescribed. He characterized it as the

PARADOXURUS GRAYI. *Par. vellere denso, subæquali; olivaceo-fulvescens cinereo tinctus, subtùs pallidior; facie, auriculis, pedibusque nigris, illius vittâ nasali, fasciâ abbreviatâ suboculari, fronteque cinereis.*

Long. corporis cum capite, circiter 20 unc.; *caudæ* paullo major. *Hab.* in Indiâ.

The fur of the animal, unlike that of *Par. Typus*, F. Cuv., and some other closely related species, is nearly of equal length, and is dense and in some degree woolly. Its colour above is a light fulvous brown, showing in certain lights a strong cinereous tinge, owing to the black tips of many of the hairs. Beneath it is lighter, and has a more cinereous tinge. The limbs are ash-coloured and deeper in intensity towards the feet, which are black. The tail is throughout of the same colour with the body. The ears are rounded, covered with hairs, and nearly black. The face is black, with the exception of the forehead, of a longitudinal dash down the middle of the nose, and of a blotch-like short oblique band under each eye; these markings being grey. There are no traces of longitudinal bands or spots on the body.

The separate hairs are dusky at the base and pale yellowish in the middle: they are tipped with black.

The tail is constantly twisted in the manner in which it is occasionally borne by *Par. Typus*, and cannot be rendered straight.

As the specimen was purchased of a dealer, the precise part of India in which it was captured cannot be ascertained.

August 25, 1835.

William Yarrell, Esq., in the Chair.

A letter was read, addressed to the Secretary by Captain Manby, R.N., dated Yarmouth, Aug. 22, 1835, and announcing the stranding of an enormous whale, near Southwold in Suffolk, on the 19th of August. Captain Manby states that it is of the species denominated by Linnæus, *Balæna Physalus*.

Drawings were exhibited of three *Fishes* captured at Port Praya, by Capt. P. P. King, R.N., Corr. Memb. Z. S. They were communicated by Mr. Broderip. They comprised representations of *Serranus tæniops*, Cuv. & Val.; *Sargus fasciatus*, Eor.; and an *Acanthurus*, apparently hitherto undescribed, the

ACANTHURUS KINGII. *Ac. purpureo-virescens, suprà lineis azureis undulatis interruptis numerosis longitudinaliter notatus; operculorum margine, pinnæ pectoralis maculâ, dorsalis basi, maculâque ovali spinam caudalem cingente rufescenti-flavis: pinnâ caudali lunatâ.*

D. 10 + 27. A. 3 + 25. P. 17. V. 1 + 5. C. 16.

Long. tot. $12\frac{7}{8}$ unc., alt. corporis, $4\frac{7}{8}$; long. *radiorum pinnæ dorsalis*, $1\frac{1}{2}$; lat. inter oculos, 1, ad pinnas pectorales, $1\frac{7}{8}$.

Besides the markings enumerated, there is a blue line at the lower part of the soft portion of the dorsal fin, separating it from the reddish yellow streak of its base. The branchial rays are reddish yellow.

The teeth are eighteen above and sixteen below: they are crenated and closely set. The scales are small, ovate, square at the outer margin, and minutely serrated.

The following Notes, by Mr. Owen, on the anatomy of the *Kinkajou, Cercoleptes caudivolvulus*, Ill., were read.

"The anatomy of an animal which is the sole representative of its genus, and which, in its external form and habits, manifests a relationship with genera belonging to two different orders of its class, must always be a desirable addition to zoological science. The death of the *Kinkajou*, which has been for the last two or three years in the Menagerie, has afforded the opportunity of determining the natural affinities of a somewhat anomalous form, and of thus compensating in some degree the loss of a living specimen, by the

additional facts contributed in consequence to the science which it is our object to advance.

"It is not in my province to enter upon an external description of the *Kinkajou*, nor is such an account now required, since it has already been given, with more or less of detail, by the best systematic zoologists of the last half century. Its interest, as an osculant form, may be gathered by a simple reference to the modes in which it has been considered and classified by different authors, and to the synonyms indicative of the different degrees of importance attributed by them to its outward peculiarities. Classed among the *Viverridæ* by Shaw, under the name of the *prehensile Weasel*, and raised to the *Quadrumana* by Pennant, as the *yellow Macauco*, it holds a somewhat intermediate station in the system of Cuvier, who places it in the *Plantigrade* family of *Carnivora*, under the generic name *Cercoleptes*, applied to it by Illiger.

"In the following description of the anatomy of the *Cercoleptes*, I shall therefore consider it with reference more especially to the *Lemures* and the *Plantigrade Carnivora*.

"The specimen measured in length, from the end of the nose to the root of the tail, 1 foot 4 inches; and the length of the tail was 1 foot 5 inches.

"There were no clavicles, not even in a rudimentary state. The clavicular portion of the *sterno-mastoideus* arose from the cartilage of the first rib, and the corresponding portion of the *deltoid* from the transverse processes of the lower cervical *vertebra*.

"The abdominal *viscera* were protected by a large *omentum* streaked with fat. The *œsophagus* was continued about an inch into the *abdomen*, and entered the stomach about an inch from the left extremity. The pyloric extremity of the stomach was bent upwards abruptly, and suddenly became narrow.

"The *duodenum* made a large semicircular sweep downwards, backwards, and to the left, being loosely connected by a wide duplicature of *peritoneum* for the greater part of its course; it was also connected with the *colon* by a fold of *peritoneum* continued from it. The remainder of the intestinal canal was disposed in rather large folds, connected to a mesentery about 2 inches broad, in which the mesenteric vessels formed only a single series of arches. The diameter of the small intestine was about half an inch, becoming somewhat less towards the *colon*. There was a slight constriction indicating exteriorly the commencement of the large intestine, and better marked within by a sudden thickening of the muscular coat, and the commencement of a few narrow longitudinal folds of the mucous membrane, but there was no *cæcum*.

"The whole length of the intestinal canal was 6 feet 6 inches; the length of the large intestine was only 5 inches. At its termination it became very muscular, and the lining membrane was thrown into irregularly transverse *rugæ*. In the rest of the intestinal canal, with the exception of the longitudinal folds above mentioned, the mucous membrane was smooth and uniform.

"The liver was composed of three principal divisions, of which the left had a small *appendix* at its under surface. The middle or cystic division was deeply cleft into three lobes, the round ligament passing into the left notch, and the gall-bladder being lodged in the right, with its *fundus* on a level with the upper convex surface of the gland. The right division of the liver was also cleft into three lobes, which were again further subdivided by shallower fissures, the smallest lobe occupying the usual place of the *lobulus Spigelii*, viz. the lesser curvature of the stomach.

"The gall-bladder had an entire investment of *peritoneum*, and two of the primordial *cæca* had been dilated and retained in their original simple condition to form this receptacle: one of them was, however, much less than the other, appearing as a small vesicle appended to the origin of the cystic duct. I have met with similar structures in other animals: in the *Hyrax Capensis* there were two accessory gall receptacles; and in a preparation in the Hunterian collection, three hepatic *cæca* have been almost equally developed to form the biliary reservoir (this is from some small quadruped, species unknown, No. 820, Gallery Catalogue). I dwell more particularly on this circumstance, because it is an anomaly which has not, so far as I know, been described, and because it throws some light on that part of the structure of the liver which is generally allowed to be still left in the most uncertain state, viz. the ultimate disposition of the biliary ducts. It obviously accords best with the opinion of Müller, that the *tubuli biliarii* terminate in, or rather commence from, blind extremities.

"The *pancreas* consisted of a transverse and circular portion, the latter following the curve of the *duodenum*; the duct terminated, with the *ductus choledochus*, 2 inches from the *pylorus*.

"The spleen occupied the usual situation; was 4 inches long, $1\frac{1}{2}$ inch broad, and $\frac{1}{2}$ an inch thick; its weight $13\frac{1}{2}$ drachms; it was of the usual elongated trihedral shape.

"The kidneys were situated high in the loins, the right higher than the left, of a somewhat elongated form, with a smooth simple exterior, neither notched nor painted with arborescent veins, as in the typical *Carnivora*. The *tubuli uriniferi* terminated on a simple elongated *mamilla*, formed by the union of five lateral processes. The ureters entered, as usual, behind the neck of the bladder.

"The supra-renal glands were very small, reddish coloured, and healthy, although imbedded in a dense strumous mass which occupied the interspace of the kidneys.

"The ovaries were a little larger than peas, with a smooth exterior, enveloped in a loose serous capsule having only a small opening turned towards the horn of the *uterus*, and in which the head of a probe could be with difficulty admitted. They were suspended by a duplicature of *peritoneum* continued from the lower end of each kidney.

"The length of the *corpus uteri* was 1 inch; of each *cornu* 2 inches; of the true *vagina* $\frac{1}{4}$ of an inch; of the urethro-sexual canal 1 inch. A well-marked transverse fold divides this from the

vagina. There were no anal scent-bags, but merely superficial follicles. In this respect *Cercoleptes* has a nearer affinity to *Ursus*, in which the anal bags are very small and shallow, than to the *Weasel* tribe, in which they are largely developed.

"The tongue was long, smooth, flat, and slightly emarginate at the tip. It had seven fossulate *papillæ*; the three nearest to the *epiglottis*, and forming the *apex* of the triangle, were the smallest. There was a long and large elastic *lytta*, ligamentous anteriorly, cellular posteriorly, surrounded by a muscular sheath of circular fibres.

"The tonsils were large and oblong. There was no *uvula*. The *epiglottis* was well developed, with a pointed *apex*. There were two narrow, shallow slits in place of laryngeal *sacculi*. The thyroid glands were separate, oblong, pointed at their lower extremities. There were more than twenty-five tracheal rings, which were incomplete behind.

"The brain of the *Kinkajou* is characterized by convolutions disposed as in the *Carnivora* generally; but the anterior transverse anfractuosity (marked No. 1. in Plate XX. of the 'Zoological Society's Transactions') runs more obliquely from within, outwards and forwards, and there is a greater proportion of brain anterior to it. The general form of the brain is longer and narrower than in the *Cat*. The *cerebellum* is separated from the *cerebrum* by a strong bony *tentorium*.

"The morbid appearances in the parts examined by me were small firm tubercles studding the liver, spleen, and kidneys; a large tuberculous mass between the kidneys; and a similar mass occupying the place of the mesenteric glands: both these masses were of scirrhous hardness, and of an irregular fibrous structure in the middle.

"In the note-book of our medical superintendent, Mr. Youatt, is the following record of the illness of the *Kinkajou*:

"'May 17th. Has not been well for some days; dull, and off its food. A little castor-oil operated well.

"'May 23rd. Dismissed well.

"'May 26th. Again off its food.

"'June 3rd. No symptom of serious illness.

"'June 7th. Spirits and appetite gone; sad heaving at the flanks. There is deeply seated organic mischief.

"'June 10th. Sinking.

"'June 15th. Died.'

"In his description of the morbid appearances, Mr. Youatt observes: 'When I attempted to cut through the diaphragm, in order to bring the lungs into view, I met with a hardness which I could with difficulty cut, and which creaked under the knife. When I got the contents of the *thorax* fairly out, I found adhesions under the diaphragm, but not a vestige either of *pericardium* or *mediastinum*; in lieu of them was a hardened, almost cartilaginous mass, presenting a convex surface superiorly, adapting itself to the form of the *thorax*, with a hollow formed in it, which contained the

heart; and a prolongation on either side becoming thinner and thinner, until at the base was some vestige of membrane. The heart was contained in this cavity, but its vessels, both pulmonary and arterial, were apparently lengthened in order to reach the lungs. The lungs, pressed out of their place by this unnatural body, were diminished in size; the substance softened, half pultaceous, and, when squeezed, a purulent matter escaped. There were also numerous minute tubercles in the substance of the lungs. The animal had wasted almost to a skeleton.'

"We may therefore regard the complaint of the *Kinkajou* as being a long-continued strumous disease, in which some of the tuberculous deposits, instead of suppurating, had become partially organized, and the cellular *septa* rendered ligamentous.

"I conclude with a few observations on the affinities of the genus *Cercoleptes*, as they are elucidated by the preceding anatomical account.

"Besides the differences of outward form which the *Kinkajou* presents, as compared with the *Lemur*, in the shorter muzzle, the absence of the hinder thumb, and the presence of the prehensile tail, as well as in the quality of the hair and the dentition, the following important discrepancies occur in the internal anatomy of these two genera:

"In *Lemur* the intestinal canal is above six times the length of the animal's body; in the *Kinkajou* it is scarcely five. In *Lemur* it is also complicated by a *cæcum* of considerable length (measuring 15 inches in the *ruffed Lemur*, according to Mr. Martin, and which I found of $7\frac{1}{2}$ inches in length in a *Lemur nigrifrons*). The *colon* also in the *Lemures*, is largely developed, (measuring upwards of 2 feet,) and is sacculated at its commencement. In the *Kinkajou* the large intestine, as in the *Raccoon*, is separated from the small by a slight internal circular projection of the mucous membrane, and measures only 6 inches in length. The stomach is also narrower at the pyloric end, and more bent upon itself than in *Lemur*.

"With respect to the digestive glands, there are no material differences. In both animals the liver is much subdivided, and the spleen is large. The kidneys are of a simple exterior in the *Kinkajou*, as in the *Raccoon*; not lobulated, as in the true *Ursi*: in this respect they resemble *Lemur*, but the form is so usual as not to authorize any deduction from it. In the generative organs, however, the *Cercoleptes* recedes from the *Quadrumanous* type further than the *Lemur*, in the extent to which the *uterus* is divided, and the consequently greater length of the *cornua*, and Fallopian tubes. Its nearer affinity to *Procyon* is also manifested in the disposition of the serous capsule about the *ovarium*, which leaves only a small orifice sufficient to admit the end of a probe; while, in *Lemur*, the *ovaria* are situated, like those of the *Quadrumana*, almost as in the human subject.

"In the osseous system it may be noticed that the *Cercoleptes* de-

viates from *Lemur*, and approximates *Procyon* and its congeners, in the absence of a clavicle and the presence of a bony *tentorium*.

" Thus all the more important parts of its anatomy show that its true position is in the *Carnivorous* order, and that it has the closest affinities with the *Ursiform Plantigrada*, making, however, the nearest approach to the *Quadrumanous* type in that family."

September 8, 1835.

Thomas Bell, Esq., in the Chair.

A living *Iacchus Monkey, Iacchus penicillatus*, Geoffr., was exhibited, which had recently been presented to the Society by Mrs. Moore of Rio de Janeiro. It was accompanied by a note, in which it was stated to have been obtained from the province of Bahia. "Like most monkeys, it will eat almost anything; but its chief and favourite food, in its wild state, is the *Banana*. It is a very delicate animal, and requires great warmth; and its very beautiful tail is, in this respect, eminently conducive to the comfort of the little creature, who, on all occasions when he requires warmth, rolls himself in the natural boa with which Providence has, in its wisdom, endowed him."

A note by Mr. William Smith, relative to the animal of the *Argonauta Argo*, Linn., and forwarded through Mr. Gray, was read. The most important statement adduced in it, with reference to the question of the parasitic nature of the *Cephalopod* so frequently found in the shell, is thus expressed: "It seems pretty evident that the animal found in the *Argonauta* is a parasite, because, in the Bay of Naples, where it is very abundant, the shell is but rarely found; whereas the *Octopus* itself is constantly to be met with, and indeed is daily to be seen in the common market as an article of food. To give some idea of its comparative scarcity in union with the shell, I shall merely mention that the usual price of the animal alone is about fourpence; while a specimen inhabiting the shell cannot be obtained under five shillings."

The following Notes, by Mr. Martin, of the dissection of a specimen of the *small Nocturnal Lemur, Microcebus murinus*, Geoffr., which lately died at the Society's Gardens, were read.

"The animal was a male, and doubtless adult, as was sufficiently indicated by the development of the sexual organs. Its length from the nose to the insertion of the tail was 5 inches; that of the tail, 6; the ears were large and naked; the head was rounded; the muzzle short and pointed; the eyes were not so large, in proportion, as in the *slender Loris, Loris gracilis*, Geoffr., but were evidently of a nocturnal character, being extremely resplendent, the glare of the *tapetum lucidum* showing very bright through the round dilated pupil.

"The *penis* was furnished with a slender bone extending from the *glans* for nearly half an inch. The *glans* was compressed, with a lunar-shaped elevation, inclosing a small depression on its an-

terior aspect. The *testes* were of considerable magnitude, and inclosed in a pendent *scrotum*, which was very conspicuous.

"On opening the *abdomen*, two portions of the liver covering the stomach, the spleen with its upper end also lying upon the stomach, the left kidney, a section of the great curvature of the stomach, and the convolutions of the intestines, were presented to view.

"The liver consisted of a middle and a left lobe having an anterior aspect, and of a right lobe having a dorsal aspect, covered entirely by the right portion of the middle lobe. This middle lobe had two fissures; that to the left for the insertion of the *ligamentum latum*; that to the right, admitting the gall-bladder to appear; the bladder itself being situated near the edge, on the under side of the lobe, in a continuation of the fissure. On opening the *abdomen*, the gall-bladder as well as the lobe in which it is situated, cannot immediately be seen, owing to its dorsal inclination. The gall-bladder was very small, being about 3 lines in length: what struck me, however, as being very remarkable, was that, contrary to the general rule, its neck, or *apex*, was on the edge of the liver, its *fundus* being inwards; so that the duct made an acute turn at its commencement, and then proceeded along the body of the bladder; leaving this, it continued for half an inch, and then received two or three auxiliary hepatic ducts; and after a further course of the third of an inch, it entered the *duodenum* little more than a quarter of an inch below the *pylorus*.

"The spleen was long and slender, measuring 1 inch by a quarter: it was attached pretty closely to the stomach.

"Of the intestinal canal the *duodenum* was the largest in circumference; it gradually diminished to the average measure, which was rather more than half an inch, that of the large intestines, if we may so call them, being scarcely so much. The length of the small intestines was 1 foot; that of the large, 8 inches. The stomach was somewhat oval, and the œsophageal and pyloric orifices were distant only 3 lines; the measurement of the greater curvature was $2\frac{3}{4}$ inches; the circumference, when moderately distended, $2\frac{1}{4}$. The *cæcum*, somewhat enlarged at its base, was about $1\frac{3}{4}$ inch in length, and terminated in a blunt *apex*.

The kidneys were compressed in form, and half an inch in length; the *tubuli* converged in one large distinct conical *papilla*. The supra-renal glands were closely attached to their upper and inner part, and were of the size of small peas.

"The lungs consisted of two lobes on the left, and three on the right side. The heart was pointed; its length being half an inch.

"The tongue was pointed, and 1 inch in length: its surface was velvety, with soft, small, delicate *papillæ*.

"The thyroid glands were oval, and little larger than pin-heads.

"The submaxillary glands were large.

"The *œsophagus* was smooth on its internal surface.

"The *trachea* consisted of nineteen or twenty rings.

"The sexual organs were next examined. The length of the *penis* from the *pubes* was 1 inch; the *erectores* muscles were large and

long; the *testes* were oval, and as large as sparrows' eggs, being $\frac{3}{4}$ of an inch in length, in breadth $\frac{1}{2}$ an inch, in thickness 3 lines; the *epididymis*, 3 lines in length, was somewhat club-shaped; the *cremaster* muscle was very strong; the length of the cord to the abdominal ring was $\frac{1}{4}$ of an inch; the total length of the *vasa deferentia*, $1\frac{1}{2}$ inch; they terminated internally at the root of the *vesiculæ seminales*, that is, between them and the bladder; the *vesiculæ seminales* were small and tubular, with a turn at the extremity; from their entrance to the bulb of the *urethra* $\frac{1}{2}$ an inch.

"Being desirous to ascertain whether the arteries of the extremities manifested any approximation in their arrangement to what obtains in the *Loris gracilis*, Geoffr., and the *Sloth*, *Bradypus tridactylus*, Linn., I injected the subclavian and femoral with mercury. The distribution was found to be similar to that of other *Quadrumana*, and without the slightest approach to the plexiform condition which was observed in the *Loris*. The arterial trunks were in fact simple, giving off muscular branches in the usual manner, as they proceeded.

"The muscles of the limbs, and especially those of the thighs, were remarkably large and firm, conveying an idea of far greater strength than would be suspected in so small and delicate an animal."

September 22, 1835.

William Yarrell, Esq., in the Chair.

Some extracts were read from a Letter addressed to the Secretary by M. F. Cuvier, For. Memb. Z. S., and dated Paris, September 15, 1835. Among other zoological notices contained in it were some remarks on the dentary systems of the three approximating genera of *Herbivorous Rodentia*, *Ctenomys*, Blainv., *Octodon*, Benn., and *Pœphagomys*, F. Cuv. M. F. Cuvier states that the teeth of the former are destitute of true roots.

A Letter was read, addressed to the Secretary by J. B. Harvey, Esq., Corr. Memb. Z. S., and dated Teignmouth, September 9, 1835. It accompanied some dried specimens of the animal of *Serpula tubularia* of Dr. Turton, which were forwarded by the writer with the view of demonstrating that the *Patella tricornis*, Turt., is in reality an appendage to that animal, serving as an *operculum* to its shelly tube—a fact which, subsequently to his description of the supposed new species of *Patella*, Dr. Turton appears himself to have suspected. The appendage described as the *Pat. tricornis* is in reality the covering of the dilated extremity of the single developed *tentaculum* in the *Serpulidous* animal forming the shell characterized by Dr. Turton as the *Serp. tubularia*: a similar covering is met with in the animals of all the species of *Vermilia*, Lam., and *Galeolaria*, Ej.; but not in those of the genus *Serpula* as restricted by Lamarck.

Mr. Harvey states that "Two days ago an industrious young naturalist, Mr. H. Glossop, of Isleworth, who has accompanied me on many dredging excursions, noticed an unusual, as he thought, horny substance upon the worm of a *Serpula tubularia*, which was adhering to a shell in salt water, and on examination it proved to be the *Patella tricornis* of Dr. Turton. We have since pulled out and examined above a hundred of these *Serpulæ*, all living specimens, and have found an *operculum* upon each of them. I am going to sea again on Saturday, and in a few days it is my intention to send you several living specimens, that you may satisfy yourself and the Society on this subject: I will forward them by the mail, with a bottle of sea-water in the basket, that you may preserve them alive for a day or two."

Mr. Bennett called the attention of the Meeting to a specimen of a *Crocodile* which he had regarded, while it was living in the Society's Gardens, as referrible, on account of the length of its head and the extent of the shielding at the back of its neck, to the *Crocodilus*

cataphractus, Cuv. A more close examination of it, however, subsequently to its death, had shown him that its head was still more prolonged than that part is described to be in *Croc. cataphractus*, its length being to its breadth as 3 to 1, instead of as $2\frac{1}{2}$ to 1: it is also deficient of the second post-occipital series of four small plates noticed as occurring in *Croc. cataphractus*. On these accounts principally he stated that he considered it as representing a previously undescribed species, which he characterized as

CROCODILUS LEPTORHYNCHUS. *Croc. rostro elongato, capitis latitudine longitudinis partem tertiam æquante; scutis post-occipitalibus ovalibus parvis duobus, nuchalibus per paria quatuor cataphractis, cum dorsi seriebus continuis.*

Long. tot. 27 unc.; *cranii*, $4\frac{5}{8}$; *cranii*, ad maxillarum commissuram, lat. $1\frac{1}{2}$.

Hab. apud Fernando Po.

Dentes in maxillâ superiore quatuordecim, in inferiore quindecim.

Notwithstanding the approximation of this species to the *Gavials* by the elongation of its jaws and by the extent to which the back of the neck is protected by bony plates, it has all the essential generic characters by which the *Crocodiles* are distinguished. The two posterior pairs of nuchal plates are much smaller than the two pairs anterior to them.

The animal having been anatomically examined subsequently to its death, the following notes were prepared by Mr. Martin of his dissection of the *Crocodilus leptorhynchus*.

"The length from the *anus* to the nose was 1 foot 2 inches; from the *anus* to the tip of the tail, 1 foot 1 inch; that of the *ramus* of the lower jaw, $5\frac{1}{4}$ inches.

"The musk-gland described by Mr. Bell was very small; and the peculiar muscle embracing it and running to the *os hyoides* was so delicate and slender that it was only to be followed with extreme care: the gland contained a small portion of creamy matter scented very strongly of musk.

"The serous cavities (of which, in his account of the *Croc. acutus*, Mr. Owen gives a detail,) may be described as follows. A serous membrane constitutes a sort of *pericardium*, to which the heart is secured at its *apex* by the membrane reflected from its own surface: from this pericardiac membrane is reflected an expansion, forming a distinct serous cavity on the anterior surface of each lobe of the liver: the *pylorus* and gall-bladder are in a separate serous cavity: and so is the anterior part of the stomach, the membrane passing from the *parietes* of the *abdomen* on the left side, uniting with the under part of the stomach, and being reflected over its surface. Besides the cavities on the liver alluded to, there is another on the right lobe at its *dorsum*, very extensive, and formed by a process of the *pleura*: but the *pleura* is not

continued to the left lobe. The intestines occupy their own serous cavity: but below the *pubes* a distinct serous cavity contains the anterior part of the *cloaca* or genito-urinary reservoir. The peritoneal or serous membrane does not invest the kidneys, but is reflected over their anterior (abdominal) surface.

"The peritoneal canals were very easily made out. They opened on each side of the base of the *penis*, by two orifices capable of admitting the point of a fine blow-pipe. In the *Croc. acutus* Mr. Owen found them to allow barely of the passage of an eye-probe; but in the present animal, small as it was, they were far larger; still it appeared to me that they could not serve the purpose suggested by M. Geoffroy St. Hilaire. Can they be intended to allow of the escape of any gaseous secretion, any aeriform fluid, which may fill the abdominal serous cavity, and be expelled under certain circumstances, as, for instance, when the animal seeks the deep bed of the lake or river?

"The stomach was globular and flattened, with a glistening tendinous patch on each side, as large as a shilling, or nearly so. The entrance of the *œsophagus* and the pyloric *appendix* were close together, the *appendix* being about as large as a good-sized horse-bean: from this the *duodenum*, emerging, formed a double fold; that is, a fold formed by two lengths of intestine put together, and bent upon themselves, embracing within the outer line, as in *Birds*, the *pancreas*, a long thin gland, one portion of which was continued a short distance along the free portion of the intestine, where it became more thick, and ended abruptly. Further to the right, but in close contact with this duodenal fold, lay the spleen, a grey flattened rounded cake; it was touched by the lower edge of the right lobe of the liver, and was totally surrounded by *peritoneum*, which attached it by a narrow riband or slip to the *duodenum*, below the entrance of the biliary ducts: along this riband ran a large vein, going from the spleen to the *vena porta:* a small artery was also visible. The gall-bladder, of an oval shape, and 1 inch long, entered the *duodenum* at the termination of the outer folded layer, just where it began to be free, by a duct half an inch in length. The pancreatic duct I could not succeed in tracing, but it certainly did not enter with the biliary. In the *Croc. acutus* it enters a quarter of an inch beyond that duct.

"It may be remarked that the stomach contained no pebbles or stones, but merely a little mucus. In a specimen of *Croc. acutus* subsequently examined the stomach was distended with undigested lumps of flesh, and a vast quantity of Indian corn, swallowed most probably in lieu of pebbles: the grains were hard, and quite unaltered.

"The liver consisted of two distinct masses or lobes, of a triangular figure; and it was between them, but on the edge of the right, that the gall-bladder was situated.

"The *duodenum* was rather larger in circumference than the rest

of the small intestines, which were in a worm-like range of convolutions, on a process of *peritoneum* that expanded like a fan from the spine: at the root of this mesentery I found the gland described by Mr. Owen, but of moderate size, and dark coloured; its diameter about half an inch. The total length of the small intestines was 4 feet 8 inches. They entered the *rectum* (for to this were the large intestines reduced,) by a valvular or sphincter-like aperture, the *parietes* of which were firm, thick, and muscular. The *rectum* suddenly enlarged on the reception of the small intestines, the length of this *viscus* being barely 2 inches; its internal membrane was longitudinally plicated. The portion which I have denominated *rectum* entered into a large *cloaca*, or genito-urinary cavity, its entrance being surrounded by a large fleshy *sphincter*, similar to that around the entrance of the small intestine into the *rectum*.

"The *cloaca* was itself divided into two chambers, by a valvular fold: the upper division was large; the anal one small. The breadth of the *meso-rectum*, 1 inch. The *ureters* entered just above the valvular fold alluded to. The *urine* opake and white, as in *Birds*.

"The *penis* was small, being only half an inch in length; it lay curled up, and its *apex* was cleft horizontally, one point being elongated, and bending over the other, so as to produce a resemblance in miniature to the flower commonly known as the *Snap-dragon*,—*Antirrhinum majus*.

"The kidneys consisted of two oval bodies, with flattened surfaces, having their venous ramifications symmetrically disposed, running horizontally across from a median line, so that each kidney had no unapt resemblance to some of the fossil fern leaves: the ureters emerged from a cleft in the centre of the lower *apex* of each kidney, and were of considerable circumference; their length was 1 inch.

