PROCEEDINGS

OF THE

COMMITTEE

OF

SCIENCE AND CORRESPONDENCE

OF THE

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CONTRIBUTORS.

With References to the several Articles contributed by each.

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January 10, 1832.

Joshua Brookes, Esq., in the Chair.

Specimens were exhibited of several *Birds*, *Land-Shells*, and *Corals*, together with the *cranium* of a *Balænoptera*, LaCép., all collected at the Cape of Good Hope by Dr. Andrew Smith, Corr. Memb. Z. S., and presented by him to the Society. In illustration of the subjects exhibited, extracts were read from a letter from Dr. Smith which accompanied his present. The *Balænoptera* was there referred to as *Bal. Capensis:* it is apparently the *Rorqual du Cap* of M. Cuvier in his 'Ossemens Fossiles,' which has since been named by M. Desmoulins *Bal. Poeskop*, and by M. Fischer *Bal. Lalandii*.

Specimens were also exhibited of several *Mammalia*, *Birds*, and *Fishes*, collected by Mr. H. Cuming chiefly in Chili.

Among the *Mammalia*, Mr. Bennett pointed out as apparently new to science an *Otter* and a *Mouse*, which may be characterized as follows:

LUTRA CHILENSIS. *Lut. suprà saturatè vinaceo-brunnea, infrà pallidior; caudâ brunneo-nigricante, corporis dimidio parum breviore.*

Hab. in aquis Chiliæ.

The fur is composed of hairs of two kinds: the inner woolly and thickly furnished; the outer silky, also thickly set, and completely concealing the inner. The colour of the fur of the upper surface is glossy brown on the head, (where the hairs are comparatively short,) and increasing in depth as it proceeds backwards becomes blackish on the rump, and still more decidedly so on the tail. The lower surface of this member, for the extreme three-fourths of its length, is of the same colour with the upper; near the vent it becomes paler and assumes a reddish hue; and this colour is continued, with a slight canescent tint, along the whole of the under

surface, scarcely becoming lighter on the throat and lower jaw. The margin of the upper lip, the cheeks, and a patch under each ear, are of the same colour with the under surface. Of the *moustaches*, which are short, some of the hairs are yellowish, while the greater number are blueish black. The legs are of the colour of the upper surface of the body, which becomes deeper on the feet. The whole of the silky hairs exhibit that varying somewhat metallic gloss which is common to most aquatic *Mammalia*.

The naked muzzle is of moderate size. The claws are short, those of the hinder toes being somewhat flattened, while the anterior claws are compressed but not acute. "The eyes," Mr. Cuming states, "are small, their colour dark-blue."

"The total length is 2 feet 4 inches; from the nose to the root of the tail, 1 foot 7 inches; girth at the belly, $9\frac{1}{2}$ inches."

Its habits, according to Mr. Cuming's observations, agree with those of the *European Otter;* and it is equally capable of domestication.

MUS LONGICAUDATUS. *Mus caudâ longissimâ: suprà pallidè fulvus nigrescente varius; infrà et ad pedes albescens.*

Hab. in arbores Chiliæ, nidum e foliis graminum construens.

The most striking peculiarity of this *Mouse* is the extreme length of its tail, which approaches nearly to double that of the body; the length of the head and body, taken in a straight line, being 3 inches, while that of the tail is $5\frac{1}{2}$.

The fur is soft, smooth, and well furnished. The hairs are deep ashy grey at their base: those of the upper surface are fawn-coloured or pale rufous towards their points, the extreme tip being frequently black; those of the under surface are tipped with white slightly tinged with fawn.

The face is covered with short hairs of mingled fawn and black: the lips are nearly white: the *moustaches* extremely long, black at their base and silvery at the tip. The ears are rounded and of moderate size: their lobe is well covered on the inside with short hairs of the colour of those of the face, and on the outside is sparingly furnished with very short whitish hairs which are scarcely discernible on the blackish skin. The colour of the back is mixed fawn and black; the black disappears on the sides, which are almost purely fawn-coloured, as are also the front of the fore-legs and the outside of the hinder legs. The tail is scaly, and furnished with numerous very short bristly hairs, which are brownish above and nearly white beneath. The hairs of the upper surface of the *tarsi* are short, and of a very pale fawn approaching to white; those of the toes still more white; and the lengthened bristles covering the claws almost silvery.

The length of the head is 1 inch and 2 lines; of the ears, 5 lines; breadth of the ears, 5 lines; length of the anterior limbs, 9 lines; of the posterior limbs, 1 inch and 6 lines; of the anterior *tarsus* and toes, 5 lines; of the posterior *tarsus* and toes, 1 inch and 2 lines; and of the *moustaches*, 1 inch and 6 lines.

Among the *Birds* were two specimens of the *Phytotoma Bloxhami*, Child., which having been submitted to Mr. Children, that gentleman reported that one of the specimens was apparently a female or a young male of the species. It differed from the adult male in being devoid of the ferruginous colour on the crown; and in the total absence of the same colour on the breast and *abdomen*, which were of a dirty yellowish white streaked with fuscous. The colours of the upper part of the body were also less deep than in the adult male. Mr. Children stated that the male specimen accorded accurately with that which he originally described in Jardine and Selby's 'Illustrations of Ornithology.' He added, that more recently, in 1830, both sexes of the bird had been described and figured in the 'Mémoires presentés à l'Académie Impériale des Sciences de St. Petersbourg,' by M. Kittlitz, who, not being aware that it had been previously published, had given to it the name of *Phyt. silens*. As M. Kittlitz's description was subsequent to that of Mr. Children, so also was his discovery to that of Mr. Bloxham, whose name is commemorated by Mr. Children in that of the bird, which was shot by him at Valparaiso certainly not later than December 1825, while M. Kittlitz did not observe the species in Chili until March or April 1827. Mr. Children added, that the "two serrated *tomiæ* or ridges" in the margin of the upper mandible, mentioned by him in his description of *Phyt. Bloxhami*, are very distinct in both the specimens submitted to his inspection.

The following species from the same locality were apparently new to science, and were characterized by Mr. Vigors as follows:

Capito aurifrons. *Cap. occipite, genis, collo superiori, nuchâ, dorsoque atris albido-flavo striatis; abdomine albido-flavo, atro-fusco striato; jugulo tectricibusque alarum aurantiacis, illius plumis subgraciliter, hujus latiùs in medio nigro striatis; fronte verticeque aureis, hoc subfuscescenti; remigibus rectricibusque fuscis.*

Longitudo 7⅗ unc.

Xanthornus chrysocarpus. Mas. *Xanth. ater, plumis obscurè ferrugineo marginatis; regione carpali-aureo-flavâ.*

Fœm. *colore superno minùs saturato, dorso imo subcinerascenti; corpore infra albo maculatim notato; strigâ utrinque a rictu per oculos ad nucham extendente latâ, alteráque in medio verticis gracili albis; regione carpali flavescenti.*

Longitudo maris 8 unc. fœm. 7½.

Aglaïa Chilensis. *Agl. sericeo-ater; capite genisque flavo-viridibus, colore genarum in latera colli angulariter extendente; pectore abdomineque beryllinis; dorso medio imoque flammeo-coccineis.*

Statura *Tanagræ Tatao*, Linn.

This bird differs from the well known *Paradise Tanager* only in the uniform flame-colour of the middle and lower parts of the back, and in the light green feathers of the cheeks extending more angularly into the black on each side than in the common species. The

great distance that separated these Chilian birds from those of Guiana and Cayenne in some measure authorized the specific separation here suggested. There were two specimens in Mr. Cuming's collection according with the above description; and Mr. Vigors stated that he had seen others of the same locality equally answering to it; while he had observed no specimen from the eastern coast which did not correspond with the *Paradise Tanager*, as figured by Edwards, Buffon, and Desmarest.

PICUS AUROCAPILLUS. *Pic. suprà ater, albo fasciatus maculatusque; strigâ latâ super oculos ad humeros extendente, alteráque suboculari interruptâ, guláque albis; pectore abdomineque sordidè albescentibus, strigis parcis fuscis notatis; capite atro, fronte aureo strigatim notato, vertice aureo.*

Longitudo, 6¼ unc.

The two following apparently new species were also in Mr. Cuming's collection, but they had been obtained by him from Mexico.

COCCOTHRAUSTES CHRYSOPEPLUS. Mas. *Cocc. corpore aureo, dorso medio nigro notato; alis rectricibusque nigris, illis albo variegatis ad carpumque aureo notatis, horum, quatuor mediis exceptis, pogoniis internis ad apices albis.*

Fœm. aut Mas jun. *capite, collo, corporeque infrà pallidè aureis, illis fusco striatis; dorso olivascenti-flavo, fusco notato; alis caudáque olivaceo-brunneis, illis albo parcè maculatis.*

Longitudo, 9½ unc.

The white markings on the wings of the male consist of five large spots extending in a line over the coverts and tertiary quill feathers; a narrow margin on the edge of the second to the fifth primary quill feather inclusive; and a spot on the outward webs of the tertiaries at the *apex*. The marks on the bird supposed to be the female or young male are small and few in number at the *apices* of the wing coverts.

ORTYX SPILOGASTER. *Ort. capite gutturque atris, illo strigis, hoc maculis, albis notatis; collo, pectore, nucha, dorso, alis, caudáque pallidè plumbeo-cinereis; capitis cristâ elongatâ recumbente, strigis colli superioris, scapularibus, abdominisque lateribus ferrugineis, his albo strigatis; pectore abdomineque medio albo oculatim guttatis; abdomine imo crissoque albescentibus, illo obscurè fusco fasciato, hoc intensiùs brunneo notato.*

Longitudo, 12 unc.

As the most interesting of the *Fishes* exhibited, Mr. Bennett pointed out a new species of *Scombresox*, LaCép., which differs by its less ample mouth, the number and direction of its teeth, and the smaller extent of the bony plate behind those of the upper jaw from the *Cyclopterus Dentex*, Pall. This he distinguished as the

SCOMBRESOX LEMURIDENS. *Scomb. ore capitis dimidium latitudine æquante; labiis crassis, inferiore utrinque latè lobato; den-*

tibus incisoribus maxillæ superioris verticalibus, inferioris horizontalibus, ponè illas osse scabro utrinque parvo.

D. 8. A. 5. C. 8. P. 25.

Hab. in Oceano Pacifico, Chiliam alluente.

In maxillâ superiore dentes incisores approximati, elongati, subæquales, (externis longitudine parum decrescentibus,) utrinque tres; dein laniarius parvus discretus, quem sequitur alter minimus dimotus: in maxillâ inferiore dentes incisores utrinque tres, quorum primus major, secundus minor, tertius minimus, omnes approximati; dein laniarius parvus discretus, et ab hoc dimoti et inter se discreti laniarii minimi tres.

An *Agriopus*, Cuv. and Val., from the same locality with the preceding fish, was shown to agree generally with the description published by MM. Cuvier and Valenciennes of their *Agr. Peruvianus;* but a deviation occurred in the number of the fin-rays, those of the spinous portion of the dorsal fin being one less in number, while of the soft rays of the anal there were three more than in the species referred to; the rays in the specimen exhibited being D. $\frac{4}{4}$. A. $\frac{1}{10}$. It appears therefore probable that the seas of the western coast of South America, like those of the Cape of Good Hope, are inhabited by two species of *Agriopus;* but it was not deemed advisable to characterize a second until an opportunity should occur for a satisfactory comparison of specimens.

Various specimens of *Syngnathi*, obtained by Mr. Cuming in the Atlantic Ocean, were regarded by Mr. Bennett, notwithstanding some important differences in their proportions, as belonging to one species, which he described as new to science, although nearly allied to *Syng. Acus*, Linn. It may be thus characterized:

SYNGNATHUS FUCICOLA. *Syng. pinnis pectoralibus, dorsali, anali, caudalique præditus rostro cylindrico, producto: scutis dorsalibus quatuordecim, præanalibus sedecim, caudalibus viginti sex: corpore heptagono caudaque tetragona transversim pinnâque dorsali obliquè nigrescenti fasciatis.* D. 28.

Fœm. *rostro truncoque brevioribus; hoc latiore; ventre (ovis exclusis) haud carinato; caudâ longiore.*

A *Syng. Acu* differt occipite minùs elevato; fronte subæqualiter declivi, orbitis parum elevatis; et præsertim scutis longè paucioribus.

Specimens were exhibited of several *Stomapodous Crustacea*, also from the collection of Mr. Cuming, a collection extremely rich in *Crustacea, Mollusca*, and other invertebrate animals inhabiting the sea. A considerable portion of it was formed during a voyage in the Southern Pacific Ocean undertaken by Mr. Cuming in a vessel freighted by him for the express purpose of obtaining objects of natural history. Among those now exhibited Mr. Owen pointed out two new species, one of which belongs to that section of the genus *Squilla*, Fabr., which is distinguished by the presence of moveable spines at the extremity of the caudal segment, and likewise, as was particularly shown, by the first pair of *pedipalpi* being

unarmed. Of this section but one species had been previously described, the *Squilla ciliata*, Fabr., (*Squilla stylifera*, Lam.), a figure of which has been engraved for the forthcoming Appendix containing the Zoology of Captain Beechey's late 'Voyage to the South Pacific,' &c. The second species was described under the name of *Squilla spinifrons;* and in illustration of the distinctions between it and the Fabrician species the following characters were read by Mr. Owen:

* *Antennæ chelis breviores.*

SQUILLA CILIATA, Fabr. *Squil. pollice tridentato; corpore suprà, præter segmentis natatoriis, lævi; rostro inermi; segmento ultimo supernè 5-carinato.*

Hab. Oahu.

** *Antennæ chelis longiores.*

SQUILLA SPINIFRONS. *Squil. pollice tridentato; corpore suprà, præter segmentis natatoriis, lævi; rostro 3-spinoso; segmento ultimo supernè 11-carinato.*

Hab. Valparaiso.

Mr. Cuming's note affixed to the latter states that it was "caught by dredging in deep water, and by the fishermen's lines."

The other new species is referable to *Gonodactylus*, Latr., and is nearly allied to *Gon. Chiragra*, Ejusd., for which the following amended character was proposed by Mr. Owen with the view of distinguishing it from *Gon. ensiger*.

GONODACTYLUS CHIRAGRA, Latr. *Gon. pollice edentato, basi extùs gibbo, intùs crenato; rostro 3-spinoso, spinâ intermediâ productâ.*

Long. 4 unc.

Hab. "in insulâ Erromanga Novarum Hebridum Oceani Pacifici, ubi in foraminibus rupium se celat," teste Dom. Georgio Bennett.

GONODACTYLUS ENSIGER. *Gon. pollice edentato, ensato, intùs acuto; rostro 3-spinoso, spinâ intermediâ obsoletâ.*

Long. 6 unc.

Hab. Valparaiso.

Color flavus; chelarum cœruleus.

Præcedenti valdè affinis, præsertim sculpturâ armaturâque segmentorum ultimorum; sed differt pollice ad basin non ventricoso, ad marginem internum non crenato; spinâ rostri mediâ non productâ; necnon magnitudine.

Mr. Cuming states that this is taken in the same manner as the *Squilla spinifrons*.

Specimens were exhibited of several *Humming Birds* from Popayan, forming part of the collection of Mr. John Gould; and the following characters, by Mr. George Loddiges, of four new species were read.

TROCHILUS TYRIANTHINUS. *Troch. capite suprà dorsoque aureo-viridibus; gulâ splendenti saturatè viridi; alis brunneo-fuscis; caudâ subrotundatâ, latissimâ, aureo-purpureâ: rostro gracili, brevissimo, recto.*

Long. *corporis*, 4 unc.; *rostri*, 4 lin.

This bird differs from all the known species by its small bill, which is much shorter than the head; and by the rich golden-purple tail composed of very broad feathers.