"At the upper *apex* of the kidneys, and partly upon them, lay the *testes*, two red elongated slender bodies, of a tolerably firm consistence. In length they were about 1 inch, and each extremity was pointed.

"Over the yellow wrinkled skin which covered the tongue or muscular expanse between the *rami* of the lower jaw, numerous small glandular orifices were thickly dispersed, whence exuded a viscid saliva or mucus. The *pharynx* was closed by the cartilaginous expansion of the *os hyoides* described by M. Geoffroy Saint Hilaire in the 2nd volume of the 'Annales du Muséum,' which, by its arrangement, forms a gular valve, its free edge pressing against a sort of *velum pendulum*, or semilunar fold of the palate, which advances anterior to the posterior *nares*. Considerably behind this gular valve is situated the *glottis*, the *rima* of which, like that of a *Bird*, is unfurnished with an *epiglottis*; unless, indeed, the gular valve be considered in this light, its use being to prevent the ingurgitation of water both into the tracheal tube and the *œsophagus*; so that the animal can breathe, provided the nostrils are just above the water,

though the jaws be open beneath the surface. The *trachea* is a straight simple tube; it was found in this animal to consist of fifty rings before its bifurcation, its length being 3¼ inches. A little below the bifurcation, on each side, was a small glandular body, similar to that seen in *Birds*, just where the *trachea* enters the *thorax*. The bifurcations were observed to run a considerable distance into the substance of the lungs before they blended into it.

"Though differing in a few minor points, the visceral anatomy of this species bore, on the whole, a close resemblance to that of the *Croc. acutus*, of which the details given by Mr. Owen are already published in the 'Proceedings of the Committee of Science and Correspondence' of this Society, Part I. pp. 139 and 169."

A specimen was exhibited of the *Stanley Crane*, *Anthropoides paradisæus*, Bechst.; and Mr. Yarrell called the attention of the Meeting to the conformation of its *trachea*, which corresponded perfectly with the one figured by him in the 'Linnean Transactions.' He remarked, that as the present *Bird* had lived for upwards of three years in the Society's Menagerie, it seemed probable, from this coincidence of form, that no increase in the extent of the fold of the *trachea* is occasioned by increasing age.

The reading was concluded of an anatomical description, by Mr. Reid, of the *Patagonian Penguin*, *Aptenodytes Patachonica*, Forst.

"The specimen, an adult male, whose dissection forms the subject of the following paper, was captured at East Falkland Isle, in latitude 51° 32′ south, by Lieutenant Liardet, R.N., and was brought to England in H.M.S. Snake, and presented by that gentleman to P. C. Blackett, Esq., by whose kind permission I was allowed to examine it in detail: the results of this dissection I now beg respectfully to lay before the Society. Owing, however, to the length of time which had elapsed subsequently to its capture, and to the manner of its preservation (in rum),—together with a wound on the inferior part of the neck, and others in the mouth, added to several bruises,—part of my description will not be so perfect as could be desired.

"The bones are very hard, compact, and heavy, having no apertures for the admission of air; but they contain, especially the bones of the extremities, a thin oily marrow. The *foramina* for the transmission of the blood-vessels of the bones are small. The *periosteum* is thick and fibrous.

"The *cranium* is short and broad, and is united into a single bone, with very little appearance of suture or harmony: superiorly it is flattened; posteriorly, towards the *occiput*, it is rounded; it declines obliquely forwards; and when it attains the front of the orbits it is suddenly truncated to meet the superior mandible.

"The orbits are large, and separated only by membrane. Above each orbit there is a *fossa*, which is deeper and broader behind than

in front, and which ends suddenly at its union with the orbitar process of the temporal bone. External and inferior to the termination of the transverse ridge of the occipital bone there is a process. The temporal bone has two processes: the tympanic, situated immediately anterior to the last-named process; and the orbitar, situated immediately behind the posterior part of the orbit. The basilar process of the occipital bone is short, ending posteriorly in a single round, prominent condyle, which articulates with the *atlas*. The body of the sphenoid is lengthened, and its pterygoid processes form separate bones. The tympanic bones have the internal process much produced. The *jugum* is very long and thin, attached as usual to the tympanic and superior maxillary bones. The palatine bones are long and thin, meeting posteriorly the pterygoid, and anteriorly the superior maxillary bones.

"The upper jaw is immoveable: the superior mandible long, slender, and a little arched at the point. The apertures for the nostrils are long and narrow. The bones of the superior mandible are of the usual form. The superciliary bones are wanting. The lachrymal bones are small, and fixed to the *cranium*. The turbinated *laminæ* are small, soft, and cartilaginous.

"The lower jaw is long and slender, and composed of three pieces, viz., the body of the bone and its two articulating portions. The coronoid processes are very small. The condyloid process is not elevated above the body of the bone. There is a process produced posteriorly for the attachment of the pterygoid muscles.

"The *os hyoides* has the lateral *cornua* much lengthened, passing upwards posteriorly to the occipital bone, then curved forwards for a short distance upon the temporal bone.

"The vertebral column consists of

Cervical *vertebræ*	.....	13
Dorsal ——	.....	9
Sacral ——	.....	12
Caudal ——	.....	8
	In all	42

"The *atlas* is of the usual shape. The *processus dentatus* of the second *vertebra* is flattened laterally; the posterior spinous process short, and the anterior long. The articulating processes are inferiorly produced, as are those of all the cervical *vertebræ*: in the lower of them the processes diverge less than in the upper ones. The posterior spinous process of the third, fourth, fifth, sixth, and thirteenth *vertebræ* is long: in the remainder this process is short. The transverse processes are short in all except the twelfth and thirteenth *vertebræ*, in which they more nearly correspond with the processes of the dorsal series. The articulation of the bodies of the *vertebræ* is effected as usual. The sixth *vertebra* has the transverse processes extended downwards as much as they may be without the

free motion of the neck being impeded: in the seventh, eighth, ninth, tenth, eleventh, and twelfth these processes gradually shorten, and in the twelfth and third can hardly be said to be produced: they lengthen in the fourth and fifth, and in the sixth reach the maximum. In the sixth *vertebra* we notice the commencement of two processes proceeding from the superior part of the anterior face of the *vertebræ*, a little external to the median line, which give firm attachment to the muscles of the neck: in the succeeding *vertebræ* these processes are more fully developed till they reach the tenth, after which we observe no trace of them; but instead of them, in the eleventh, twelfth, and thirteenth we have a very prominent anterior spinous process: in the two last it is bifid. In the last (the thirteenth) the transverse processes are extended laterally, and are curved acutely backwards, leading immediately to the shape of the dorsal *vertebræ*.

"These are nine in number. The first has very extensive motion: in the second the motion is much diminished: and the diminution of motion is continued as far as the seventh *vertebra*, the last two having no motion whatsoever. The posterior spinous processes have less development than is usual in most *Birds*. The anterior ones are very little produced. The transverse processes do not overlap each other. The oblique processes strongly resemble those of the neck. In the first *vertebra* the anterior spinous process is most prominent, and in the second, third, fourth, fifth, and sixth the process is bifid and less prominent.

"The sacral region is composed of twelve bones, all anchylosed together, of which the upper four might almost be regarded as lumbar, for they are unconnected to the *ilia*, except by ligament. The *canalis vertebralis* is broadest in the tenth of these *vertebræ*.

"There are eight caudal *vertebræ*, each furnished with transverse and spinous processes, and also, on their anterior face, with two processes arising one on each side of the median line, measuring in length, on an average, 6 lines. The eighth, or last, is in length 2 inches, conical, with the base towards the body, and having the tip scabrous, for the insertion of muscle: on the superior part of the anterior face there is a groove extending about one third of its length. About half an inch from the tip there is a thickening of substance, giving the appearance of the tip having been originally separate. The *canalis vertebralis* extends a short way down the bone. The seventh *vertebra* is united to the eighth by anchylosis.

"The ribs are nine in number, and of the usual form: the two upper ones are not connected with the *sternum*. The oblique processes are situated halfway between their vertebral and sternal extremities. They commence cartilaginous at the inferior margin of each rib, and are about 5 lines broad at their origin: towards their termination they spread laterally to the width of 1 inch. As they approach the lower rib they get gradually thinner. In the first and last rib they are totally wanting. The last rib, at its centre, has a

surface concave externally, produced by the action of the thigh. The sterno-costal bones are seven in number: the last one curved suddenly at its costal end.

"The body of the *sternum* is long. The keel is much developed at its top, and forms a very acute angle posteriorly, terminated by a small line. The space for the attachment of the middle pectoral muscle is considerably larger than that for the attachment of the great pectoral. On each side of the keel there is a large space, terminating inferiorly in one, owing to the shortness of the middle layer compared with the lateral ones. The keel terminates abruptly inferiorly. The ensiform process has a ridge in the middle, along which and the inferior edge of the keel a membrane was attached (which separated in maceration). The external layers of the bone are, as has been already incidentally noticed, much longer than the middle one: they curve inwards toward each other, and are tipped with cartilage. The sternal *fossa* is large and very distinct. The sternal *apophyses* are very large.

"The coracoid bones are long, strongly formed, and smooth anteriorly; the margin much produced at the superior internal edge, and the ends furnished with long hamuliform processes, extending upwards and downwards. The superior one is attached to the clavicle by the intervention of ligament. The upper part of the *os coracoides* is bent upon itself at an angle greater than a right angle. They are larger at their inferior ends, the inner ends being produced and curved forwards. The glenoid cavity of the bone is situated on the exterior posterior part, and is formed by this bone and the *scapula*, about three fifths of the cavity being formed by the *os coracoides*.

"Each clavicle is turned downwards, and is broader near the coracoid bone, and tapering to the front, where there is a protuberance formed by the junction of the clavicles: this protuberance does not touch the *sternum*. Posteriorly they give off a flat conical process, which goes down internally to the coracoid bone, and is united to the process situated on the posterior part of the *scapula*, immediately inferior to its head.

"The *scapula* is remarkably broad and thin: its neck and head rounded. There are three articulating processes in this bone: one with the *furculum*; another with the coracoid bone; and the third with the *humerus*.

"On comparing the *sternum* and adjacent bones with the *sterna* of some nearly allied *Birds*, we find less development of the keel in the *Loon*, and less development of the lateral wings in the *Auk*, and more in the *Spheniscus*. The differences will be best shown by the following tables:

	Colymbus Glacialis.	*Alca Torda.*	*Spheniscus demersa.*	*Aptenodytes Patachonica.*
	inch. lin.	inch. lin.	inch. lin.	inch. lin.
Length of the body of the *sternum*	5 3	4 10	5 10	7 0
Length of the lateral wings	3 9	4 0	6 5 n.	8 0
Length of its keel	5 0	5 4	6 5	8 0
Length of the ensiform process	1 n. 0	0 3	0 3	1 2 n.
Length of the sternal *apophysis*	0 3	0 2	0 9 n.	1 0
Half the breadth of the bone at its superior margin	1 6	0 10	1 7	2 4
Height of the keel at the superior part	1 n. 0	1 4 n.	1 8	1 9
Projection of the keel, superior to the body of the *sternum*	0 3	0 8	1 3	2 0
Length of the *os coracoides*	2 0	1 8	3 3	5 10
Length of the *scapula*	2 3	2 10	6 5	7 7
Breath of the *scapula* at its neck	0 3	0 2	0 7 n.	0 8
Breadth near its inferior angle	0 3 n.	0 2	1 9 n.	2 1 n.

or, in integral parts, the length of the centre of the *sternum* being taken as unity:

	Colymbus.	*Alca.*	*Spheniscus.*	*Aptenodytes.*
Length of the middle of the *sternum*	1	1	1	1
Length of the lateral wings	$\frac{3}{21}$	$\frac{24}{29}$	$1\frac{1}{10}$ n.	$1\frac{1}{7}$
Length of the keel	$\frac{20}{21}$	$1\frac{3}{29}$	$1\frac{1}{10}$ n.	$1\frac{1}{7}$
Length of the ensiform process	$\frac{4}{21}$ n.	$\frac{1}{29}$ n.	$\frac{3}{28}$ n.	$\frac{2}{14}$ n.
Length of the sternal *apophysis*	$\frac{1}{21}$	$\frac{1}{29}$	$\frac{1}{7}$	$\frac{1}{7}$
Breadth of the superior margin	$\frac{6}{21}$	$\frac{6}{29}$	$\frac{2}{7}$ n.	$\frac{4}{14}$
Height of the keel	$\frac{4}{21}$ n.	$\frac{8}{29}$	$\frac{2}{7}$	$\frac{3}{14}$
Projection of the keel above the body of the bone	$\frac{1}{21}$	$\frac{4}{29}$	$\frac{3}{14}$	$\frac{2}{7}$
Length of the *os coracoides*	$\frac{8}{21}$	$\frac{10}{29}$	$\frac{4}{7}$ n.	$1\frac{0}{2}$
Length of the *scapula*	$\frac{23}{21}$	$\frac{17}{29}$	$1\frac{1}{10}$	$1\frac{1}{2}$ n.
Breadth at its neck	$\frac{3}{21}$ n.	$\frac{1}{29}$	$\frac{1}{10}$ n.	$\frac{1}{14}$ n.
Breadth at its inferior angle	$\frac{2}{21}$	$\frac{1}{29}$	$\frac{3}{7}$ n.	$\frac{2}{7}$ n.

"The *humerus* is much flattened. On its posterior aspect there is a large *foramen*, situated under, and occupying the whole of the internal part of its head, which is in form crescentic from before backwards: over the internal and posterior part of it a groove passes. The distal end of the bone has two tubercles for articulation. There are two prominent *trochleæ* on its posterior surface, on which work the two sesamoid bones of the elbow-joint. The form of the larger of these is flattened, and of the smaller trapezoid, with truncated edges.

" The *ulna* is very thin and flat, not quite so long as the *humerus*, rounded slightly at its upper extremity, and still less at its lower one. Its head has a cavity, which receives the posterior tubercle of the *humerus*. Immediately inferior to this is a prominence on the posterior margin, to which is attached the ligament of the two sesamoid bones. The superior ulno-radial joint admits of little motion, being composed of a convex and plane surface. Near the distal extremity of the bone there are several rough lines for the attachment of muscles. The distal articulating surfaces are three: one with the *radius* anteriorly; another with the first carpal bone inferiorly; and the third with the second carpal bone posteriorly and obliquely downwards.

" The *radius* much resembles the *ulna* in shape. At its head it has two articulations: one superiorly, with the anterior tubercle of the *humerus*; and the other posteriorly, for articulation with the *ulna*. There are likewise two articulations at its distal extremity: posteriorly one for the *ulna*; and inferiorly there is another with the first carpal bone. Near its neck is situated a process for the attachment of muscles. On its superior anterior part a groove runs obliquely, from before backwards, and from above downwards. At the distal extremity there is a similar one, but running in a contrary direction, i. e. from behind forwards.

" The first carpal bone has the form of a trapezium, with three articulating surfaces: a superior one for the *radius*; a posterior one for the *ulna*; and an inferior one for the *metacarpus*. The shape of the second carpal bone is triangular, with articulating processes, and a notch on its inferior edge: one anteriorly for the *ulna*; the other inferiorly for the *metacarpus*.

" The *metacarpus* is composed of a single bone, formed by the union of two. The anterior of the two metacarpal bones supports two *phalanges* of the first finger, and is twice the size of the posterior one, which supports the single *phalanx* of the second finger. The upper end is crescentic, articulated with the first carpal bone anteriorly, and with the second inferiorly. There is a *sulcus* between the ends of the two bones, at their inferior extremity.

" The first *phalanx* of the first finger is a long, broad, and flat bone, tapering gradually from above downwards, united to the *metacarpus* by a flat surface, and connected with the second *phalanx* by a similar articulation. The other *phalanx* is broad and flat, tapering from above downwards. By a similar articulation is attached to the posterior metacarpal bone a *phalanx*, which is flat, long, and tapering from above downwards, superiorly giving off a process which passes upwards for a short distance on the posterior part of the metacarpal bone.

" The bones of the *pelvis* are so much shortened behind that they throw the centre of gravity in a perpendicular line with the *vertebræ*. The length of the *ilia* behind the cotyloid cavity is one third of the length of the body in a *Gull* (*Larus*); one half in the *Loon*;

and not quite one fourth of the length of the trunk in the *Patagonian Penguin*. The sacro-sciatic notch is a complete *foramen*. The pubic bones are long and feeble; they are turned forwards and tipped with cartilage. The cotyloid cavity is a perfect *foramen*, with a large process at its postero-inferior part tipped with cartilage, and articulated with the *trochanter major*. The thyroid *foramen* is not complete, except by the intervention of a ligament which separates it from the *obturator foramen*. As there is no *iliacus internus*, the superior part of the *os ilium* extends upwards, and lies close to the ribs.

"The *os femoris* is formed as usual, the head being flattened anteriorly, the neck short and thick, the *trochanter major* smooth on its superior posterior surface, and articulated with the process on the *ilium*. Besides the posterior there is also an anterior *linea aspera*. There is a process external to the external condyle, having its inferior surface tipped with cartilage, which acts as a pulley. On its infero-external surface there is a sharp edge. The condyles are not much everted.

"The shape of the *patella* is peculiar. There are two articulating surfaces posteriorly: one which would form part of a large crescent, and which has a prominence for the condyles of the *femur* in its centre; the other, inferior, is likewise crescentic; it is very narrow, and articulated by ligaments to the tubercle of the *tibia*.

"The superior surface of the *femur* has a *crista* in its centre, of an ovoid form: the posterior edge truncated. The internal surface is perfectly flat: the oblique slightly marked with a ridge, and looks downwards. There is a groove on the centre of the anterior edge which also passes obliquely downwards on the external side: these two sides are truncated at their junction.

"The *tibia* is nearly twice the length of the *femur*: the tubercle is elevated above its head, and forms a broad short conical truncated process. On the anterior part of the head there is a large groove, deepest at the top, and passing obliquely downwards and inwards: the outer side is here smooth for articulation with the *fibula*. It has inferiorly two condyles, articulated with the *metatarsus*, having a *foramen* above and between them for the transmission of tendon, &c.

"The *fibula* is in the form of a lengthened cone, and is attached to the outer surface of the *tibia*: for about two thirds of its length it is anchylosed to that bone inferiorly. It has the usual quantity of surfaces for the attachment of muscles.

"There is no *tarsus*.

"The *metatarsus* has two articular depressions on its posterior surface for the reception of the condyles of the *tibia*. It represents three pullies for articulation with the *phalanges*. On the inner part of the superior face is situated the metatarsal bone of the first toe, connected by ligaments to the large bone. There is a *fossa* on the superior surface, between the first and second, and second and third

bones of the *metatarsus*: this gradually decreases in size and increases in depth, till it perforates the bone, and joins the *fossæ* on its inferior surface, where, immediately anterior, internal, and inferiorly to the outer depression on its head, there is a large protuberance forming the inner boundary to a groove. The phalangeal end is formed as in most *Birds*. The first toe, which is the smallest in the foot, has three bones, all of which are flattened, and have simple articulations, the last one having a nail. The metatarsal bone is only connected to the others by muscle: the whole length of the toe is 1 inch: the second toe has three *phalanges*: the third has four: and there are five belonging to the fourth toe. All are formed as is usual in this class.

"The ligaments of the head and trunk are of the usual form.

"In addition to these a ligament arises from the sesamoid bones of the elbow-joint, which passes to the external or dorsal side of the *carpus*, where it is tied down; it again passes forwards, and is attached by separate slips to the joint and head of the first part of the *metacarpus* and to the first *phalanx* of the first finger; and is inserted into the second about 3 lines from its head.

"The ligaments of the hip-joint are as usual.

"Besides the usual ligaments of the knee-joint there is one which arises together with the crucial, and is attached to the *patella* halfway down the central line. The form of the semilunar cartilages is crescentic, with prolonged horns.

"The ankle-joint has semilunar cartilages of the usual form.

"There are superior and inferior annular ligaments belonging to the *metatarsus*.

"In no other instance is there any deviation from the usual form.

"There is a very large *bursa* situated within the knee-joint.

"The muscles were of a dark red colour, very tough, and having a great deal of cellular membrane amongst them. The *fasciæ* were very thick and strong. In no instance did I observe any tendency to ossification in the tendons. In the tendons of the *perforatus* of the first and second toes there was a sesamoid bone, scarcely equalling in size a mustard-seed.

"The *panniculus carnosus* is very thick and strong, and is divided into three pieces. The first division arises muscular from the lateral parts of the skin of the shoulder, back, and under the wing; from the *fascia* of the muscles of the back; tendinous along the superior edge of the *furculum*; tendinous from the *fascia* covering the muscles of the shoulder; muscular from the blubber over the shoulder-joint; and by a small head from the inferior part of the cervical *fascia*: it passes upwards, uniting anteriorly and posteriorly to its fellow, and is attached, muscular, into the superior transverse ridge of the occipital bone, and to the posterior third of the sides of the lower jaw. The second portion arises from the dorsal *fascia* by five irregular fleshy slips: it passes downwards, and is attached to the blubber covering the back and sides, sending forwards a membra-

nous slip, which is attached to the skin of the *abdomen*. The last portion arises fleshy from the tubercle of the *tibia*, and from the peroneal *fascia*: and, covering the abdominal muscles, is attached very firmly to the skin of the *abdomen*, sending off two slips, which unite with their fellows over the central line.

"The *occipito-frontalis* is small, arising posteriorly from the *panniculus carnosus*, and inserted anteriorly into the frontal bone, just above its junction with the superior *maxilla*. The *orbicularis palpebrarum* arises from the anterior part of the orbit, immediately anterior to the situation of the lachrymal bones, and is inserted into the orbitar process of the temporal bone, from the inferior half of which a muscle arises, passing downwards under the eye, and attached to the inferior part of the optic *foramen*, sending off a slip, which is attached immediately anterior and internal to the orbitar process of the temporal bone. There is most motion in the inferior eyelid.

"Round the entrance of the external *meatus* of the ear there are some muscular fibres observable, but as the part was much bruised, I was unable to separate them: they seem to act as a sphincter.

"The *masseter*, *temporalis*, and *pterygoideus* arise as usual, as does also the zygomatic.

"On the fore part of the neck there are two muscles: one arising from the superior edge of the *furculum*, near its union with the *os coracoides*, and from the recurved portion of the coracoid bone, and inserted into the temporal *fascia*; the other arising tendinous from the superior internal part of the *furculum*, and attached to the outer and posterior part of the tympanic bone.

"The tongue has a *hyoglossus* and *lingualis*, as usual.

"The muscles of the *os hyoides* and lower jaw are as usual.

"There is only one pair of muscles of voice.

"The *recti postici* and *antici*, *obliqui capitis*, *splenii capitis et colli*, *complexi*, *intertransversales*, *interspinales*, *transversalis colli*, *spinales dorsi et colli*, *trapezius*, *cucullaris*, *rhomboideus*, *biventer cervicis*, *trachelo-mastoideus*, *longus colli*, and *scaleni* muscles are large and well defined, arising and attached in the same manner as in most short-necked *Birds*, but especially resembling the muscles of the neck of the *Loon*; as do also the abdominal muscles, and those for the motion of the dorsal *vertebræ*, ribs, and tail.

"The muscles connecting the *scapula* to the trunk resemble those of the *Loon*, but have broader attachments, in proportion as the *scapula* of the *Penguin* is broader than that of the *Bird* referred to.

"The principal differences are in the muscles of the wing and leg.

"The muscles of the wing I shall now describe. The *pectoralis major* arises from the superior part of the *crista* and the external part of the body of the *sternum*, from the *fascia* of the *pectoralis minor*, from the cartilages of the ribs, and from the anterior part of the coracoid bone; over the *crista* it unites with its fellow of

the opposite side; it is inserted, muscular, into the anterior superior part of the *humerus*. The *pectoralis minor* arises from the lower part of the *crista* and the interior part of the body of the *sternum*, and from the inferior part of the *furculum* and coracoid bone; its tendon passes over the union of the three bones of the shoulder-joint, moving freely over them, and is inserted, tendinous, into the scabrous surface on the posterior part of the external side of the *humerus*, just below its head. The *coraco-brachialis* arises from the lateral angle of the *sternum* and base of the coracoid bone, and is inserted immediately posterior and a little superior to the *pectoralis minor*. The *subclavius* occupies the usual place, but is small. A muscle arises from the outer and upper fourth of the membrane between the *furculum* and *os coracoides*; it passes upwards, but internal to the capsular ligament of the joint; and is inserted, tendinous, immediately above the insertion of the *pectoralis minor*. Another muscle arises from the external inferior third of the *os coracoides*, from the angle and costal part of the *sternum*, and from the *fascia* of the *pectoralis major* for about the length of an inch; passing upwards it forms a round tendon about $\frac{1}{4}$ of an inch from the shoulder, which passes over the joint and under the *supra-spinatus*, and is inserted into the external edge of the *foramen* at the head of the *humerus*. The *supra-spinatus* is small, and arises fleshy from the superior edge of the *scapula*, near the glenoid cavity; it passes round and constricts the ligament of the joint, and is inserted, tendinous, into the *humerus*, immediately anterior to the muscle last named.

"I will here notice, before proceeding to the remaining muscles, a loop through which several of the muscles pass. It arises flat from the infero-anterior edge of the *scapula*, just below the glenoid cavity, and passing upwards and outwards for about an inch, is then doubled upon itself, and attached to the same part from whence it arose: there is no admixture of its fibres.

"A muscle arises from the *fascia* which covers the last rib and the outer edge of the external oblique, passes upwards and through the loop, and is inserted into the lower part of the external edge of the *foramen* situated at the posterior part of the head of the *humerus*. The *latissimus dorsi* arises from the last cervical and first five dorsal *vertebræ*, and forms a tendon, which passes through the loop and is inserted immediately below the preceding muscle. The *infra-spinatus* arises fleshy from the whole external surface of the *scapula* below the upper third, and is inserted into the large tubercle of the *humerus*. A muscle arises from that part of the inner edge of the *os coracoides* which is produced; it passes obliquely upwards and outwards behind the *os coracoides*, to which it is attached; and is inserted tendinous into the anterior tubercle of the *humerus*. The *deltoides* arises from the posterior part of the projecting edge of the *scapula*, and from the scapular process of the clavicle; passing over the shoulder-joint, it is inserted into the anterior part of the middle

tubercle of the *humerus*. The *subscapularis* arises from the internal surface of the *scapula*; it passes upwards, and is inserted into the posterior part of the middle tubercle of the *humerus*. The *teres minor* arises from the whole width of the posterior surface between the glenoid cavity and the end of the upper third of the *scapula*; it passes in the groove, and is inserted into the inferior part of the large tubercle of the *humerus*. Of the *triceps extensor cubiti* the long head arises immediately above the origin of the *teres minor*, and passing down on the external side of the *humerus*, it is joined by the second head, arising from the internal part of the large *foramen cæcum* of the *humerus*; these two unite about the middle of the arm, and are joined by the third head, which arises from the two inferior thirds of the posterior edge of the *humerus* till within 8 lines of the joint: it is now attached to the sesamoid bones of the elbow-joint, and to the *fossa* on the inferior parts of the posterior surface of the *os humeri*.

" The *anconeus* arises from this muscle, and from the part of the bone below the origin of the third head, and is attached to the sesamoid bones anterior to the *triceps extensor cubiti*. Instead of a *biceps* and *brachialis internus*, there is a *triceps flexor cubiti*, the long head of which arises, tendinous, from the antero-interior part of the superior angle of the *furculum*, and, passing over the joint, is joined, at the union of the upper with the middle third of the *humerus*, by the fibres of the middle head, which arises fleshy from the *furculum* immediately behind the *foramen* formed by the union of the three bones of the shoulder passing on to join the long head; at the head of the *humerus* it is joined by the short head which arises from the anterior part of the *foramen cæcum*; when it reaches the superior part of the middle third of the *humerus*, it joins the other tendons, and then forms an *aponeurosis* over the elbow-joint, and is attached to the middle part of the *radius*. A muscle arises from the anterior superior edge immediately below the arterial groove on the lower part of the *humerus*; it passes directly downwards and is inserted into the radial extremity of the metacarpal bone and into the edge of the carpal ligament. The *flexor communis* arises from the internal side of the *humerus*, from the ligament of the elbow-joint, and from the superior part of the *radius* and *ulna*; it divides into two tendons, which go down in the interosseal space, passing under the *ligamentum carpi annulare posterius*, and are attached to the first and each succeeding *phalanx* of the two fingers about 5 lines below their articulations. The *extensor communis* has the same situation and number of attachments on the external or dorsal side of the *humerus*. There is a *pronator quadratus* arising as is usual in this class. There is also a muscle which arises from the anterior part of the *radius* at its distal extremity, and is inserted into the projection of bone formed by the *phalanx* of the second finger, and also, by a slip, into the internal part of the first *phalanx* of the first digit.

" The muscles serving for the motion of the inferior extremity may be described as follows.

"The *rectus* arises by a *fascia* from the spinous processes of the last three dorsal and two lumbar *vertebræ*, and muscular from the lower half of the external part of the *dorsum ilii* and sacro-iliac *symphysis*; and, passing over the neck of the thigh-bone, is inserted into the lower edge of the groove on the anterior part of the *patella*. The *tensor vaginæ femoris* arises by a *fascia* from the sacral *vertebræ*, passes over the cotyloid cavity and *trochanter major*, and turning to the anterior part of the thigh is joined by another head which arises immediately anterior to the cotyloid cavity; after this union they are inserted into the *fascia* of the thigh about halfway down. The *glutæus medius* at its origin occupies that part of the *dorsum* which extends between the origin of the *acetabulum* and the ridge situated in the centre, and passes downwards and is inserted into the *trochanter minor* and the ridge which joins it. The *glutæus minimus* arises from the whole of the *dorsum ilii* unoccupied by the other *glutæi* except its *crista*, and is inserted into the anterior part of the *trochanter major*. The *glutæus maximus* arises from the prominent ridge on the *os ilium* below the *acetabulum*; it passes on the posterior surface of the thigh-bone; and when it has passed below the head of the *tibia* it forms a round tendon and passes through a loop situated on the external posterior part of the *tibia*; continuing its course obliquely downwards, it is inserted into the scabrous ridge on the posterior surface of the *tibia* near its head. A muscle arises from the transverse processes of all the caudal *vertebræ* except the last, goes forwards, and is attached to the postero-internal edge of the *tibia* just below its head. Another muscle arises from the anterior part of the last caudal *vertebræ*, and is inserted into the external part of the *linea aspera* after its bifurcation. The *pyriformis* arises from the anterior oblique processes of the caudal *vertebræ*, from the tip of the *ischium*, and from the internal part of the *os pubis*; the fibres converge downwards, and are inserted into the intero-anterior ridge of the *tibia* just below the tubercle. The *semitendinosus* arises from the ridge immediately anterior to the *glutæus maximus*, and is inserted immediately inferior to the bifurcation of the *linea aspera* on its external division. The *gemini* arise from the *ischium* immediately posterior to its spine, and are inserted into the cavity posterior to the *trochanter major*. A muscle arises from the *ischium* anterior to the *gemini*, and is inserted into the intero-anterior ridge of the *tibia*, just below the *pyriformis*. Of the *triceps adductor femoris* the first head arises from the extero-inferior part of the *pubis*; the second head arises immediately above the first; and the third above the second, and from the interosseous ligament which unites the *pubis* and *ischium*: they join on the upper third of the thigh, and are attached to the *linea aspera* on its internal side and division. The *obturator internus* arises fleshy from the internal part of the *pubis*, from part of the *obturator foramen*, and from the *ischium*; it forms a tendon which passes through the thyroid *foramen*, is tied down to the joint, and is inserted into the anterior part of the great *trochanter*. A muscle arises from the

outer edge of the cotyloid cavity, passing outwards and a little upwards, and is inserted behind the *trochanter major*. Another muscle arises from the anterior part of the *acetabulum*, passing directly outwards, and is strongly attached to the ligament of the joint; it is inserted into the thigh-bone just below its neck.

" A muscle arises from the interior and a small part of the anterior and posterior surfaces of the thigh-bone, from near its neck to the condyles, and forms a tendon which is inserted into the ridge at the anterior internal part of the *tibia* immediately below its head. The *cruralis* arises fleshy from all the superior and external parts of the bone not occupied by the former; one part is inserted into the whole of the superior surface of the *patella*, the remainder passes over the internal part of the *patella* and is attached to the internal side of the head of the *tibia*. A muscle arises by four heads: the first, tendinous, from the ridge behind the external condyle which formed the loop through which the *glutæus maximus* passed; the second, fleshy, from the internal side of the *triceps*; the third, from the inferior portion of the intero-anterior ridge of the *tibia*; the fourth, from the inferior internal edge of the *patella*; these two last join just below the origin of the third, and passing down tendinous are united to the two other tendons a little above the ancle-joint: it expands and flattens at the joint, and just below it divides into two tendons, the internal of which is inserted into the internal edge of the groove on the plantar surface of the metatarsal bone, while the external tendon is inserted into the external head of the same bone. Another muscle arises from the postero-inferior part of the cotyloid cavity, passes forwards on the exterior part of the thigh and over the groove on the *patella*, and is attached on the interior part of the head of the *tibia*. The tendon of the *flexor perforatus* is composed of four muscles, which unite just above the ancle-joint. The first arises by two heads, one from the outer surface of the external, and the other from the inner side of the internal condyle; about the end of the upper third of the *tibia* this forms a tendon, which passes down to the place of junction with the others: the second has also two heads, one from the posterior part of the head of the *fibula*, and the other immediately below the attachment of the *glutæus maximus*; the muscle forms its tendon just below the middle of the bone, and passes forwards and joins that of the first muscle: the third has one origin between the two condyles, and forms its tendon at the middle of the leg, passing on and joining the two former: the fourth muscle arises immediately above the third, and forms its tendon like the rest, joining them above the ancle: after the tendons are united they are distributed as usual. The *flexor perforans* consists of two heads; the first arises from the back part of both condyles; the second arises from the superior and posterior third of the *tibia*, *fibula*, and interosseous ligament: they unite about halfway down the bone and form a tendon, which passes in the groove of the plantar surface of the metatarsal bone, and is distributed in the usual manner. A muscle arises from

the scabrous surface situated on the internal part of the posterior face of the *tibia* about halfway down that bone, and forms a tendon which is attached to the upper part of the internal edge of the groove in which runs the tendon of the *perforans*. Another muscle arises from the external condyle, from the *patella* on its anterior surface, and from the fibres of the *rectus femoris*; it covers the *tibia* and fills up the space between it and the *fibula*, and forms a tendon which passes through the *foramen* situated at the anterior surface of the *tibia* between its condyles, under the capsular ligament of the ancle-joint, and is attached to the prominence situated between the second and third portions of the metatarsal bone near its tibial extremity.

"A muscle arises from the anterior and external parts of the head of the *fibula*; it becomes tendinous about halfway down the leg, passes under the annular ligament, and is inserted into the external side of the metatarsal bone near its postero-inferior angle: another slip goes under the foot and forms the plantar *fascia*. Another muscle arises from the anterior inferior surface of the *patella*, and from the whole of the *fossa* and its edges on the head of the *tibia*, passes downwards, and is tied down by the annular ligament; and has the same distribution as in the *Loon* and *Gull*, except that the tendon is more closely tied down, smaller, and not so round. Another muscle arises fleshy from the whole anterior part of the *fibula*, interosseous ligament, and part of the external side of the *tibia*; it forms its tendon near the ancle-joint, and is attached to the postero-external angle of the *metatarsus* on its plantar surface. There are also four muscles arising from the metatarsal bone, one on each side, and one in the *fossæ* between the three portions of the metatarsal bone: they all arise near the tibial end on its superior surface, and are attached to the *phalanges* of the first, second, and fourth fingers. The thumb has three muscles: an *extensor*, on its superior surface; a *flexor*, on its inferior; and an *abductor*, on its internal surface; all attached to the tibial end of the *metatarsus* as usual.

"The diaphragm consists of twelve narrow fleshy slips, which arise, six on each side, from the internal surface of the ribs: near their angle they pass upwards, and are inserted tendinous into the thin transparent membrane covering the lungs. The blood-vessels pass in front of it.

"The circulatory system corresponds exactly with that of the *Loon*, except in the origin and distribution of the arteries of the stomach. The cœliac artery comes off on a level with the fifth rib; it passes a little forwards, and divides into the *coronaria ventriculi*, the hepatic, and the splenic. The *coronaria ventriculi*, just after its origin, divides into the superior and inferior coronaries: the superior passes round the large curvature of the stomach, and near the *pylorus* gives off the superior pyloric and left hepatic; the inferior passes down the right side of the stomach, and disappears at the *pylorus*, being here minutely ramified upon it. The hepatic gives off the right gastro-epiploic, which goes on the inferior angle of the sto-

mach, and the right gastric, which goes on the *pylorus* and superior part of the stomach, anastomosing with the superior pyloric and inferior coronary arteries. The splenic gives off a small artery distributed on the cardiac portion of the stomach, and some *vasa brevia*, which are distributed to the left portion of the stomach.

"Not wishing to mutilate the skeleton, I did not examine the brain; but from the number, size, and situation of the *foramina* in the base, and the whole contour of the *cranium*, the brain must be presumed to be very nearly similar in proportional quantity and structure to those of the *Loon* and *Gull*.

"The nerves are distributed as usual. The brachial plexus is composed of the last cervical and first two dorsal nerves, and of a filament from the last spinal nerve but one in the cervical region. The sciatic is composed of the five superior or anterior pairs of pelvic nerves.

"The nose is organised similarly as in others of this class. The cartilaginous *laminæ* of the turbinated bone are concentric, and thirteen in number.

"The eye has six muscles, which arise and are attached as usual. The lachrymal gland is placed at the postero-superior part of the orbit, and is large in proportion to the globe of the eye. It sends off several ducts; I think seven; but the part being much injured, I found it impossible to ascertain their precise number and origin: one, however, opened immediately under the anterior part of the *membrana nictitans*. Two other ducts also opened below this membrane, passing from the Harderian gland, which was situated at the inferior part of the orbit. The nasal gland occupied its usual situation, partly in the anterior and superior portion of the orbit, and partly in the *fossa* of the frontal bone: its duct passed forwards under the bridge of bone, and then bifurcated, one division of it ending on the cartilaginous *laminæ* of the *ossa turbinata*, and the other going forwards, and lying on the bone: I was not able to trace it further.

"The *membrana nictitans* is large and strong: it is moved by a *pyramidalis* and a *quadratus* muscle.

"The globe of the eye is large, as compared with the *cranium*. The sclerotic is less osseous than I have yet found it in any *Bird*. The optic nerve enters at the postero-inferior part of the sclerotic. The *cornea* is small, owing to the large space occupied by the sclerotic. Under the *cornea* lies the *membrana aquatica*, consisting of a thin membrane, adhering to the edge of the *iris*. This membrane was first observed, together with the *tunica cellularis*, by Mr. Blackett, in 1802, in the eye of the *Cat*, the preparation of which was sold in the first part of Mr. Brookes's Museum. The *tunica cellularis* in this animal is rather pulpy, but, on the application of *liquor potassæ*, it dissolved, and displayed a cellular structure. Mr. Blackett demonstrated this membrane to me in 1832, since which time I have observed it in all the eyes I have examined; but, owing to the diffi-

culty in obtaining specimens, I have not been able to make sufficiently extensive researches to justify the demonstration of the membrane as one of the proper tunics of the eye. There appears to be a *marsupium nigrum*. The *retina* is very thick and strong.

"The absorbent system is more perfect than in most *Birds*. Of the thoracic ducts, the left is the largest. There are a femoral and two axillary glands; also an extra pair of bronchial glands more than in the *Loon* or *Gull*. The coccygeal glands are 2 inches 3 lines long, and 9 lines broad.

"There is a gular pouch, which measures in length 4 inches, and in breadth 8 lines.

"The tongue is set with cartilaginous *papillæ* directed backwards.

"There is only one pair of salivary glands; the submaxillary.

"The structure and proportion of the lungs are the same as in the *Water Birds* generally. The air-cells are few in number, and small, and are filled by openings from the lungs, or from one cell to another. They consist principally of the internal air-cells; one above the *furculum*; and the axillary, abdominal, and femoral rows.

"The liver, spleen, and *pancreas* are large.

"The *œsophagus* is straight, and 1 inch and 5 lines in width. It is infundibuliform, so that when it reaches the stomach it is 2 inches and 4 lines wide: the *infundibulum* contained the beaks of cuttle-fishes and gravel.

"The stomach is muscular, small, and glandular, and of the shape of an egg. The *duodenum* is broad at its origin, and at about 3½ inches from its commencement the biliary and pancreatic ducts enter. The gall-bladder is 6 inches long and 2 inches in circumference; it is attached to the under side of the liver, and, gradually diminishing in diameter, it passes over the stomach, and is inserted into the intestine, without the intervention of any duct.

"The *testes* were large, as were the supra-renal glands and kidneys. I did not observe any difference from the usual structure and proportions in any other parts.

"The small intestines measured 22 feet 6 inches in length, and were about the thickness of the little finger. There were attached to them two *cæca*, each measuring about 1 inch 3 lines in length, which were of the same diameter as the intestines. The great intestines were somewhat larger than the small. The measurements of the stomach and the intestines were as follows:

	Feet.	Inches.	Lines.
Length of the *œsophagus*	0	10	0
Breadth at the *pharynx*	0	1	6
——— *infundibulum*	0	2	4
Length of the *infundibulum*	0	10	0
Breadth at the junction of the *infundibulum* with the stomach	0	6	0
Length of the stomach	0	4	0
Width of ditto	0	2	6

	Feet.	Inches.	Lines.
Length of the *duodenum*	1	3	0
Circumference of ditto	0	4	0
Length of the small intestines, inclusive of the *duodenum*	22	6	0
Length of the *cæca*	0	1	3
Circumference of the *cæca* and the small intestines	0	2	6
Length of the large intestines	0	6	0
Circumference of ditto	0	2	9

"The total length of the individual examined, measured over the back, was 3 feet 2 inches and 6 lines; the length of the neck, 11 inches and 9 lines; that of the trunk, 1 foot 1 inch and 9 lines."

The reading of Mr. Reid's communication was illustrated by the exhibition of the skeleton of the specimen of the *Patagonian Penguin* described by him, and of preparations of many of the *viscera*, the whole forming part of the collection of Mr. Blackett.

October 13, 1835.

Richard Owen, Esq., in the Chair.

Mr. Bennett called the attention of the Meeting to a *Pteropine Bat* which had recently been obtained from the neighbourhood of the river Gambia, and which was exhibited. He directed especial notice to two large tufts of white hairs placed upon its shoulders and forming a very conspicuous feature in its appearance. These, he remarked, might probably cover cutaneous glands destined for the preparation of a secretion fitted to defend that part of the animal in its passage through the air, or perhaps to attract the opposite sex. It could scarcely be conceived that they have any influence in increasing the buoyancy of the animal; although the backward position of the wings might seem to render necessary such a supplemental aid: their position in advance of the ordinary alar membranes gives them, in fact, some resemblance to supplementary wings.

He stated that on account, chiefly, of the position of the wings so far backward as almost to seem to be placed behind the centre of gravity, he was disposed to consider that the *Bat* exhibited might be regarded as the type of a new genus, to which the name of *Epomophorus* might be given. But the genus would, he conceived, rest almost entirely on this single character, and he hesitated to propose it definitively until he had an opportunity of examining a specimen preserved in spirit, and consequently not liable to that distortion to which the individual skin exhibited might have been subjected. In one of the two other species of *Pteropi* previously obtained from the same country by Mr. Rendall, and brought under the notice of the Society on July 14 (page 100) by Mr. Ogilby, the same backward position of the wings exists. In dentary characters the new species agrees with those just referred to, the only exception being in the presence of a third abnormal incisor on the left of the upper jaw.

Regarding it as a form of some interest to zoologists, Mr. Bennett stated his intention to describe it more fully in a paper which he proposed to prepare on the subject. He characterized it as the

PTEROPUS EPOMOPHORUS. *Pter. pallidè brunneus, posticè pallidior; ventre albido; scopâ humerali albâ magnâ.*
Long. tot. 6¾ poll.; *capitis*, 2¼; expansio alarum, 12.
Hab. in regione Gambiensi.

Professor Agassiz, at the request of the Chairman, explained his views of the affinities and distribution of the *Fishes* of the family *Cyprinidæ*.

He commenced by remarking that among the genera referred by Cuvier to this family there were several, such as *Pœcilia*, *Lebias*, &c., which possessed maxillary teeth and a large number of branchiostegous rays. These genera, he conceived, ought to be excluded from the *Cyprinidæ*; and the family be considered as limited to fishes with mouths destitute of teeth, and having few branchiostegous rays.

To the family thus reduced the nearest affinities appeared to him to be the genera *Atherina* and *Mugil*. In internal organization the *Cyprinidæ* agree nearly with those genera; and this consideration, M. Agassiz conceives, is of much higher importance in the natural arrangement than the external character founded on the presence or absence of spinous rays in the dorsal and other fins. The affinity of the *Cyprinidæ* to the *Siluridæ* he regards as extremely doubtful: and although from the bearded *Carps* to the bearded *Siluri* there appears to be a natural transition by means of the bearded *Loaches*, it is important to distinguish that in these latter, as well as in the *Carps* and other *Cyprinidæ*, the beards, as they are called, are merely processes of the skin; while in the *Siluri*, the *cirri* of the angles of the mouth are actually prolongations of the maxillary bones, becoming gradually cartilaginous and tapering into thread-like extremities.

In the subdivision of the *Cyprinidæ*, M. Agassiz regards the form of the fins, and especially of the dorsal and anal, as furnishing indications of the highest value; and the form of the pharyngeal teeth as affording the characters next in importance. He first distinguishes the group comprising the genera *Anableps*, *Cobitis* and *Botia*, the latter established by Mr. Gray for the reception of those *Loaches* in which the suborbital bone is armed with a moveable spine. He then distinguishes another group comprising four genera: 1. *Cyprinus*, in which the pharyngeal teeth are large, and, when worn, resemble the molars of some *Rodent Mammalia*, such as the *Hare*; 2. *Barbus*, in which there are three rows of lengthened conical hooked teeth on each side of the *pharynx*; 3. *Gobio*, in which the pharyngeal teeth have the same form as those of the *Barbels*, but are more slender, and constitute only two rows; and 4. *Tinca*, the pharyngeal teeth of which are club-shaped, rounded at the end, and placed in a single row. In the genus *Leuciscus*, which M. Agassiz limits to *Leuc. Alburnus* and three allied species, the mouth is cleft obliquely, and the teeth, consisting of elongated cones, are disposed in four rows. From these the *Cyprinus Nasus* is to be generically distinguished as possessing six rows of pharyngeal teeth: its mouth is transverse and inferior, with the edges cutting. A third genus, containing many species, also requires to be distinguished, as having only two rows of teeth, one of which is hooked: in these the opening of the mouth is rounded. There remains the genus *Abramis*, distinguished by its long anal fin, in which the teeth are bevilled off and have

a cutting edge: of this genus eight species are known to Professor Agassiz.

In this enumeration of the genera of *Cyprinidæ* M. Agassiz limited himself to the European forms, and scarcely adverted to any but European species.

In illustration of his views preparations were exhibited of the pharyngeal teeth of *Cyprinus*, *Barbus*, and other genera, from the collection of Mr. Yarrell.

October 27, 1835.

William Yarrell, Esq., in the Chair.

At the request of the Chairman, Mr. Burton exhibited, with the permission of Sir James M^{c}Grigor, Bart., specimens of many *Birds* which had recently been presented to the Museum of the Army Medical Department at Chatham. He particularly pointed out among them the following which he regarded as hitherto undescribed, and for which he proposed the names and characters subjoined.

Noctua Brodiei. *Noct. brunnea; capite fasciâque gulari pallidè rufo strigatis guttatisque, dorso, alis, pectore, ventreque pallidè rufo fasciatis; mento, collo, et regione postauriculari albis; fasciâ cervicali latâ nigro albo rufoque varid; secundariis maculâ albâ notatis; caudâ brunneâ, subtùs pallidiore, fasciis septem rufis angustis ornatâ; femoribus albis brunneo variis.*

Long. tot. 6¼ poll.; *corporis* 4¼; *caudæ* 2¼; *tarsi* 1.

Rostrum album.

Hab. apud Montes Himalayenses.

The colouring of this bird bears a general resemblance to that of *Noct. Cuculoides*, Gould; but the peculiar cervical collar, the diminutive size, and some other characters forbid its being identified with that species.

It is dedicated to Sir Benjamin Brodie, Bart., V.P.R.S., &c., in token of high respect and ancient friendship.

Phœnicura MacGrigoriæ. *Phœn. capite, collo, dorso, scapularibus, rectricumque pogoniis externis saturatè cæruleis; fronte, regione superciliari, uropygioque cæruleis; remigibus rectricumque pogoniis internis brunneis; mento regioneque præoculari nigris; collo utrinque maculâ cæruleâ bellè notato; pectore ventreque brunneis, hoc pallidiore.*

Long. tot. 5¼ poll.; *corporis*, 3¼; *caudæ*, 2; *tarsi*, ¾.

Rostrum nigrum; *pedes* brunnei.

Hab. apud Montes Himalayenses.

This graceful bird is named in honour of the only daughter of Sir James M^{c}Grigor, Bart., M.D., F.R.S., Director General of the Army Medical Department.

Sylvia? castaneo-coronata. *Sylv. corpore suprà, alis, caudâque*

olivaceis; capite genisque castaneis; subtùs flavo, olivaceo tincto, guld nitidè flavá; alis caudâque subtùs remigumque pogoniis internis brunneis; caudâ minimâ.

Long. tot. 3¼ poll.; *corporis*, 2¼; *tarsi*, 1.

Mandibula superior nigra, *inferior* alba; *pedes* pallidi.

This bird is provisionally retained in the genus *Sylvia*; but the imperfect development of the tail, and the length and strength of the toes, more particularly of the posterior one, will probably at some future time render it the type of a new genus.

SYLVIA BURKII. *Sylv. corpore suprà flavescenti-viridi, subtùs flavo; capite maculis elongatis irregularibus nigrescentibus duabus nebuloso; alis prope flexuram seriebus duabus punctorum flavorum obsoletorum fasciatis; remigum pogoniis internis brunneis; caudâ brunneâ præter rectricum externarum duarum pogoniis internis albis.*

Long. tot. 5 poll.; *corporis*, 3; *caudæ*, 2; *tarsi*, ¾.

Mandibula superior nigrescens tomio apiceque albis, *inferior* alba; *pedes* albescentes.

Hab. apud Montes Himalayenses.

This bird is named in honour of Dr. Burke, Inspector General of Hospitals, Principal Medical Officer of the King's Army in India, by whom these birds were presented, and who has enriched the Museum with an extensive collection in ornithology from Northern India.

ÆGITALUS FLAMMICEPS. *Æg. capite flammeo; dorso scapularibusque flavescenti-viridibus; uropygio viridescenti-flavo; alis flavo viridi brunneo albidoque variis; remigibus rectricibusque brunneis, pogoniis internis viridescentibus, ad apices albo ciliatis; gulâ flammeâ, in flavum ad pectus transeunte; ventre flavescenti albido; alis subtùs albis, nisi externè et infernè.*

Long. tot. 3¾ poll.; *corporis*, 2¼; *caudæ*, 1½; *tarsi*, 1.

Rostrum nigrum, mandibulæ superioris tomio nisi ad apicem albo; *pedes* nigri. *Alæ* caudam longitudine subæquantes; remigibus 2dâ 3tiâque longioribus. *Caput* subcristatum.

Hab. apud Montes Himalayenses.

Two species of this genus are already known and described, *Æg. Smithii* and *Æg. pendulinus*: the present therefore forms the third of M. Boié's subdivision.

Genus SYLVIPARUS.

Rostrum parvulum, brevissimum, compressum nisi ad basin; *mandibulæ* æquales, superior paululum ad apicem arcuata; *nares* plumis setaceis tectum.

Pedes ut in genere *Paro*.

Alæ longiores, fere ad extremam caudam extensæ, remige 1mâ verâ breviore, 2ndâ, 3tiâ, et 4tâ æqualibus et longissimis, 5tâ his paulo breviore, 6tâ primam æquante.

Cauda mediocris, æqualis.

Sylviparus modestus. *Sylv. corpore suprà brunnescenti-viridi, subtùs viridescenti-albido; remigibus rectricibusque brunneis, pogoniis externis flavescenti-viridi ciliatis.*

Long. tot. 4 poll.; *corporis*, 2¼; *caudæ*, 1¼; *tarsi*, ⅝.

*Rostrum pedes*que nigrescentes.

Hab. apud Montes Himalayenses.

It is reluctantly proposed to institute a new genus in a family already sufficiently complicated; nevertheless, as this bird combines the characters of *Sylvia*, *Regulus*, and *Parus* in its wing, tail and bill, it is deemed necessary to make it the type of a genus of which more species will probably be discovered as our intercourse with the remote regions from whence it is derived becomes more extended.

Picumnus innominatus. *Pic. corpore suprà flavescenti-viridi, subtùs sordidè albo maculis nigris conspicuis in fascias ad ventrem lateraque confluentibus notato; fronte nigro aurantiacoque obscurè fasciato; remigibus brunneis, pogoniis externis flavescenti-viridi ciliatis; rectricibus intermediis nigris, cæteris albo nigroque fasciatis; colli lateribus brunneis, lineâ albâ supra oculum oriente alterâque sub oculum et inde ad scapulam ductis ibique confluentibus.*

Long. tot. 4 poll.; *corporis*, 2¾; *caudæ*, 1¼; *tarsi*, ½.

Rostrum nigrum albo basin versus varium; *pedes* brunnei.

Hab. apud Montes Himalayenses.

This is the only species of *Picumnus* yet discovered in the Old World.

Mr. Burton also exhibited a fine specimen of that splendid bird, *Eurylaimus Dalhousii*, Wils., likewise from the Chatham collection, of which only two other specimens are known to exist in Europe.

Various specimens of *Fishes* and other marine animals, collected by J. B. Harvey, Esq., Corr. Memb. Z.S., on the south coast of Devonshire, were exhibited: and Mr. Yarrell called the attention of the Meeting to them, and to the *Fishes* in particular, remarking on their characters and habits, and on the peculiarities of their internal structure.

A note by Mr. Allis of York, forwarded through Mr. Bell, was read.

It referred to the statement made by Mr. Martin at the Meeting on February 10, 1835 (page 17), that in the *Adjutant, Ciconia Argala*, Vig. and Childr., and in the *common Heron, Ardea cinerea*, Linn., no less than in the *Pelicans*, the *os furcatum* is united by bone to the anterior *apex* of the keel of the *sternum*. After remarking that this statement is at variance with his experience, Mr. Allis proceeds thus:—"I have prepared a skeleton of the *Adjutant*; two of the *purple Heron*; two *Storks*; three of the *common Heron*; one *common Bittern*; one *little Bittern*; one American small *green Heron*; a British *Crane*; and a Polish *Crane*. Among all these the *Cranes* are the only birds where there is true osseous union between the *furculum* and the keel: and in the *Cranes* the *furculum* is rather a forked elongation of the keel than a distinct bone. Out of more than two hundred birds' skeletons which I have mounted, the *Pelican* is the only other bird where the *furculum* and *sternum* form one bone. The *Cormorant* and the *Gannet* have the *furculum* resting on the apex of the keel like the *Adjutant* and the *Herons*, but there is no bony junction. I think the specimens of Mr. Martin must have been extremely old birds, or that the bone must have been injured at the point of union, and that the osseous union was formed in consequence of that injury. The *Heron's* skeletons which I have myself prepared are by no means young birds; but I suppose extreme old age would be very likely to form a bony junction between bones pressing so close to each other as they do in this case.

"It may be thought singular that I should prepare duplicates of the skeleton of so common a bird as the *common Heron*. The reason is, that two of the skeletons exhibit curious specimens of nature's reparation of broken limbs, and the third is a singular instance of malformation. The *sternum* of the *Heron* is united to the vertebral column by four short ribs which are attached to four of the largest of the long ribs: this specimen has the usual number of short ribs; but one of them is placed so far forward on the *sternum* as to be quite out of the reach of any of the vertebral or long ribs; and the last of the four long ribs which is usually attached to one of the short or sternal ribs, wanting its usual support, is attached by cartilage to the rib immediately preceding it."—T. A.

A Note from Mr. Martin, on the same subject, was subsequently read.

Mr. Martin admits the incorrectness of his previous statement as regards the *Adjutant* and the *common Heron*; but remarks that the union, although not effected by bone, is yet so close as probably to have nearly the same physiological consequence as if anchylosis had actually taken place. When considering the *sternum* and *os furcatum* of the *Pelican* as structurally bearing upon the bird's powers of flight, he looked for analogies of the structural point in question among

birds of ample wing, and of slow but untiring flight. Observing them in the birds to which he had before referred, he did not accurately draw the line of distinction between anchylosis, and a firm and close attachment with only thin cartilage intervening between the bones. With regard to the effects produced upon aerial progression, he conceives that, *cæteris paribus*, it is immaterial whether the union be that of anchylosis or not, provided the junction be firm and intimate.

Mr. Martin thinks it, however, probable that in the *Adjutant*, when old, a bony union may take place; the junction between the *os furcatum* and the *sternum* in the Society's skeleton of this bird being so close as almost to admit of its being regarded as a kind of suture. In an adult example of the *Stanley Crane, Anthropoides paradisæus*, Bechst., where the anchylosis between these bones is fairly perfected, he finds traces of the obliteration of a similar mode of union.

Referring to Mr. Allis's remark that in the *Cranes* the *os furcatum* is rather a forked elongation of the keel than a distinct bone, Mr. Martin observes that the anchylosis which takes place in those birds does not render the *os furcatum* less a distinct bone in reality than where its union is by cartilage or suture; for in these latter cases it is only by an arrest of the process of ossification—a natural arrest, it is true—that anchylosis has not been effected.