Trochilus eurypterus. *Troch. suprà fusco-viridis, subtùs cinereo viridique variegatus; caudâ rotundatâ, atro-aureo-viridi, rectricibus lateralibus apice cinereis; alis latissimis fusco-atris: rostro brevi, recurvato, mandibulâ inferiore albâ.*

Longitudo, $4\frac{1}{4}$ unc.

Trochilus flavescens. *Troch. aureo-viridis; capite guláque splendenti aureo-smaragdinis; caudâ subfurcatâ, albo-flavescenti, rectricibus lateralibus ad margines, mediisque totis aureo-olivaceis; alis atro-fuscis, subtùs pallidè rufescentibus: rostro mediocri, recto.*

A species resembling *Troch. rubineus*, Auct., in its size, and nearly allied to that bird. It differs, however, in the collar, which is golden green, and in the tail-feathers, which are (with the exception of the middle pair,) yellowish white.

Trochilus Gouldii. *Troch. viridis; jugulo pallidè smaragdino; caudâ longissimâ, forficatâ, rectricibus rotundatis, exterioribus $4\frac{1}{2}$ uncialibus nigris, ad apices aureo-viridibus, mediis brevibus, cæteris gradatis aureo-viridi splendentibus; alis mediocribus rotundatis: rostro parvo, recto.*

Long. *corporis*, 2 unc.; *rostri*, $3\frac{1}{4}$ lin.

The most remarkable feature in this elegant little bird is its long and luminous green tail, in the form of which and in the arrangement of the feathers it approaches the *fire-tailed Humming-Bird*, *Trochilus sparganurus*, Shaw, and likewise the *Nouna Koali* of M. Lesson's 'Supplement,' pl. 35.

Preparations were exhibited of the stomach, and of the tongue, *larynx* and *trachea* of a *Jaguar*, *Felis Onça*, Linn. They were obtained from an individual which lately died at the Society's Gardens, respecting the dissection of which Mr. Martin read, at the request of the Chairman, the following notes.

"The *Jaguar* which died a few weeks since was a full grown female, and although in height less than the *Leopard*, appeared more muscular and strongly made. The length of the body, exclusive of the tail, was 3 feet 2 inches; the tail measured 2 feet.

"The small clavicles which are found in the feline tribe in general, were in the present instance barely 2 inches in length, simply imbedded in the muscles of the chest, and without any ligamentous attachment either to the *scapulæ* or *sternum*.

"The lungs consisted of three lobes on the left side, and four on the right, of which the posterior was furnished with an appendix or process, situated in a cavity or kind of inferior *mediastinum* having its walls (which were incomplete on the right but complete on the left side,) formed by a reflexion of the *pleura* passing from the heart, the diaphragm constituting its base. This structure is, I believe, to be found in most *Mammalia*.

"The immense volume of the chest, as contrasted with that of the

abdominal cavity, was very striking, a circumstance which might be considered as furnishing an index to the habits and vital energy of this tribe of active and ferocious quadrupeds. On measuring the length of the *vena cava* in the chest, it was found to be 4 inches. The heart was of large size and rather fat; the coronary veins were found to terminate in the right auricle to the left side of the posterior *cava* at its entrance.

"The liver consisted of five lobes and a *lobulus Spigelii*. In the middle lobe, a deep fissure cut quite through its substance for the reception of the gall-bladder, the *fundus* of which appeared through the fissure on the anterior surface of the lobe. The gall-bladder was large and filled with green bile: the *ductus choledochus*, in length 3 inches, terminated an inch below the *pylorus*, and just below this again the duct of the *pancreas*.

"The *pancreas* was of considerable length, beginning about 5 inches below the stomach; passing on to the termination of the *ductus choledochus;* then leaving the *duodenum* and taking its course over the posterior surface of the *cardium*, inclining backwards and terminating at the posterior edge of the spleen. For some distance before its termination it was found enveloped in *omentum*.

"The kidneys were in length 3 inches, the *pelvis* of each large. The supra-renal glands were compressed, triangular, and hollow; their texture firm and white, not unlike condensed fibrine. The left emulgent vein received the spermatic of that side; but the right spermatic, which was much shorter, terminated in the *vena cava*.

"The stomach in shape was found to be very prolonged, lessening gradually from the cardiac portion, but rather increasing again before ending in the *pylorus*. Its length following the large curvature was 2 feet, and the small intestines measured 13 feet 10 inches. The *cæcum* extended 3 inches from the termination of the small intestines, but was smaller in its circumference than the *colon*. The large intestines measured 2½ feet.

"The tongue, flattened towards the tip and rounded there, exhibited on its surface, for a considerable distance, a grove of horny points arising from its *papillæ* and reflected backwards: these diminish in size and number as they proceed onwards, the base of the tongue becoming quite smooth.

"The distance from the base of the tongue to the *rima glottidis* measured fully 3 inches; and, as in the *Lion*, the posterior *nares* were continued on by a canal which opened upon the *rima glottidis*, a construction adapted perhaps for allowing freedom of breathing during the gorging of food, and probably of use also in giving some modification to the tone or character of voice.

"The *rugæ* of the *pharynx* were slight and transverse.

"The *os hyoides* consisted of three portions, a body and two small bones; the body forming three sides of an oblong square, the angles being rather rounded, and to these angles the two separate portions of bone, of a semilunar shape, (having the indented edge external,) were attached. The thyroid and cricoid cartilages were strong and broad.

"The *rima glottidis* presented a construction very similar to that of the *Lion*, the slit being simple with its edges considerably produced; a form occasioned by the projection of the arytenoid cartilages, which in shape were found to be somewhat triangular, one angle of each cartilage being placed anteriorly.

"The thyroid gland consisted of two compressed disjoined lobes, one on each side of the *larynx*, extending from the top of the first ring as far down as the sixth or seventh.

"The *epiglottis* was broad and acuminate.

"The *trachea* consisted of thirty-four imperfect rings, and measured fully 3 inches in circumference; the cartilaginous portion making up but about two-thirds of the circle, and being very soft and elastic. At the division of the *trachea* two large indurated glands were situated."

A preparation of the tongue, *larynx* and *trachea* of an *Ocelot*, *Felis Pardalis*, Linn., having been placed on the table for comparison with the preparation of the same parts in the *Jaguar*, Mr. Martin pointed out the difference between them. He showed that while in the *Jaguar* there intervenes between the base of the tongue and the *rima glottidis* a distance of 3 inches, in the *Ocelot* the *rima* and base of the tongue are in close proximity. In the *Ocelot* the *epiglottis* is larger in proportion than in the *Jaguar*, is not so acute, and has a slight indentation at the point: the rings of the *trachea* are also firmer and more perfect than in the *Jaguar*; and the edges of the *rima glottidis* do not protrude as in that animal and in the *Lion*. The thyroid gland is double both in the *Ocelot* and the *Jaguar*. At the commencement of the *œsophagus* the membrane is puckered up in the *Ocelot* into a number of irregular folds crossing the *striæ*, which are there very slight and longitudinal so as to form a kind of valve or obstruction: in the *Jaguar* on the contrary the *striæ* are transverse, and there are no valve-like foldings of the membrane between the *pharynx* and *œsophagus*.

The following note by A. P. Palmedo, Esq., H. M. Consul in Corsica, dated Bastia, Jan. 1832, was read. It was communicated to the Committee by Mr. Barnard.

"There had been hitherto no instance in Corsica of *Moufflons* breeding in a domesticated state, nor any of their coupling with *Sheep*, though the flocks of the latter not rarely approach the high regions of the *Mouflon*. General Merlin, the commanding officer of Corsica, has now, however, not only a young *Mouflon* born of two tame *Moufflons* in his possession, but also an offspring of the same *he-Mouflon* and of a *Ewe*."

January 24, 1832.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of various *Mammalia* and *Birds*, collected in Nepâl by B. H. Hodgson, Esq., Corr. Memb. Z. S., British Resident at Katmandoo. For this exhibition the Committee was indebted to the kindness of Dr. N. Wallich, to whom the skins had been transmitted by Mr. Hodgson.

The *Mammalia* included specimens of a new species of *Felis*, L.; of two *Antelopes*, one the *Chiru* and the other new to science; and of the wild *Dog* of Nepâl. They were accompanied by coloured figures, and, except in the instance of the latter, by accounts of the several animals from the pen of Mr. Hodgson. These accounts were read.

The new species of *Felis* is described as the *Moormi Cat*, a name derived from that of the tribe which inhabits the part of the hills in which the animal was taken. It was entirely unknown to the natives, and had consequently no local name. It may be thus characterized:

Felis Moormensis. *Fel. caudâ elongatâ; suprà saturatè badia, infrà pallidior; auribus caudæque apice nigris; mento albo; faciei lateribus vittis flavescentibus nigro marginatis tribus notatis.*

In size it is nearly intermediate between the larger and the smaller *Cats;* but is more allied in its general form, proportions, and aspect, to the former than to the latter, having in fact little resemblance to the smaller species of *Felis*, except in the shortness of its nose and the agreeable expression of its countenance.

Its body is long and compressed; its legs short and not remarkably stout. The neck is short and thick. The head is of considerable breadth and depth; its crown flattened; the nose straight, short, and abrupt; the ears short, widely opened, and well lined within, erect, rounded, and without tuft at the tip. The tail is long, rounded, well and uniformly covered with hair, and slightly tapering at its extremity.

The hinder legs are considerably longer than the anterior, and are distinguished by the true pardine length of the femoral portion; indicating, like all other parts of the form of the animal, very great agility. The jaws are very powerful, but the teeth are not remarkable for superiority of size, and the front ones may even be said to be small; they are close-set and compressed laterally except near the extremities, where the lateral compression ceases and an oblique truncation is observed both from without and within. The *moustaches* are large and very stout; the bristles above the eyes are only four or five, and are small. The expression of the face is devoid of ferocity, and agreeable, approaching to that of the *domestic Cat*.

The whole of the upper parts of the animal (except the ears, the tip of the tail, and the marks on the face,) are of a uniform deep rich brown-red or bay; the ears and tip of the tail above are black; and the marking on the face pale buff, edged with black. The under surface is generally of the same colour with the upper, but considerably paler; the neck alone being nearly as dark below as above. The insides of the fore-limbs are paler than those of the hinder, being whitish buff, and are, moreover, marked with several transverse dusky bars: the paws are dusky, freckled with grey: the upper lip pale buff with three parallel rows of black dots: the *moustaches* black at the base and whitish buff at the tip: the lower lip and chin white, as is also the inferior surface of the tip of the tail: the insides of the ears are of the same colour with the under surface generally, but paler, or buff.

The markings on the face which form so conspicuous a characteristic of the animal were particularly described. There are three principal marks on each side of the head; one above the eye and two behind the gape. Their general form is linear, and their general direction longitudinal; but the lines are not regular, neither is their direction strictly lengthwise, the two proceeding from behind the gape almost to the angle of the jaw, though in general nearly parallel to each other, tending to approximate behind; and the one above either eye being rather arched above the middle of the orbit. From the latter lines, too, two shorter lines are given off obliquely as they approach the openings of the ears. The middle and larger portion of all these marks is whitish buff; the marginal portion surrounding them entirely is black

The eyes are of a freckled greenish hue like those of the *domestic Cat*, and below them is a dash of whitish buff. The nose is fleshy white. The nails are black.

The dimensions are as follow:

	ft.	in.
Length of the body from the tip of the nose to the insertion of the tail	2	$7\frac{1}{2}$
Length of the head	0	$6\frac{1}{2}$
——— from the nape to the eyes	0	$4\frac{1}{4}$
——— eyes to the snout	0	$2\frac{1}{8}$
——— of the tail	1	7
——— fore-leg to the line of the belly	0	11
——— hinder ditto ditto	1	$1\frac{1}{2}$
Height at the shoulder	1	5
Length of the ears	0	$2\frac{1}{2}$

The only specimen of this species which Mr. Hodgson has been able to procure was a fine mature male sent to him alive, about two years back, by the Prime Minister of Nepâl: it was accompanied by an intimation that the animal presented to him was the first of the kind ever taken, the people of the country having been by its capture first apprised of its existence in Nepâl. It was caught in a tree by some hunters in the midst of an exceedingly dense forest,

situated in about the latitude of the great valley: the *habitat* of the species may therefore be presumed to be the central part of these mountains, or that portion which lies equidistant from the snows of the Himalaya and the hot plains of Hindoostan. Though only just taken when it was brought to Mr. Hodgson, it bore confinement very tranquilly, and gave evident signs of a tractable disposition and cheerful unsuspicious temper; so much so as to convince that gentleman that a judicious attempt at taming it must succeed. None such, however, was made; and when the animal, after six months confinement, died of disease, it was still, of course, unreclaimed from its wild state of manners and temper; in which state it manifested considerable ferocity and high courage, the approach to its cage of the huge *Bhoteah Dog* exciting in it symptoms of wrath only—none of fear.

In a note appended to his description of this second new species of *Felis* from Nepâl, Mr. Hodgson refers to that of the *Fel. Nepalensis* published by Messrs. Horsfield and Vigors in the 'Zoological Journal,' vol. iv. p. 383. The ground-colour of this latter animal is there described as "grey, with a very slight admixture of tawny;" whereas in five specimens possessed by Mr. Hodgson the tawny prevails over the grey to such an extent that the tawny should be regarded as the ground-colour in the mature animal of both sexes. One adult male is almost as brightly tinted as a *Leopard*: the females are paler than the males. He adds that the common species of *wild Cat* is frequently met with in Nepâl of the fullest European size, and so like to the Occidental type as not even to constitute a variety.

The new species of *Antelope* is distinguished by Mr. Hodgson as the *Bubaline Antelope*.

ANTILOPE BUBALINA. *Ant. cervice jubatâ; cornubus brevibus, conicis, recurvis, sulcatis, annulatisque; suprà nigra, ad latera saturatè fulvo intermixta.*

"This remarkable species is entirely devoid of the characteristic elegance of the genus to which it belongs. It is a large, coarse, heavy animal, with bristly thin-set hair, not unlike that of the *Buffalo*. The body is short and thick; the chest deep; the neck, short and straight; the head coarse and spiritless, though not remarkably large; the eye, poor; the limbs (for an *Antelope*) thick and short; and the hoofs short and compact. The general form, proportions and attitudes, the style and character of the ears, the hoofs, the hair, and, more especially, of the *testes* and mane, belong rather to the *Goat*- than to the *Deer*-kind. So likewise do the manners of the animal, which dispose it to solitude and to mountainous situations. It is seldom found in herds, however small; and the grown males usually live entirely alone, except during the breeding season. Of all the *Deers* or *Antelopes* of these hills it is the most common. It tenants the central region equidistant from the snows on the one hand, and the plains of India on the other; and though it be found everywhere, within that central space, between the Sut-

lege on the west, and the Teesta on the east, it is more frequent in the eastern than in the western half of the tract so defined, or in Nepâl Proper. The female is scarcely distinguishable from the male, by her somewhat inferior size, smaller horns, and rather paler colours; being, in every other respect, precisely like him.

"The mature male measures, from the tip of the nose to the end of the tail, fully 5 feet; and stands upwards of 3 feet at the shoulder. In his ordinary quiescent attitude all the four legs are perfectly upright; the back horizontal; the neck slightly raised and straight: and we look in vain for the gracefully bowed neck of the *Antelope* and *Deer*, or the taper stooping hinder limbs with which they seem ever ready to bound from the earth, upon which they scarcely appear to tread at all.