Mr. Gould, at the request of the Chairman, exhibited drawings of ten species of *Ramphastidæ* which had become known to him since he published, in 1834, his 'Monograph' of that family. Several of these birds had already been brought under the notice of the Society. He now named and characterized the remaining ones as follows.

Ramphastos citreopygus. *Ramph. tectricibus caudæ superioribus sulphureis.*

Long. tot. 20 poll.; *rostri*, 5⅛; *alæ*, 9¼; *caudæ*, 6; *tarsi*, 2.

Hab. in Brasilia?

Descr. Rostrum (pro corporis ratione) minus, nigrum, fasciâ basali culmineque prope basin flavis. Pectus albidum flavescente tinctum. Torques pectoralis coccinea latiuscula. Orbitæ tarsique plumbei, hi saturatiores.

Ramphastos osculans. *Ramph. rostro nigro, culmine fascidque basali stramineis; pectore in medio aurantiaco.*

Long. tot. 18 poll.; *rostri*, 4½; *alæ*, 7½; *caudæ*, 6½; *tarsi*, 1⅜.

Hab. in Brasiliâ.

Descr. *Ramph. culminato*, Gould, quam proximè accedit. Pectus aurantiacum, latera versus in flavum transiens; gula regioque parotica albæ. Torques pectoralis subangustata.

Pteroglossus pluricinctus. *Pter. gastræo flavo, fascid pectorali nigrâ, alterâque subventrali anticè nigrâ posticè coccineâ.*
Long. tot. 20 poll.; *rostri*, 4½: *alæ*, 6½; *caudæ*, 8¼.
Hab. in Brasiliâ.
Descr. *Pter. regali*, Licht., affinis. Rostrum ad basin lineâ elevatâ flavâ cinctum: maxillæ superioris culmen, linea intrabasalis, tomiique pars posterior nigræ; latera aurantiaco-flava apicem versus pallescentia: maxilla inferior nigra. Caput collumque nigra; fœminæ regio parotica castanea, fasciaque guttur posticè cingens coccinea. Pectus et venter maculis indistinctis sparsis coccineis notati. Femora olivacea.

Pteroglossus Humboldtii, Wagl. *Pter. gastræo flavo; mandibulâ inferiore nigrâ, superiore flavescente, culmine, apice, lineâ prope basin, serraturarumque maculis transversis nigris.*
Long. tot. 16–17 poll.; *rostri*, 4; *alæ* 5½; *caudæ*, 6¾; *tarsi*, 1⅜.
Hab. in Brasiliâ.
Descr. *Pter. inscripto*, Swains., maximè affinis, sed major. Rostrum majus, magisque productum: mandibulæ superioris lituræ omnes angustiores.

Pteroglossus Nattereri. *Pter. ventre flavo, femoribus castaneis, crisso coccineo; rostro rubro, culmine, maculâ prope basin utriusque mandibulæ, plurimisque subtransversis ad serraturas nigris.*
Long. tot. 18½ poll.; *rostri*, 2⅝; *alæ*, 5½; *caudæ*, 5; *tarsi*, 1½.
Hab. in Brasiliâ.
Descr. *Pter. maculirostri*, Licht., admodum affinis, in sexu utroque. Rostri colores toto cœlo diversi: sicut et ventris femorumque.

Pteroglossus Reinwardtii, Wagl. *Pter. ventre aurantiaco castaneo tincto, crisso coccineo; culmine rostrique dimidio apicali nigrescenti-brunneis, basali rufescente.*
Long. tot. 12–13 poll.; *rostri*, 2½; *alæ*, 5; *caudæ*, 5¾; *tarsi*, 1¼.
Hab. in Brasiliâ.
Præcedenti valdè affinis. Rostrum magis elongatum, coloribusque maximè diversum: prope basin mandibulæ superioris tomium nigro trimaculatum. Rectrices intermediæ quatuor brunneo apiculatæ: in *Pter. Nattereri* et *Pter. maculirostri*, rectricum sex intermediarum apices similiter notati sunt.

Pteroglossus Langsdorffii, Wagl. *Pter. ventre castaneo, crisso coccineo; rostro nigrescenti-brunneo basin versus pallescente.*
Long. tot. 13½ poll.; *rostri*, 2¾; *alæ*, 5¾; *tarsi*, 1½.
Hab. in Brasiliâ.
Descr. *Pter. Culik*, Wagl., affinis. Rostri ad basin ventrisque color alius. (Rectricum apices desiderantur.)

Pteroglossus pavoninus, Mus. Mun. *Pter. suprà prasinus, subtùs pallidior, crisso rectricumque apicibus brunneis; rostro infernè et ad basin nigro.*

Long. tot. 13–14 poll.; *rostri*, vix $3\frac{1}{4}$; *alæ*, $5\frac{1}{4}$; *caudæ*, $5\frac{1}{2}$; *tarsi*, $1\frac{1}{4}$. *Hab.* in Mexico.

Descr. *Pter. prasino*, Licht., propemodo affinis. Rostrum nigrum, ad basin lineâ aurantiacâ cinctum; mandibula superior pro maximâ parte apicem versus flava in cœruleo-viridem supernè transiens.

Mr. Gould concluded by stating that it was his intention immediately to publish, as a supplement to his 'Monograph of the *Ramphastidæ*,' the drawings which he had laid before the Meeting. Of that family thirty-three species are now known to him, which may be distinguished by the following Synoptic Table of the species of

Ramphastidæ.

I. Caudâ breviore, quadratâ: rostro maximo. *Nigri; gutture caudæque tegminibus discoloribus.*—Ramphastos.

Caudæ tegminibus superioribus flavis vel flavescentibus.
Pectore albo.
Rostro ut plurimum nigro, lateribus compressis . . . . . 1. *culminatus.*
—— convexis . . . . . 2. *Cuvieri.*
———— rubro . . . 3. *erythrorhynchus.*
Pectore pallidè lutescente . . . . 4. *citreopygus.*
——— flavo. . . . . 5. *osculans.*
Caudæ tegminibus superioribus albis.
Pectore albo . . . . . 6. *Toco.*
——— flavo.
Rostro pluricolore . . . . . 7. *carinatus.*
——— obliquè dimidiatim flavo . 8. *Swainsonii.*
Caudæ tegminibus superioribus coccineis.
Rostro nigro.
Auribus albis . . . . . 9. *vitellinus.*
——— pectori concoloribus, (sc. flavis) . . . . . 10. *Ariel.*
Rostro viridescente . . . . . 11. *dicolorus.*

II. Caudâ longiore, gradatâ: rostro majore. *Viridescentes; capite, gastræo, tegminibusque caudæ superioribus in plurimis discoloribus.*—Pteroglossus.

Gastræo bi-vel pluri-colore, coloribus discretis.
Pectore ventreque flavis, fasciatis.
Fasciâ ventrali coccineâ, latâ.

Maxillæ superioris lateribus sordidè albis . . 1. *Aracari.*
——— obliquè dimidiatis nigris . . . 2. *castanotis.*
Fasciâ ventrali anticè nigrâ posticè coccineâ.
Pectore maculâ nigrâ notato . 3. *regalis.*
——— torque latâ nigrâ cincto . 4. *pluricinctus.*
Pectore coccineo.
Torque pectorali vel nullâ vel angustâ, flavâ . . . . . 5. *bitorquatus.*
——— latissimâ, nigrâ . 6. *Azaræ.*
Pectore ventreque flavis, haud fasciatis.
Maxillâ superiore dimidiatim flavâ et aurantiacâ . . . . . 10. *viridis.*
——— flavâ, nigro inscriptâ.
Maxillâ inferiore nigrâ . . . . 11. *Humboldtii.*
——— superiori concolore 12. *inscriptus.*
Pectore gutturi concolore, ventre discolore.
Maxillâ superiore nigro maculatâ, albescente . . . . . 13. *maculirostris.*
ut plurimum rubrâ.
apice concolore . . . . 14. *Nattereri.*
—— nigrescente . . . 15. *Reinwardtii.*
Maxillis nigris,
basin versus rubris . . . . 16. *Culik.*
paullum cinerascentibus . . 17. *Langsdorffii.*
Gastræo unicolore, vel subunicolore.
Gastræo stragulo discolore.
Gastræo flavo, rubro intermixto . 7. *ulocomus.*
——— cœruleo-cano . . . . 8. *hypoglaucus.*
——— flavo . . . . . 9. *Bailloni.*
Gastræo stragulo subconcolore.
Crisso discolore.
Mandibulæ superioris basi flavescente . . . . . 18. *prasinus.*
——— nigro . . . . . 19. *pavoninus.*
Crisso concolore.
Uropygio concolore.
Rectricum apicibus concoloribus . . . . . 20. *sulcatus.*
——— intermediarum duarum apicibus castaneis . 21. *Derbianus.*
Uropygio coccineo . . . . 22. *hæmatopygus.*

The latter five of the above species are referrible to the genus proposed by Mr. Gould, on December 23, 1834, (Proceedings, Part ii. p. 147,) under the name of *Aulacorhynchus*.

The following "Observations on the Habits, &c. of a male *Chimpanzee, Troglodytes niger*, Geoff., now living in the Menagerie of the Zoological Society of London, by W. J. Broderip, Esq., V.P.Z.S., F.R.S., &c.," were read:—

"The interesting animal whose habits in captivity I attempt to describe, was brought to Bristol in the autumn of this year by Capt. Wood, from the Gambia coast. The natives from whom he received it, stated that they had brought it about one hundred and twenty miles from the interior of the country, and that its age was about twelve months. The mother was with it, and, according to their report, stood four feet six inches in height. Her they shot,—and so became possessed of her young one; and those who have seen our animal will well understand what Dr. Abel means, when, in his painful description of the slaughter of an Asiatic *Orang* (*Pithecus Satyrus*, Geoff.), he observes that the gestures of the wounded creature during his mortal sufferings, the human-like expression of his countenance, and the piteous manner of his placing his hands over his wounds, distressed the feelings of those who aided in his death, and almost made them question the nature of the act they were committing. During the period of his being on ship-board, our *Chimpanzee* was very lively. He had a free range, frequently ran up the rigging, and showed great affection for those sailors who treated him kindly.

"I saw him for the first time on the 14th instant, in the kitchen belonging to the Keeper's apartments. Dressed in a little Guernsey shirt, or banyan jacket, he was sitting child-like in the lap of a good old woman, to whom he clung whenever she made a show of putting him down. His aspect was mild and pensive, but that of a little withered old man; and his large eyes, hairless and wrinkled visage, and man-like ears, surmounted by the black hair of his head, rendered the resemblance very striking, notwithstanding the depressed nose and the projecting mouth. He had already become very fond of his good old nurse, and she had evidently become attached to her nursling, though they had been acquainted only three or four days; and it was with difficulty that he permitted her to go away to do her work in another part of the building. In her lap he was perfectly at his ease; and it seemed to me that he considered her as occupying the place of his mother. He was constantly reaching up with his hand to the fold of her neck-kerchief, though when he did so she checked him, saying "No, Tommy, you must not pull the pin out." When not otherwise occupied, he would sit quietly in

her lap, pulling his toes about with his fingers, with the same pensive air as a human child exhibits when amusing itself in the same manner. I wished to examine his teeth; and when his nurse, in order to make him open his mouth, threw him back in her arms and tickled him just as she would have acted towards a child, the caricature was complete.

"I offered him my ungloved hand. He took it mildly in his, with a manner equally exempt from forwardness and fear;—examined it with his eyes, and perceiving a ring on one of my fingers, submitted that and that only to a very cautious and gentle examination with his teeth, so as not to leave any mark on the ring. I then offered him my other hand with the glove on. This he felt, looked at it, turned it about, and then tried it with his teeth. His sight and his ordinary touch seemed to satisfy him in the case of a natural surface, but, as it appeared to me, he required something more to assure his senses when an artificial surface was presented to him; and then he applied the test of his teeth.

"At length it became necessary for his kind nurse to leave him; and after much remonstrance on his part, she put him on the floor. He would not leave her, however, and walked nearly erect by her side, holding by her gown, just like a child. At last she got him away by offering him a peeled raw potato, which he ate with great relish, holding it in his right hand. His keeper, who is very attentive to him, and whom he likes very much, then made his appearance, and spoke to him. Tommy (for by that name they call him) evidently made an attempt to speak too, gesticulating as he stood nearly erect, protruding his lips, and making a hoarse noise "hoo-hoo" somewhat like a deaf and dumb person endeavouring to articulate. He soon showed a disposition to play with me, jumping on his lower extremities opposite to me like a child, and looking at me with an expression indicating a wish for a game of romps. I confess I complied with his wish, and a capital game of play we had.

"On another occasion, and when he had become familiar with me, I caused, in the midst of his play, a looking-glass to be brought, and held it before him. His attention was instantly and strongly arrested: from the utmost activity he became immoveably fixed, steadfastly gazing at the mirror with eagerness and something like wonder depicted on his face. He at length looked up at me—then again gazed at the glass. The tips of my fingers appeared on one side as I held it—he put his hands and then his lips to them—then looked behind the glass—then gazed again at its surface—touched my hand again, and then applied his lips and teeth to the surface of the glass—looked behind again, and then, returning to gaze, passed his hands behind it, evidently to feel if there was anything substantial there. A savage would have acted much in the same way,

judging from the accounts given of such experiments with the untutored natives of a wild and newly discovered land.

"I broke a sugared almond in two, and, as he was eating one half, placed the other, while he was watching me, in a little card-box which I shut in his presence—as soon as he had finished the piece of almond which he had, I gave him the box. With his teeth and hands he pulled off the cover, took out the other half, and then laid the box down. He ate the kernel of this almond, rejecting the greatest part of the sugary paste in which it was incased, as if it had been a shell: but he soon found out his error; for, another almond being presented to him, he carefully sucked off the sugar and left the kernel.

I then produced a wine-glass, into which I poured some racy sherry, and further sweetened it with sugar. He watched me with some impatience, and when I gave him the glass he raised it with his hands to his lips, and drank a very little. It was not to his taste, however, for he set down the glass, almost as full as he had taken it up; and yet he was thirsty, for I caused a tea-cup with some sugared warm milk and water to be handed to him, and he took up the cup and drained it to the last drop.

"I presented him with a cocoa-nut, to the shell of which some of the husk was still adhering: the tender bud was just beginning to push forth—this he immediately bit off and ate. He then stripped off some of the husk with his teeth, swung it by the knot of adhering husk-fibres round his head, dashed it down, and repeatedly jumped upon it with all his weight. He afterwards swung it about and dashed it down with such violence that, fearing his person might suffer, I had it taken away. A hole was afterwards bored through one of the eyes, and the cocoa-nut was again given to him. He immediately held it up with the aperture downwards, applied his mouth to it, and sucked away at what milk there was with great glee.

"As I was making notes with a pencil, he came up, inquisitively looked at the paper and pencil, and then took hold of the latter. Before I gave it up, I drew the pencil into the case, foreseeing that he would submit the pencil-case to examination by the teeth. Immediately that he got it into his possession, he put the tip of his little finger to the aperture at the bottom, and having looked at it, tried the case with his teeth.

"While his attention was otherwise directed I had caused a hamper containing one of the *Pythons* to be brought into the room and placed on a chair not far from the kitchen dresser. The lid was raised, the blanket in which the snake was enveloped was opened, and soon after Tommy came gamboling that way. As he jumped and danced along the dresser towards the basket, he was all gaiety and life. Suddenly he seemed to be taken aback, stopped—

then cautiously advanced towards the basket, peered or rather craned over it—and instantly with a gesture of horror and aversion, and the cry of Hoo! hoo! recoiled from the detested object, jumped back as far as he could, and then sprang to his keeper for protection. He was again put down, his attention diverted from the basket, and, after a while, tempted to its neighbourhood by the display of a fine rosy-cheeked apple, which was at last held on the opposite rim of the hamper. But no—he would evidently have done a good deal to get at the apple; but the gulf wherein the serpent lay was to be passed, and after some slight contention between hunger and horror, off he went and hid himself. I then covered up the snake, and after luring him out with the apple, placed it on the blanket—No. I then shut down the lid—still the same desire and the same aversion. I then had the hamper, with the lid down, removed from the chair on which it had been placed to another part of the room. The apple was again shown to Tommy and placed on the lid. He advanced cautiously, looking back at the empty chair and then at the hamper: he advanced further with evident reluctance, but when he approached near he peered forward toward the basket, and, as if overcome by fright, again ran back and hid himself under his cage.

"I now caused the hamper with the serpent to be taken out of the room. Our friend soon came forward. I showed him the apple and placed it on the chair. He advanced a little, and I patted his head and encouraged him. He then came forth and went about the room, looking carefully as if to satisfy himself that the snake was gone—advanced to the chair more boldly,—looked under it—and then took the apple and ate it with great appetite, dancing about and resuming all his former gaiety.

"We know that there are large constricting serpents in Africa; and as the animal must have been very young when separated from its parent, I made this experiment in particular to try his instinct: it succeeded to the entire satisfaction of the witnesses who were present.

"He manifested aversion to a small living tortoise, but nothing like the horror which he betrayed at sight of the snake. I was induced to show him the former by the account of the effect produced by *Testudinata* on the Asiatic *Orang*, whose habits are so admirably described by Dr. Abel and Captain Methuen, who brought the animal to England.

"Tommy, among other exercises, is very fond of swinging. He places himself on the swing, generally in a sitting posture, holding on each side with his hands. He not unfrequently puts up his feet and grasps the cord on either side with them too, appearing more at home on his slack rope than Il Diavolo Antonio himself.

"James Hunt, one of the keepers, has observed him frequently

sitting and leaning his head on his hand, attentively looking at the keepers when at their supper, and watching, to use Hunt's expression, "every bit they put into their mouths." Fuller, the head keeper, informs me that our *Chimpanzee* generally takes his rest in a sitting posture, leaning rather forward with folded arms and sometimes with his face in his hands. Sometimes he sleeps prone, with his legs rather drawn up, and his head resting on his arms.

"Of the *black Orangs* which I have seen, Tommy is by far the most lively. He is in the best health and spirits, and is a very different animal from the drooping, sickly *Chimpanzees* that I have hitherto seen. A good deal of observation made on the Asiatic *Orangs* which have been exhibited in this country, satisfies me that the intelligence of the African *Orang* is superior to that of the Asiatic. This intelligence is entirely different from that of a well-educated dog or a mere mimic, and gives me the idea of an intellect more resembling that of a human being than of any other animal, though still infinitely below it.

"The *Pygmy* of Tyson and the *black Orang* dissected by Dr. Traill, and so well described by him in the 'Wernerian Transactions,' are both stated to have progressed generally by placing their bent fists on the ground and so advancing: indeed Dr. Traill says that the individual which he saw never placed the palms of the hands on the ground. The progression of Dr. Abel's *red* or *Asiatic Orang* is described to have been after the same fashion. Whether it is that our *Chimpanzee* is in better health and more lively, I know not, but he certainly passes a great deal of his time in a position nearly approaching to erect, nor does he, generally, place the bent knuckles to the ground. He will often stand on the top of his cage and apply the palms of his hands to the smooth surface of the wall against which it stands. It is said that a spectator who saw him thus employed, with his back to the company, dressed in his little banyan jacket and woollen cap, was told by a companion to look at the monkey, as he profanely called him. "Where is he?" was the reply. "Why there on the top of the cage," was the answer. "What!" said the first, "that little man who is plastering the wall?"

"Tommy does not like confinement, and when he is shut into his cage, the violence with which he pulls at and shakes the door is very great, and shows considerable strength; but I have never seen him use this exertion against any other part of the cage, though his keeper has endeavoured to induce him to do so in order to see whether he would make the distinction. When at liberty he is extremely playful, and, in his high jinks, I saw him toddle into a corner where an unlucky bitch was lying with a litter of very young pups, and lay hold of one of them, till the snarling of the mother and the voice of his keeper, to which he pays instant respect,

made him put the pup down. He then climbed up to the top of the cage where the *Marmozets* were, and jumped furiously upon it, evidently to astonish the inmates, who were astonished accordingly, and huddled together, looking up in consternation at this dreadful pother o'er their heads. Then he went to the window, opened it and looked out. I was afraid that he might make his escape: but the words "Tommy, no!" pronounced by his keeper in a mild but firm tone, caused him to shut the window and come away. He is in truth a most docile and affectionate animal, and it is impossible not to be taken by the expressive gestures and looks with which he courts your good opinion, and throws himself upon you for protection against annoyance.

"It must be remembered that though I have not observed our *Chimpanzee* to progress with his bent knuckles touching the ground, as I have seen the *Asiatic Orangs* move, there is no reason for doubting the accurate descriptions of Tyson and Dr. Traill. I consider it as my province to relate faithfully what I saw, and I have only seen our *Chimpanzee*, as yet, in a small room, where a very few paces will bring him to a chair, a leg of a dresser, or some other piece of furniture which enables him to call into action his prehensile hands and feet, so admirably adapted to his arboreal habits. The narrowness of the *pelvis*, the comparatively inferior development of the *glutæi* * and *gastrocnemii* muscles, and other peculiarities of conformation so ably pointed out by Tyson, Dr. Traill, and others, but more particularly by Mr. Owen, show that the erect, or, more properly speaking, the semi-erect position, is not the natural one; though my observations upon living *Asiatic Orangs* and *Chimpanzees* accord with the inference drawn by Mr. Owen from the comparative organization of the latter, viz. that the semi-erect position is more easily maintained by the *Chimpanzee* than by any of the other known *Simiæ*.

"The great intelligence and strength of the individual now in the menagerie of the Society, added to the state of its dentition, raised a doubt in my mind as to the accuracy of the report of its age; and I wrote to my friend Mr. Owen my suspicion that he might be older than he was said to be. I received the following reply, in which so much valuable information is concentrated that I feel it to be due to those who may think this memoir worthy of attention to give it as I received it.

'21st October, 1835.

"'My dear Broderip,—I feel that we have no data towards deter-

* This must be understood as limited to a comparison with the same muscles in man; for there is in the *Chimpanzee* as Mr. Owen observes, "a provision for a more extended attachment for the *glutæi* muscles, in a greater breadth of the *ilia* between the superior spinous processes, than is observed in the inferior *Simiæ*."

mining with certainty the exact age of the young *Chimpanzee* at the Gardens: its present state of dentition corresponds to that which our own species presents during the period of from 2 to 7 years, viz. incisors $\frac{4}{4}$, canines $\frac{2}{2}$, molars $\frac{4}{4}$, all of which belong to the deciduous series. The deciduous canines appear in the human jaws before the completion of the second year; and those of the *Chimpanzee* are certainly the temporary ones, but are protruded by the enlarged germs of the permanent teeth behind them, so as to appear larger than natural. From this circumstance and from the space already existing beyond the deciduous molars, I infer that the appearance of some of the permanent teeth is near at hand; and we may still see an additional molar protruding in each jaw before the winter is over, if the poor animal should survive that period.

"'The human child acquires the corresponding permanent molars at the seventh year; and from the appearances on the jaws of our *Chimpanzee* I conclude that its age tallies with that of 5 or 6 years in us. But analogy will be dangerous ground for an inference as to precise age, since it is by no means improbable that, where the brain is so much less developed, the full use of it may be much earlier acquired, such as it is; and that the shedding of the teeth may take place at a proportionally early period.

'Believe me, &c. 'RICHARD OWEN.'

"I now proceed to the measurements of our male specimen, premising that the operation was a work of no small difficulty in consequence of the restlessness of the animal. Indeed I am not sure now about the height, though I am confirmed in the measurements by Mr. Miller and Fuller. The *Chimpanzee* would keep drawing up his legs and putting the *musculus scansorius* detected by Dr. Traill into action; and it was not practicable to make him stand or lie quite straight with his legs entirely extended.

	Ft.	In.
Height from the heel to the top of the head	2	0
Circumference of the bottom of the breast	1	5
——— round the hips	1	3¼
——— of the head round the eyes and ears	1	3
Opening of the mouth	0	3¼
Height from the middle of the upper lip to the eyebrows	0	3¼
Length from the eyebrows to the *occiput*	0	7½
Diameter of the ear upwards	0	2¾
Transverse diameter of the same	0	1¾
Circumference of the external edge of the same	0	6½
——— of that part which adheres to the head	0	4¾
Height from the upper point of the *pubis* to the clavicle	0	10½
Distance between the navel and *sternum*	0	4¼

Distance between the navel and *pubis*	0	3¼
——— nipples	0	4
Length of the arm from the shoulder to the end of the fingers	1	4½
Circumference of the arm	0	6
——— of the forearm four inches above the wrist	0	6¼
Length of the hand from the wrist to the end of the middle finger	0	5¼
Circumference of the hand	0	4½
Length of the thumb	0	1¾
——— second finger	0	2½
——— middle finger	0	3¼
——— fourth finger	0	3
——— fifth finger	0	2¼
Circumference of the thumb and little finger	0	1¾
——— other fingers	0	1¾
Length of the palm	0	2½
Breadth of ditto	0	2
Height from the heel to the extremity of the thigh-bone	0	11½
Length from the heel to the extremity of the middle (longest) toe	0	5¼
Circumference of the thigh	0	8¾
——— leg, at its thickest part	0	6
——— foot, taken from the origin of the thumb	0	5¼
Length of the thumb or great toe	0	1½
——— second toe	0	2
——— third toe	0	2¼
——— fourth toe	0	2¼
——— fifth toe	0	1¾
Greatest breadth of the sole at the origin of the thumb or great toe	0	2½
——— near the heel	0	1¾
Circumference of the great toe at the largest point	0	1¾
——— other toes	0	1¼

"On referring to the dimensions given by Daubenton we shall be struck with the stoutness of our specimen as compared with that of the individual which was the subject of his observations.

"It was my intention to have added a particular description of the individual which has been the subject of this memoir; but on carefully inspecting the animal I find Dr. Traill's elaborate description so accurate—(there really is no difference but sex at present)—that I should be needlessly occupying space if I inserted my own; and I beg, therefore, to refer the reader to that gentleman's highly valuable papers in the 'Wernerian Transactions'.

" Since writing the above the cage in which our animal was confined has been enlarged and several barked branches have been nailed to a stem so as to form an artificial tree. These branches he ascends with great activity, and frequently swings with his head downwards, holding on by his lower extremities, and recovering himself with greater agility than any rope-dancer."—W. J. B.

November 10, 1835.

Thomas Bell, Esq., in the Chair.

At the request of the Chairman, Mr. Gould exhibited a specimen of the true *Lanner Hawk, Falco Lanarius*, Linn., and entered into some details with respect to its distinguishing peculiarities. Its real characters, he stated, have hitherto been so imperfectly understood as to have led to very general doubts as to its existence as a distinct species.

Mr. Gould also exhibited specimens of two species of *Pheasant*, both of very great rarity, which had recently come into his possession: they were the *Phasianus Sœmmeringii*, Temm., and the *Phas. versicolor*, Ej. He accompanied the exhibition by some remarks on the subdivisions which appear to him to be required among the *Phasianidæ* generally; and more especially on the position, among that extensive group, of the species exhibited.

Mr. Bell read "Some Account of the *Crustacea* of the Coasts of South America, with Descriptions of New Genera and Species; founded principally on the Collections obtained by Mr. Cuming and Mr. Miller. (Tribus 1, *Oxyrhynchi*.)" The paper contains characters and descriptions of the following genera and species of *Crustacea*; and was accompanied by the exhibition of the specimens described in it, and of drawings in illustration of it.

Fam. Leptopodiidæ.

Genus Leptopodia, *Leach*.

Leptopodia Sagittaria, *Leach*.
Hab. apud Valparaiso.

Genus Eurypodius, *Guèr*.

Eurypodius Latreillii, *Guèr*.
Hab. apud Valparaiso, *D. Cuming*; ad Rio Janeiro, *D. Miller*.

Fam. Maiidæ.

Genus Libinia, *Leach*.

Libinia rostrata. *Lib. rostro producto, valido, bidentato; dentibus compressis, acutis, divergentibus.*
Long. tot. 2 poll. 8 lin., lat. 2 poll. 3 lin.
Hab. ad oras Peruviæ.

Genus Rhodia.

Testa pyriformis, in rostrum parvum bidentatum anticè producta.

Oculi retractiles, globosi, pedunculo crassiores.
Orbita fissurâ magnâ supernè apertâ.
Antennæ interiores in foveolis profundis, lunatis, anticè separatis receptæ.
Antennæ exteriores rostro duplo longiores; articulo basilari bidentato, reliquis cylindricis, ad rostri latera insertæ.
Pedum par anticum (♂ immaturi) reliquis brevius; digitis minutissimè serratis; *paria quatuor posteriora* testâ longiora, a secundo ad quintum sensim paullò breviora.
Abdomen MARIS 7-articulatum; FŒMINÆ — ?
OBS. Genus *Herbstiæ* affine; differt præcipuè pedibus anticis tenuioribus abbreviatis, digitisque minutissimè tantum serratis.

RHODIA PYRIFORMIS.
Long. testæ 8 lin., lat. 6.
Hab. ad Insulas Gallapagos dictas.

Genus PELIA.