"The horns, in the fully grown male, are annulated more than two-thirds of their whole length from the base; and in such males the terminal third is perfectly smooth and polished. The rings are closely set, equally prominent all round, and blunt edged; and their continuity is broken by a numerous series of irregular longitudinal grooves running from the base upwards as far as the annulations, which they cut, and even higher. In young animals the grooving extends almost to the tips of the horns; whereas the annulation is confined nearly to their bases. The core of the horns reaches almost to their extremities. The basal interval of the horns is from $\frac{1}{3}$ths of an inch to $\frac{5}{8}$ths · the divergency at the tips, very inconsiderable: the arcuation backwards, uniform and well defined. The horns are quite round, short, (as short almost as the ears,) and acute.

"The ears are very large and coarse, erect, not much opened, the insides well lined with long soft hair, the tips rather sharp and not tufted.

"The head is (as already noted) not inelegantly large, though coarse, and expressionless; its tapering is considerable and uniform to the muzzle: the eye (for an *Antelope*) is poor and mean; the suborbital *sinuses* are quite round, small, distinct and naked; the *testes* goat-like, large, pendent, and hairy; the hoofs short, firm, and thick; the teeth devoid of peculiar characters; the hair coarse, bristly, straight, sparely set on, and closely applied to the skin; the entire dorsal surface of the neck, and half the shoulders, furnished with a semi-erect, straight mane, composed of bristles rather longer and stouter than those covering the rest of the body; in character goat- or rather hog-like; no mane on the pectoral surface of the neck, nor any semblance of beard on the chin; the tail short, narrow, and deer-like.

"With regard to the colours, there is, in this species, some little variation independent of that caused by sex and age. The following is, however, an adequate description of the mature male in this respect.

"The whole superior parts of the animal, and the neck, below as well as above, are pure black: the lateral parts are black, largely mixed with earthy brown red, but the latter colour prevails greatly

over the former on the limbs above the knees. The inferior parts, insides of the limbs, and entire legs below the knees, as well as the insides of the ears and the muzzle, are dirty white. The outsides of the ears are black, like the rest of the superior surface, but dotted with the brown-red of the flanks: the periophthalmic region nearly naked and of an earthy red mixed with grey; round the *sinuses* the same: *irides* brown-red: horns and hoofs black: naked skin of the nose, the same.

"In the female, the black of the superior parts is less full than in the male and sometimes mixed with grey. In her, too, and in the young male, the parts above described as white are sprinkled often with the red prevailing on the parts next to them: and, lastly, the belly is not immaculate white but has a black sprinkling.

"The female has four teats.

"The Nepalese call this animal the *Thâr*. The chase of it is a favourite diversion with the Gooroong tribes especially, who usually kill it with poisoned arrows. It is not speedy, as might be inferred from what has been said of its make. Its flesh is very coarse and bad: but there is plenty of it, and these mountaineers, who are apt to look to the quantity more than the quality of such flesh as a Hindoo Government deems licit food for them, prize the *Thâr* very highly, and hunt him very eagerly.

"The following are the size and dimensions of a fine mature male.

	ft.	in.
Length of the body, from the setting on of the horns to the root of the tail	4	$1\frac{1}{2}$
——— of the head	0	$11\frac{1}{2}$
——— of the tail (flesh only)	0	$3\frac{1}{4}$
——— ——— to the end of the hair	0	$6\frac{1}{2}$
Height at the shoulder	3	1
Depth of the chest	1	$3\frac{1}{2}$
Height of the fore-leg to the line of the chest	1	$9\frac{1}{2}$
Utmost girth of the head	1	9
——— of the body	3	2
Length of the ears	0	$7\frac{3}{4}$
——— of the horns (in a straight line)	0	8
Basal diameter of ditto	0	$1\frac{3}{4}$
Basal interval of ditto	0	$0\frac{5}{8}$"

Of Mr. Hodgson's account of the *Chiru Antelope*, *Antilope Hodgsonii*, Abel, a full abstract has already been published in the 'Proceedings,' Part I., p. 52. He has had opportunities of examining carefully three individuals. One of these, which he possessed alive, furnished materials for the description originally given. The second was a very old male, noticed at p. 54, in which the ruddy hue of the upper surface had merged almost into hoary grey on the neck, the back of the head, the ears, and the buttocks. In this individual the stripes extended down the whole of the legs as far as the hoofs. The third specimen, a young male or a female?, had the legs simi-

larly striped with the second; and its forehead and the fronts of its limbs were much less darkened than in either of the others.

It should be added that the fleshy tumour on the margin of the nostrils is covered with hair like the rest of the head; and that the suborbital *sinuses* appear, on closer examination, to be wanting.

In illustration of the history of the nomenclature of the species Dr. Wallich forwarded a note addressed to himself by the late Dr. Clarke Abel, in which that gentleman stated his intention of dedicating it to its discoverer, an intention which he subsequently carried into effect.

The skin of the *wild Dog* of Nepâl was compared by Col. Sykes with a specimen of the *Kolsun* of the Mahrattas, recently described by him in the 'Proceedings' (Part I., p. 100) under the name of *Canis Dukhunensis*. He stated his impression to be, that the animals are identical, differing only by the denser coat and more woolly feet of the Nepâl race, a difference readily accounted for by the greater cold of the elevated regions inhabited by it. He declined, however, pronouncing a decided opinion, which, he thought, could only be arrived at by more extensive comparison and by a full acquaintance with the habits of the *wild Dog* of Nepâl.

Among the *Birds* contained in Mr. Hodgson's collection was exhibited a specimen of the *Hæmatornis undulatus*, a species described in the First Part of the 'Proceedings' of the Committee, p. 170, and figured in Mr. Gould's 'Century of Birds.' The specimen agreed accurately with that which had been previously exhibited to the Committee except in size; the present specimen being about one third larger. From this difference in size it was conjectured to be a female. Specimens were also in the collection of the *Myophonus Temminckii*, the difference between which species and the *Myophonus flavirostris* (*metallicus*, Temm.) had been pointed out in the same Part of the 'Proceedings', p. 171. The separation of the two species was thus further justified by the accurate accordance of several specimens of the Nepâlese bird, in those characters which separated them from the Archipelagan species. A specimen of *Zoothera monticola* was also included in the exhibition, which deviated in no respect from that already described in the 'Proceedings', p. 172, and figured by Mr. Gould.

An interesting species of *Hornbill*, which had been described by Mr. Hodgson in the 'Asiatic Researches', vol. xvii. p. 178, but which had never before been seen in Europe, accompanied the former birds. Its characters are as follows:

Buceros Nepalensis, Hodgson. *Buc. ater, dorso alisque viridi-splendentibus; remigibus tertiâ ad septimam inclusam, rectricibusque ad apices albis; rostro albo, mandibulâ superiori strigis sex latis atris obliquè positis notatâ.*

Jun. *capite, collo, abdomineque rufo-brunneis; rostro albo haud notato.*

Longitudo *corporis*, 39 unc.; *rostri*, 7¼; *alæ* a carpo ad apicem remigis 5tæ, 15½; *tarsi*, 2½; *caudæ*, 17½.

Among some drawings of this species which accompanied the collection, one was observed in which the tail was elevated in the same manner, although not to the same extent, as in the *Toucans* of South America when at rest. Mr. Vigors called the attention of the Committee to this peculiarity in the *Toucans*, which he had ascertained from a living bird in his own collection, and which he described in the 'Zoological Journal', vol. ii. p. 480, pl. xv. And he dwelt on the additional proof thus afforded of affinity between these two families of the Old and New World, which are equally allied by the most important characters of their structure.

A male and female *Pheasant* were also exhibited from the collection which appeared to be the species described by Dr. Latham under the name of *Phasianus leucomelanos*, (Ind. Orn ii. 633.) Mr. Vigors pointed out the difference between this species and the *Phasianus albo-cristatus*, which he had described in the First Part of the 'Proceedings', p. 9. This difference consisted in the deep black colour of the crest in the *Phas. leucomelanos*; in the lanceolated feathers of the under part of the body extending no further than the breast; and in the plumes of the lower part of the back being doubly fasciated, by a slender violet-black band in the first instance near the *apex*, and secondly by a slender white apical band. In the *Phas. albo-cristatus*, on the contrary, the crest is white with a somewhat dusky base; the lanceolated feathers on the under body extend over the abdomen; and the feathers on the lower part of the back are fasciated with one rather broad white apical band, without any vestige of the black violet markings observed in the other species. Mr. Vigors added that these two species, together with the *Phas. lineatus* of Dr. Latham, exhibited to the Committee on the 11th Jan. of last year, and described in the 'Proceedings' of that date, p. 24, as well as the *fire-backed Pheasant*, *Phasianus ignitus*, Lath., formed a group among the *Pheasants*, which appeared intermediate between the typical birds of that family and the genus *Gallus*, or *Jungle Fowl*. This group, distinguished by their crests, and by the tail partaking equally of the elevated character of that of the *Jungle Fowl*, and the recumbent character of that of the *Pheasant*, had been set apart by MM. Temminck and Cuvier under the name of *Houppifères*, and by the former naturalist under the scientific name of *Euplocamus*.

The only species apparently undescribed in the collection was the following *Pigeon*, which Mr. Vigors expressed his pleasure in having it in his power to dedicate to the enterprising and scientific discoverer.

COLUMBA HODGSONII. *Col. capite colloque pallidè, dorso crissoque intensiùs vinaceo-griseis; alis, regione interscapulari, abdomineque vinaceo brunneis, hoc albo variegato; scapularibus albo guttatis; nuchâ vinaceo-brunneo notatâ; remigibus rectricibusque, his intensiùs, fuscis; gulâ albescenti-griseâ; pedibus saturatè cæruleis, unguibus flavis.*

Longitudo *corporis*, 15 unc.

A specimen was exhibited of the *Birgus Latro*, Leach, which had recently been presented to the Society by Mr. J. P. Vaughan; and Mr. Owen referred to the curious statement made by Herbst, that this *Crab* climbs trees for the purpose of stealing cocoa-nuts; a statement partially confirmed by the fact recorded by MM. Quoy and Gaimard, that individuals of this species were fed by them for many months on cocoa-nuts alone. A more ample confirmation, he remarked, was furnished by some observations communicated to him by Mr. Cuming, whose fine collection of *Crustacea* contained several specimens obtained in the islands of the South Pacific. "They climb," Mr. Cuming states, "a species of Palm, (*Pandanus odoratissimus*,) and eat a small kind of cocoa-nut that grows thereon. They live at the roots of trees, and not in holes in the rocks; and are a favourite food of the natives."

Mr. Owen subsequently reported the morbid appearances observed on the *post mortem* examination of the *Mandrill, Cynocephalus Maimon*, which recently died at the Society's Gardens.

The animal was convulsed at different periods before death, and was in the act of acquiring its permanent teeth,- a critical period to the *Quadrumana*, and especially to those in which the laniary teeth are large. The following was the state of its dentition. In the upper jaw, the four permanent *incisors* were acquired, or had passed through the gum; the point of the left laniary had also appeared, but the right was still concealed, though it had protruded from the jaw: both the temporary *incisors* and laniaries in this jaw had been shed. In the lower jaw, the four permanent *incisors* had also been acquired, and close to them were the temporary laniaries, not yet shed: half an inch behind these were the permanent laniaries about one third advanced through the gums, and their points worn or broken.

There existed no inflammation or disease in the brain or its membranes.

In the *abdomen* there was a slight inflammation or congestion in the first part of the small intestines. The mesenteric glands were not diseased, but a small scrofulous cyst was found in the *omentum*.

In the chest, the right lung was healthy; the left gorged with bloody *serum*, partially hepatized, and having a large scrofulous *vomica* at the lower part. The whole of this lung was firmly adherent to the *parietes* of the chest, except at the upper part; where there was more recently effused lymph. The heart and *pericardium* were firmly adherent, and there was much recently effused lymph about the great vessels. Near the base of the right ventricle and on its external surface there was a small ulcer. The kidneys were not diseased, but appeared to be unusually loaded with blood, their tubular part being of a dark venous hue. It seemed therefore probable, that on account of the impeded respiration and the checked cutaneous exhalation the actions of these glands had increased. The bladder was much distended.

February 14, 1832.

Dr. Such in the Chair.

The *Monkey* described at p. 105 of the First Part of the 'Proceedings' of the Committee, under the name of *Semnopithecus? albogularis*, having died, it was placed upon the table; and Colonel Sykes remarked that notwithstanding its large facial angle, nearly equal incisors, very small callosities, mild disposition, and gravity of manner, which had induced him to class it provisionally with the *Semnopitheci*, its more essential anatomical characters were those of the genus *Cercopithecus*. The posterior molar tooth of the lower jaw has only the four tubercles characteristic of that genus, without any prolongation backwards; and the cheek-pouches, although not very large, are distinct and capable of moderate dilatation. For these reasons, and to avoid the inconvenience resulting from the too great multiplication of genera, he preferred considering it as a species of *Cercopithecus*. The peculiarities above noticed indicate, however, a remarkable transition between the African and Indian groups of *Monkeys* in an animal believed to have been brought from an intermediate locality, the island of Madagascar. To the *Lemurine* groups hitherto supposed to be the exclusive quadrumanous inhabitants of that island, it approaches in the great development of its canines, which form fangs of a large size, and have their posterior edge acutely angular, and as sharp as that of a knife.

Its admeasurements are as follows:

	ft.	in.
Length of the head and body taken in a straight line	1	$9\frac{1}{2}$
——— the tail	2	$7\frac{1}{2}$
——— the muzzle anterior to the eyes	0	$1\frac{1}{4}$
——— the fore-leg from the axilla to the end of the longest finger	1	2
——— the hind-leg to ditto	1	6
——— the thumb of the anterior hands in its free portion	0	$0\frac{3}{4}$
Diameter of callosities when exposed by the separation of the hair	0	$1\frac{1}{2}$

The general appearance of the animal is massive and thick-set, and the limbs, especially the anterior, are strong and muscular. On the body the hairs are close-set and measure generally from 2 to 3 inches in length; they are for the most part soft and adpressed; on the fore-limbs they are more rigid, and become gradually shorter as they approach the hands.

Mr. Owen read the following notes on the Anatomy of the *Cercopithecus albogularis*, Sykes.

"The anatomical examination of this new species did not bring to light any remarkable deviations from the ordinary structure of the *Cercopitheci*; in which, as in the *Baboons*, the most interesting circumstances are those which indicate the departure from the human type and the approximation to the carnivorous genera, *e. g.* the genus *Canis*. Among these may be noticed the extension of the superior or lesser *cornua* of the *os hyoides*, and the muscles which connect them to the greater; the projecting ridge on the thyroid cartilage for the attachment of the *thyreo-hyoidei*; the bone developed at the extremity of the *penis*; the uniform character of the lining membrane of the intestinal canal; the simple *cæcum*, and its loose mode of attachment to the abdominal *parietes*; the order of origin of the large arteries from the aortic arch; the great extent of the inferior *cava* in the *thorax*; the additional lobe to the right lung; the additional lobe to the liver; and the simple composition of the kidneys. It is less necessary to notice the remarkable development of the *laniarii* in some of these species, as this circumstance, together with their projecting orbits and receding forehead, has procured for them from the most remote periods of natural history an appellation characteristic of the relation above alluded to.

"The abdominal *viscera* of this *Monkey* were enveloped in a large *omentum*, extending to the *pubes*, and, as it were, tucked in at the iliac and lumbar regions; it was streaked with fat of a bright yellow colour; the line of adhesion was to the stomach and transverse *colon*, to the ascending portion of the *colon*, and as low down as the *cæcum*. The stomach had nothing of a sacculated appearance, as found by Dr. Otto in a species of *Semnopithecus?*, but the left blind extremity was more considerable than in the *Macaci* and *Cynocephali*, the *œsophagus* entering at an equal distance from the two extremities. I have observed the same circumstance in *Cercopithecus fuliginosus*. The pyloric end lay immediately below the gall-bladder, and had in consequence a deep circumscribed yellow stain. The *duodenum* has the same short course as in the *Mandrill*, and becomes a loose intestine as soon as it has crossed the spine. The *cæcum* and ascending arch of the *colon* have an entire investment of *peritoneum*, and are consequently more loosely attached to the *parietes* of the *abdomen* than in the human subject. At the commencement of the transverse arch the *colon* is connected with the *duodenum*; it terminates in a considerable sigmoid flexion on the left side of the *abdomen*. The *cæcum* is puckered up by four longitudinal muscular bands, of which one terminates at the entry of the *ilium*, and the other three are continued on to the *colon*. The interior of the *jejunum* presented a singular appearance from numerous minute black spots, not unlike the skin of a *Sepia*; when viewed through the microscope they were found to be situated at the extremities of the *villi*, which are very minute and disposed in delicate zig-zag lines; the black points disappeared on sponging the surface three or four times. In the *omentum* was found, what rarely occurs in *Quadrumana*, viz., a cyst containing the *Cysticercus tenuicollis* of Rudolphi; differing only in its smaller size from those of the sheep and other ruminants.

"The liver was composed of four lobes; the cystic lobe, or that containing the gall-bladder, being the third from the right. The gall-bladder was of an elongated form, and the cystic duct tortuous at the commencement, as in most *Quadrumana*. The spleen was 2 inches long and broadest at the lower part.

"The *viscera* of the chest were as in the *Mandrill*.

"The *larynx* was as usual in *Cercopitheci* and *Macaci*, viz with two wide lateral *sacculi*, and a middle pouch continued forwards between the *os hyoides* and thyroid cartilage, and extending about 3 inches under the skin of the neck. The aperture by which it communicated with the *larynx* was large enough to admit the little finger. The *epiglottis* was of a rhomboid form, with two small lateral processes, and an *apex* slightly notched.

"The tongue was characterized by three fossulate *papillæ* placed in a triangle, the *apex* towards the *epiglottis*. In *Macaci* I have found four of these *papillæ* similarly disposed, the *apex* being formed by two placed close together.

"No structural disorganization was met with in this dissection. Abundance of bright yellow-coloured fat was found in different parts of the body."

A specimen was exhibited of a *Lemuridous* animal, recently presented to the Society by C. Telfair, Esq., Corr. Memb. Z. S. It was shown by Mr. Bennett to possess characters differing to so great an extent from those of the previously known genera of the family to which it belongs, as to require its separation from them as the type of a new group, to which he gave the name of

PROPITHECUS.

Rostrum mediocre.
Scelides antipedibus longiores.
Index abbreviatus.
Cauda longa, pilosa.
Dentes primores $\frac{4}{4}$: superiores coronidem versus lateraliter anticè expansi, ideoque ad coronidem approximati, subseriati; inferiores approximati, proclives, externo utrinque majore: *laniarii*, $\frac{1}{1}$, $\frac{1}{1}$: *molares* ——; superiorum priores 2 cuspidati, 3tius elongatus, externè 2-tuberculatus, 4tus præcedenti similis ——; inferiorum primus 1-cuspidatus, 2dus 3tiusque plurituberculati ——.

* PROPITHECUS DIADEMA. *Prop. dorso cinerascenti; artubus, prymnâ, caudâ, fasciâque frontali albis, illis fulvo tinctis; vertice, nuchâ, manibusque nigris.*
Hab. Madagascar.

The face is nearly naked, with short blackish hairs about the lips, and equally short yellowish white hairs in front of the eyes. Above the eyes the long, silky, waved, and thickly set hairs which cover the body commence by a band of yellowish white crossing the front and passing beneath the ears to the throat. This is succeeded by black extending over the back of the head and neck; but becoming

freely intermingled with white on the shoulders and sides, the white gradually increasing backwards so as to render the loins only slightly grizzled with black. At the root of the tail the colour is fulvous, which gradually disappears until the extreme half of the tail is white with a slight tinge of yellow. The outer side of the anterior limbs is at the upper part of the slaty grey of the sides, below which it is pale fulvous; the hands are black, with the exception of tufts of long fulvous hairs at the extremities of the thumb and fingers, extending beyond and covering the nails. The outer sides of the hinder limbs, after receiving a tinge of fulvous from the colour surrounding the root of the tail, are of a paler fulvous than the anterior limbs: this becomes much deeper on the hands, which are fulvous except on the fingers, where there is a very considerable intermixture of black, the terminal tufts, equally long with those of the anterior hands, being, as in them, fulvous. The under-surface is white throughout, with the exception of the hinder part of the throat, where it is of the same colour with the sides of the body.

The hairs are generally long, silky, waved, erect, and glossy. On the crupper they are shorter and more dense, offering a sort of woolly resistance. On the tail they have the general character of those of the body, but are considerably shorter.

On the anterior hands the thumb is slender; it is placed far back, and is extremely free; its length is 1 ¼ inch, the extremity of its penultimate *phalanx* ranging slightly beyond the end of the metacarpal bone of the *index*. The *index* is 1 ¼ inch in length; its extremity ranges with the middle of the penultimate *phalanx* of the second finger: the length of the second finger is 3 inches: that of the third finger is 3¼. The length of the *carpus* and *metacarpus* is 2 inches.

On the hinder hands the thumb is very strong, placed forwards and ranging with the fingers: it is 2 inches long: the *index* is 2½ inches, the pointed nail extending ½ an inch beyond: the length of the 2d finger is 3½: of the *tarsus* and *metatarsus* 3 inches.

The length of the body and head, measured in a straight line, is 1 foot 9 inches; of the tail, 1 foot 5 inches. The anterior limbs, exclusive of the hands, measure 7½ inches in length from the body; the posterior, 10½.

The muzzle is shorter than in the *Lemurs* generally; the distance from the anterior angle of the orbit to the tip of the nose (1¼ inch) being equal to that between the eyes.

The ears are concealed within the fur. They are of a rounded form. Their length is 1 inch; their breadth 1½.

From *Lemur*, the genus to which it most nearly approaches, *Propithecus* is essentially distinguished by the number and form of its teeth, and especially by the form of the incisors of the upper jaw, which constitute apparently a regular series, a structure unknown in any other *Lemuridous* animal. This difference, striking as it is, is however more of an apparent than a real deviation from the type of the family, inasmuch as a tendency to dilate laterally towards their cutting edges is observed in the upper incisors of *Lemur*, and it is

only the extreme development of this dilatation that gives to the teeth of *Propithecus* a peculiarity of character rather resembling at first sight that of the *Monkeys* than the *Lemurs*. The number of the incisors of the lower jaw differs from that of *Lemur*, but occurs in another genus, *Indri*: and it may be remarked, that in *Propithecus*, as in *Indri*, the canine teeth of the lower jaw close behind those of the upper,—a remark which tends to invalidate an opinion expressed by M. Geoffroy-Saint-Hilaire, that the outer of the six incisors of the lower jaw ought rather to be regarded as canine teeth, the usual position of the lower canines when the mouth is closed being anterior to the upper. The number of the false molars in *Propithecus* is one less in each jaw than in *Lemur*, and they are less smooth and not so acutely triangular; the second in the upper jaw being in fact somewhat tuberculate on its outer edge, and forming, as it were, a transition from the false to the true molars between which it is placed. The posterior molars were not examined.

The external characters by which it is distinguished from *Lemur* are its shorter muzzle, terminated by more approximate nostrils, the upper margin of which appears to be only slightly lobulated: its rounded ears: the marked disproportion in length between its hinder and anterior extremities: the greater length of its hands, especially of the anterior: the shortness of its anterior thumb, which is also placed much further back: the marked abbreviation of the anterior *index*: the development and power of the hinder thumb, which is nearly an equal opponent to the whole of the fingers: and the comparative shortness of the hairs by which the tail is covered.

Mr. Bennett concluded by expressing his regret that no particulars respecting the habits of this interesting addition to our catalogues of *Mammalia* were known to him. He trusted, however, that the zealous correspondent by whom it was presented to the Society, and to whose liberality the Society is so deeply indebted, would at an early period obtain the requisite information, by inquiries in the district of Madagascar in which it is found, and where it is stated to be rare.

Colonel Sykes took occasion to add the *Viverra Rasse*, Horsf., to his Catalogue of the *Mammalia* of Dukhun, the two specimens exhibited to the Committee, which he had hitherto regarded as varieties of the *Viv. Indica*, Geoff., having been pronounced by Dr. Horsfield to be the *Viv. Indica* and *Viv. Rasse*. The *habitat* of the former is in the woods of the western Ghauts; the latter is found in the table land eastward of the Ghauts.

Dr. Horsfield furnished the following account of the differences between the two animals. In *Viv. Rasse* the colour is grey, inclining to tawny or dark fulvous; the form is lengthened and slender; the ears are short and suddenly rounded, having somewhat the appearance of being artificially clipped off; the dorsal lines are eight in number, broad and distinct; and the lateral lines obscure, interrupted and consisting of separate spots. In *Viv. Indica* the colour is light grey inclining to yellow; the form is lengthened and slen-

der, but with the character of length of body and neck existing in a greater degree than in *Viv. Rasse;* the ears are of moderate length and suberect; the dorsal lines are narrow, the superior eight continuous; and the lateral lines resemble those on the back, and are tolerably distinct and subcontinuous. Dr. Horsfield added, that not having been acquainted with the *Viv. Indica* at the time when he wrote the account of the *Viv. Rasse* in his 'Zoological Researches in Java,' he now found it necessary to modify the specific character of the latter, which he contrasted with that of *Viv. Indica* in the following terms:

VIVERRA RASSE. *Viv. griseo-fulvescens; auriculis approximatis rotundatis subabbreviatis; dorso lineis longitudinalibus octo latis nigricantibus saturatis; lateribus utrinque lineis tribus interruptis obscuris; pedibus concoloribus fuscis; pilis corporis caudæque attenuatæ rigidiusculis.*

VIVERRA INDICA. *Viv. isabellino-grisea; auriculis erectis subelongatis; dorso lineis longitudinalibus octo angustis nigricantibus; lateribus utrinque lineis tribus subcontinuis.*

In illustration of the confusion prevailing between the two species, Dr. Horsfield referred to a note at p. 210 of M. Desmarest's 'Mammalogie', where an animal preserved in the Paris Museum under the name of *petite Civette de Java* (in all probability the *Viv. Rasse*) is suspected to be the young of *Viv. Indica;* and to Fischer's 'Synopsis Mammalium', where the name of *Viv. Indica* is accompanied by the characters of *Viv. Rasse*, as given in the 'Zoological Researches in Java', the two animals being combined. The same union of the two species occurs in M. Lesson's 'Manuel de Mammalogie'.

Mr. Owen subsequently read the following notes on a malformation of the beak of *Psittacus Erithacus*, L.

"This bird was stated to have a double beak; but the malformation consists essentially in the separation of some of the upper horny *laminæ* from the remainder of the superior mandible, leaving an interval of about 2 lines between the separated portions. The vertical diameter of the detached *laminæ* is about 2 lines, that of the remainder of the mandible at the widest part, 6 lines, which is less by 2 lines than in the natural state, and shows that the detached horn-like process is not to be considered a superaddition. This is also manifested by the form of the upper surface of the inferior portion, which, instead of being rounded and convex as in the natural state, presents a groove corresponding to the size of the detached process above. The latter, on the contrary, has a smooth convex upper surface such as the upper mandible usually presents. A further argument in favour of the above view of the subject is to be derived from the situation of the nostrils, which, supposing the two portions to belong to one mandible, is the same as in the ordinary beaks of this species; for they are placed exactly in the interval of the separated portions, and consequently about 2 lines from the upper margin of the mandible that would result from the union;

whereas if the inferior portion had represented a perfect mandible and the superior projecting process a horny excrescence, we ought to have had the nostrils situated about 2 lines lower than they actually are in the malformed specimen.

"The detached process extends nearly to the extremity of the upper mandible, but is turned a little to the right side. It appears neither to be hurtful nor inconvenient to the bird, which uses its beak in the ordinary way.

"As this process is not liable to have its growth checked by attrition, I inquired if it ever attained inordinate growth, so as to require cutting, but was told that it had never grown beyond its present size.

"The bird which exhibits this singular *lusus naturæ* is in the possession of Captain Owen, who brought it from Africa. Mrs. Owen, to whose politeness Mr. Vigors and myself are indebted for an examination of the bird, informed us that the original vendor, a negro, on being questioned, denied that any artificial means had been employed to produce the appearance. It was at that time a young bird, and is now six years old. It possesses the usual good temper and tractability of its species, which renders it such a general favourite among the negroes and so much in request in Europe.

"Although this malformation is of a simple kind, being rather *per situm mutatum*, than *per excessum*, yet there are not wanting instances of a complete and well-formed upper mandible being superadded and situated above the ordinary one, of which there is an example in the head of a *Vulture* preserved in the Museum of the Royal College of Surgeons."

At the request of the Chairman, Mr. William Daniell, R.A., exhibited numerous drawings of *Antelopes* made by his brother from living animals in his different journeys in Africa. He added, that he was induced to bring them before the Committee by his desire to publish engravings of twenty of the species under the patronage of the Society; and briefly explained the terms on which he proposed to submit them to the public, commencing the work as soon as two hundred copies shall have been subscribed for. Mr. Daniell also exhibited drawings of the male and female *fire-backed Pheasant*, (*Phasianus ignitus*, Lath.), which had been made by his brother in the native place of these birds. The male was observed to possess two elongated middle tail feathers, of a white colour with a black tip, which had never been observed in the specimens received in this country, nor noticed in the descriptions of the species, except by Dr. Latham, who referred to these drawings of Mr. Daniell. The Committee considered this fact worthy of being recorded, in order to draw the attention of the naturalists of India to the circumstance.

February 28, 1832.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of numerous *Mollusca* and *Conchifera* hitherto undescribed, which form part of the collection made by Mr. H. Cuming during a voyage undertaken in 1827, 1828, 1829, and 1830, for the purpose of obtaining subjects in natural history on the western coast of South America, its adjacent islands, and many of those which form the principal Archipelago of the South Pacific Ocean. The specimens exhibited on the present occasion constituted the first portion of the collection, which extends in these classes to upwards of four hundred new species; the whole of which Mr. Cuming proposes to bring before the Committee from time to time, as the descriptions of them are completed. The intention of publishing coloured figures of all the new species was announced.

The new species brought, on this evening, under the notice of the Committee were accompanied by characters and descriptions of them by Mr. Broderip and Mr. G. B. Sowerby, of which the following is an abstract.

Genus Chiton.

* Ligamento marginis granoso.

Chiton Goodallii. *Chit. testâ ovali, olivaceo-fuscâ; valvis terminalibus subradiatim granulosis, internè striatis; cæteris concentricè lineatis, internè medio serratis, areis lateralibus subradiatim granulosis; limbo marginali granoso, olivaceo, cæruleo-viridi vario: long. 5, lat. 3 poll.*

Hab. ad insulas Gallapagos. (James's Island.)

This fine species differs from *Chit. olivaceus* principally in the absence of longitudinal *striæ* on the central areas of the valves, the coarser texture of the grains which stud the border, and in the colour of those grains, which in *Chit. olivaceus* is a uniform shining black, while in the specimens of *Chit. Goodallii* that are not aged the grains are of an olive brown dappled or even almost transversely banded with cœrulean green, going off towards the border in some individuals into a more dusky hue. Some of the specimens of a moderate size are beautifully marked on each side of the *carina* of the seven posterior valves with short, transverse, closely zigzagged lines of a light blue colour, about six in number.

The older individuals were found in exposed situations; the younger under stones and ledges of rock at low water.—W. J. B.