Testa pyriformis, rotundata, anticè rostro elongato apice bifido terminata.
Orbita suprà fornicata, externè unifissa, infrà emarginata.
Oculi retractiles, globosi, pedunculo crassiores.
Antennæ interiores in basin rostri insertæ.
Antennæ exteriores rostro haud multo longiores, articulo basilari longissimo ad medium rostri attinente, extùs uni-denticulato; articulis reliquis cylindricis, gracilibus.
Pedipalpi externi caule externo semifusiformi; caulis interni articulo primo elongato-rhomboideo, secundo trapezoideo, margine integro.
Pedum par anticum aliis paullò crassius, secundo brevius; digitis apicem versus serrulatis, digito immobili ad medium excavato, tuberculum unicum digiti mobilis recipiente: *paria quatuor posteriora* gracilia, compressa, pilosa.
Abdomen MARIS 7-articulatum.
OBS. Genus *Herbstiæ* et *Pisæ* affine.

PELIA PULCHELLA.
Long. testæ 4 lin., lat. 2¼.
Hab. ad Insulas Gallapagos dictas.

Genus HERBSTIA, *Edw.*

HERBSTIA EDWARDSII. *Herbst. pedum pare antico inermi.*
Long. testæ 7 lin., lat. 6.
Hab. ad Insulas Gallapagos dictas.

Genus THOË.

Testa subtriangularis, depressa, horizontalis, rostro minimo apice leviter fisso terminata.
Orbita edentata, fissuris tribus inconspicuis.
Oculi retractiles, globosi, pedunculo brevi.
Antennæ interiores in fossulâ anticè tantum divisâ insertæ.

Antennæ exteriores ad latera rostri insertæ, rostro triplo longiores, pilosæ, articulo basilari lato, anticè et posticè producto.

Pedipalpi externi introrsùm ciliati, caulis interni articulo primo subrhomboideo, secundo margine integro.

Pedes antici MARIS reliquis longiores, brachiis suprà et externè serie cellularum erosis; manibus lævibus, digitis ad apicem tantum contingentibus: *posteriores* depressi, lateribus pilosis.

Abdomen in utroque sexu 7-articulatum.

OBS. Genus *Herbstiæ* affine: differt corpore depresso, rostrique formâ. Peculiares admodum cellulæ brachiorum.

THOË EROSA.

Long. testæ 5 lin., lat. 4.

Hab. ad Insulas Gallapagos dictas.

Genus HYAS, *Leach.*

HYAS EDWARDSII. *Hy. testâ anticè angustatâ, post orbitas haud coarctatâ, pilosâ; orbitarum dente interno mediocri.*

Long. testæ 9 lin., lat. 7.

Hab. apud Valparaiso et ad Insulas Gallapagos dictas.

Genus PISA, *Leach.*

PISA SPINIPES. *Pisa testâ ovatâ; dente articuli basilaris antennæ exterioris dente superorbitali longiore; margine antico-laterali et pedibus omnibus spinosis.*

Long. testæ 8 lin., lat. 4.

Hab. ad Insulas Gallapagos dictas, et apud Sanctam Elenam.

PISA ACULEATA. *Pisa testâ triangulari; dente articuli basilaris antennæ exterioris dente superorbitali breviore; margine antico-laterali inermi, regione branchiali spinis quatuor armatâ, pedibus suprà spinosis.*

Long. testæ 8 lin., lat. 7.

Hab. ad Insulas Gallapagos dictas.

Genus MITHRAX, *Leach.*

MITHRAX ROSTRATUS. *Mithr. testâ spinosâ, rostro elongato bidentato, dentibus divaricatis, terminatâ; pedibus spinosis, manibus lævibus.*

Long. testæ 2 poll. 2 lin., lat. 2 poll.

Hab.

MITHRAX URSUS (Jun. *Cancer Ursus*, Herbst). *Mithr. testâ granulatâ, verrucoso-tuberculatâ; rostri dentibus obtusis tuberculo granuloso terminatis; tuberculis octo pone rostrum, et sex circum orbitam; manibus lævibus.*

Long. testæ 2 poll., lat. eadem.

Hab. ad Insulas Gallapagos dictas.

MITHRAX NODOSUS. *Mithr. testâ trigono-ovatâ, margine tuberculis tribus fortibus, rotundatis, et dente unico; rostro brevi trifido; pedipalpis articulo secundo caulis externi lunulato; manibus lævibus,*

suprà cristatis, carpis tuberculatis; pedibus posterioribus suprà spinosissimis et pilosis.
Long. testæ 1 poll., lat. 1 poll, 3 lin.
Hab. ad Insulas Gallapagos dictas.

MITHRAX DENTICULATUS. *Mithr. testâ profundè sculptâ, margine laterali dentibus quatuor obtusiusculis; pedipalpis articulo secundo caulis interni cordato; manibus lævibus; pedibus posterioribus pilosis, spinosissimis.*
Long. testæ 5 lin., lat. 6.
Hab. ad Insulas Gallapagos dictas, sub lapidibus.

MITHRAX PYGMÆUS. *Mithr. testâ depressâ, subpentagonâ, fronte obtusissimo, lato, obsoletè bilobo.*
Long. testæ 3 lin., lat. eadem.
Hab. apud Panama.

Genus PITHO.

Testa latè ovata, rostro parvo, brevi, bifido, haud deflexo, terminatâ.
Oculi pedunculo elongato, cylindrico, subcurvo, haud crassiores.
Antennæ interiores minutissimæ.
Antennæ exteriores breviusculæ, articulo basilari lamelloso, extùs dente triangulari armato; secundo compresso, cordato, anticè emarginato, et tertio multò majore; reliquis parvis cylindricis.
Pedipalpi externi caulis interni articulo secundo triangulari, extrorsùm producto.
Pedes mediocres. *Par anticum* MARIS — —? FŒMINÆ reliquis minus, digitis minutè serrulatis, digito mobili longiore; *paria quatuor posteriora* ordine 2, 3, 4, 5 gradatim breviora; digitis subtùs minutissimè denticulatis.
Abdomen MARIS — —? FŒMINÆ 7-articulatum.
OBS. *Micippæ* et *Paramicippæ* affine: differt præcipuè rostro minuto haud deflexo.

PITHO SEXDENTATA. *Pitho testæ margine laterali dentibus sex triangularibus acutis.*
Long. testæ 9 lin., lat. 8.
Hab. ad Insulas Gallapagos dictas.

PITHO QUINQUEDENTATA. *Pitho testæ margine laterali dentibus quinque triangularibus acutis armato.*
Long. testæ 6 lin., lat. 5.
Hab. cum præcedente.

Genus TYCHE.

Testa oblonga, depressa, angulata, anticè declivis, fronte lato, rostro bidentato piloso terminata; rostri dentes compressi, obtusi, apicem versus internè emarginati.
Orbita suprà latissima, in dente prominente complanato anticè producta, infrà carens.
Oculi pedunculo elongato graciliores.
Antennæ interiores in fossulâ ad basin rostri insertæ.

Antennæ exteriores rostro paullò longiores, articulo basilari latiusculo, anticè angustiore; articulo tertio secundo abruptè minore; omnibus externè pilosis.

Pedipalpi externi rugosi, caule exteriore subulato, caulis interioris articulo primo canaliculato, extùs profundè emarginato, secundo securiformi, tridentato.

Pedes antici graciles, simplices, pari secundo breviores, digitis inermibus: *posteriores* cylindrici, unguibus acutis, curvis, complanatis terminati.

Abdomen MARIS 7-articulatum; FŒMINÆ — — ?

OBS. Genus *Creocarcino* affine.

TYCHE LAMELLIFRONS.

Long. testæ 7 lin., lat. 4.

Hab. apud Panama.

Genus PERICERA, *Latr.*

PERICERA VILLOSA. *Per. testâ depressâ, villosâ, regionibus elevatis, sulcis separatis, spinâ obtusâ laterali utrinque; rostri cornibus validis, sublamelliformibus, divergentibus; dente articuli basilaris antennæ externæ dente superorbitali multò longiore; antennis exterioribus sub rostro insertis.*

Long. testæ 1 poll. 7 lin., lat. eadem (spinis lateralibus inclusis).

Hab. in Sinu Guayaquil.

PERICERA OVATA. *Per. testâ elongato-ovatâ, spinis viginti ad viginti quatuor armatâ; dente superorbitali dente articuli basilaris antennæ externæ longiore.*

Long. testæ 1 poll., lat. 6 lin.

Hab. ad Insulas Gallapagos dictas.

PERICERA HEPTACANTHA. *Per. testâ pyriformi, dorso quinquespinoso, ordine* 1, 3, 1, *lateribus utrinque* 1*-spinosis; rostri cornibus parvis, acutis.*

Long. testæ 1 poll. 5 lin., lat. (spinis lateralibus inclusis) 1 poll. 7 lin.

Hab. apud Puerto Portrero.

Genus ACANTHONYX, *Latr.*

ACANTHONYX PETIVERII, *Edw.*

Hab. ad Insulas Gallapagos dictas, *D. Cuming*; ad oras Brasiliæ, *D. Miller.*

Genus EPIALTUS, *Edw.*

EPIALTUS DENTATUS, *Edw.*

Hab. apud Valparaiso.

EPIALTUS MARGINATUS. *Ep. testâ depressâ, lateribus marginatis; fronte latâ, antennas exteriores omnino tegente.*

Long. testæ 2 poll. 3 lin., lat. 1 poll. 8 lin.

Hab. ad oras Brasiliæ.

The skeleton was exhibited of a *Coypus*, *Myopotamus Coypus*, Comm., together with preparations of some of the *viscera* obtained from the

same individual, which recently died at the Society's Gardens. With reference to them the following notes by Mr. Martin were read.

"Though the *Coypus* is now well known to naturalists, I am not aware that much attention has been paid to its anatomy:—it is not often, indeed, that the living animal is brought to Europe, extensive as the importation of its skins appears to be. I am therefore not without a hope that the following notes of the examination of an individual which died in August, 1835, at the Gardens of the Society, will be found not altogether destitute of interest, imperfect as they are from circumstances over which I had no controul.

"The animal was an adult male, measuring from nose to *anus* 1 foot 11 inches; the length of the tail being 1 foot 5 inches. The body was very fat; and the subcutaneous muscle or *panniculus carnosus* was strong and extensive, as it is in aquatic *Rodents* in general. Of the external organs of generation the *penis* alone was apparent, for the *testes* are not contained in a *scrotum* but situated in the groin just without the abdominal ring; the length of the *penis* from the *pubes* was 5 inches; the *glans* was acuminate and contained an osseous stylet.

"On looking into the *abdomen*, I found that the *viscera* had previously been disarranged, in the examination which the animal had undergone with the view of ascertaining the cause of its death; their natural situation consequently could not be determined. The *liver* consisted of one left, one middle, and two right lobes, one of which was small and seated dorsad. The middle lobe was deeply cleft; and in the channel continued from the fissure on the under surface of this lobe was seated the gall-bladder, which, having been cut, was destitute of its fluid. On distending this *viscus*, however, through the *ductus choledochus*, which was as large as a crow-quill, I found its shape to be a long oval, measuring in length 2 inches, its duct being joined by a large hepatic duct, $\frac{1}{4}$ an inch below its commencement; the total length of the *ductus choledochus communis* was 2 inches, and its entrance into the *duodenum* was just below the sacculated origin of that portion of the intestine, or $2\frac{1}{2}$ inches from the *pylorus*.

"The *pancreas* consisted of an irregular mass or body concealed by the stomach, whence it spread itself, in thin irregular layers of an elegant arborescent arrangement, through the duodenal mesentery, between the two membranes. Its duct, owing to the previous disarrangement of the *viscera*, I could not discover; it did not appear to enter with the biliary.

"The spleen resembled a prism in its figure, and was 3 inches in length; it adhered to the cardiac portion of the stomach by a ribband of *peritoneum* 1 inch in breadth. In the *Ondatra*, the *Capromys*, and some other *Rodentia*, the spleen presents the same figure.

"The stomach closely resembled that of the *Capromys*, being of an oblong figure, both extremities having pretty nearly the same volume; the cardiac extremity projecting 3 inches beyond the entrance of the narrow *œsophagus*, and the pyloric *sacculus* a little more than 2 beyond the *pyloric orifice*. The stomach, measured in a straight line from end to end, was $7\frac{3}{4}$ inches; its greatest depth being $4\frac{1}{2}$.

"The *duodenum* was found to commence with a large dilatation or *sacculus*, projecting towards the *œsophagus* like a *cæcum*; in which respect it resembles *Cœlogenus* as described by Sir E. Home. In *Capromys*, *Anœma*, and *Dasyprocta* a similar dilatation, though not so considerable, has also been noticed. In circumference at this part the *duodenum* measured 4½ inches; the decrease is gradual, and where the biliary duct enters the circumference is 3 inches; a little distance below this it is 2½. To follow the natural course of this intestine was out of my power; it has a mesentery, however, through its whole extent.

"The total length of the small intestines was 16 feet 4 inches, and their mean circumference 1¾.

"The *cæcum* was of large size, making a circular turn at its base and gradually diminishing in volume as it proceeded. It was puckered into *sacculi* by two muscular bands, one on each side; which were not however traceable quite to its extremity, but were tolerably strong in its wide basal part. In its general figure the *cæcum* had no unapt resemblance to a ram's horn. In length it measured about 1 foot 10 inches, its greatest circumference 8 inches.

"The *ileum* terminated in a sort of *sacculus* at the base of the *colon*, beyond which projected the round head of the *cæcum*: the valve indicating the separation of the *cæcum* from the *colon* is very apparent in the dried preparation.

"The *colon* began large, but gradually became narrow; on leaving the *cæcum* it was slightly sacculated for a short distance, but this appearance was speedily lost: its mean circumference was 2¾ inches. The commencement of the *colon* was not only somewhat larger than the succeeding portion, but made an abrupt turn from the *cæcum*, and after a course of 1 foot 5 inches suddenly folded upon itself, the reflected length running down for the distance of 11 inches, when it turned suddenly back again, but did not adhere so closely to the previous fold, as that did to the first length; it then became very small, and soon dipped down to constitute the *rectum*. The whole of this long loose fold reminded me of the *duodenum* of *Birds*. A similar structure is recorded by Mr. Owen in his notes on the dissection of *Capromys Fournerii*, as existing in that animal. It was near the end of the first loose fold, as also in *Capromys*, that the *fæces* began to assume a solid form in separate oval masses. The total length of the large intestines was 4 feet 4 inches.

"The kidneys were of an oval form, and very soft in their structure; their surface, the tunic being removed, presented a granular appearance. The two portions were very distinct. The *pelvis* was small; the *papilla* single. The right kidney was somewhat higher than the left. The length of each was 2 inches, the breadth 1½. The suprarenal glands were long and rounded, of a greyish yellow externally; but their internal structure was like soft liver: each had a small cavity within. Their length was 1 inch. Their situation was mesiad of the upper extremity of each kidney.

"The lungs were of small volume, and consisted of three lobes of nearly equal size, and one very small lobe on the right; and of three lobes on the left side.

"In shape the heart was very elegant; it was compressed, and both ventricles described the half of a circle, and ended in a short sharp *apex*. The length and breadth of this organ were equal, the admeasurements being each 1¾ inch.

"The disposition of the branches given off at the arch of the *aorta* was as follows. On the right side arose a common trunk, which divided into the right subclavian and the right carotid, but gave off lower down to the left the left carotid. The left subclavian arose from the *aorta* in a distinct branch.

"In his account of the anatomy of *Capromys* Mr. Owen notices a peculiarity in the arrangement of some of the abdominal muscles: a decussation of the pillars of the *recti* muscles taking place at the *pubes*. In the *Coypus* an arrangement of a similar character was observed. It may be thus described. From the right *os pubis* and close to the *symphysis* arises a fleshy column, which crossing a column arising from the left side passes obliquely upwards, and becomes immediately united with another larger column arising more outwardly, and passing under the column of fibres from the left side, as the first does above it; and thus is constituted the left *rectus* muscle. Between these two columns, as we have said, and from the left side of the *pubes*, runs up a decussating column, which blends with another passing beneath the larger column of the left *rectus*, both forming by their union the right *rectus abdominis*. The lower column of the external oblique, with which muscle the *rectus* is blended above (as in *Capromys*) so as to appear in reality but one, has its own insertion on its own side.

"The *testes* were situated in the groin on each side of the *pubes*, enveloped in a strong cremaster of circular fibres given off from the external oblique and *transversalis*; they were capable of being passed back through the abdominal ring, which is very large, the columns of the *rectus* forming its inner edge. As in many others of the *Rodent* order, large foliated fatty processes, adhering to the *testes*, were found hanging loose in the abdominal cavity; their length was 5 inches, their breadth at the broadest part 2.

"The bladder was of the usual oval form, and, as it lay undistended with fluid, measured 2 inches in length. The ureters entered laterally near its neck.

"Beneath the ureters near their entrance the *vasa deferentia* crossed: the total length of these tubes was 5 inches; at their origin on leaving the *epididymis* they were found to be slightly tortuous, but only for a short distance. The *epididymis* consisted of a congeries of convolutions, whence a tortuous elongated portion followed the convex surface of the *testis* for two thirds of its length, and then passed into the *vas deferens*, which was enveloped in a fatty process extending from the *testes*, and spreading over the base of the *vesiculæ seminales* and the proximate portion of the ureters. The *vesiculæ seminales* were long tortuous bodies with numerous small processes or *sacculi*, giving them a knotted appearance: at their *apex* they folded down upon themselves, and terminated in a point: when extended they measured about 4 inches.

"The *urethra* at its commencement formed a sort of *cul de sac*,

as noticed by Mr. Owen in the *Capromys*; and a transverse ridge separated the entrance of the bladder from the orifices of the *vasa deferentia* and *vesiculæ seminales*. Below this ridge was a small conical body, at the *apex* of which opened the *vasa deferentia*, and on the sides the *vesiculæ seminales*. The latter, when opened, were found filled with a white hard curdy matter having some resemblance to the roe of fishes. This substance filled a great portion of the *urethra* also.

"The prostate gland appeared like accessory *vesiculæ*, and was closely united to the base of those bodies: it was divided into two large lobes, each of which was found to be composed of a number of blind tubes or elongated cells, united into a mass by cellular membrane. They were easily unravelled into a tuft of long fringes, each tube being $\frac{1}{4}$ of an inch in length. These tubes all concentrated in a small spot, where they opened by a few minute orifices into the *urethra* at the base of the little conical elevation before alluded to.

"The distance from the prostate to the base of the bulb of the *urethra* was $1\frac{1}{4}$ inch.

"The membranous part of the *urethra* was closely embraced by a layer of muscular fibres: the *acceleratores urinæ* investing the bulb were large and strong: the *erectores* were fleshy; they embraced the *crura penis*. On each side of the bulb, external to the *accelerator urinæ*, lay a gland as large as a filbert, whence proceeded a tube of the diameter of a crow-quill, which passing beneath the *accelerator* entered the bulb of the *urethra* above its centre. The length of this duct was 1 inch. These glands are, I suppose, to be considered as the *glandulæ ante-prostatæ*, or Cowper's glands.

"At the extremity of the *rectum* on its abdominal aspect was situated a large glandular sac of the size of a walnut filled with inodorous creamy matter; its excretory orifice was just within the anal opening. This sac was invested with a tunic of muscular fibres continued from the *sphincter* and *levator ani*.

"The *tongue* was acuminate and 3 inches in length, its surface covered with small retroverted shining velvety *papillæ*; two large distinct *papillæ* of an oval form appearing at the base. The free part of the tongue, that is from the *frænum* to the *apex*, was $\frac{3}{4}$ of an inch. The basal portion of the *dorsum* was elevated, but not so abruptly as in some *Rodents*; the disc, however, was sufficiently marked.

"The *fauces* were found to form a funnel-shaped cavity with neither tonsils nor palate arches; but the soft palate was continuous to the posterior aperture, which barely admitted the entrance of a common quill. The *posterior nares* were continued like a funnel beyond this posterior orifice of the *fauces*, and received into their aperture the *glottis*, *epiglottis*, and arytenoid cartilages, so that the margin of the orifice of the *fauces* lay in contact with the *dorsum* of the tongue anterior to the *epiglottis*, which rose behind it, and which it was evident could not be brought at all under the soft palate; hence respiration and every vocal intonation must proceed through the nostrils.

"The *epiglottis* was broad basally, but not elevated; it assumed

a rounded figure, and when pressed down did not completely cover the *rima* of the *glottis* until the *larynx* was depressed towards its base.

"A distinct fold or duplicature surrounded the opening of the *nares* into the *œsophagus*; which tube was small, and had its lining membrane corrugated into longitudinal folds.

"The sublingual glands were large.

"The *trachea* was about 3 inches in length to its bifurcation, and $\frac{1}{4}$ an inch in diameter; the *bronchi* were about 1 inch long before entering the lungs.

"To the above sketch of the visceral anatomy of the *Coypus*, I have to subjoin a few observations on some portions of its skeleton.

"Of the skulls of such *Rodentia* as I have been enabled to compare with that of the present animal, although it agrees in many points with that of *Capromys*, the one which approximates the nearest to it is that of the *Capybara*. The main outline and contour of both are very similar; they both agree in the flatness of their upper surface, in the elongation of their form, in the magnitude of the suborbital *foramen*, and in the development of the processes of the occipital bone continued from its transverse crest. When, however, we descend to details, numerous and striking points of difference are immediately observable. In the *Capybara*, for instance, the margin of the orbit is circular or nearly so, and the zygomatic arch, broad and strong, has its lower edge brought down considerably below the level of the *molares*: whereas in the *Coypus* the margin of the orbit approaches to a square, and the zygomatic arch is narrow and scarcely depends to a level with the crown of the *molares*, though it advances much further than either in the *Beaver* or *Water Rat*; in which animals the orbits, of an oval shape, have a less lateral and more vertical aspect. In the *Coypus* the temporal *fossæ* are deeper than in the *Capybara* or the *Beaver*, and the external auditory *foramen* runs obliquely forwards and downwards, while in the *Capybara* it runs obliquely downwards and inwards, and in the *Beaver* downwards and backwards. The frontal bone is divided by a permanent longitudinal suture, as it is also in *Capromys*; whereas in the *Capybara*, the *Water Rat*, and the *Beaver* no trace, at least in adults, of such a separation is visible. The *Beaver* when semiadult exhibits, however, a slight appearance of it.

"The general admeasurements of the skull of the *Coypus* before me are as follows:

	In.	Lin.
From the end of the nasal bones to the occipital ridge..	4	6
From the lower edge of one *zygoma* to the opposite ..	2	9
Breadth of the frontal bones between the orbits	1	3
From the outer edge of the last molar tooth to the edge of the *zygoma*.....	0	5
From the base of the incisors to the base of the first molar	1	3
From the crown of the first molar to the top of the skull where the nasal and frontal bones unite in a straight line.....	1	9

Length of the row of the *molares* on each side	1	1
Breadth of the lower jaw from the outer edge of one *ramus* at its broadest part to the opposite.....	3	3
From the middle of the condyle of the lower jaw to the base of the incisors	3	1

"Placing the skull before us, and surveying its upper aspect, we observe that the nasal bones are narrow and elongated, being broadest at their nasal extremity and narrowest at their frontal, as in *Capromys* and the *Water Rat*, but not in so great a degree. In the *Capybara* the contrary obtains: in the *Beaver* the nasal bones are broadest in the middle. Their length in the *Coypus* is 1¾ inch, their united breadth at the frontal union 5 lines.

"By the side of the nasal bones runs up the ascending *ramus* of the intermaxillary bone, which at its union to the frontal expands considerably, and terminates on an exact level with the nasal. In the *Capybara* the *ramus* is very narrow, and does not ascend quite so high as the nasal: in two skulls of the *Beaver* now before me, I find it ascend 1 line higher than the nasal in the one, and 2 lines lower than the nasal in the other. In *Capromys* it ascends somewhat higher.

"The frontal bones, having a longitudinal suture between them, form an oblong square, occupying a considerable space, their length being 1 inch 5 lines, and their united breadth 1 inch 3 lines. They form above the orbits a bold but level ridge: in the *Capybara* this ridge is arched, rounding the orbit above; in the *Beaver* the ridge is but little prominent; and in the *Water Rat* there is none. It may be added that in the *Beaver* the frontal bone (for here we may speak of it as single) approaches a triangle in its outline, the anterior portion of the parietal bone on each side advancing upon it.

"In the *Coypus* the parietal bones are small, and are depressed on each side posteriorly to form a deep temporal *fossa*, bounded by a ridge (the index of the origin of the temporal muscle), which ridge, with the coronal suture for a base line, forms a triangle ending in a slight short sagittal crest. The parietal bones are nearly consolidated together, and doubtless become ultimately completely so; it is only for a short space from the coronal suture that in the present skull any trace of a sagittal suture is visible. In the *Capybara* the union is complete; but in the *Beaver* the sagittal suture continues unobliterated, and the parietal bones moreover are separated posteriorly by a large interparietal or *os triquetrum*. In the *Water Rat* there is an oblong post-parietal bone.

"The occipital bone is narrower than in the *Beaver*, and more nearly resembles that of the *Capybara*; it rises, however, immediately behind the lambdoid suture into a high strong transverse crest, which sweeps down on each side, and is continued in two strong processes, the outer and shorter of which passes just behind the auditory *foramen*, while the interior process has its base between the former and the condyle, abuts upon the posterior part of the tympanic *bulla*, and passing obliquely outwards and downwards ends in a broad lunar-shaped termination: its length is 1 inch 2 lines. The *foramen magnum* is nearly circular: in the *Beaver* it is compressed horizon-

tally: in the *Capybara* laterally. The cuneiform process is flat with a slight mesial spine: in the *Capybara* it is convex: in the *Beaver* hollowed out like a box. The condyles resemble those of the *Capybara*, but advance somewhat more forwards.

"The squamous portion of the temporal bone, which, as is usual in these animals, is separated by a permanent suture from the petrous, consists of a narrow strip, advancing from the base of the occipital ridge, and then spreading to form the posterior margin of the orbit; a bold process backing the posterior angle of the superciliary ridge. The zygomatic process of the temporal bone resembles that of the *Beaver* more nearly than that of the *Capybara* or of the *Capromys*, but turns up at its extremity in a more decided hook. The petrous portion is small, and, with the exception of the ridge round the auditory *foramen*, consists of little besides the tympanic *bulla*, which in the *Beaver* is externally divided by a strong ridge.

"The malar bone is elongated and narrow, but, as in *Capromys* also, it does not advance forwards along the zygomatic process of the maxillary bone as in the *Beaver*, the suture being just behind the great suborbital *foramen*. In the *Capybara* the malar bone does not advance so far. The large *foramen* alluded to is formed by two branch-like processes of the maxillary bone, the upper one of which arises just below the union of this bone to the frontal, and, bending down, forms the anterior margin of the orbit; the other branch arises just over the root of the first molar tooth, and advancing outwards and backwards joins the other branch to form the boundary of the *foramen*, which is a triangular aperture leading at once to the orbit. In the *Beaver* the suborbital *foramen* is very small. In the *Water Rat* it is somewhat larger than in the *Beaver*. In *Capromys* it is as open as in the *Coypus*.

"The lachrymal bone, which in the *Capybara* spreads largely in a triangle without the orbit at the interior inferior angle, is in the *Coypus* very small and altogether within the orbit.

"On turning to the base of the skull we may observe that the internal pterygoid processes, (which in the *Capybara* are very small, but both in the *Beaver* and *Water Rat* largely developed, being in the former of a hook-like figure and touching with their *apex* the anterior point of the tympanic *bulla*,) are here moderate and bent back, their points being on a level with the spheno-temporal fissure. The *glenoid cavity*, which the malar bone contributes to form, resembles that of the *Beaver*.

"The palate bones, which in the *Beaver* begin in a point opposite to the posterior edge of the first molar, here begin opposite the posterior edge of the third molar; but they advance further backwards so as to throw the pterygoid processes to a considerable distance from the last molar tooth: in which circumstances the *Coypus* differs both from the *Beaver* and the *Capybara*, and more nearly agrees with *Capromys*, where the palate bones commence opposite the middle of the second molar, but do not advance so far backwards.

"The lower jaw of the *Coypus* is very remarkable; it seems as if it had been horizontally compressed, so as to throw the broad part of each *ramus* outwardly into a semilunar shelf. The fact is that this part must be regarded not as the body but as a process of the

ramus which exists also, but in a more moderate degree, in *Capromys*; in the *Capybara* we see indications of a similar structure. An immense space is here afforded for the insertion of the temporal and masseter muscles: these muscles may be short, but their strength will be prodigious. In the *Beaver* the coronoid processes are long and rise above the condyles: in the *Capybara* they are short and on a level with the condyloid processes, which are themselves very contracted: in *Capromys* they are very small: but in the *Coypus* the coronoid processes are reduced to a mere rudiment, elevated by the side of the last molar tooth. On the contrary the posterior angle here stretches back in a flat narrow process continued from the lateral shelf, or, as we may term it, horizontal reflexion of the lower margin of the *ramus*.