Chiton Stokesii. *Chit. testâ ovatâ, viridi-fusca, intùs viridi-cæruleâ; valvâ anticâ posticæque parte posticâ granoso-rugosis, intermediarum areis lateralibus granoso-radiatis: long. 2⅓, lat. 1⅓ poll.*

Hab. ad oras Americæ Meridionalis. (Port St. Elena, west coast of Columbia and Panama.)

In boldness of sculpture this species comes nearest to *Chit. sulcatus*.

It was found on stones at low water.—W. J. B.

CHITON SUBFUSCUS. *Chit. testâ ovali, subfuscâ, pallidiore variâ, valvis terminalibus lineis subinterruptis concinnis radiatis; valvarum intermediarum areis lateralibus radiatim centralibus longitudinaliter subsulcatis; limbo granoso, granis externis majoribus: long.* 2⅝, *lat.* 1⅝ *poll.*

Hab. ad littora Americæ Meridionalis. (Island of Chiloe.)

Var. areâ intermediâ valvarum lævi, parte centrali solùm longitudinaliter subsulcatâ.

In its form and general appearance this species resembles *Chit. Goodallii*. One specimen is of a dark rusty colour with a tinge of lead gray; another is very dark chestnut brown.

It was found under stones at low water.—G. B. S.

** Ligamento marginis subgranoso, quasi velutino.

CHITON LYELLII. *Chit. testâ oblongâ, nigro, viridi, roseoque variâ; dorso elevatiusculo; valvâ anticâ radiatim subgranosâ; areis lateralibus valvarum intermediarum radiatim obsoletè granosis; limbo minutissimè subgranoso, quasi velutino: long.* 1½, *lat.* ⅝ *poll.*

Hab. in Polynesiâ. (Pitcairn's Island.)

It was found in small round hollows formed by *Echini* in exposed situations at low water mark.—G. B. S.

*** Ligamento marginis velutino.

CHITON LURIDUS. *Chit. testâ oblongâ, elevatiusculâ, cinereâ; valvâ anticâ, areis lateralibus valvarum intermediarum et valvâ posticâ scabroso-granulosis; areis centralibus valvarum intermediarum longitudinaliter sulcatis, interstitiis scabroso-granulosis: long.* 1$\frac{3}{10}$, *lat.* $\frac{9}{10}$ *poll.*

Hab. ad littora Stæ Elenæ.

This small species is remarkably scabrous all over; the scabrosity of the central area of the intermediate valves being arranged in longitudinal rows.

It was found on stones in five fathoms water.—G. B. S.

CHITON LIMACIFORMIS. *Chit. testâ elongatâ, limaciformi, variegatâ; dorso rotundato; lateribus anterioribus valvarum intermediarum emarginatis; valvâ anticâ, areis lateralibus valvarum intermediarum et posticâ parte valvæ posticæ longitudinaliter granulosis; areis centralibus longitudinaliter sulcatis: long.* 1$\frac{6}{10}$, *lat.* $\frac{9}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Inner Lobos Island in Peru, and Guacomayo in Central America.)

The intermediate valves are nearly as long as they are wide, are deeply notched on each side in front, and when viewed on the under side appear much contracted: the lateral areæ do not meet in the centre of these valves.—G. B. S.

******** Ligamento marginis coriaceo.

CHITON BLAINVILLII. *Chit. testâ subrotundâ, valvâ anticâ obscurè radiatâ, posticâ minimâ, abruptâ, cæteris concentricè lineatis, roseâ, albo, fusco, viridique variâ, internè albidâ; limbo aurantio-rubro posticè valdè angusto, anticè enormiter producto, subrotundo, processibus coriaceis brevibus hinc et hinc (præcipuè ad marginem anticum) lacinioso: long. 2, lat. 1¼ poll.*

Hab. ad oras Peruvianas. (Inner Lobos Island.)

The enormous production of the anterior part of the border gives to this species a considerable resemblance to a waterman's cap, or to an English coal-heaver's hat.

Although sought for with great perseverance by Mr. Cuming, only a few specimens adhering to a stone were obtained while dredging in seventeen fathoms water.—W. J. B.

CHITON ELENENSIS. *Chit. testâ oblongâ, pallidâ; dorso rotundato; valvâ anticâ radiatim sulcatâ; areis lateralibus valvarum intermediarum turgidis, unisulcatis; valvâ posticâ retusâ, posticè radiatim sulcatâ; areis centralibus valvarum intermediarum irregulariter sulcato-scabrosis; margine lævi: long. $\frac{6}{10}$, lat. $\frac{1}{10}$ poll.*

Hab. ad portum Stæ Elenæ et Panamæ.

This is the *Chiton Janeirensis, var.?* Gray. It is unquestionably a distinct species, as Mr. Gray hints it may be, from his *Chit. Janeirensis*.

Found under stones at low water.—G. B. S.

CHITON SWAINSONI. *Chit. testâ oblongo-ovali, dorso elevatiusculo, castaneâ, albido-lineatâ; valvis rotundatis; valvâ anticâ, areâ posticâ valvæ posticæ et areis lateralibus valvarum intermediarum leviter radiato-granulosis; areis medianis valvarum intermediarum longitudinaliter sulcatis: long. 1⅛, lat. 1 poll.*

Hab. ad oras Peruvianas. (Iquiqui and Callao.)

This species resembles in colouring *Chit. lineolatus*, Frembl, but differs materially in its sculpture.

It was found on *Mytili* and *Pectines* in nine fathoms water.—G. B. S.

CHITON CRENULATUS. *Chit. testâ oblongâ, albido-roseâ, lineis nigro-viridibus subconcentricis variâ; valvâ anticâ subgranoso-radiatâ, posticâ retusâ, cæteris granoso-subconcentricè lineatis, medio externè carinatis, internè nigro-rubris; areis lateralibus granoso-biradiatis: long. $1\frac{7}{10}$, lat. 1 poll.*

Hab. ad oras Americæ Meridionalis. (Panama.)

Found under stones below low water mark.—W. J. B.

********* Ligamento marginis setoso.

CHITON SETOSUS. *Chit. testâ oblongo-ovali, cinereo-virescente, scabrosâ; valvâ anticâ, areis lateralibus valvarum intermediarum et valvâ posticâ radiatim sulcatis; setis marginis breviusculis, confertis: long. $1\frac{3}{10}$, lat. $\frac{6}{10}$ poll.*

Hab. ad oras Americæ Centralis. (Guacomayo.)

This species is very distinct from *Chit. setiger*, King, (Zool. Journ. vol. v. p. 338,) which it in some degree resembles. The bristles around the edge are much shorter, thicker, and more closely set.

It was found in exposed situations.—G. B. S.

CHITON FREMBLEII. *Chit. testâ oblongâ, complanatâ, olivaceo-fuscâ, lineis albido-viridibus variâ; valvæ anticæ radiis elevatis subgranosis; intermediarum marginibus angulosis, areis lateralibus biradiatis, radiis subgranosis, interstitiis longitudinaliter subsulcatis; limbo setis brevibus frequentibus obsito: long.* $1\frac{1}{4}$, *lat.* 1 *poll.*

Hab. in Sinu Valparaiso.

This species differs from *Chit. setiger*, King, in being much flatter, in the more angular margins of its intermediate valves, and in its more numerous and much shorter bristles.

It was found only on one exposed rock covered by a small species of *Fucus*.—W. J. B.

****** Ligamento marginis piloso.

CHITON SCABRICULUS. *Chit. testâ ovali, planiusculâ, cinereâ, albido-variegatâ; valvâ anticâ, areis lateralibus valvarum intermediarum et parte posticâ valvæ posticæ radiatim scabroso-lineatis; valvis intermediis et parte anticâ valvæ posticæ longitudinaliter sulcatis; limbo piloso, cinereo, rufo-articulato: long.* $1\frac{1}{8}$, *lat.* $\frac{7}{8}$ *poll.*

Hab. ad littora Americæ Centralis. (Guacomayo and Puerto Portrero.)

Found under stones.—G. B. S.

******* Ligamento marginis fasciculato-piloso.

CHITON RETUSUS. *Chit. testâ oblongâ, posticè retusâ, pallescente; valvâ anticâ, areis lateralibus valvarum intermediarum et valvæ posticæ areâ posticâ turgidis, radiato-sulcatis; areis centralibus valvarum intermediarum et areâ anticâ valvæ posticæ sulcato-asperis; ligamento marginis fasciculis pilorum minimis plurimis: long.* $1\frac{1}{10}$, *lat.* $\frac{9}{20}$ *poll.*

Hab. ad oras Americæ Centralis. (Guacomayo and Puerto Portrero.)—G. B. S.

Genus PLACUNANOMIA.

Testa adhærens, subæquivalvis, irregularis, complanata, marginem versus plicata, internè vitrea. *Cardo* internus, dentibus duobus elongatis, crassis, subcurvis, divaricatis, basi convergentibus in valvâ inferiore, sulcis duobus ligamentiferis in superiore. *Valva inferior* cardinem versus superficialiter irregulariter externè fissurata, organo adhæsionis subosseo inter testæ laminas inserto et externè fissuram implente. *Impressio muscularis* in utrâque valvâ subcentralis. In valvâ superiore organi adhæsionis impressio superaddita.

This interesting genus partakes of the characters of the genera *Ostrea, Plicatula, Placuna,* and *Anomia*. It may be regarded as the connecting link between the two latter. With an arrangement of the hinge approaching very nearly to that of *Placuna*, it has the distinguishing organization of *Anomia*, while the external appearance of the shell, especially if viewed *in situ*, bears the strongest resemblance to a *Plicatula* or some of the plicated *Oysters*. The organ of adhesion, which in its bony character (for it is more bony

than shelly) resembles that of *Anomia*, does not perforate the lower valve directly, but is inserted between the *laminæ* of the internal surface of the lower valve above the muscular impression and below the hinge, and passes out into an external irregular somewhat longitudinal superficial fissure or *cicatrix*, which is narrowest at the hinge margin, and which it entirely fills to a level with the surrounding surface of the shell.

PLACUNANOMIA CUMINGII. *Plac. testâ subrotundatâ, obscurè argenteo-albidâ, complanatâ; margine plicato, plicis maximis: long.* 2½, *lat.* $\frac{7}{10}$, *alt.* 2¼ *poll.*

Hab. ad oras Americæ Centralis. (Gulf of Dulce, Province of Costa Rico.)

Dredged from a muddy bottom, at a depth of eleven fathoms, attached to dead bivalve shells and dead coral.—W. J. B.

Genus DENTALIUM.

DENTALIUM SPLENDIDUM. *Dent. testâ tenui, politâ, basi carnea, apice majori lacteâ; aperturâ posticâ fissuris duabus, alterâ dorsali, alterâ ventrali: long.* $1\frac{8}{10}$, *lat.* $\frac{1}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Xipixapi, West Columbia.)

Dredged in from ten to sixteen fathoms water, on a sandy muddy bottom.—G. B. S.

DENTALIUM TESSERAGONUM. *Dent. testâ tenui, lacteâ, lævi, primùm tetragonâ, ob angulos evanescentes dein cylindricâ; lineis incrementi tenuissimis annulos subhyalinos efformantibus: long.* $1\frac{6}{10}$, *lat.* $\frac{1}{10}$ *poll.*

Hab. ad oras Americæ Centralis. (Gulf of Nocoiyo and Puerto Portrero; also Xipixapi.)

Var. angulis indistinctis; lineis incrementi annulos efformantibus.

Obtained in the same manner as the preceding species.—G. B. S.

DENTALIUM QUADRANGULARE. *Dent. testâ parvulâ, albâ, quadrangulari, angulis acutiusculis, interstitiis striatis; aperturâ tetragonâ: long.* $\frac{8}{10}$, *lat.* $\frac{2}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Xipixapi.)

The colour of this shell is variable, being either milk-white, yellowish, or reddish; the angles are less acute at the larger end; and at the smaller end there is sometimes formed a tubular appendage.—G. B. S.

DENTALIUM PERPUSILLUM. *Dent. testâ minimâ, tenui, angustâ, curvâ, politâ, albâ; apice acuto; aperturâ coarctatâ, obliquâ: long.* $\frac{3}{10}$, *lat.* $\frac{1}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Puerto Salango, West Columbia.)

This is related to *Dent. Gadus*, but is much more slender, and the aperture is obliquely truncated from the dorsal to the ventral margin.—G. B. S.

Genus HELIX.

HELIX MONILE. *Hel. testâ globosâ, turgido-planâ, translucidâ, corneâ, supernè maculis strigisque angulatis moniliformibus ornatâ; spirâ excavatâ; umbilico magno: long.* $\frac{2}{10}$, *lat.* 1 *poll.*

Hab. in Columbiâ. (Salango.)

This pretty species belongs to that group of *Helices* which so much resemble *Planorbis*.—W. J. B.

Genus Carocolla.

Carocolla globosa. *Car. testâ orbiculatâ, subcastaneâ, infrà turgidâ, anfractu basali subangulato, scabriusculo; labro unidentato, reflexo, albo, dente magno; aperturâ fusco-castaneâ, umbilico mediocri: long.* $\frac{1}{3}$, *lat.* $2\frac{1}{4}$ *poll.*

Hab. in sylvis Insulæ Tumaco, Columbiæ Occidentalis.

An obscure band runs round the angle of the basal whorl. Exposure to the weather causes the chestnut colour of the shell to acquire somewhat of a blueish cast.—W. J. B.

Carocolla quadridentata. *Car. testâ orbiculatâ, fusc l, anfractu basali turgido, angulato, scabro; labro subreflexo, albo, intùs tridentato; aperturâ fuscâ, dente albo falcato armatâ; umbilico magno: long.* $\frac{1}{3}$, *lat.* $\frac{1}{4}$ *poll.*

Hab. in sylvis Americæ Centralis. (Woods near the Gulf of Dulce.)

This species approaches nearly to *Car. Labyrinthus:* the white elevated tridentated lip is continued round the aperture: the single white falcated tooth is not attached to the lip, but rises within it from the lower surface of the basal whorl.—W. J. B.

Genus Bulinus.

* Labio externo tenui, acuto.

Bulinus Broderipii. *Bul. testâ ovato-pyramidali, tenui, albicante, nigro fulvoque elegantissimè maculatâ et variegatâ; anfractibus quinque, rapidè crescentibus, paullulùm ventricosis; suturâ subconfluenti; superficie granulis minimis, longitudinaliter seriatim dispositis: long.* $1\frac{1}{3}$, *lat.* $1\frac{1}{4}$ *poll.*

Hab. in fissuris rupium prope Copiapo Chilensium.

Var. testâ nanâ, albicante-rosaceâ, lævìore, maculis nigris majoribus et seriatim dispositis.

Hab. in fissuris rupium prope Iquiqui, in Peruviâ.

The dwarf variety was found at an elevation of 2500 feet above the level of the sea.—G. B. S.

Bulinus Coturnix. *Bul. testâ globoso-pyramidali, anfractibus quatuor ad quinque, ventricosis, albicantibus, fusco maculatis et variegatis; suturâ distinctâ; superficie tenuissimè transversim striatâ; umbilico parvo: long.* $1\frac{1}{4}$, *lat.* $\frac{7}{8}$ *poll.*

Hab. sub lapides in aridis apud Huasco Chilensium.

From the preceding species the present is easily distinguished by its more globular form and the possession of an *umbilicus*.—G. B. S.

Bulinus Coquimbensis. *Bul. testâ levi, ovato-fusiformi, fragili, subdiaphanâ, albido-fuscâ, maculis strigisque nigro-fuscis sparsâ; anfractibus sex, longitudinaliter striatis, ultimo maximo; labro acuto: long.* $1\frac{9}{10}$, *lat.* $\frac{9}{10}$ *poll.*

Hab. ad Coquimbo in montibus.

The body whorl is more than twice as long as all the rest together.—W. J. B.

BULINUS GRANULOSUS. *Bul. testâ ovato-pyramidali, subpellucidâ, fuscâ, strigis fasciisque interruptis castaneo-nigris variâ; anfractibus sex granulosis; labro acuto: long.* $1\frac{7}{10}$, *lat.* $\frac{9}{10}$ *poll.*

Hab. subterraneus ad Valparaiso et in montibus Conceptionis.—W. J. B.

BULINUS CACTIVORUS. *Bul. testâ fusiformi-pyramidali, albidâ, subpellucidâ, opalescente; anfractibus sex, subventricosis, longitudinaliter creberrimè elevato-striatis; spiræ apice subnigro: long.* $\frac{7}{8}$, *lat.* $\frac{4}{8}$ *poll.*

Hab. ad montem Christe in Columbiâ.—W. J. B.

BULINUS NITIDUS. *Bul. testâ fusiformi, subpellucidâ, nitidè albidâ, strigis frequentibus longitudinalibus castaneo-fuscis variâ; anfractibus sex, longitudinaliter striatis; apice subnigro; labro acuto: long.* $1\frac{1}{4}$, *lat.* $\frac{5}{8}$ *poll.*

Hab. in Peruviâ. (Tumbez.)

This species has somewhat of the opalescent character of the preceding. In some of the old specimens there is a small blunt tooth on the inner surface of the body whorl within the aperture and just above the *columella;* but this is by no means a constant character.—W. J. B.

BULINUS TRANSLUCENS. *Bul. testâ oblongo-pyramidali, levissimè transversim striatâ, pallidè flavâ, valdè pellucidâ; anfractibus quinque, subventricosis: long.* $\frac{7}{8}$, *lat.* $\frac{4}{8}$ *poll.*

Hab. in Americâ Meridionali, arboribus adhærens. (King's and Saboga Islands, Bay of Panama.)

This elegant *Bulinus*, when in fine preservation, is so translucent that the internal pillar and structure of the shell may be plainly viewed through its glassy surface. Like many other transparent shells, this species, when it has been long weathered or dead, becomes of a white hue and much more opaque.—W. J. B.

BULINUS GUTTATUS. *Bul. testâ fusiformi, pellucidè fuscâ, guttis lineisque longitudinalibus albis variâ; anfractibus sex; apice papillari et quasi elephantino: long.* $\frac{7}{8}$, *lat.* $\frac{4}{8}$ *poll.*

Hab. in Peruviâ. (Cobija or Puerto De la Mar.)

The termination of the spire in this pretty and transparent species is somewhat abrupt, and the ivory-looking *apex* is almost as papillary, and appears almost as opaque, as that of a *Turbinella.*—W. J. B.

BULINUS VITTATUS. *Bul. testâ pyramidali, albidâ, subdiaphanâ, vittis latis fuscis circumdatâ, anfractibus septem, turgidis, longitudinaliter levissimè striatis; labro acuto; umbilico mediocri; aperturâ carneâ: long.* $1\frac{1}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. in Peruviâ. (Ilo.)—W. J. B.

BULINUS SCALARIFORMIS. *Bul. testâ pyramidali, subfuscâ, anfractibus quinque, subturgidis, creberrimè longitudinaliter costatis; labro acuto; umbilico magno: long.* $\frac{1}{10}$, *lat.* $\frac{1}{10}$ *poll.*

Hab. in Peruviâ. (Ancon.)

Var. testâ fuscâ, fasciis et lineis transversis albis.—W. J. B.

Genus Partula.

Partula hyalina. *Part. testâ oblongâ, hyalinâ, anfractibus sex, longitudinaliter levissimè striatis et transversim minutissimè creberrimèque lineatis; labro albo: long.* $\frac{9}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. in Polynesiâ. (Oheataroa.)

The sculpture of this elegant species is most minutely delicate. —W. J. B.

Genus Achatina.

Achatina Dactylus. *Ach. testâ fusiformi, subpellucidâ, flavescente, strigis rubro-castaneis longitudinalibus raris; anfractibus septem, striis longitudinalibus minutissimè crenulatis crebris, et suturam versus crenulatam lineis circiter sex transversis. long.* $2\frac{1}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. in Insulâ Tumaco.

The body whorl is large and long, and the upper whorls decrease rapidly. The sculpture, especially when viewed through a microscope, is most elaborate.—W. J. B.

Genus Cyclostoma.

Cyclostoma Cumingii. *Cycl. testâ orbiculari, subdepressâ, albicante, epidermide fuscâ; spirâ elevatiusculâ, carneâ; anfractibus quinque vel sex, rotundatis, spiraliter sulcatis; suturâ subdecurrente; aperturâ ferè circulari, obliquâ, albâ, supernè subacuminatâ, peritremate simplici subincrassato; umbilico maximo; operculo corneo, tenui, spirali, anfractibus plurimis, margine fimbriato: long.* $1\frac{1}{10}$, *lat.* 2 *poll.*

Hab. in Americâ Meridionali. (Island of Tumaco.)

The *epidermis* appears to be very deciduous, and is much thinner on the lower parts of the shell than on the upper, its remains forming a broad, dark, fuscous band just below the suture.—G. B. S.

Cyclostoma succineum. *Cycl. testâ parvâ, orbiculato-pyramidali, lævi, succineâ; anfractibus quinque, rotundatis; suturâ distinctâ; aperturâ rotundatâ, margine basali internâ angulatâ; peritremate tenui, acuto; umbilico parvo, margine carinato: long.* $\frac{9}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. in Polynesiâ. (Opara.)—G. B. S.

Cyclostoma minutissimum. *Cycl. testâ globoso-pyramidali, fulvâ, apice nigro; anfractibus tribus rotundatis; suturâ profundâ; aperturâ circulari; peritremate acuto; umbilico nullo; operculo corneo.*

Hab. in Insulâ Pitcairni.

This is the smallest species of the genus.

Genus Fasciolaria.

Fasciolaria granosa. *Fasc. testâ fusiformi, tuberculiferâ, luteo-albidâ, transversim striatâ; anfractibus suturam versus subangulatis, duobus ultimis præcipuè tuberculiferis, tuberculis magnis, distantibus; columellâ luteâ triplicatâ; aperturâ transversim*

striatâ, albidâ, marginem versus sublutcâ; labro denticulato; epidermide fuscâ, granosâ: long. 4½, *lat.* 1⅞ *poll.*

Hab. ad Panamam.

The shell at first sight resembles *Pyrula Vespertilio*, but differs from it in many other points (such as the mamillary termination of the spire) besides the generic character of plaits on the pillar.

It was found on mud banks.—W. J .B.

Genus Voluta.

Voluta Cumingii. *Vol. testâ ovato-pyramidali, albidâ, cæruleo-spadiceo nebulosâ, suturas versus nigro-spadiceo vittatâ; spirâ elongatâ, apice acuto; anfractibus nodosis, ultimo subcostato, costis tumidis, fasciâ subcentrali pallidâ latâ cincto; labro tumido subcontracto subreflexo, acuto, varice interno obliquo, submedio; columellâ obscurè multiplicatâ, plicis tribus ultimis maximis: long.* 1¼, *lat.* ⅝ *poll.*

Hab. in Americâ Centrali. (Gulf of Fonseca, province of San Salvador.)

This pretty species is one of the group which approaches so closely to the *Mitres*. In some, as in *Vol. lyriformis*, we have a general likeness; in others similitude of particular parts of the shell; and in *Vol. Cumingii* we have general similarity combined with the strictly acuminated spire of a *Mitra* joined to the arrangement of plaits on the pillar by which *Voluta* is distinguished from that genus.

A single specimen was dredged in nine fathoms water.—W.J.B.

A paper was read by Mr. Cox, in which he entered at some length into the consideration of atmospheric causes as influencing the health of exotic animals kept in confinement in this climate.

He commenced by reminding the Committee of the power possessed by man of supporting extreme vicissitudes of temperature even to the extent of from —40° to 270° or 280° Fahr., and by observing that no other animal can bear such a range with impunity. Thus a *Leopard* has been killed by exposure to a degree of cold but little below 32°; while on the other hand the *Esquimaux Dog* is incapable of bearing, without great inconvenience, the heat of our climate in summer.

The cause of the generation of heat in animals remains still to be ascertained. The chemical theory ingeniously propounded by Crawford is now perhaps generally regarded as unsatisfactory; and indeed the later experiments of Dulong seem almost conclusive of its inadequacy to explain the phænomena. The experiments of Mr. Brodie have fully proved that the nervous influence is necessary for the preservation of the animal temperature: and Dr. Wilson Philip, regarding the nervous influence as identical with galvanism, has shown that galvanism and electricity are both capable of sustaining for some time the temperature of a cup of blood. This, however, as Mr. Cox remarks, only proves that the stimulus employed by Dr. Philip will for a short time produce phænomena similar to vital action, but by no means

proves the identity of that stimulus with the one which forms so important a part of the animal economy; an observation further illustrated by the fact that a purely mechanical stimulus, such as the application of a needle, will excite muscular action after life has ceased. If moreover temperature, arterialization, digestion, &c., were all produced by electric agency, this would surely be manifested by delicate instruments; but no such manifestation is obtained. Still further, it is worthy of observation that in those animals (such as the *Gymnotus electricus* and the *Torpedos*) which are endowed with electric power, a peculiar apparatus exists for the development of such power. On the whole, indeed, it appears that modern physiologists have scarcely advanced in the explanation of the causes of animal temperature beyond that given by John Hunter, who says, "It is most probable that it arises from some other principle; a principle so connected with life, that it can, and does, act independently of sensation, circulation, and volition; and is that power which preserves and regulates the internal machine. This power of generating heat is in the highest perfection when the body is in health;" and the energy of the vital principle is, in fact, the scale by which we can estimate the power of the body to sustain its temperature.

There are many circumstances which modify the effects of temperature upon animals and render them more susceptible of a low temperature. Such are want of exercise, inappropriate food, impure atmosphere, exhaustion whether from fatigue or hunger, immature age, season, and the quality of the air as to humidity or dryness. These were severally considered.

The excitement produced by exercise, the activity imparted by it to the circulation, and the glow which it gives to the system, all tend to render an animal less susceptible to the effect of a low temperature. Dens therefore in which animals are kept should be of sufficient size to allow of the taking of free exercise. Its importance is strongly illustrated by the fact that in very cold or elevated situations cessation of motion is destruction, well known instances of which are the cases of Sir Joseph Banks and Dr. Solander, and of Dr. Richardson.

The quality of the food is of the greatest importance, and should be regulated as nearly as possible in accordance with the habits of the animals in a state of nature. This subject requires therefore extensive inquiry and observation. There is, however, one part of it which is deserving of particular notice as connected with climate. In the quality of his nourishment man is guided by the climate in which he lives. The Esquimaux adopts a food entirely animal. The Hindoo uses a diet solely vegetable, employing condiments only to counteract the flatulency which such food is likely to produce. The inhabitants of northern countries take, and without material injury, stimulating liquors;—the use of such beverages is borne very badly by the natives of India. In cold and elevated regions stimulating diet appears therefore to be indicated, and it seems consequently advisable to furnish such, including even spirits or fermented liquors, to tropical animals kept in our climate during the cold season.

Air vitiated by respiration is deprived of the requisite stimulus to

support the due arterialization of the blood; and hence animals confined in such air are in a state peculiarly liable to be affected by any great or unusual depression of temperature. It is probably on account of their breathing air much contaminated by carbonic acid gas that persons sleeping near limekilns are so frequently frost-bitten. In repositories for animals which are much frequented the air is vitiated by the respiration of the visitors also, who, moreover, impart a heat to the rooms which is indicated by the thermometer, but is not beneficial but noxious to the animals. The air should be continually renewed, and when its temperature is to be raised it should be heated, where practicable, by a furnace placed in a lower apartment previously to being admitted into the repository, from which ample exit should be allowed at the top: in this manner an effective ventilation on just and scientific principles would be established.

Exhaustion from fatigue is one of the causes which render persons ascending heights more susceptible to the impression of cold: exhaustion from hunger produces the same effect: Mr. Hunter has shown that an animal which had fasted for some time was more affected by cold than one that was well fed, the reduction of temperature in the latter being 16° and 18°, in the former 18° and 21°. The means of counteracting these effects in menageries are obvious; but it is particularly necessary to attend to them in the importation of tropical animals, so many of which perish in beating up Channel, the effect of the low temperature being increased by the exhaustion from the fatigue of the voyage. Hence in the Channel not only should cold be particularly guarded against, but additional food should be supplied.

Young animals are generally very susceptible of the effects of cold, as has been shown by the experiments of M. Edwards. Thus, young birds removed from the nest become quickly of the same temperature as the surrounding atmosphere. The young of those *Mammalia* which are born blind are equally obnoxious to cold, their blood being imperfectly arterialized, owing to the *foramen ovale* remaining open for some time; the young of the other *Mammalia* retain the temperature of the adult animal. This makes it very important that if any of the *feline* or similar races of animals breed in European menageries, their dens should be peculiarly warm: the probability of preserving them will also of course be considerably increased if the young are produced in summer, or even in spring.

Season, as has been shown by the experiments of M. Edwards, exercises a considerable influence on the susceptibility of animals for cold; a much greater degree being borne with impunity in winter than in summer. This is apparently analogous to what occurs in the vegetable kingdom: a tree which will bear in winter a temperature of —20° without injury will be scathed as if by lightning, and perhaps die, if in summer it be exposed to 32° or 30°. Many animals, in captivity especially (the *Sylviadæ* as a familiar instance,) are as susceptible of cold as these trees; a draft of cold air or a frosty night will frequently produce on them effects from which they never recover. As this susceptibility is so considerably increased during summer, especial care should be

taken to guard against the vicissitudes which frequently occur at that season. Animals brought from warm climates to those which are colder suffer under the same evils as animals exposed in summer to a considerable reduction of temperature. Tropical animals should therefore on their first importation be placed in apartments of higher temperature, which may be gradually reduced to that usually maintained in the part of the menagerie appropriated to similar animals.

The state of the atmosphere as regards humidity and dryness is of the highest importance to health. A very humid atmosphere does not exist at a temperature much below 40°, for when there is any great degree of frost the moisture is precipitated; but a temperature of 40° when the air is saturated with damp is highly injurious, producing catarrhs and coughs, which are frequently cured by a sharp frost. Our insular situation may expose us especially to humidity, which has a bad effect, on vegetation at least, by intercepting light. The degree of luminousness in the atmosphere is probably of more importance in climate than is generally imagined. Between Havre de Grace and Portsmouth it is but eleven hours sail, yet there is evidently the difference of a complete climate in the productions of the soil and in animal life; the pomegranate and the vine growing in the former place with luxuriance and fertility, and many insects which are here scarce, occurring there in the utmost profusion. The cold and humid atmosphere prevalent during our winters, and commonly called raw cold, is highly prejudicial to animals; and its evil effects are so much the more rapidly produced, as by the deposition of the moisture on the covering of the animal, the wetted fur or wool (as occurred in an experiment made by John Hunter on the freezing of a *Dormouse*) is changed from the state of a bad to that of a good conductor of heat. During the continuance of such a state of atmosphere the apartments of the animals should be kept closed, and only so far opened as may be necessary for ventilation. Much of the humidity might be abstracted from the air by means of lime, or perhaps still more effectually, as suggested by Leslie, by dry vegetable mould.