"The dentition of the *Coypus* is figured by M. F. Cuvier in his work 'Sur les Dents des Mammifères.' It differs widely from that of *Hydromys*, with which the animal was associated generically by M. Geoffroy St. Hilaire. Cuvier observes, that the skull of the *Coypus* has a resemblance to that of *Hystrix dorsata*: I have not seen a skull of this animal and therefore cannot judge, but certainly the teeth as given by M. F. Cuvier and those of the *Coypus* materially differ. The molars in the *Coypus* are four on each side above and below. In the upper jaw they have an outward inclination; the last is the largest, and they decrease in size slightly but regularly from the last to the first: each is a copy of the other; and the rib-bands of enamel are oblique. The molars of the lower jaw incline obliquely inwards, and decrease in size from the last to the anterior. The *incisores* are large and strong and of a deep orange yellow on their outer surface; the *alveoli* of those of the upper jaw pass through the intermaxillary into the true maxillary bones. In the lower jaw they extend beneath the whole row of the *molares*.

"Of the rest of the skeleton, the trunk, clavicles, *scapulæ*, *humeri*, and femoral bones are all that I have been able to examine, the rest being contained within the mounted specimen.

"The *scapula* agrees closely with that of *Capromys*, but differs considerably in shape from that of the *Beaver*. Its anterior edge runs out into an angle, at a greater comparative distance from the spinous ridge than either in the *Beaver* or the *Porcupine*; and the same may be said of the posterior angle: so that the total breadth of this bone is comparatively greater than it is in those two animals. Its length from the glenoid cavity to the posterior angle is 2¼ inches. Its breadth from this angle to the opposite 2. The spinous ridge is thin and but little elevated; about the middle it is slightly dilated. Three quarters of an inch before it reaches the level of the glenoid cavity it ceases; the *acromion* process being here united to it by cartilage in the specimen belonging to the Society. I find, however, that this cartilaginous union at some period of the animal's existence becomes ossified; for in a clavicle belonging to Mr. Blackett the *acromion* is completely anchylosed to the extremity of the spine. This process is at first slender, but it spreads at its termination into a broad triangular base, to the anterior *apex* of which is attached the clavicle. The length

of this process is 1 inch, and it advances ¼ an inch beyond the glenoid cavity.

"The clavicle is slender, 1 inch 5 lines ong, with a slight sigmoid flexure.

"The *humerus* presents nothing very remarkable; its length is 1¾ inch.

"The *pelvis* is long and narrow; its breadth from point to point is 3¼ inches; its length, 5 inches; the depth of the *symphysis pubis*, 1½ inch.

"The *femur* is thin and small, and has both a *trochanter major* and a *trochanter minor*.

"In the motions of the hinder limbs of the *Coypus* when alive I observed not only an awkwardness, but a want of firmness, which gave something of a crawling character to the progression of the animal on the floor. A recollection of this circumstance, which struck me when I first saw the animal, led me to open the capsule of the hip-joint with care: on doing this, I was surprised to see no *ligamentum teres*: on opening the other, still none appeared. I am convinced that I did not destroy or rupture the ligament, for no ruptured fibres were at all visible, and on opening the *acetabula* of other animals at the same time, the ligament was found strong and large; in this, however, nothing of the kind was visible. There is on the head of the *femur* a very slight depression, but it is covered, as the rest of the head, with smooth cartilage. I believe, therefore, that the *Coypus* may be added to the list of the few *Mammalia* in which this ligament is absent: but it would be desirable that another specimen should be examined before this peculiarity is insisted on as an ascertained fact.

"The ribs are short, thin and flexible, the longest measuring only 3 inches exclusive of the cartilage; the first two are very short, but strong. The chest of the *Coypus* is, in fact, of very small capacity. The number of the ribs is thirteen.

"The spinous process of the first dorsal *vertebra* is very short, like those of the cervical *vertebræ*; but that of the second rises abruptly to the length of 1 inch, which is at least a quarter higher than those of the succeeding *vertebræ*.

"The number of the *vertebræ* is as follows:—

Cervical	7
Dorsal.....	13
Lumbar	6
Sacral.....	4
Caudal	23

"I regret that I was unable to examine all the bones of the extremities, as Cuvier notices a peculiarity in those of the *carpus*,—in there being no separation between the *os magnum* and *trapezoïdes*."

Mr. Christy subsequently exhibited several skins of the *Coypus*, for the purpose of directing the attention of the Meeting to the position of the *mammæ* in the female, which are situated extremely high up the sides.

November 24, 1835.

Richard Owen, Esq., in the Chair.

Mr. Yarrell exhibited a specimen of the *Syngnathus Acus*, Linn., with the view of again calling the attention of the Society to the fact that the males in this species of *Pipe-fish* are furnished with a pouch under the tail, in which they bear about with them the *ova* until the young have escaped from the capsule; and which probably serves also as a place of shelter to which the young can, for some time after their exclusion, retreat in case of danger. In this individual the opened *abdomen* exhibited the preparatory organs of the male; and the displayed subcaudal pouch showed many eggs contained in it, the young of which were fully developed and ready to escape from the capsules, while from others the young had actually escaped. As a guide to those observers who may be desirous of procuring specimens equally illustrative of the peculiarity of this fish, Mr. Yarrell mentioned that the individual exhibited was obtained on the 20th of July.

Mr. Yarrell read some "Notes on the Economy of an Insect destructive to Turnips"; which he prefaced by adverting to the importance to agriculture of an attentive collection of those entomological facts which relate to species injurious to the ordinary crops of the farmer. He then proceeded to remark that the turnip crop is in this country usually infested in every season by two species of *Haltica*; and that another destroyer has been, in the dry summer of this year, superadded to them, especially on the light and chalky soils. To the history of this latter pest, which has been known to occur in those seasons only in which there has been an almost total absence of rain, Mr. Yarrell's paper is directed. A good account of a similar visitation in 1782, as it was observed in Norfolk by Mr. William Marshall, was published in the 'Philosophical Transactions' for the following year.

Early in July last the "yellow fly" was seen upon the young turnips. It was remembered by some farmers that this was the fly which prevailed in the year 1818, and which was followed by the caterpillars known by the name of the blacks. The eggs being deposited by the perfect insect in the leaf of the plant, the black caterpillar or turnip-pest speedily makes its appearance, feeding on the soft portions of the leaves of the turnips and leaving the fibres untouched; and finally, casting its black skin and assuming one of a more slaty or grey colour, it buries itself in the earth. Lodged there, it forms for itself, from the soil, a strong oval cocoon; from which some of the earlier broods pass almost immediately into the perfect state, filled with *ova*, and ready quickly to supply another generation

of destroyers. So complete and so rapid was the destruction in some instances, that a whole field was found, in two or three days, to present only an assemblage of skeletonized leaves; and this too when the turnips had attained a considerable size.

The insect whose proceedings have been thus briefly noticed, belongs to the *Hymenopterous* family *Tenthredinidæ*; it is the *Athalia Centifoliæ*, a species first noticed by Panzer. Mr. Yarrell describes the perfect insect and the caterpillar; and then recurs to the damage effected by the latter. By their repeated broods the devastation was continued for so long a time that even the third sowing did not in all cases escape destruction; and it was not until the occurrence of the heavy rains in September, terminating the unusually dry summer, that the mischief ceased. The destruction of the leaves caused, in most instances, the loss of the root also; and where the leaves suffered from the attacks of the black caterpillar, but not sufficiently to occasion the death of the plant, the turnip itself became pithy and of little value. It has become necessary, Mr. Yarrell states, to import the root largely from the Continent to supply the deficiency of the home crop.

The remedial measures adopted on a former visitation were the turning into the infested fields of a large number of ducks, who greedily devoured the caterpillars as they were brushed from the leaves by a boy with a long pole; the passing of a heavy roller over the ground at night, when the caterpillars were at their feed; and the strewing of quick lime by broad cast over the fields, renewing it as often as it was dispersed by the wind. The latter mode was generally considered as the most effectual preservative.

December 8, 1835.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of various *Birds*, chiefly from the Society's collection, which Mr. Gould regarded as hitherto undescribed. At the request of the Chairman he pointed out the distinguishing peculiarities of the undermentioned species.

Phœnicura plumbea. *Phœn. nigrescenti-cinerea; caudâ tectricibusque superioribus castaneo-rubris; remigibus nigrescenti-brunneis, cærulescenti-griseo fimbriatis.*

Fœm. *Suprà brunnescenti-cinerea, uropygio albo; rectricibus duabus intermediis brunneis, basin versus albis reliquis ad apicem brunneis; pectore cinereo, plumis singulis lunulis alternatim brunneis albidisque notatis; remigibus brunneis; secundariis cinereo-brunneis maculâ parvâ albâ ad apicem notatis.*

Long. tot. 5¼ poll.; *alæ*, 3; *caudæ*, 2; *tarsi*, ⅞; *rostri*, ⅝.

Hab. apud montes Himalayenses.

This bird is in every respect a typical example of the genus *Phœnicura*. It is rather less in size than *Phœn. Ruticilla*, Swains.

Pyrgita cinnamomea. *Pyrg. suprà cinnamomea, dorso in medio nigro longitudinaliter maculato; alis caudâque brunneis, illis albo prope scapulam unifasciatis; gulâ nigrâ; genis, colli lateribus, corporeque subtùs cinerascenti-albidis.*

Long. tot. 4¾ poll.; *alæ*, 2¾; *caudæ*, 2; *tarsi*, ⅝.

Rostrum nigrum; *pedes* brunnei.

Hab. apud montes Himalayenses.

Rather less in size than *Pyrg. montana.*

Merula castanea. *Mer. castanea; capite colloque cinereo-albidis, gutture pallidiore; alis caudâque nigris; tectricibus caudæ inferioribus crissoque albis nigro variis.*

Long. tot. 11½ poll.; *alæ*, 5¾; *caudæ*, 5½; *tarsi*, 1⅜; *rostri*, 1⅛.

*Rostrum pedes*que flavescenti-brunnei.

Hab. apud montes Himalayenses.

Saurophagus Swainsonii. *Saur. suprà brunnescenti-cinereus; capite nigro, cristâ occultâ aurantiacâ; caudâ nigrescenti-brunneâ, rectricum exteriorum marginibus omniumque apicibus cinereo-albis; alis brunneis, scapularibus secundariisque cinereo-albido marginatis; corpore subtùs albo.*

Long. tot. 8 poll.; *alæ*, 4; *caudæ*, 3½: *rostri*, 1¼; *tarsi*, vix 1.

*Rostrum pedes*que nigri.

Hab. in Americâ Australi.

Brachypus gularis. *Brach. flavus, suprà olivaceo tinctus; capite auribusque nigris; caudâ olivaceo-brunneâ; remigibus brunneis.*

Long. tot. 5¾ poll.; *alæ*, 4⅝; *caudæ*, 3¼: *rostri*, ⅝; *tarsi*, ⅝.
Rostrum nigrum; *pedes* saturatè brunnei.
Hab. in Indiâ Orientali apud Travancore.

More diminutive in size than *Brach. dispar*, Horsf., but nearly allied to it.

Genus Stenorhynchus.

Rostrum capite longius, gracile, compressum, subfornicatum; mandibulâ superiore leviter emarginatâ, culmine in frontem depressissimum producto.
Nares ovales, apertæ.
Alæ breviusculæ, subrotundatæ; remige 1mâ brevissimâ, 4tâ longiore; 5tâ et 6tâ 4tam subæquantibus.
Cauda mediocris, rotundata; rectricibus decem?
Pedes robusti: *acrotarsiis* subscutellatis; *halluce ungue*que postico fortibus, tarsum longitudine subæquantibus, digito intermedio brevioribus.
Plumæ molles.

Stenorhynchus ruficauda. *Sten. suprà sordidè saturatè brunneus, rufo caudam versus tinctus; caudâ, secundariis, scapularibusque saturatè rufo-brunneis; subtùs brunnescenti-cinereus, in rufo-brunneum ad latera vergens.*

Long. tot. 9½ poll.; *rostri*, 1¾; *alæ*, 4¾; *caudæ*, 3¼; *tarsi*, 1.
Rostrum nigrum; *pedes* brunnei.
Hab.

As only one specimen of this bird has yet been seen, it is doubtful whether it may not possess twelve tail-feathers; but, after a careful examination, Mr. Gould can discover no more than ten.

Merula Nestor. *Mer. fuliginoso-nigra; capite colloque sordidè cinereis; caudæ tectricibus inferioribus maculâ longitudinali flavescenti-albidâ notatis.*

Long. tot. 7¾ poll.; *rostri*, 1; *alæ*, 4⅝; *caudæ*, 3; *tarsi*, 1⅛.
*Rostrum tarsi*que flavi.
Hab. in Novâ Cambriâ Australi.

This appears to be in every respect a true *Merula*. It is the first of that genus that has been received from New Holland. It formed part of Captain Sturt's collection made in the Murrumbidgee country.

Ianthocincla pectoralis. *Ianth. ferrugineo-cinerea; capite suprà olivaceo-cinereo; cervice lateribusque ferrugineis; plumis aures tegentibus cinereis, rachibus nigris; lineâ nigrâ a basi mandibulæ inferioris aures cingente cum alterâ pectus lunulatim circumdante conjunctâ; corpore subtùs albo; remigibus brunneis, pogoniis externis cinereis; caudâ rotundatâ, basin versus olivaceo-

cinereâ, in medio nigro unifasciatâ; rectricibus extimis tribus utrinque albo, cæteris olivaceo-cinereo, apiculatis.

Long. tot. 12½ poll.; *rostri*, 1¼; *alæ*, 5½; *caudæ*, 5½; *tarsi*, 2. *Rostrum* nigrescenti-brunneum; *tarsi* brunnei.

Hab. in Nepaliâ.

Ianthocincla albogularis. *Ianth. suprà et ad pectus olivaceo-cinerea, subtùs ferrugineo-aurantiaca; caudâ rotundatâ, olivaceo-cinereâ, rectricibus extimis utrinque quatuor ad apices latè albis.*

Long. tot. 11½ poll.; *rostri*, 1¼; *alæ*, 5½; *caudæ*, 5½; *tarsi*, 1⅞. *Rostrum tarsique* brunnei.

Hab. apud montes Himalayenses, in Nepaliâ, &c.

Nearly allied to *Ianth. leucolopha*, (*Corvus leucolophus*, Lath.).

A paper was read, entitled "Mémoire sur une Nouvelle Espèce de Poisson du Genre Histiophore, de la Mer Rouge: par M. E. Rüppell, M.D., Memb. Ext. Z. S." It was accompanied by a drawing of the fish described in it.

MM. Cuvier and Valenciennes have described, in their 'Histoire Naturelle des Poissons,' three species of *Sword-fishes* of the genus *Histiophorus*; from all of which Dr. Rüppell regards his fish as distinct, although it apparently approaches most nearly to *Hist. Americanus*: it should seem that its occurrence at Djetta, on the coast of Arabia, was only accidental, as the Arab fishermen knew no name for it. The most striking peculiarity of the new species is the uniformity of the colour of its dorsal fin: in all those which were previously known the first dorsal fin is varied with spots; in the one obtained by Dr. Rüppell, the first dorsal fin is black throughout and destitute of spots, on which account its discoverer proposes for it the name of

Histiophorus immaculatus. *Hist. pinnis pectoralibus mediocribus; dorsali nigrâ, immaculatâ.*

D. 47, 0+7. A. 10, 0+7. C. 5+17+5. P. 1+19. V. 3.

Pinnæ pectorales quam in *Hist. Indico*, Cuv. & Val., multo minores: utpote quæ in illo ⅛ vel ⅐ corporis longitudine æquant, in *Hist. immaculato* $\frac{1}{15}$ tantum. In *Hist. pulchello* præoperculi angulus spinâ munitus: in *Hist. immaculato* aliisque inermis. *Hist. Americani* pinna dorsalis cinereo-argentea, maculis brunneis rotundatis ornata.

Dr. Rüppell describes the fish in considerable detail. He has not, however, examined it anatomically, on account of his possessing only one specimen, which he had deposited in the Frankfort Museum.

The following notes by Sir Robert Heron, Bart., were read.

"In many books that I have seen some errors are made in the history of the *Kangaroos*, which my long possession of those animals enables me to correct.

"The *great Kangaroo* does not make use of his tail in leaping. He uses it in walking, and still more in standing. When excited,

he stands (the male only) on tip-toe and on his tail; and is then of prodigious height. In fighting he does not stand on the tail and one leg, but balances himself for a moment on the tail only, and strikes forward with both hind legs.

"The *bush Kangaroo*, or *Kanguru enfumé* of Cuvier, never uses his legs in fighting. He generally contents himself with threatening with his teeth and a low growl; but I have seen him, when attacked by an *Emu*, jump up at the bird's head. Neither of them, however, has persevered in annoyance.

"When sitting in a state of repose the *great Kangaroo* throws the tail behind him: the lesser one before him, between his legs."

The following note by Sir Robert Heron, Bart., was also read, as giving an account of an extraordinary instance of want of sagacity in a *Dog*.

"A large old white female terrier followed me this autumn from Grantham. She remained perfectly satisfied for three weeks, when, on my again going to attend the petty sessions, she again followed me. I then found that she belonged to one of my colleagues, the Rev. Mr. Ottley; and that she had long been a great favourite in the family, who were greatly distressed at her loss. It happened that Mr. Ottley and I each rode a chestnut pony with a long tail. This had completely deceived the dog, whose unsentimental friendship did not prompt her to ask any further questions."

December 22, 1836.

E. S. Hardisty, Esq., in the Chair.

Specimens were exhibited of several *Rodent* animals collected during his survey of the Straits of Magalhaens, by Capt. P. P. King, R.N., Corr. Memb. Z. S., and presented by him to the Society. They were accompanied by some notes by Capt. King, which were read.

In bringing the animals severally under the notice of the Meeting, Mr. Bennett first directed particular attention to one of them, which constituted, in his estimation, a new species in the genus *Ctenomys*, Blainv. To elucidate its relations with the nearly allied genera of *Herbivorous Rodentia*, *Octodon*, Benn., and *Poephagomys*, F. Cuv., a specimen of *Octodon Cumingii* was exhibited and compared with it; and Mr. Bennett stated his intention of entering with some detail into the subject in a paper which he proposed to prepare upon it.

In the structure of its molar teeth, *Octodon* may be regarded as occupying an intermediate station between *Poephagomys* and *Ctenomys*. In *Octodon* the molars of the upper jaw differ remarkably in form from those of the lower. The upper molars have on their inner side a slight fold of enamel, indicating a groove tending in some measure to separate on this aspect the mass of the tooth into two cylinders: on their outer side a similar fold penetrates more deeply, and behind it the crown of the tooth does not project outwardly to so great an extent as it does in front. If each molar tooth of the upper jaw be regarded as composed of two partially united cylinders, slightly compressed from before backwards, and somewhat oblique in their direction, the anterior of these cylinders might be described as entire, and the posterior as being truncated by the removal of its outer half. Of such teeth there are, in the upper jaw of *Octodon*, on each side, four; the hindermost being the smallest, and that in which the peculiar form is least strongly marked. In *Ctenomys*, all the molar teeth, both of the upper and the lower jaw, correspond with the structure that exists in the upper jaw of *Octodon*, excepting that their crowns are slenderer and more obliquely placed, whence the external emargination becomes less sharply defined; and also excepting that the hinder molar in each jaw is so small as to be almost evanescent: as is generally the case, however, the relative position of the teeth is counterchanged, and the deficiency in the outline of the crown of the tooth, which in the upper jaw is external, is, in the lower jaw, internal. In the lower jaw of *Octodon* the crowns of the molars assume a figure very different from those of the upper, dependent chiefly on the prolongation of the hinder portion of the tooth to the same lateral extent as its anterior part: each of them

consists of two cylinders, not disjoined in the middle where the bony portion of the crown is continuous, but partially separated by a fold of enamel on either side producing a corresponding notch; placed obliquely with respect to the jaw they resemble, in some measure, a figure of 8 with its elements flattened obliquely, pressed towards each other, and not connected by the transverse middle bars. With the lower molars of *Octodon* those of *Poephagomys*, as figured by M. F. Cuvier, correspond in structure in both jaws. *Octodon* thus exhibits, in its dissimilar molars, the types of two genera: the molars of its upper jaw represent those of both jaws of *Ctenomys*; those of its lower jaw correspond with the molars of both jaws of *Poephagomys*.

The characters distinguishing the new species of *Ctenomys* are chiefly those of colour. The *Cten. Brasiliensis* is described by M. de Blainville as being shining rufous above, and reddish white below. The new species may be characterized as the

Ctenomys Magellanicus. *Cten. flavescenti-fusco-griseus, subtùs pallidior; pedibus caudâque albescentibus.*

Long. corporis cum capite 7¼ unc.; *caudæ*, 2¾; *capitis*, 2.

Hab. apud Portum Gregory dictum, ad Fretûs Magellanici ostium orientale.

Captain King states that this "little animal is very timid; feeds upon grass; and is eaten by the Patagonian Indians. It inhabits holes, which it burrows, in the ground: and, from the number of the holes, it would appear to be very abundant."

A second animal exhibited appears, like the preceding, to represent in the more southern latitudes of South America a genus whose type was originally observed in Brasil. Mr. Bennett regarded it as a second species of *Kerodon*, F. Cuv., chiefly distinguishable from the one discovered by Prince Maximilian of Wied by its more uniform colour. Excepting a slight dash of white behind the ear, and a longer line of the same colour marking the edge of each branch of the lower jaw, the animal is entirely grey; the upper surface being distinguished from the under by a greater depth of tint, and by the intermixture of a free grizzling of yellow and black. The crowns of the molar teeth, as in the typical species, consist of bone surrounded by two triangles of enamel, the bases of which are connected together by a short line of enamel passing from the one to the other: all the lines being slender and sharply defined.

For this species Mr. Bennett proposed the name of

Kerodon Kingii. *Ker. griseus, suprà flavo nigroque punctulatim interstictus; maculâ pone aures lineâque ad maxillæ inferioris marginem albis.*

Long. corporis cum capite 9¼ unc.; *capitis*, 2¼; *auricula* subnulla.

Hab. apud Portum Desire dictum, ad Patagoniæ littus orientale.

The third animal exhibited was remarked on as constituting a new species of *Cavy*, distinct from all those that were previously known,

including the two which have recently been described by M. Brandt in the 'Nouveaux Mémoires de l'Académie Impériale de St. Petersbourg.' Mr. Bennett characterized it as the

Cavia Cutleri, King MSS. *Cav. brunnescenti-nigra; subcristata; genis in medio nudiusculis.*

Long. tot. 10 unc.; *capitis*, 3.

The general form of the animal is probably similar to that of the *restless Cavy, Cavia Cobaya*, Gmel., popularly known as the Guinea-pig. It is covered universally by long, smooth, glossy, black hairs, which are slightly tinged with brown. Its ears are rather large, broadly expanded, and hairy; and between them the hairs are longer than those on the adjoining parts, occasioning a slight appearance of a crest. On the middle of each cheek the hairs radiate as from a centre, almost in a similar manner to that in which they spread from around the crown of the *bonneted Monkeys*, and the skin is consequently left in the middle point almost bare. The dentition is altogether that of the *restless Cavy*, and the incisors, as in it, are white. The skull is rather more expanded laterally, which gives to it an appearance of comparative flatness.

"This animal was known, on the survey, by the name of the *Peruvian Cavy*. The specimen in the Society's collection was presented to one of the officers of the Beagle by an American sailing-master, of Stonington, U.S., a very intelligent person, to whom we were much indebted. The trivial name which I have proposed for it is in recollection of the benefit we derived from his experience and knowledge of the intricate navigation of the south-western coast of Patagonia, which was freely imparted to us on several occasions."—P. P. K.

The collection also contained specimens of a *Mouse*, for which Mr. Bennett proposed the name of

Mus Magellanicus. *Mus caudâ corpus caputque longitudine æquante; suprà saturatè subflavicanti-fuscus; subtùs albidus; pedibus albis.*

Long. corporis cum capite 4¼; *caudæ* longitudo eadem; *pedis postici*, 1.

Hab. apud Portum Famine dictum, in Fretu Magellanico.

The ears are of moderate size, rounded, and hairy.

Specimens were exhibited of several *Marsupialia*, on which Mr. Ogilby made the following remarks.

"A small collection of *Marsupial Quadrupeds*, which Mr. Gould lately received from his brother-in-law, Mr. Coxen, contains two or three interesting species, which the usual kindness of Mr. Gould enables me to notice. They were all procured, as I am informed, in the country beyond the Hunter River, about eighty miles north of Sydney in New South Wales. The most remarkable is an undescribed species of *Phalanger*, which I propose to call

Phalangista Canina. It is similar in size and general proportions

to *Phal. Vulpina*, and the two allied species described in the 'Proceedings' for 1830–31, (page 135,) but is easily distinguished from them all by the small size and round form of the ears, as well as by the distribution of the colours. All the upper parts of the body, the head, cheeks, back, sides, and outer face of the arms and thighs are of a uniform grizzled brown; the throat, breast, belly, and interior of the members dirty ashy grey with a slight shade of yellow. The ears are only an inch in length and about the same in breadth, being thus little more than half as long as in *Phal. Vulpina*. They are naked within, but covered with deep coffee-coloured fur on the outside; the nose, and the paws, both before and behind, are dark brown; and the tail is bushy and entirely black to within about 2 inches of its root, which is of the same colour as the back. All these circumstances distinguish the present species from *Phal. Vulpina*, with which alone it can possibly be confounded, and in which the backs of the ears, and the cheeks and paws are yellowish white, whilst the black colour occupies only the latter half of the tail. Both these animals have long black *vibrissæ*, and a tuft of similar stiff hair on the cheek, about an inch below and behind the eye. The whole length from the nose to the root of the tail is 2 feet; the length of the tail 13½ inches.

Phal. Cookii. I notice this species merely to observe that the present specimen is the only certain evidence we possess of this animal being an inhabitant of Continental Australia. Cook observed it in Van Diemen's Land, and I had never been able to ascertain the precise locality from which the various other individuals I had formerly examined, were obtained.

Macropus Eugenii. This specimen agrees with M. Desmarest's description, and is interesting as coming from a very distant part of the country.

Perameles obesula. An adult specimen of the same size as the full-grown *Per. nasuta*. I notice it to mention that the teeth are, in all respects, similar to those of *Per. nasuta*, both in form and number.

The collection contains besides, two very fine specimens of *Petaurus Taguanoides*; one of *Pet. Sciureus*; one of *Hydromys chrysogaster*; and a young *Koala*."—W. O.

Specimens were exhibited of numerous *Shells* of the genus *Mitra*, Lam., and of one species of *Conoelix*, Swains., forming part of the collection of Mr. Cuming; and the following account of them by Mr. Broderip was read.

"The species of the genus *Mitra*, Lam., which I am about to describe had been sent by Mr. Cuming, in whose cabinet they are, to Mr. Swainson, whose intimate acquaintance with this family renders him so particularly competent to the task of describing them. They were named by him, and he also made notes respecting them before returning them. In the following account of them I have retained Mr. Swainson's name in every instance but one: and whenever he has made any written observations I have quoted them.

Genus Mitra, (*Lam.* & *Swains.*).

Mitra nebulosa. *Mitra testâ turritâ, striis impressis cinctâ, pallidè flavâ maculis castaneo-fuscis pictâ; columellâ obsoletè sexplicatâ: long.* 1⅝ *poll., lat.* 3½ *poll.*

Hab. ad Insulam Annaan.

Mr. Cuming found this species on the reefs at low water.

Mr. Swainson, whose name is retained, has the following observation: "representing *nubila*." "Type 5, 1."

Mitra Swainsonii. *Mitra testâ turritâ, valdè productâ, lævigatâ, pallidè carneâ, apicem versus pallidè brunneâ, striis transversis cinctâ; columellâ quadriplicatâ: long.* 6, *lat.* 1. *poll.*

Hab. ad Colombiam Occidentalem. (Monte Christi.)

Dredged up from sandy mud by Mr. Cuming in seven fathoms water.

This shell has been much exposed, and its colour is faded.

The following remark appears on the cover: "Type 1, 1."

Mitra Ancillides. *Mitra testâ turritâ, minutisimè transversim striatâ, totâ pallidè flavâ; columellâ quinqueplicatâ: long.* 5, *lat.* 2 *poll.*

Hab. ad Insulam Annaan.

Found on the reefs.

The following remark appears on the cover: "Type 5, (2 ?)."

Mitra maura. *Mitra testâ turritâ, transversim minutè striatâ, anfractibus torosis, totâ nigricante; columellâ albâ, quadriplicatâ; aperturâ hiante: long.* 2⅛, *lat.* ⅞ *poll.*

Hab. ad Peruviam. (Iquiqui.)

Found in the fissures of rocks, buried in sand, at low water mark.

On the cover is the following observation: "representing *Tiara foraminata*, Type 1, 4."

The older shells are eroded, especially towards the *apex*, like some of the freshwater turbinated shells.

Mitra fulvescens. *Mitra testâ ovato-elongatâ, fulvâ, striis altis cinctâ; columellâ sexplicatâ: long.* ⅞, *lat.* $\frac{3}{10}$ *poll.*

Hab. ad Insulam Annaan.

Found on the reefs.

On the wrapper is the following observation: "Type 5, 1."

Mitra testacea. *Mitra testâ turritâ, acuminatâ, rubro-lutescente, transversim striatâ; columellâ quinqueplicatâ: long.* 1⅛, *lat.* ⅜ *poll.*

Hab. ad Insulam Annaan.

Found on the reefs.

Mr. Swainson has the following observation on the wrapper: "Type 5, 1. representing *fulva*."

Mitra fulva, var. *Mitra testâ turritâ, fulvâ, striis transversis punctatis cinctâ; suturâ crenulatâ; columellâ sexplicatâ; labro crenulato.*

Hab. ad Insulam Annaan.
Found on the reefs in shallow water.
The following observation appears on the wrapper: "Type 1, 2. representing *Tiara*."

Mitra chrysostoma. *Mitra testâ ovato-acuminatâ, striis magnis subcrenulatis cinctâ, flavescente castaneo maculatâ, maculis magnis; columellâ sexplicatâ; labro subrubro-aureo, externè subcrenulato: long.* 1⅜ ?, *lat.* ½ *poll.*
Hab. ad Insulam Annaan.
Found on the reefs in shallow water.
On the cover is written, "Type 5, 1. representing *ferruginea*."

Mitra tristis. *Mitra testâ turritâ, suturis rotundatâ, striis transversis cinctâ, longitudinaliter costatâ, atro-fuscâ, suturis pallidè fasciatâ; columellâ quadriplicatâ, plicis maximis; aperturâ (in adultis) albido-purpurascente: long.* 1¼, *lat.* ½ *poll.*
Hab. ad Sanctam Elenam et ad Insulas Gallapagos dictas.
Found in sandy mud at a depth of from six to ten fathoms.
On the cover, "Type 2, 4."

Mitra effusa. *Mitra testâ fusiformi, transversim valdè striatâ, striis intermediis minimis; totâ fuscâ vel atro-castaneâ; columellâ quadriplicatâ, plicis duabus superioribus magnis; labro crenulato: long.* 1⅜, *lat.* 1$\frac{4}{10}$ *poll.*
Hab. in Americâ Centrali (Guacomayo) et ad Insulas Gallapagos dictas.
Found in sandy mud at the depth of twelve fathoms.
On the cover, "Type 1, 5."

Genus Tiara, *Swains.* (Mitra, *Lam.*)

Tiara foraminata. *Tiara testâ turritâ, longitudinaliter costatâ, striis distantibus impressis inter costas hinc et hinc quasi foraminatis, costis magnis, sordidè fuscâ, suturis rotundatâ; columellâ quadriplicatâ, plicis maximis; aperturâ sordidè albido-purpurascente: long.* 2⅝, *lat.* ⅞ *poll.*
Hab. ad Sanctam Elenam, ad Insulam Platam dictam, et ad Panamam.
Dredged up from sandy mud and gravel at a depth ranging from six to fourteen fathoms.
This appears to have been published in Mr. Wood's 'Supplement' under the name of *Voluta Lens*.
On the cover, "representing *Mitra maura*, Type 2, 4."

Tiara muricata. *Tiara testâ longitudinaliter costatâ, transversim striatâ, costis submuricatis, totâ brunneâ; columellâ triplicatâ: long.* ⅝, *lat.* ⅜ *poll.*
Hab. ad Insulas Gallapagos dictas.
Dredged up from sandy mud at a depth of six fathoms.

TIARA MUCRONATA. *Tiara testâ longitudinaliter costatâ, transversim striatâ, striis sub-punctatis, anfractibus noduloso-muricatis præcipuè suturam versus, albidâ fusco vel ferrugineo fasciatâ, fasciâ basali latissimâ; columellâ quadriplicatâ: long.* 1, *lat.* $\frac{5}{8}$ *poll.*

Hab. ad Insulam Taheiten.

Found in soft muddy sand at low water within the reef.

TIARA CATENATA. *Tiara testâ ovatâ, longitudinaliter costatâ, albidâ suturam versus punctis sanguineis fasciatim dispositis concinnâ, apice subviolaceo, anfractu basali bifasciato, fasciis fusco-castaneis; columellâ quadriplicatâ: long.* $\frac{5}{8}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad Insulam Annaan.

Found on the reefs in shallow water.

On the paper, "Type 1, 3."

TIARA MULTICOSTATA. *Tiara testâ longitudinaliter multicostatâ, transversim substriatâ, brunneâ vel ferrugineâ albo fasciatâ; columellâ quadriplicatâ: long.* $\frac{7}{8}$, *lat.* $\frac{3}{8}$ *poll.*

Hab. ad Insulam Annaan.

Found on the reefs in shallow water.

In the ferruginous individuals the white band is nearly obsolete, and would almost justify their separation as a variety: but such individuals of that colour as have been submitted to me appear to be young.

TIARA ROSEA. *Tiara testâ multicostatâ, costis posticè subtuberculosis, creberrimè transversim sulcatâ, roseâ albo fasciatâ; columellâ quadriplicatâ: long.* $\frac{1}{2}$, *lat.* $\frac{3}{8}$ *poll.*

Hab. ad Insulas Lord Hood's dictas.

Found on the reefs in shallow water.

On the paper, "Type 1, 2."

TIARA MILLECOSTATA. *Tiara testâ subovatâ, longitudinaliter creberrimè costatâ, basi cancellatâ, nigro-castaneâ, apice albido; columellâ triplicatâ: long.* $\frac{1}{2}$, *lat.* $\frac{3}{8}$ *poll.*

Hab. ad Insulam Annaan.

Found on the reefs in shallow water.

The close-set longitudinal ribs and cancellated base give this shell, which may not have attained its full growth, the aspect of a *Cancellaria*.

TIARA LINEATA. *Tiara testâ fusiformi, albidâ hinc et hinc castaneo strigatâ, lineis elevatis castaneis cinctâ; columellâ triplicatâ; epidermide valdè tenui: long.* 1, *lat.* $\frac{3}{8}$ *poll.*

Hab. ad Salango Colombiæ Occidentalis.

Found on sandy mud in ten fathoms water.

The elevated lines run from the *apex* to the base like the threads of a screw.

On the paper, "Type 5, 1."

TIARA NIVEA. *Tiara testâ fusiformi, albâ, lineis creberrimis sub-*

punctatis transversis insculptâ; columellâ quinqueplicatâ: long. $2\frac{1}{8}$, *lat.* $\frac{7}{12}$ *poll.*

Hab. ad Insulam Annaan.

Found on the reefs.

Minute longitudinal lines cross the transverse thick-set punctated ones, and with the punctures produce a somewhat cancellated appearance, which may be also detected by the touch.

The base of the *columella* is strongly developed, milk white, and shining, reminding the observer of the same part in *Ancillaria*.

On the paper, "Type 5, 3."

TIARA AURANTIA. *Tiara testâ turritâ, costis longitudinalibus striisque elevatis transversis subnodulosâ, aurantiacâ albo fasciatâ; columellâ quadriplicatâ: long.* $1\frac{1}{8}$, *lat.* $\frac{5}{12}$ *poll.*

Hab. cum præcedente.

TIARA TEREBRALIS. *Tiara testâ fusiformi-turritâ, acuminatâ, carneâ aurantiaco nebulosâ; anfractibus* 11 *seu* 12, *lævibus, nitidis, longitudinaliter crebrè sulcatis, sulcis profundè impressis et lineis impressis spiralibus decussatis; aperturâ brevi, angustâ, labio externo margine crenulato; columellâ quadriplicatâ: long.* 1·85, *lat.* 0·45 *poll.*

Hab. ad Insulam Annaan.

Found on the reefs.

Mr. Swainson has written on the paper containing it, "Type 4, 4. This is one of the most extraordinary shells in the collection, as it so closely resembles the *Mitra Terebralis* that, but for its possessing the generic characters of *Tiara*, it might pass for the same species."

It is one of the most slender of its genus, and has very much of the general character and form of a *Terebra*; and its resemblance to *Terebra* is increased by the circumstance of its having one spiral groove, more deeply impressed than the others, placed at about one third of the length of each volution before the suture. The points of contact of the decussating with the longitudinal grooves are deeply impressed.

There is a fine specimen in Mr. Broderip's collection.

Mr. Sowerby has furnished me with the account of this species.

TIARA CRENATA. *Tiara testâ fuscâ, lineis subelevatis cinctâ; columellâ triplicatâ: long.* $\frac{5}{12}$, *lat.* $\frac{3}{12}$ *poll.*

Hab. ad Xipixapi Colombiæ Occidentalis.

Found on sandy mud in six fathoms water.

On the paper, "Type 5, 3. or 3, 3."

TIARA RUBRA. *Tiara testâ minutâ, longitudinaliter costatâ, transversim minutissimè striatâ, rubrâ albo fasciatâ; canali subreflexo columellâ quadriplicatâ: long.* $\frac{4}{12}$, *lat.* $\frac{1}{6}$ *poll.*

Hab. ad Insulam Lord Hood's dictam.

Found on *Meleagrina margaritifera*.

On the paper, "Type 1, 2."

Tiara semiplicata. *Tiara testâ ovato-fusiformi, glabrâ, longitudinaliter plicatâ, basi transversim striatâ, castaneâ, anfractibus spiræ basi albo fasciatâ, anfractu basali fasciâ submediâ albâ cincto ; columellâ quadriplicatâ : long.* $1\frac{1}{2}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. ad Insulam Rieteam.

Found on the reefs.

The basal whorl is only plaited on a comparatively small portion of its circumference, but this is evidently the result of malformation in the only specimen submitted to me.

Tiara attenuata. *Tiara testâ fusiformi, attenuatâ, fuscâ, lineis valdè elevatis distantibus cinctâ ; columellâ triplicatâ ; aperturâ albidâ, glabrâ : long.* $1\frac{1}{2}$, *lat.* $\frac{3}{8}$ *poll.*

Hab. ad Insulam Cañam Americæ Centralis.

Found on a rocky bottom at the depth of twenty-eight fathoms.

Approaching *Tiara lineata*, but differing from it. The basal whorl of *Tiara attenuata* is longer in proportion than that of *Tiara lineata*, and the elevated line on the angular shoulder of each whorl in the former is larger than the others.

On the paper, "Type 5, 1."

Genus Conoelix, *Swains.*

Conoelix Virgo. *Con. testâ conicâ, crassâ, spirâ depressâ, lineis transversis subpunctatis insculptâ, albidâ, columellæ basi nigro-purpureâ ; epidermide subfuscâ, tenuissimâ : long.* $\frac{8}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab. ad Insulam Rieteam.

Found on the reefs in shallow water.

On the paper, "representing *Conus* Virgo."—W. J. B.

The following observations by Mr. Swainson elucidate his notes in relation to the *Mitres*, appended to most of the preceding characters :—

"To render my explanation of the notes and references attached to the different species of the *Mitranæ* more intelligible to conchologists, it will be necessary for me to state, in as few words as possible, the result of my investigation of this subfamily, and the principles which have regulated these numerical indications.

"I have already, in another work, characterized the family *Volutidæ*, which appears to be that primary division of the *Carnivorous Gasteropoda* (*Zoophaga*, Lam.), which represents the *Rasorial* type among *Birds*, the *Ungulata* among *Quadrupeds*, and the *Thysanura* among perfect *Insects* (*Ptilota*) : these analogies being of course remote, although founded on the structure of the animal, no less than on its testaceous covering. It thus follows that the Lamarckian *Mitræ*, instead of a genus, constitute a subfamily, which appears to be the subtypical group of the circle. The five genera composing this circle I have long ago characterized ; and here, for some years, my analysis of the group terminated. The inspection, however, of the numerous species brought home by Mr. Cuming, and the gradually augmented number in my own cabinet, seemed to

invite a still further and more minute investigation, for the purpose of ascertaining if any, and what, subgenera were contained in the more crowded groups of *Mitra* and *Tiara*. This investigation was carried on, at intervals, for nearly twelve months; and the result surpassed my most sanguine expectations. It has convinced me that not only does each of the genera of the *Mitranæ* represent analogically the corresponding groups of the *Volutinæ*, but that the same relations can be demonstrated between the minor divisions of the genera *Tiara* and those of *Mitra*: in other words, that these latter represent all the subfamilies and genera of the other *Volutidæ*, while they preserve their own peculiar or generic character. What I have just said on the parallel relations of analogy between the *Mitranæ* and the *Volutidæ*, is strictly applicable, in fact, to the genera *Mitra* and *Tiara*, the primary divisions of each of which can thus be demonstrated subgenera. Nor is this all: the materials I have been for so many years collecting have enabled me to ascertain, in very many instances, that the variation of the species, in each of these subgenera, is regulated on precisely the same principle. Hence it follows that the two circles of *Mitra* and *Tiara*, like the two divisions of Mr. MacLeay's *Petalocera*, contain species representing each other, so that if their generic character is not attended to, it is almost impossible to discriminate them even as species. Many instances of this extraordinary analogy might be mentioned, independent of that here alluded to, between *Mitra Terebralis* and *Tiara Terebralis*.

"Selecting this shell to illustrate the numbers "Type 4, 4", I may observe, that 'Type 4' signifies that it belongs to the fourth subgenus of *Tiara*, in which group it is the fourth subtype, uniting to *Mitra maura*, which is the fourth subtype of the first or typical subgenus. *Mitra maura*, again, as representing this latter shell, consequently becomes the fourth subtype of the first or typical subgenus, and is therefore marked "Type 1, 4." The first figure always denotes the subgenus, and the last the station which the species appears to hold in its own subgenus.

"I am unacquainted with any group in the animal kingdom which demonstrates more fully than this does the law of representation. It may be mentioned, also, that nearly all the divisions I had long ago characterized, from the formation of the shells alone, have more recently been confirmed by a knowledge of their respective animals: a knowledge for which we are entirely indebted to the able naturalists who accompanied the French expedition on board the Astrolabe."—W. S.

Specimens were exhibited of several hitherto undescribed *Cowries*, most of which have been brought to England within the last few years. They were accompanied by the following characters and descriptions by J. S. Gaskoin, Esq.

Genus Cypræa.

Cypræa formosa. *Cypr. testâ ovato-globulosâ, tenui, sericeo-sub-*

nitente, pallidè rosea, subnebulosâ, anticè saturatiore, basi albidâ; costis numerosis, confertis, continuis, ad basin non interruptis; margine subincrassatâ; aperturâ latiusculâ; lineâ dorsali nullâ.

Shell ovato-globose, posterior end rather obtuse and broad, of a delicate rose (almost white) colour, somewhat clouded with very light reddish brown, which is deeper over the anterior extremity. Base white, somewhat even. Aperture rather wide: teeth of the lip about twenty-one, almost every alternate rib (about fifteen in number) terminating between the denticulations just before arriving at the edge of the lip; teeth of the *columella* about twenty-five, and about seven terminate exterior to the aperture: columellar front grooved along its entire length, inner edge of the groove slightly serrated, forming a circular projection towards the anterior extremity, where it is deepest and widest. Ribs slightly prominent, numerous, close, extremely even and regular, extending continuously from the lip to the inner border of the columellar groove, very few terminating on the sides of the shell: false ribs few, and extending but little towards the back. Anterior beaks rather wide apart, slightly produced: beaks of the lip longer than those of the *columella*. Spire only traceable in the adult, and in the younger state forming a fine small point or *apex*. Margin only on the lip side, and slightly thickened. No dorsal line.

Length ·425 of an inch; breadth ·350; height ·325.

The younger specimens of this beautiful shell are of a fine clear, semipellucid, rose (almost white) colour, with the light reddish brown markings at the anterior and outer extremity of the shell, and at the point of the posterior beak of the lip, more conspicuous than in the adult, while the cloudings are less observable.

Habitat. Cape of Good Hope.

From *Cypr. Europæa* it is distinguished by the following characters: greater convexity of the curvature of the inner edge of the columellar groove; ribs and teeth much more numerous and even, and on the lip almost every alternate rib terminates before arriving at its edge; shape more gibbous and obtuse posteriorly; mouth wider; spire scarcely visible in the adult, and forming a beautifully minute point in the younger individuals; texture and colour of the shell infinitely more delicate.

Cab. Gaskoin.

CYPRÆA RUBINICOLOR. *Cypr. testâ ovato-subglobosâ, utrinque subrostratâ, rubellâ, extremitatibus pulchrè roseo-rubris; labro incrassato, convexo; costis acutis, continuis, indivisis; lineâ dorsali nullâ.*

Shell ovato-globose, of a light red or pinkish colour; the four beaks, particularly on the base, of a much deeper red. Base roundish. Aperture and margins lighter coloured. Margins thickened, somewhat produced, in short, rather broad beaks. Aperture rather narrow, and inner edge of the lip nearly circular. *Columella* somewhat ventricose towards the middle, concave towards the anterior end: teeth numerous and even; on the lip about twenty, proceeding across the back, forming ribs, and continuing over the *columella*, pass through

the frontal groove, converging towards the middle, and terminating at its inner border in a very slightly curved serrated edge; one or two ribs terminate near the middle of the back. False ribs few, and terminating in teeth only between the beaks. No dorsal line.

Length ·475 of an inch; breadth ·400; height ·250.

Habitat.

Its distinctive characters from *Cypr. sanguinea* are: teeth much more numerous and even; no ribs terminate on the lip, rarely more than one or two on the side of the back, and they are of the colour of the shell; colour much lighter, and the beaks on the base deepest-coloured.

Cab. Gaskoin.

Cypræa producta. *Cypr. testâ ovato-subglobosâ, basi planulatâ, transversim costatâ, albidâ; marginibus crassiusculis, ad extremitates subdepressis; aperturâ angustiore, labri margine subrectâ, columellæ flexuosâ, acutangulâ; lineâ dorsali nullâ.*

Shell ovato-subglobose, of a uniform dull white colour. Aperture rather narrow: teeth prominent and even, about twenty-six on the lip, and twenty-three on the *columella;* between the beaks there are about five or six rather strongly marked denticulations. The columellar edge of the aperture forms a sharp line, within which is a broad and rather deep groove, extending the length of the mouth, deeper at each end; the ribs, extending through it, form on its inner border a denticulated line, and they are more acutely prominent within the aperture than on the outside of the shell. Ribs prominent, smooth, (interstices uneven,) many terminating on the side of the shell at various distances from the middle of the back, those continuing to the middle about fifteen, a few only of which are continuous down the opposite side, the rest terminating in the centre of the *dorsum* between each other, but not in obtuse or thickened ends: false ribs about six posteriorly and eight anteriorly, and, like those in the *Cypr. sanguinea,* extending high up towards the back. Extremities much produced, somewhat flattened. Margins thick. No impressed dorsal line. Anterior beaks wider apart than the width of the aperture, and within each of these beaks is a slight impression or groove.

Length ·500 of an inch; breadth ·375; height ·300.

Habitat.

It is thus distinguishable from *Cypr. scabriuscula*: it has no dorsal line; ribs much larger and prominent; has wide margins; a broad and flattened base; a slight groove within the anterior beaks; extremities much produced and flattened, &c.

Cab. Gaskoin.

I am indebted for the very appropriate appellation of this species to my friend Mr. Gray.

Cypræa candidula. *Cypr. testâ ovato-globulosâ, latere columellari subventricoso, niveâ; extremitatibus columellaribus subcompressis; margine subincrassatâ; aperturâ subangustatâ, posticè recurvâ; labri dentibus numerosis confertis; costis ex aperturâ divergentibus; lineâ dorsali nullâ.*

Shell ovato-globose, the columellar side rather ventricose, entirely of a snow-white colour. Base somewhat flat. Aperture rather narrow, curved posteriorly. Columellar groove extending from one end of the shell to the other, rather broad, most so at the anterior extremity, not deep. Teeth even, somewhat numerous, small on the edge of the lip, on which there are about twenty-two; on the *columella* about thirteen, which converge towards the centre. Ribs rather prominent; some few terminate on either side of the shell, the rest pass continuously across it from the edge of the lip, and terminate in minute denticulations at the inner border of the frontal groove: false ribs a few. Anterior and posterior beaks of the *columella* divergent, and slightly projecting: extremities produced, and obtuse: marked denticulations between the anterior beaks. Spire scarcely visible, or forming a small blunt protuberance. No impressed dorsal line. Margin on the lip only and rather thick.

Length ·312 of an inch; breadth ·250; height ·212.

Habitat. Mexico.

Distinguishable from *Cypr. scabriuscula* by the shell being much wider and shorter; aperture more curved; teeth and ribs much fewer; the extremities more obtusely produced, thicker and wider; columellar beaks more divergent and prominent; body of the shell more ventricose; anterior part of the columellar groove not so broad; no impression of a dorsal line.

Cab. Gaskoin.

The propriety of regarding this as a distinct species is confirmed from the coincidence of three persons having done so, without any communication or knowledge of each other, in three distant capitals, viz., Dr. Beck of Copenhagen, by the name of *Cypr. approximans*; M. Duclos at Paris, by that of *Cypr. olorina*; and myself in London, under the appellation of *Cypr. candidula*: and as I believe I am the first to describe it, it is perhaps right that I should retain, and apply to it, my own designation.

CYPRÆA ACUTIDENTATA. *Cypr. testâ candidâ, ovato-globulosâ, utrinque subproductâ; labro incrassato; costis acutis prominentibus, dorsum versus partim interruptis, opacis, interstitiis inæqualibus nitidulis; columellâ convexiusculâ, absque plicâ.*

Shell ovato-globular, white; extremities slightly produced. Aperture narrow, somewhat ventricose at the middle of the *columella*, and a little concave at the anterior end. Teeth numerous, about seventeen, thin, sharp, and prominent, continued to form the ribs, several of which terminate (especially at the outer part of the shell) before arriving at the summit of the back, and the teeth are consequently more numerous on the lip than on the *columella*; a deep depression at each end of the columellar side of the aperture caused by the abrupt termination of the *columella*, it not extending to the extreme ends of the aperture. Ribs rather thick, not crowded, prominent, the interstices between them somewhat shining; observed by a magnifier the ribs appear uneven; false ribs at both extremities, a few only forming teeth. No complete dorsal line, but a faint de-

pression. No depression or groove in front of the *columella*. Columellar side more gibbous than the outer, and the ribs continue entirely round it, converging towards the centre.

Length ·300 of an inch; breadth ·200; height ·175.

Habitat. Isle of Muerte, Bay of Guayaquil.

Nearest in shape to *Cypr. exigua*, and in the manner of the ribs terminating on the back; but it is of a dull white colour, destitute of markings, and has no groove or depression in front of the *columella*, which distinguishes it from all other species of this form of *Cypræa*.

Cab. Cuming.

I had the misfortune to break the only specimen that I have seen of this shell shortly after I had described it, but having submitted the description to the critical examination, with the shell, of Dr. Beck and Mr. Sowerby at the same time, I conclude this description may be received, although I have no specimen to show to the Society.

Cypræa Pediculus, var. labiosa. *Cypr. testâ ovali, latâ, extremitatibus rotundatis; costis prominentioribus, nullis supra labium externum terminantibus; marginibus latioribus, crassioribus; lineâ dorsali profundiore, fuscâ; basi marginibusque cinerascenti-griseis; dentibus albis.*

Shell oval, of a reddish brown on the back, running into a blueish brown on the sides; six rather large dark brown spots on the back, three on each side the dorsal line, placed opposite to each other at the anterior, middle, and posterior parts of the back; base of a greyish brown colour, rounded and broad. Aperture rather wide, white within: teeth about twenty on the lip, white, prominent, even and distant, and all continuing evenly over the lip forming the ribs, several of which terminate on the side of the shell, the others (about twelve) at the dorsal line, in elevated and broad or thickened ends; on the *columella* there are about fifteen teeth, a few of which, continuing to form the ribs, terminate on the side of the shell, the rest at the dorsal depression, in a similar form to those on the opposite side; there are about two floating ribs, false ribs at each end. Columellar groove very shallow posteriorly, rather deeper and wider anteriorly; the teeth passing, slightly prominent, across it form a serrated edge at its inner border. Margins much thickened and produced, terminating in a coronated ridge all round the shell, scarcely more prominent at the extremities than on the outer or lip side. Extremities round. Dorsal line rather broad, deep, shining, and of a darker brown colour than the back.

Length ·525 of an inch; breadth ·410; height ·320.

Habitat.

Differs from *Cypr. Pediculus* in being broader and shorter, and rounder at the extremities; in the colour and shape of the base; in having much more prominent ribs, and none terminating on the lip; margins infinitely thicker and broader; teeth white; dorsal line more impressed, &c.

Cab. Gaskoin.

This shell having some characters in common with *Cypr. Pediculus*, and as I have seen only this one specimen, I have felt it difficult to separate it entirely from that species; and on the other hand it has characters so different, that I scarcely know how to make it a member of that tribe: I have, however, placed it as Varietas *labiosa*; and should other specimens be found, I think it may be properly severed from its present associates, and retain that distinctive appellation.

Cypræa vesicularis. *Cypr. testâ inflatâ, subglobulosâ, subtrigonâ, rubellâ; costis transversis, approximatis, lævibus, concoloribus supra columellam continuis; aperturâ amplâ; labro intùs albido, dentato.*

Shell ovato-subglobose, inflated; semipellucid, of a faint rose, or flesh colour. Aperture very broad, a little longer than the spire. Posterior part of the *columella* rather ventricose: the anterior forming a broadish groove, the inner border of which is most prominent at its middle, and the ribs passing through it terminate, at its posterior part, in a serrated edge, the anterior part being even and forming a smooth notch. Lip of a lighter colour than the rest of the shell, straight at its base, longer than the body of the shell, forming a very slight notch as it joins the columellar side at the posterior extremity, and anteriorly a broader and deeper one between the beaks. Beaks very slightly produced, and the anterior ones a little divergent. Teeth numerous and even, about twenty on the lip, and about twenty-three on the *columella*. Ribs even, close, numerous, not prominent, extending transversely across the shell in parallel lines, and passing entirely round the *columella* to its inner margin; about eight of the ribs terminate on the lip, and consequently form no denticulations, and almost alternately between the teeth from the anterior extremity, some few terminate on the outer part of the *columella*. Ribs very faintly marked on the back. No dorsal line. Margin a little thickened. Spire visible, depressed.

Length of the *columella* ·475 of an inch; of the lip ·525; breadth ·450; height ·350.

Habitat. Cape of Good Hope.

From *Cypr. aperta* it differs by the anterior columellar beak being divergent; posterior end of the shell blunter and broader; ribs infinitely more numerous and even, and extending entirely over the *columella* to its inner edge within the aperture.

Cab. Gaskoin.

Cypræa Beckii. *Cypr. testâ ovato-oblongâ, utrinque productâ, subrostratâ, subumbilicatâ, supernè pallidè fulvâ, punctis subocellaribus helvolis sparsis; margine suprà subcrenatâ, basique albis; labri dentibus crassiusculis, posteriùs lineolâ helvolâ notatis, columellæ gracilioribus, in culmen rectilineum terminantibus, medio obsoletioribus; sulco columellari profundo, recto, lævi, anteriùs et infernè denticulato.*

Shell ovato-oblong, of a light fawn colour, dotted distantly with minute slightly ocellated reddish brown *puncta*, which are larger

near the margins, especially the columellar, mixed with a few exceedingly faint minute spots lighter coloured than the ground. Base nearly white, rather flat. Aperture narrow: *columella* somewhat gibbous at the middle part: teeth, like the base, nearly white, even, not minute, extending half across the lip, on which there are about nineteen, coloured at their edges of a reddish brown colour, forming short lines; teeth of the *columella* about eighteen, forming an angular, slightly elevated, serrated, longitudinal ridge, more prominent at the anterior extremity; at the two extremities the teeth extend a little outwards, and are there marked, as on the lip, by reddish brown little lines. At the anterior portion of the front of the *columella* is a deep elongated groove, terminating outwardly in a deep notch, between the end of the ridge and the beak, with three or four denticulations at its inner border, not extending through it from the ridge. Extremities produced; the beaks divergent; the outer anterior and posterior beaks larger and a little longer than the inner. Internal colour the same as that of the base. Spire a little prominent, with a depression around it superiorly and laterally. Dorsal line almost obsolete.

The young has no markings on the teeth.

Length ·450 of an inch; breadth ·250; height ·175.

Habitat.

Distinguished from *Cypr. Cumingii* by the brown lines or markings on the lips; teeth infinitely less numerous, and larger; dark brown ocellated dots on the back; aperture straighter and wider; shell more elongated and less gibbous; groove nearly around the spire; posterior channel more produced; beaks more equal; lip round; outer edge of the margin crenulated, &c.

Cab. Cuming.

Doctor H. Beck, the learned naturalist of Copenhagen, being at this time in our capital, I have taken advantage of the circumstance to date its period, by placing his name, now, to this new species of *Cypræa*.—J. S. G.

There was read an "Extrait du Quatrième Rapport Annuel sur les Travaux de la Société d'Histoire Naturelle de l'Ile Maurice: par M. Julien Desjardins."