Extreme dryness of the atmosphere combined with cold is equally prejudicial, as was proved by M. Edwards, with the combination of cold and moisture; the latter causing mischief by the degree of cold it produced, and the former by the increased transpiration which it excited from the mucous surfaces. During March and April especially this dry and cold state of the atmosphere prevails in England with winds from the N. and N.E.; and Mr. Daniell states that he has seen the dew point of his hygrometer at 20° to 30° below the temperature of the atmosphere, evidencing a degree of dryness scarcely surpassed by that of the Harmattan. This state of atmosphere is almost diametrically opposed to that of tropical climates generally; a remarkable instance of which is afforded by the observations of Captain Sabine in Africa, where the dew point was almost at full saturation. It must consequently, though highly injurious to all animals, be more particularly so to those brought from tropical regions. Its effect is to produce inflammation of the mucous surfaces,

croup, bronchitis, &c.; and it is well worthy of consideration whether inflammatory affections of the respiratory organs arising from such a cause would not be materially benefited by saturating with moisture the air of the apartments inhabited. Evaporation should during its continuance be promoted in menageries, either by placing wet cloths over the pipes employed for heating them, or by means of a fountain, or by exposing in different parts of the rooms vessels containing water.

In the preceding observations the preservation of animals brought from tropical climates has been chiefly considered; but the keeping of those which are obtained from the northern or more elevated regions is apparently even more difficult.

The *Rein-deer* and the *Chamois* scarcely ever continue to live during even a moderate period in our climate, the differences between which and that of the countries of extreme cold are worthy of especial consideration. One of these is the heaviness of our atmosphere, as compared with the highly rarefied state in which it exists in elevated regions; a difference so great as to increase the pressure of the air on the human body to the extent of 5500 lbs. beyond that which it sustains at an elevation of 1200 toises. To obviate this, no suggestion can be advanced. Another marked distinction is the extreme humidity of England during the winter months, a state highly detrimental to life in beings adapted to a dry atmosphere; for a frosty atmosphere is (as has been before remarked) necessarily a dry one, and at a temperature of -20° it is absolutely dry. The effect on animals of so great a contrast may receive some illustration from the evils resulting from moisture to the plants of cold regions: Auriculas die unless the moisture is drained from the pots in which they are kept; and the *Saxifraga oppositifolia*, and *Rubus arcticus*, plants which inhabit the extreme north, rot from the dampness of our atmosphere. Its effects upon arctic animals may, however, be guarded against by the precautions already suggested as adapted to preserve tropical animals from the influence of the raw cold of our climate.

The greater part of the animals of northern regions, excepting those which hibernate, migrate to more southern latitudes, where food is more abundant and the cold less severe. Those which remain are generally predaceous, and being reduced to the greatest necessity, are voracious in the extreme. It is therefore a question whether in our attempts to keep such animals they should not be placed on a very low diet. This is also indicated by the fact that animals of cold countries are less acted upon by cold than those of warmer climates; they approach apparently somewhat to the state of the cold-blooded classes, and it is therefore probable that it would be improper to exhaust their irritability by stimulating them at a period when nature has provided that they should be in a state of subaction. Hibernation is the extreme of this state. It is a great resource established by nature to obviate the evils of low temperature and privation. In this condition the quadruped sinks to a state resembling that of a reptile, its temperature scarcely exceeding that of the immediately surrounding air, a state of existence which has been beautifully con-

trasted by M. Edwards with the summer condition of the same animal. Mr. Cox adverted particularly to the more remarkable phænomena of hibernation, which, he stated, were now undergoing the investigation of Dr. Marshall Hall, who was about to lay the result of his experiments on this subject before the Royal Society.

Mr. Cox then proceeded to recapitulate the practical remarks which had resulted from his previous observations, and which in the present abstract have been embodied with them. He afterwards entered into the consideration of temperature, and dwelt particularly on the importance of maintaining it at a sufficiently high degree in all collections of tropical animals. On the question as to the degree which might safely be regarded as sufficient, he remarked that if analogies drawn from the vegetable kingdom could be depended on, reference might be made to a temperature of from 50° to 90°, being that of the noble Palm-house of Messrs. Loddiges, in which those natives of tropical climates flourish admirably. But it is evident from experience that 50° will be sufficient to keep tropical animals alive in this climate, and a temperature of from 50° to 55° will preserve them in health and activity. To induce them to breed with us, that temperature will not be high enough, for an emasculating effect, as has been observed by Mr. Yarrell in the *Peccary* and other animals, is produced by a cold climate: the few instances in which some of the *Felis* tribe have been fruitful in this country, being only to be regarded as exceptions. To develope the organs of reproduction in plants, a higher degree of temperature than that suited for their mere preservation is required; this rule may be equally applicable to animals, and the temperature of repositories for those of tropical climates should therefore probably be allowed to alternate between 55° and 70°. Mr. Cox repeated his opinion that sufficient humidity should at the same time be provided.

Mr. Cox concluded by stating that he had long been of opinion that the best test for the proper state of the atmosphere in a menagerie is vegetation. If the plants of a tropical or warm latitude thrive, he conceives that the temperature and state of atmosphere (for it is not temperature alone which we have to regard, but the other qualities of the atmosphere also, moisture, elasticity, &c.) cannot be far removed from those required for animals of the same latitudes. He assumes that a perfect *Vivarium* should include within its area a conservatory containing plants, natives of countries of a character similar to that of the animals inclosed. No apprehension need, he thinks, be entertained of plants contaminating the air to any injurious degree, if proper ventilation were established, and abundance of fresh unrespired air were supplied: the contrary would in fact be frequently the case during the day-time, the experiments of Priestley having shown that the purity of air vitiated by the breathing of animals is restored by the growth of living and healthy vegetables freely exposed to the solar light.

March 13, 1832.

Richard Owen, Esq., in the Chair.

Mr. Gray described three new animals, brought from New Holland by Mr. Cunningham. Of these, one was a *Quadruped*, forming a new genus of the Order *Rodentia*; the two others *Reptiles* of the family of *Lizards*. The *quadruped* was characterized as follows:

PSEUDOMYS.

Dentes primores $\frac{2}{2}$, superiores anticè rotundati læves, inferiores subulati: *molares* $\frac{4}{4}$, $\frac{4}{4}$ radicati; superiores oblongi, primus major elongatus extùs uni-plicatus; inferiorum primus compressiusculus secundo duplò longior, postremus parvus oblongus extùs plicatus.

Caput magnum. *Aures* majusculæ nudiusculæ. *Artus* subæquales, digitis 5, 5, longis liberis compressis, unguibus parvis curvatis. *Cauda* filiformis subannulata pilis brevibus setosis vestita.

The general appearance of this animal agrees with that of the *Water-Rats*; but the teeth are simple, and approach in character, as they correspond in number with, those of the true *Rats*. They differ, however, in the adult animal (the only state in which Mr. Gray had an opportunity of observing them,) in the front grinders of the lower jaw being much more compressed and elongated; and in the front grinder of the upper jaw and the hinder one of the lower having each a fold on the outer edge, and a corresponding ridge across the outer surface of the crown. The skull appears, judging from its remains, which were exhibited to the Committee, to bear a close resemblance in shape to that of the *Rat*. On the fore feet the thumb is short, almost rudimentary, and furnished with a claw; the second and third toes are nearly equal, and longer than the first and fourth, of which the latter is rather the shortest. On the hind feet the thumb is short and slender, the second, third, and fourth toes are nearly equal, and the fifth is shorter, and placed higher. The following is the specific character of the animal:

PSEUDOMYS AUSTRALIS. *Pseud. nigrescenti-brunneus cinerascente interstinctus, infrà cinereo-rufescens; collo pectoreque cinerascentibus.*

Hab. in Novâ Hollandiâ Orientali extratropicâ.

The fur is soft, close, thick, blackish brown, and slightly grizzled at the tips of the hairs; beneath, it is of a reddish ash; and on the throat and breast grayish ash. The whiskers are slender, weak, and reach beyond the ears. The head and body measure 5¼ inches; the tail 3¼; the fore foot 5½ lines; and the hind foot 1 inch.

Mr. Cunningham states that the animal inhabits holes in swampy sandy grounds on the south-west or lower side of Liverpool Plains in New Holland.

One of the *Lizards* was also regarded by Mr. Gray as forming a new genus in the family of *Geckos*, which he characterized as follows, under the name of

DIPLODACTYLUS.

Squamæ subconformes, minutæ, læves, abdominales paulò majores, caudales majores annulatæ, labiales mediocres distinctæ, tribus anterioribus utrinque multò majoribus, gulares nullæ. *Cauda* cylindrica, ventricosa. *Digiti* 5, 5, simplices, subæquales, subcylindrici, apicibus subdilatatis, subtùs bifidis, discis duobus carnosis lævibus ovalibus obliquis; unguibus 5, 5, parvis, maximè retractilibus. *Pori femorales* nulli.

This genus differs from *Phyllodactylus*, Gray, in the under sides of the tips of the toes being furnished with two rather large oblong tubercles, which are truncated at the tip, and form two oval disks placed obliquely, one on each side of the claw, instead of having, as in *Phyllodactylus*, two membranaceous scales. The scales of the body are also uniform, while in that genus there is a series of larger scales extending along the back. The species, a drawing of which was exhibited, was named

DIPLODACTYLUS VITTATUS. *Dipl. fuscus, vittâ dorsali longitunali latâ saturatiore; lateribus testaceis, artubus, caudâque maculis seriatis flavis marginatis.*

Hab. in Novâ Hollandiâ.

The length of the head and body is 2 inches; that of the tail $1\frac{1}{4}$ inch. On each side of the body there are two rows of rather distant small spots, which become larger on the upper surface of the tail; they are scattered on the limbs.

The other *Reptile* described was a species of *Tiliqua*, the

TILIQUA CUNNINGHAMI. *Til. squamis superioribus carinato-spinosis, carinis seriatis.*

Hab. in Novâ Hollandiâ Orientali extratropicâ.

This species is very distinct from all the rest of its genus, and even of its family, on account of its carinated scales, which are sufficiently prominent on the back and sides, but become more so on the limbs, and still larger in size, although their series decrease in number, as they approach the extremity of the tail. The colour is pale brown, dotted with yellow above, and paler beneath, with obscure darker spots. The head and body measure 8, and the tail 7, making a total length of 15 inches.

Mr. Cunningham found this *Lizard* in a torpid state in a barren sandy part of the scrubby country in lat. 29°, while prosecuting his overland journey from Port Jackson towards Moreton Bay in the winter of 1827.

Mr. Gray stated that the comparison of a young specimen of *Mus giganteus*, Hardw., with a specimen of *Mus setifer*, Horsf., presented to the British Museum by their respective describers, had enabled him to correct an opinion expressed by M. Temminck in the 'Tableau Méthodique,' appended to his 'Monographies de Mam-

malogie', that the latter species is only the young of the former. The differences between the two animals were stated to be as follows. In *Mus giganteus* the head is short and rounded; the eyes are large; the fur is rather short, pale brown, varied with yellowish and black on the back, and ashy beneath; the feet are of moderate size; and the claws moderate and blunt. The specimen being young is about the size of *Mus setifer*, the head and body measuring 8 inches, and the tail $5\frac{1}{2}$; but the length of the hinder foot to the end of the heel does not exceed $1\frac{1}{4}$ inch. In *Mus setifer*, on the contrary, the muzzle is long and compressed; the eyes are small; the fur is long, loose, mixed on the rump with abundance of long, flat-tipt, bristly hairs, of a dark brown above, and darker with much longer scattered hairs beneath; and the hinder feet are very large and strongly clawed. The length of the body is $7\frac{3}{4}$ inches; the tip of the tail is wanting in the specimen; the ears are 18 lines in length; and the hinder feet $1\frac{3}{4}$ inch, being half an inch longer than those of the young *Mus giganteus*. The geographical range of the latter appears to be very extensive, Mr. Charles Hardwick having transmitted to the British Museum a specimen from Van Diemen's Land.

Mr. Gray further observed that the comparative length of the hinder feet, and the relative distances of the tubercles of the sole from the end of the toes and from the heel, appear to furnish very good distinctive characters for the species of this difficult genus. Thus in the *Wood Mouse*, *Mus sylvaticus*, L., the hinder tubercle of the sole is about a line nearer to the heel than to the end of the toes, while in the *common Mouse*, *Mus Musculus*, L., which has a shorter hind foot, the hinder tubercle is nearly equidistant between the heel and the tip of the toes.

Mr. Gray also stated, that in examining a specimen of *Antipathes* sent to the British Museum by the Rev. R. T. Lowe from Madeira, and which he believed to be identical with the *Ant. dichotoma*, Pall., he had discovered the animals of this remarkable *Coral*, and thus ascertained (what had previously been only presumed from the close resemblance of their horny *axes*) its near relation to the genus *Gorgonia*. He regarded this confirmation of the generally received opinion as the more important in consequence of the apparent similarity between some of the species of *Antipathes* and some strong fibrous *Sponges*, which are now generally believed not to be the habitations of *Polypes*. The minute branches of the specimen examined bore on their surface at irregular intervals a number of red, dry, pellucid tubercles; and portions of a similar substance were observed hanging from their sides. These on being immersed for some time in proof spirits, and afterwards placed for examination in water, exhibited under the microscope, in each tubercle, a *polype* exactly similar to those of *Gorgonia* and *Corallium*, except that it had only six *tentacula*, while the *polypes* of the two last-named genera have eight. It is necessary to observe that when examined in spirit the *polypes* and the thin bark by which they are connected to

each other and to the stem assumed a uniform waxy appearance, and broke down beneath the needle without exhibiting any traces of organization. This circumstance had nearly induced Mr. Gray to abandon his search, had he not discovered that by macerating in water, and thus removing the spirit, the *polype* was restored to its natural gelatinous consistence, in which state it was readily expanded and observed. Minute, pellucid, oval bodies, which are perhaps similar to the irregular papillary *spiculæ* found in the bark of *Gorgonia*, are scattered through the bark of this species of *Antipathes*, and the *axes* of its smaller branches are minutely tubular.

In Ellis's 'History of Zoophytes' is given a figure of what the author regarded as the *polype* of *Ant. spiralis*, which he found scattered over the stem of that species in the shape of small distant warts. These when soaked in water he describes as having six *tentacula* surrounding a small cup. The *tentacula*, he observes, in a letter to Linnæus, published in the 'Correspondence' of that naturalist, are shaped like a bull's horns, with wrinkles across, and full of gelatinous matter; and the cup is of a most elegant figure. In the figure this part appears to be concave, with a crenated edge, and placed on an urn-shaped pedicel. Should this account of the *polype* of *Ant. spiralis* prove to be correct, it would be necessary to remove that species from the neighbourhood of the *Gorgoniæ* and other barked *Corals*, from all of which it would differ so remarkably in its cup-shaped appendage, and the want of ciliation on the surface of its *tentacula*. Mr. Gray added that he had repeatedly examined the stem of the species in question, but had never been able to discover on it anything resembling a *polype*. The earlier observations of Rumphius, Marsigli, and Pallas, the former on *Ant. spiralis* and the two latter on *Ant. dichotoma*, were of too vague a character to furnish any idea of the real structure of the *polype*.

Mr. Owen read the following account of the anatomy of the *Ariel Toucan, Ramphastos Ariel*, Vig.

"Independently of the beauty of the plumage and singularity of the form of the *Toucans*, the peculiarity of some of their habits and actions renders them extremely interesting to the naturalist while in the living state, and not less desirable in connexion with the doubts respecting their natural food, as objects of anatomical investigation after death. These doubts, however, have already been in a great measure dispelled by the observations on the living *Toucan*, which we owe to Mr. Broderip (Zoological Journal, vol. i. p. 484.), and by the subsequent remarks of Mr. Vigors (Ibid., vol. ii. p. 466.) on the present individual, which for some time formed a principal ornament of his choice collection.