The communications relative to the *Mammalia* read before the Natural History Society of the Mauritius in the fourth year of its existence have comprised an account by the secretary, M. Julien Desjardins, of a *Whale* which he regards as the *Physeter macrocephalus*, Linn., that was cast ashore on an adjoining reef: and some observations by the same author on several of the *Mammalia* of the island, and particularly on the hybernation of the *Tenrec, Centenes spinosus*, Ill.; the lethargy of which animal takes place when the thermometer is not lower than 20° Cent., and even when it marks 26°.

In ornithology M. Desjardins has also been the only contributor. He has described, as new, two *Birds* belonging to the island, and has proposed for them the names of *Charadrius Nesoyallicus* and *Scolopax elegans*.

M. Liénard, the elder, has, in the course of the year, described many *Fishes*, including a new species of *Plectropoma*, allied to the *Plectr. melanoleuca*, Cuv. & Val., which is of a uniform brown colour, with all its fins of a still deeper brown, except the pectoral which are orange; on this latter character his specific name is founded: a *Holacanthus*, La Cép., from Batavia, remarkable on account of the numerous sinuous silvery lines which occupy principally the middle of the body; and having also on its face two yellow and two black bands, one of which is ocular: a *Cheilinus*, Cuv.: an *Echeneis*, Linn., furnished, on its suctorial disc, with twenty-five pairs of plates: and a *Muræna*, Thunb., the body of which is of an ebony black, and the dorsal fin yellow; the trivial name being indicative of the latter peculiarity. He has also given some account of a collection of *Fishes* obtained from the western coast of Madagascar, and comprising thirteen species, several of which he regards as new. M. Desjardins has described as the *blue-faced Tetrodon*, a species remarkable for two large blue spots on each side of its face, and having the fin rays as follows; D. 15. A. 12. P. 14. C. 14.: it inhabits the seas adjacent to the Isle of France.

In entomology the only communication made to the Mauritius Society was by M. Goudot, and related to the *Insect* described by Mr. Bennett at the Meeting of the Zoological Society on January 22, 1833, (Proceedings, Part i., p. 12,) under the name of *Aphrophora Goudoti*. The communication made to the Zoological Society, of which a full abstract is given at the page quoted, was apparently identical with that read before the Mauritius Society.

The remaining zoological communication related to the *Intestinal Worms*, and was made by the Secretary. It gave some account of the *Distoma hepaticum*, Cuv., as found in the stomach of a cow; and of the *Cysticercus Cellulosæ*, Brems., existing in innumerable quantities over almost the whole of the head, trunk, and extremities of a sow.

An "Extrait du Cinquième Rapport Annuel" of the same Society, by M. Julien Desjardins, Corr. Memb. Z. S., was also read.

In the year of which the present Report gives an account, M. Desjardins has communicated to the Natural History Society of the Mauritius, a list of several species of *Birds* that are occasional visitors of that island; and has also referred particularly to the *Coturnix Sinensis*, Cuv., and the *Nectarinia Borbonica*, Ill., as stationary in the Mauritius.

M. E. Liénard has brought from the Seychelles a species of *Gecko* of considerable size; which he has described in a communication made to the Society: and M. E. Liénard has placed on record the existence in the adjacent seas of the *Sphargis coriaceus*, Merr.

M. Liénard, the elder, has again made numerous contributions to ichthyology. He has given a detailed description of the *Squalus Vulpes*, Linn.: has described as new a *Trichiurus*, Linn., which he had formerly regarded as the *Trich. lepturus*, Ej., but which has the eye much larger, more numerous *striæ* on the *suboperculum*, and a few

more rays in the dorsal fin: and has also described two species of of *Crenilabrus*, Cuv., which he regards as new; one of them has three longitudinal rose-coloured bands on the white ground of the body, others on the dorsal fin, a large blood-red spot on the ventral fins, and D. 12+10. A. 3+11; the other is banded like the preceding, but is deeply rose-coloured on the back and pale yellow below, has a black circle surrounding the base of the pectoral fin, a large red spot above the *anus*, the dorsal and caudal fins red, the anal and ventrals yellow, the pectorals rose-coloured, and D. 12+9. A. 3+11. He has also given a description of a *Muræna*, Thunb., of a very pale olive yellow towards the front and brown towards the tail, and marked on the back by white ocellated spots bordered with brown.

In the same department M. E. Liénard has contributed descriptions, from recent specimens, of several *Serrani* described by Cuvier and M. Valenciennes in their 'Histoire Naturelle des Poissons'; and has also given a description of a *Blennius*, Linn., destitute of appendages on the head. These fishes were observed in a voyage to the Seychelle Islands, whence M. E. Liénard brought back with him to the Mauritius a *Chætodon* of very varied colours, which M. A. Liénard subsequently described under the name of *Chætodon diversicolor*. M. Desjardins has stated, in a note, that the *Mango fish, Polynemus longifilis*, Cuv. & Val., is not found, as had been announced, in the Isle of France. And he adds that he has prepared an alphabetical index to the nine volumes of the 'Histoire Naturelle des Poissons' that had then reached the Mauritius. M. Magon has presented to the Museum of the Society a fragment of a ship's coppered keel pierced by the point of the upper jaw of a *Histiophorus*, Cuv., which still remains infixed in it.

M. Desjardins has contributed the only notices relative to the *Mollusca*, which have consisted of short descriptions of three species belonging to the island: an *Octopus, Oct. arenarius*, Desj., found in the shell of a *Dolium*; a *Pupa*, of a red and yellow colour; and a small species of *Helicina*. He has also ascertained the existence at the Mauritius of the *Tornatella flammea*, Auct.

To the same active member the Mauritius Natural History Society is indebted for the only entomological communication made to it in the fifth year of its existence: it is a detailed description of a large species of *Iulus* brought from the Seychelles, and characterized as the *Iulus Seychellarum*, Desj.

Specimens were exhibited of various *Fishes*, forming part of a collection from Mauritius, presented to the Society by M. Julien Desjardins, and forwarded by him at the same time with the "Rapports de la Société d'Histoire Naturelle de l'Ile Maurice." These were severally brought under the notice of the Meeting by Mr. Bennett, who called particular attention to the following, which he regarded as hitherto undescribed.

Apogon tæniopterus. *Ap. altiusculus; fronte latiore: pinnâ dorsali priore maculâ elongatâ obliquâ inter singulos radios,*

secundâ analique vittâ prope basin, ventralibus maculis elongatis inter radios exteriores, caudalisque marginibus, nigris.
D. 7, 1+9. A. 2+8.

Acanthurus Desjardinii. *Ac. pinnis altissimis: capite pectoreque cæruleo? punctatissimis; corpore reliquo lineis plurimis (cæruleis? flavis?) inter se sæpissimè fascias nigras includentibus, in pinnas verticales excurrentibus, ibique ad formam pinnæ rotundatis; pinnis anali dorsalique anticè ad basin guttulatis; caudali pallidè per series irregulares punctatâ.*
D. 3+29. A. 3+23.
Dentes maxillæ superioris serrati, elongato-trigoni, ad apicem subrotundati; inferioris crenati, serrâ intermediâ elongatâ.
The peculiarities of the colouring of this *Fish*, Mr. Bennett stated, induced him to regard it as distinct from those figured under the name of *Ac. velifer* by Bloch and by Dr. Rüppell; which also he considered, on a comparison of the figures published by those authors, to be specifically different from each other, and distinguishable by the subjoined characters.

Acanthurus Ruppelii. *Ac. pinnis altissimis: capite pectoreque albido punctulatissimis; corpore reliquo infernè flavo guttato, supernè flavo transversim lineato lineis inter se sæpissimè fascias abbreviatas nigras includentibus; pinnis dorsali analique lineis incurvis plurimis illâque anticè guttis sparsis flavis notatis; caudali punctulis albidis per series verticalibus dispositis.*
"D. 3+29. A. 2+23."
Acanthurus velifer, *Rüpp., Zool. Atlas zu Nord-Afrik. Reise, tab.* xv. *f.* 2.
Hab. "in Mari Rubro."

Acanthurus Blochii. *Ac. pinnis altissimis: capite flavo punctato; corpore toto lineis albescentibus fascias saturatiores inter se sæpissimè includentibus transversim notato, lineis in pinnas verticales excurrentibus ibique per series incurvas guttarum cærulearum dispositis; pinnâ caudali fasciatâ seriatimque punctulatâ.*
"D. 3+28. A. 2+21."
Acanthurus velifer, *Bloch, Ichth., tab.* 427. *f.* 1.
Dentes maxillæ superioris serrati, acutè elongato-trigoni.
Hab. "apud Tranquebariam."

Labrus spilonotus. *Labr. pinnâ caudali sublunatâ: maculâ in initio pinnæ dorsalis alterâque ad ejus finem maximâ, laterali, caudam supernè circumdante; pinnis dorsali analique ad basin squamis corpori conformibus vittatim vestitis.*
D. 12+10. A. 3+12.
Labro rubro-lineato, Comm., ut videtur, maximè affinis, et forsan idem. Dentes antici validi in utrâque maxillâ quatuor: superioris subæquales, distantes; inferioris duo intermedii minores subapproximati, inter intermedios maxillæ superioris (ore clauso) recepti, lateralis utrinque major ante lateralem maxillæ superioris (ore clauso) recepto.

ANAMPSES LINEOLATUS. *An. capité corporeque crassis, illo anticè subrotundato, hoc cæruleo? lineolato; fasciâ lineâque inter oculos notatus; pinnis dorsali analique cæruleo? marginatis, hâc insuper in medio vittatâ.*

D. 9+12. A. 3+12.

Ab *An. cæruleo-punctato*, Rupp., differt corpore et præsertim capite crassioribus, hoc anticè os versus minus producto; necnon picturâ, præsertim vittâ pinnæ analis. In *An. cæruleo-punctato* squamæ singulæ punctum, in *An. lineolato* lineolam corpori transversam gerunt. In hoc caput, nisi ad frontem labiaque, vix notatum; pinnaque caudalis, ut videtur, æquè haud notata.

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 IV.

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LIST

OF

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 4¾ inches, exclusive of the head, which from nose to *occiput* measured 3¾ 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 8½ 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 2½ 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 4½ 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*, 1¾; *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 gutturequè sordidè albis.*

Long. tot. 8 unc.; *rostri*, 1; *alæ*, 4; *caudæ*, 3¼; *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*, 1¼.
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*, 4¼; *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*, 2½; *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 CŒRULICEPS. *Pri. iridescenti-olivaceo-viridis, pteromatibus secundariisque magis viridibus; caudâ ad basin viridi, dein cæruleâ, ad apicem nigrâ; capite cæruleo, fasciâ frontali flavescenti-viridi, linedque nigrâ a nare per oculum auremque utrinque ductâ et finem versus cæruleo submarginatâ, notato.*
Long. tot. 18 unc.; *rostri*, 1⅜; *alæ*, 5½; *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 1¼ 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 *Çariama, Dicholophus cristatus,* Ill., were read.

"The *Çariama,* 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 $7\frac{1}{2}$ 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 $1\frac{1}{4}$ 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 $\frac{1}{4}$ 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 $5\frac{1}{2}$ 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 3¼ 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 $1\frac{1}{4}$ 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 $1\frac{1}{4}$ 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 $1\frac{1}{4}$ 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 $\frac{3}{4}$ths of an inch in diameter; the pyloric canal was corrugated internally, these corrugations verging to a *sphincter*.

"The small intestines were $11\frac{1}{4}$ 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 ¾ 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; subgregarious.
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.
Suborbital glands.

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. ?
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.* $\frac{9}{10}$ *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$\frac{1}{2}$, *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 subtuberculatibus, anfractu basali elongato, fasciis duabus distantibus pallidioribus obscuris cincto; spirâ mediocri, valdè plicatâ; columellâ* 4*-plicatâ; aperturâ angustiore: long.* 3$\frac{1}{4}$, *lat.* 1$\frac{1}{8}$ *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. $\frac{4}{5}$, lat. $\frac{7}{8}$ 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. $1\frac{1}{4}$ 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 $\frac{2}{8}$. 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.* $\frac{5}{10}$, *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 *Rusan* 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 $2\frac{1}{2}$ 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 ¼ 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 $\frac{1}{4}$ 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; guld 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*, 1⅛; the distance from the *foramen magnum* to the bony palate, 2⅜; and the length of the bony palate, 2¼.

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 2½ 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 2⅛.

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* 1¼.

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 3½ 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 4¼ 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 7¼ 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 1¼ 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 2½ 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 3¾ 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; gulâ 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; guld, 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; gulâque 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 $1\frac{1}{4}$ 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 $\frac{1}{4}$ 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 $1\frac{1}{4}$ 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., 7½ poll.; *rostri* à rictu ad apicem, 1; *alæ*, 3⅞; *caudæ*, 2½; *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; guld, 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, guld, 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.* 17½ unc.; *alæ* a carpo ad apicem remigis 4tæ, 12; *tarsi*, ⅞; *caudæ*, 8; *mandibulæ* superioris, 1½; inferioris, 1⅛.

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. guld 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*, 1⅛; *alæ*, 3¼; *caudæ*, 3; *tarsi*, ¾.

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 *Flycatchers*; 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; guld 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 intermediis 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 guld 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., 4½ unc.; *rostri*, ½; *alæ*, 2; *caudæ*, 2; *tarsi*, ⅝.

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*, $\frac{1}{3}$.

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 nonnunquàm 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 cœruleo-nigro; corpore superiore ferrugineo-brunneo, lineâ transversali nigrâ; caudâ pallidè rufo-brunneâ; guld, pectore, abdomineque intermedio albis, lateribus et crisso pallido ferrugineis lineâ transversali nigrâ; mandibulâ superiore nigrâ brunneâ; pedibus brunneis.*

Long. tot., $3\frac{7}{4}$ unc.; *rostri*, $\frac{5}{8}$; *alæ*, $1\frac{3}{4}$; *caudæ*, $1\frac{1}{2}$; *tarsi*, $\frac{5}{4}$.

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. Hyemé 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. Schœniclus*. 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*, $\frac{2}{5}$; *alæ*, $3\frac{1}{2}$; *caudæ*, $2\frac{3}{4}$; *tarsi*, $\frac{5}{4}$.

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, guld 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*, $3\frac{1}{8}$; *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; guld 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*, $\frac{5}{8}$.

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; gulâ 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; caudâ rufescente-brunneâ.*

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 gulâ nitidè brunneis, scapulâ plumâ cinereo-argentato cinctâ; fasciâ nuchali rosaceâ; 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. nuchâ, 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 cristâ, et toto corpore nitidè nigris, rectricibus caudæ duabus intermediis exceptis; fasciâ latè coccineâ cinctis; rostro prægrandi ad basin pallidè plumbeo; pedibus cæruleo nigris.*

Fœm. *Differt cristâ genis corpore supernè guttis flavis adspersis; corpore inferiore transversis lineis coccineis atque flavis ornato; fasciâ caudali coccineâ, lineis nigris interruptâ, 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 $\frac{3}{8}$ 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 *carneæ columna*. The right ventricle does not approach the *apex* of the heart by $\frac{5}{8}$ 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, $1\frac{5}{8}$ of an inch; breadth, $\frac{5}{4}$ 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, $\frac{5}{4}$ 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 $\frac{3}{4}$ 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^c^Cormick. 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,

* γνυθος *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 $\frac{1}{5}$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, guld, 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. 12½ unc.; *rostri*, 1⅝; *alæ*, 6; *caudæ*, 5⅝; *tarsi*, 1¼.
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. 13¼ unc.; *rostri*, 1¾; *alæ*, 7; *caudæ*, 6; *tarsi*, 1½.
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. 11½ unc.; *rostri*, ¾; *alæ*, 5½; *caudæ*, 6; *tarsi*, 1½.
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 grisea; 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. 10¼ unc.; *rostri*, 1½; *alæ*, 5¼; *caudæ*, 4½; *tarsi*, 1⅛.
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. 6½ unc.; *rostri*, ⅝; *alæ*, 3; *caudæ*, 3; *tarsi*, ⅝.
Hab. In Novâ Cambriâ Australi.

MELIPHAGA 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*, $\frac{3}{4}$; *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*, $\frac{5}{8}$; *alæ*, $3\frac{3}{8}$; *caudæ*, $2\frac{3}{4}$; *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, olivaceo 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; guld 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*, $1\frac{5}{4}$; *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*, $\frac{5}{4}$; *rostri*, $1\frac{1}{2}$; alt. *rostri*, $\frac{3}{8}$.

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 olivaceo-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*, $1\frac{3}{4}$; *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 linedque 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; guld 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*, $\frac{8}{4}$.
Hab. In Terrâ Van Diemen.

Coturnix pectoralis. *Cot. loro, auriculis guldque 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; aldâ 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 fusco-nigris; 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 secundariisque 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. 21½; *alæ*, 16½.

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 latissimâ 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*, 1½; *alæ*, 17; *caudæ*, 10½; *tarsi*, 3½.

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. 21½ unc.; *alæ*, 15½; *rostri*, 9⅓; *tarsi*, 3½.

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. 13½; *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.

Anomiopsis 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, guld, pectore, abdomineque albis, naso suprà nigrescente; mystacibus atris; capite magno; auribus mediocribus rotundatis, pilis nigris et griseis intermixtis, vestitis; corpore crasso; caudd capite corporeque breviore, pilis nigricantibus, subtùs albescentibus prope basin, vestitd; 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 sordidè 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	$4\frac{1}{2}$
——— 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 fusecescentibus, 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 Σκαπτηρ, 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 Ὀξυς, 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.	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*, $2\frac{3}{16}$; *caudæ*, $2\frac{1}{4}$; *tarsi*, $\frac{5}{4}$.
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*, $\frac{3}{8}$; *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 olivaceo-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

* Ῥεῖθρος, a channel; Ὀδούς, 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 læves: *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-

edge 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. in. line.		M. Rattus. 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, $26\frac{1}{2}$ 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* 201. *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 $3\frac{1}{2}$. 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 $3\frac{1}{2}$, the other $4\frac{1}{2}$ 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 pæciloptera*, 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 *emboîtement* 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, lujus 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 irregularitèr striatis, interspatiis guttulis undulatis repletis: plumis scapularibus, tectricibusque majoribus et minoribus notam*

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triangularem cervinam ad apicem ostendentibus; uropygio pallidè luteo obscurè nigro guttato; caudâ fuscescenti-nigrâ notis fasciisque rufescenti-cervinis irregulariter 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
——— *caudæ*.....	10	0
——— *auris*	1	$2\frac{1}{2}$
Latitudo *auris*.....	0	11
Longitudo *pollicis* antipedum.....	0	6
——— *digiti longissimi*.....	1	1
——— *pollicis* pedum posticorum	0	7
——— *digiti longissimi*.....	1	2
——— pedis postici a calce ad apicem digitorum	2	11

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 primariorum 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 castaneo-*

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, 14½ inches; the foot from the heel to the end of the middle toe, excluding the nail, measures 1 inch ⅜, while in this smaller species it measures 1 inch ⅝.

"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	7½

"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, 3tio, 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 irregulariter sparsis et maculatis ; primariis nigris, ad bases rubrescenti-cervinis, ad apices albis ; secondariis cervinis, nigrescenti-fusco irregulariter 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 transversim 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*, $14\frac{1}{8}$; *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 $\frac{1}{3}\frac{1}{0}$ to $\frac{1}{4}\frac{1}{0}$ 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, guld 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, guld et fascid jugulari, dorso, alis caudâque nigris; tectricibus alarum minoribus supra infraque aureis; remigibus basi, tectricibus majoribus apice, remigibusque secundariis margine externo, albis.*

Culandria 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*.

Frigueve, 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* 1mo et 5to *subæqualibus;* 2do, 3tio, et 4to *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-*

taneo-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 castaneo-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. olivaceo-fuscus, subtus flavo-cinnamomeus, gulâ tantum vix fuscescenti striatâ: tectricibus alarum inferioribus remigumque margine interno aurantio-cinnamomeis, remigum primo sextam æquante, 4to et 5to 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. Mniotilta 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. Asthenurus 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. violaceo-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 gulâque 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 $\frac{4}{5}$, 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. cunicularia, 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 $\frac{4}{4}$, 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; secundariis 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 sublùs 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, 5to in medio, et basi 6to et 7mo 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* 1mo *et* 2do *ad apicem, cæteris fuscis, mandibulis lateis, dentibus nigris.*

Long. corp. lin. 9½.

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. 3¼.

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.* 1ma *majori obliqua marginali, ante medium locata,* 2da *media, ovata prope suturam,* 3^{tia} *obliqua marginali,* 4ta *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 2^do^ 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*, $2\frac{3}{8}$; *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 caryophillaccâ 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. Whitëii*, 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; secondariis, 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 basès 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, guttureque 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*, 14½; *tarsi*, 3½.
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. 22½ unc.; *rostri*, 1⅝; *alæ*, 15½; *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*, $1\frac{1}{8}$; *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*, $1\frac{3}{8}$; *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 cinerescenti-albâ ; rostro nigro ; cerâ pedibusque aurantiaco-flavis.*

Long. tot. unc. 14 ; *alæ*, $11\frac{3}{4}$; *caudæ*, $6\frac{1}{4}$; *tarsi*, $1\frac{3}{8}$.

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 cinerescenti-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 cinerescentibus transversim fasciatis, apice cinerescente ; corpore subtùs brunneo alboque marmorato, hóc 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.

Athene? 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 suprâ, alisque in medio cinereis; primariis, secondariisque intùs nigrescentibus, griseo 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*, $1\frac{1}{8}$; *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, secondariisque 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*, $1\frac{3}{8}$; *alæ*, $7\frac{3}{4}$; *caudæ*, $6\frac{1}{2}$; *tarsi*, $1\frac{1}{8}$.

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; secondariis 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 viridescenti-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*, $3\frac{3}{8}$; *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, olivaceo-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 aláque 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 commissuráque* 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, hôc colore in crisso lateribusque prævalente; rostro pedibusque pallidè brunneis.*

Long. tot. 4 unc.; *rostri*, $\frac{9}{16}$; *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*, $\frac{7}{8}$; *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, leviter ornatis ; abdomine pallide 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*, $\frac{3}{8}$; *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*, $2\frac{5}{8}$; *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 1mo brevissimo, 4to, 5to, 6to, 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.

EPIITHIANURA. Genus novum.

Rostrum capite brevius, ferè rectum, lateraliter compressum, ad apicem indentatum; *nares* basales, lineares, membranâ tectæ; *alæ* elongatæ, remige, 1mo spurioso, 2do longo, 3^{tio} et 4to 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.

EPIITHIANURA AURIFRONS. *Epiith. 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*, $\frac{6}{8}$; *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 leviter 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*, $\frac{3}{10}$; *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, hóc colore in fronte et uropygio prævalente; dorso superiore, secondariis, 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*, $1\frac{5}{8}$; *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 supèrciliari, 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, hóc 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 ; hóc 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 secondariis 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*, $4\frac{1}{3}$; *tarsi*, $\frac{7}{8}$.

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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LIST

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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 $4\frac{5}{8}$ 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 development; 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 Koninklik, 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 $\frac{5-5}{5-5}$		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	8¾
——— *auris*	0	7

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 griseo-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, lineâ 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 griseocenti-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 abovementioned 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 leucótis. 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 AUDUBONI. 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 *Gãto 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.

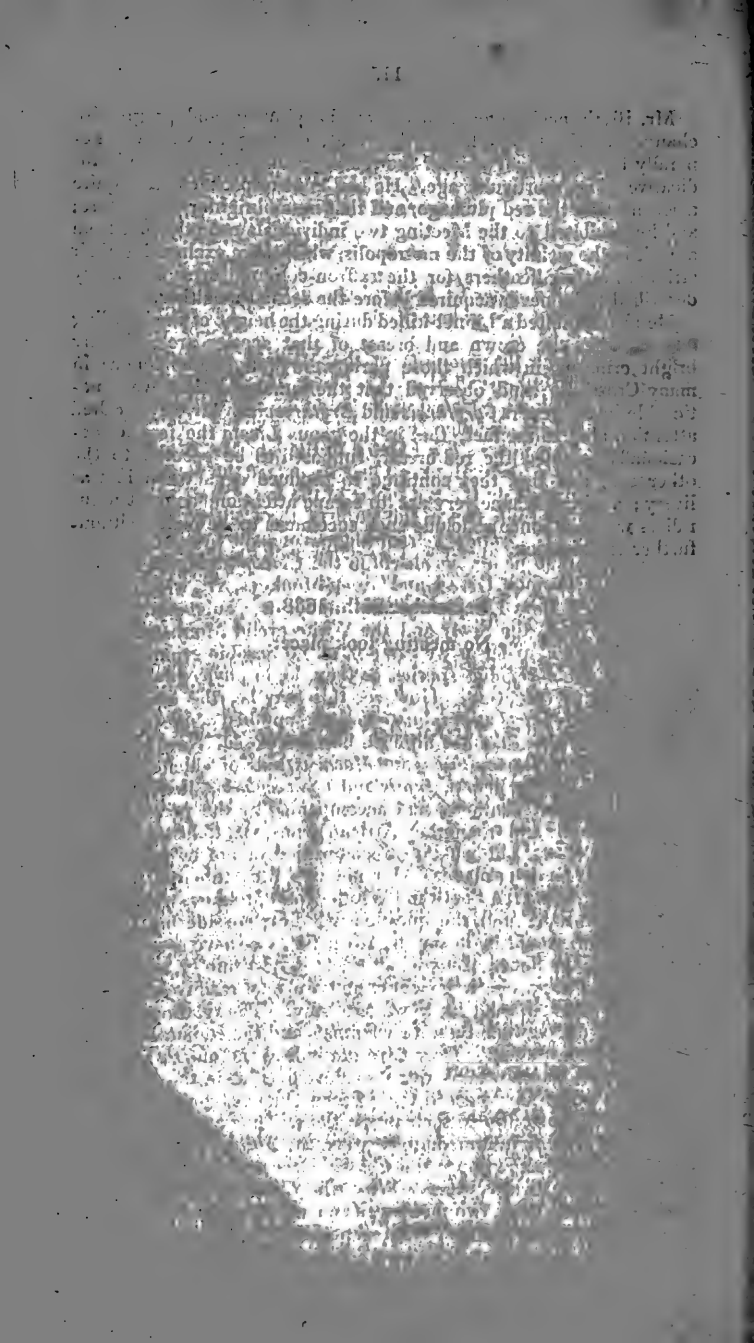
"Length, from the tip of the bill to the rump, 5 inches; bill, $\frac{9}{10}$; tail, $2\frac{1}{2}$ inches; *tibia*, 1 $\frac{1}{10}$; *tarsi*, including nail, $1\frac{1}{10}$; hind claw, $\frac{1}{10}$ inch; liver of two lobes, one much longer than the other; gall-bladder fully developed; spleen cylindrical, $\frac{6}{10}$ 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 Anteaters 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 spheroid *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 before-mentioned, 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 above-mentioned. 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 scalène 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 Perameles 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 *Chœropus* 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.

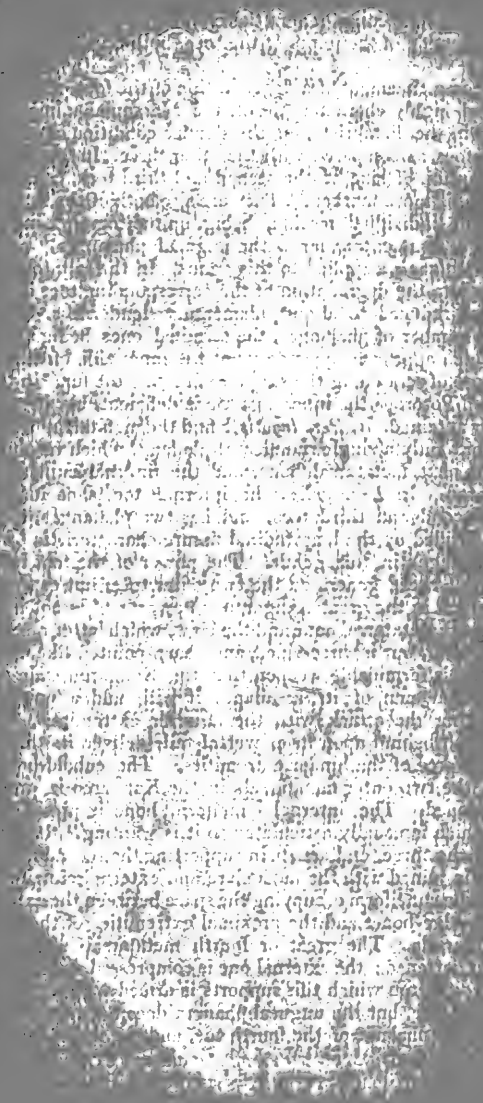
the astragalus rests upon the calcaneum: a greater part of the superincumbent pressure is transmitted by a transversely extended convex anterior surface to the scaphoid and cuboid bones. This form of the astragalus is also characteristic of the Koala, Petaurists, Dasyures, and the Pedimanous Marsupials. 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, $\frac{3-3}{1-1}$; 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.			*P. sciureus.*	
	in.	lin.		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 *Muræenidæ*, 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 $1\frac{3}{4}$ 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 $\frac{1}{5}$.

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 $1\frac{1}{7}$ 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 $1\frac{1}{7}$ 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$\frac{9}{10}$ 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 2¼ 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, 4¼ 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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