"The alimentary canal of the *Toucan* is short and simple, but has a general character of capacity which accords with the peculiar form of beak at its commencement. The *œsophagus* is 7 inches in length; it is at first 1 inch in width, and becomes slightly narrower to its termination. It is unprovided with a crop, and not to be distinguished very readily from the *proventriculus*, as that cavity

is continued in the same line with it without any dilatation, and its limits are only recognisable when its internal surface is seen. The lining membrane of the *œsophagus* exhibits at its commencement (or *pharynx*) the usual assemblage of retroverted *papillæ*, after which it is smooth, and then rendered irregular by *rugæ*, which towards the termination of the tube fell into distinct narrow longitudinal folds, evidently the consequence of a temporary state of contraction at that part. As it passes into the *proventriculus* it assumes the character of a mucous membrane, and also becomes finely reticulate; the orifices of the gastric glands being in the interstices of the meshes. These glands are simple cylindrical follicles dispersed over the whole cavity, but more closely aggregated near the gizzard. The length of the *proventriculus* is 1 inch.

"The gizzard is a spheroidal cavity, about $1\frac{1}{2}$ inch in diameter. The muscular coat does not exceed half a line in thickness; the lateral tendons are small but distinct. The horny lining membrane is tough and hard; it was stained of a deep yellow colour, and not so readily separable from the muscular coat as I have observed in other birds. The entrance to the gizzard is by an ample orifice, and this, in connexion with the structure of the previously described parts, perfectly accords with the regurgitating actions witnessed by Mr. Broderip in *Ramphastos erythrorhynchus*, and which, being followed by a repetition of the process of mastication, he aptly compares to the act of rumination. The thin *parietes* of the gizzard, corresponding to the omnivorous character of this bird, may render in some cases additional mastication necessary; and the powers of the extraordinarily developed beak may in this way compensate for the absence of the grinding structures so peculiar in the stomachs of the true vegetable feeders. The pyloric orifice of the gizzard is situated about a quarter of an inch from the cardiac entry, and is only 3 lines in diameter. The stomach, if we include in this term both *proventriculus* and gizzard, derives its nutrient fluid, as in man, from two sources; the one a vessel analogous to the coronary artery, which comes off from the descending *aorta*; the other an artery from the hepatic, analogous to the gastro-epiploic; but in this instance the former vessel is remarkable for its superior size, in consequence of having to supply materials for the extensive secretion which takes place in the *proventriculus*.

"The intestinal canal is 2 feet 1 inch in length; it is $1\frac{1}{2}$ inch in circumference at the commencement, 2 inches at the termination, and 1 inch at the middle, from which part it gradually widens to both extremities. It is simple, being without cæcal appendages, corresponding in this respect to some carnivorous birds, as the *Vulture*, *King-fisher*, and *Cormorant*; to some insectivorous birds, as the *Nightingale*, *Woodpecker*, and *Hoopoe*; and to some frugivorous and granivorous birds, as *Glaucopis*, the *Psittacidæ*, *Columba coronata*, and some other species of *Pigeon*. The mucous membrane of the intestines presents extremely delicate *villi*, between 1 and 2 lines in length, and repeats in a striking manner the peculiar downy character of the external integument. These *villi* become in a very

gradual manner shorter and thicker, disappearing at length within a few lines of the verge of the *cloaca*. The *duodenum* forms a loose fold about 3 inches in length: the remainder of the alimentary canal is attached by a wide mesentery to the middle of the posterior *parietes* of the *abdomen*.

"The liver is composed of two lobes of unequal size, joined by a small band: the margins of the lobes are more rounded than usual. There is no gall-bladder; a small hepatic duct enters the *duodenum* very near its commencement; a second duct of about 2 lines in width terminates near the pancreatic duct at a distance of 4 inches from the *pylorus*. This dilated duct might serve in some measure in place of a gall-bladder; and a more complete receptacle for retaining and increasing the active powers of the biliary secretion may be unnecessary where the alimentary canal is so simple, short, and capacious, as in the *Toucan*. It is, however, interesting to observe that the *Psittacidæ*, to which the *Toucan* manifests its affinity in other parts of its structure, exhibit a corresponding deficiency both of *cæca* and gall-bladder. The *Pigeons* also which are without a gall-bladder either want the *cæca* altogether, or have them, as in the *Insessorial* birds, of very small size. This corresponding deficiency must, however, be considered rather as simple coincidence than in the relation of cause and effect; for in the *Vulture* and *Nightingale* the gall-bladder exists without the *cæca*, while in the *Cuckoo* the *cæca* exist without the gall-bladder: the similar examples in the other classes of *Vertebrata* are too well known to require notice.

"The kidneys are composed of three lobes, of which the middle one is the smallest; their length is $1\frac{1}{2}$ inch; their surface is convoluted, though in a less marked degree than in *Reptiles*. Between the anterior extremities of these glands was situated the ovary, of a triangular shape, and apparently healthy in structure. The *ova* were like minute granules, and disposed in a convoluted manner. The supra-renal glands were imbedded in the posterior part of the ovary. The oviduct was as large as a crow-quill; it commenced by the usual fimbriated and wide aperture, was slightly tortuous at the commencement, and then continued straight to the *cloaca*.

"Among the varied forms of tongue which birds present, that of the *Toucan* is one of the most remarkable. Its length from the aperture of the *glottis* is $2\frac{1}{2}$ inches. The posterior ridge or backward-projecting process, is broad, and finely notched; it is situated about 4 lines from the *glottis*. Anterior to this process the tongue is soft and minutely papillose for the extent of 4 lines, and here, most probably, the sense of taste resides: the rest of the organ consists of a transparent horny *lamina*, flattened horizontally and supported by the anterior process of the *os hyoides*, which forms a ridge along the middle of its inferior surface. At about $1\frac{1}{2}$ inch from the extremity of the horny *lamina* the margins become obliquely notched, and these notches becoming deeper and closer together towards the extremity occasion the bristled appearance on each side of the tongue. These bristles, Mr. Vigors observes, were

generally applied to the morsels of food whilst held between the mandibles previously to being swallowed.

"The *cornua* of the *os hyoides* are $1\frac{1}{2}$ inch in length. The *trachea* is 5 inches in length, the rings somewhat flattened and decreasing in diameter towards the inferior extremity, from which a single pair of muscles pass off to the *sternum*. The length of the lower fourth of the tube, and the state of tension in the *bronchia*, are regulated by a pair of small muscles, which, arising from the sides of the tracheal cartilages, are inserted into the bone of divarication at the extremity of the *trachea*: and that this part of the tube is subjected to variations in length is indicated by the tortuous character of the recurrent nerves attached to the sides of the *trachea* at this part. The lungs are small in proportion to the size of the bird, but of the usual form and structure. The abdominal air-cells were of small size. The heart is of a more oblong form than in general; its *apex*, as it were, truncate; its length 1 inch.

"The pectoral muscles, as in the *Psittacidæ*, are but feebly developed, and the keel of the *sternum* is of moderate size, not projecting more than half an inch from the plane of the bone. The *sternum* has four notches at its posterior margin. The clavicles, or lateral halves of the *furcula*, are here, as in the *Psittacidæ* and *Struthionidæ*, separate; they are 1 inch in length, slender, pointed at their lower ends, and joined to each other and to the *sternum* by ligament only.

"The peculiar motions of the tail called for a particular examination of that part. It is difficult to state the precise number of the caudal *vertebræ* in consequence of the terminal ones being anchylosed, requiring for this purpose the examination of a young specimen at a period before the *anchylosis* takes place. In the skeleton of a *black-billed Toucan* which I have examined, it would appear that three *vertebræ* are thus anchylosed, making the entire number of coccygeal *vertebræ* nine. The *Woodpecker* has also nine caudal *vertebræ*, and this seems to be the greatest number found in *Birds*. The first six of these *vertebræ* in the *Toucan* are articulated by ball-and-socket joints, the ball and the socket being most distinct in the two last joints. That between the sixth and the anchylosed *vertebræ* is provided with a capsule and synovial fluid; the others have a yielding ligamentous mode of connexion. The spinous processes of these *vertebræ*, both superior and inferior, are of moderate size, but smallest in the sixth, where the greatest degree of motion takes place. The transverse processes on the contrary are large and broad so as almost wholly to prevent lateral motion. The first of the anchylosed *vertebræ* is broad and flat and of a rounded form, supporting the two coccygeal glands: the last of these processes is compressed laterally, and of the ordinary plough-share form. The caudal *vertebræ* can be inflected dorsad till their superior spines are brought in contact with the *sacrum*; in the opposite direction they can scarcely be bent beyond a straight line: and it is to this structure of the bones and joints that is to be attributed the capability in the *Toucan* of turning its tail upon its

back (as represented in the Zoological Journal, vol. ii. pl. xv.), the muscles presenting comparatively few peculiarities, since the motion alluded to is remarkable rather for its extent, than the vigour with which it is performed.

"The principal *elevators* of the tail are the *sacro-coccygei-superiores* (*sacro-sus-caudiens* of Vicq d'Azyr). They arise from two longitudinal ridges on the inferior and convex part of the *sacrum*, and are inserted into the superior spines of the first six *vertebræ* by detached tendons, terminating broadly in the anchylosed *vertebræ*. The principal antagonists of these muscles, *sacro-coccygei-inferiores* (*sacro-sous-caudiens* of Vicq d'Azyr), pass over the first five *vertebræ* and terminate in the sixth and anchylosed *vertebræ*: their origins are wider apart than in the preceding pair of muscles, coming off from the margins of the sacro-sciatic notches. In the interval are situated small muscles passing from the transverse processes to the inferior spines of the first six *vertebræ*.

"From the limited nature of the lateral motions of the tail the muscles appropriate to these movements are feeble, especially in comparison with those which are observed in the birds that spread their tail-feathers in flight, and in that way regulate their course during that vigorous species of locomotion. These muscles are in number two on each side, arising from the posterior extremities of the *ischia* and inserted into the expanded anchylosed *vertebræ*. From the disposition of these muscles it is obvious that after the proper *elevators* have raised the tail to a certain height, they also become dorsad of the centre of motion, combine their forces with the *elevators*, and by this addition of power terminate the act of throwing up the tail by a jerk: so Mr. Vigors in his observations on the living animal observes, that 'in these movements the tail seemed to turn as if on a hinge that was operated on by a spring.'

"The morbid appearances observed in this dissection were confined to the alimentary canal, which exhibited in four places tracts of inflammation of one and two inches in extent."

The stuffed skin and skull of a *Rodent Quadruped*, brought from Chili by Mr. H. Cuming, were laid upon the table, and characterized by Mr. Bennett as forming a new genus,

OCTODON.

Dentes primores $\frac{2}{2}$ acutati anticè læves; *molares* utrinque $\frac{4}{4}$ eradicati complicati subæquales; *superiores* subtransversi, facie anticâ latâ, posticâ ob incisuram externam profundam duplò angustiore, internâ medio uniplicatâ, plicis a primo ad postremum sensim minoribus; *inferiores* obliqui, singulo plicâ externâ internâque subopposita coronidem in areas duas obliquè transversales, figuram 8 vel clepsydram quodammodo referentes, dispartientibus, plicâ externâ in postremo vix conspicuâ.

Artus subæquales omnes pentadactyli, digitis liberis, unguibus falcularibus acutis. *Cauda* mediocris subannulata pilosa apice floccosa.

The teeth of this animal are remarkably different from those of

any known genus. Their nearest approach is to those of *Helamys*: the latter however want the narrowing of the posterior face of the molars in the upper jaw, and the external fold in those of the lower, as well as the oblique position of the latter, which so strikingly characterize the present genus. From *Arvicola*, which it much more closely resembles in habit, it is at once distinguished by the number of its teeth, and by their much smaller degree of complication. Its specific characters, should the discovery of other species render it necessary so to distinguish it, will probably be found in the following phrase:

Octodon Cumingii. *Oct. suprà fusco-griseus nigrescenti intermixtus, infrà et ad pedes pallidior; caudâ suprà et ad apicem floccosam concolore nigrescente.*

In size and shape the animal very closely resembles the *common Rat*; but its head is much broader and less elongated, and its tail is uniformly covered with short adpressed rigid hairs, which become longer and more lax as they approach the extremity, where they form a slight floccose tuft. The facial line is regularly and strongly arched, and the muzzle obtusely truncate; the eyes are small, and seated nearly midway between the base of the ears and the nostrils; and the ears are of moderate size, thinly covered both within and without with short adpressed hairs, and rounded at the tips. The whiskers are numerous and rigid, and the longest exceed the head in length. On the body, which is well-proportioned, the fur consists almost entirely of straight hairs, lying flat, and varying from half an inch to an inch in length: they become shorter on the head and beneath the body, and still more so on the tail and limbs. Of the limbs the hinder are somewhat longer, but the disproportion is by no means so great as might be inferred from the saltatory habits of the animal. All the feet have five toes, but the innermost both before and behind is very short, and separated by a wide interval from the rest. Except the thumb of the fore feet, which has a short obtuse claw, all the toes are armed with rather long, slightly curved, sharp-pointed claws, partially concealed by long bristly hairs. Of the four outer toes anteriorly the two intermediate are nearly equal, and the two lateral somewhat shorter; posteriorly the three intermediate toes are of nearly equal length, and considerably exceed the outer. The tail, though covered rather thickly with short stiff hairs, is distinctly annulated.

The general colour of the upper surface and sides is of a brownish gray, intermixed with frequent spots and patches of dusky black. It becomes slightly darker towards the rump; and the upper surface of the entire tail, together with its under surface for one-third of its length from the tip, is dusky brown approaching to black. The under surface is dusky gray mixed with a shade of brown, lighter beneath the base of the tail, and deeper on the breast and neck, where it is nearly of the same general hue with the upper surface and head. The ears are dusky, with a few stiff gray hairs at their base anteriorly, and some whitish hairs on their inner surface. The shorter whiskers are for the most part white, and the longer black.

The legs are grayish mixed with brown, becoming of a paler gray towards the feet, and the claws are deep black.

The following measurements were taken from the stuffed specimen.

	inches.	lines.
Length of the head and body	6	8
——— tail	4	0
——— head	1	8
——— muzzle, anterior to eyes	0	8
——— longest whisker	2	0
Height of the ears	0	9
Breadth of ditto	0	7
Length of *carpus* to the end of the longest toe	0	9
——— *tarsus* to ditto	1	3

The bones having been removed, no reliance could be placed on the remaining measurements, for which reason they were not given.

Two living specimens of this interesting little *Rodent*, for which the Society is also indebted to Mr. Cuming, have been exhibited during the winter among the smaller animals at the Garden, where they retain all their liveliness and activity. They appear rather shy and have but little playfulness, but readily leap, with great agility and without any appearance of exertion, from the floor of their cage to a narrow perch placed at the height of nearly a foot, on which they remain seated quite at their ease. Their food, as might be inferred from the structure of their teeth, is entirely vegetable. Mr. Cuming states that, in their native country "these animals burrow in the ground, but always under brush-wood fences or in low thickets. They are so abundant in the neighbourhood of Valparaiso, that in the high-road between that place and St. Jago, more than a hundred may frequently be seen at one time in search of food. Sometimes, but not often, they are observed on the lower branches of the shrubs and on those which form the fences. They fly at the least alarm, and in running carry their tufted tails bent like a bow. A species of *horned-Owl*, of which I had the pleasure of presenting a specimen to the Society, feeds principally on these pretty little creatures."

March 27, 1832.

John Edward Gray, Esq., in the Chair.

A Report from Devereux Fuller, the Head Keeper, was read. It was communicated to the Committee by the President.

It referred to the experiments on the feeding of carnivorous *Mammalia* recommended by the Committee on Dec. 13, 1831, (Part I., p. 164,) and subsequently ordered by the Council to be tried. The animals subjected to the experiment were two *Leopards* and two *Hyænas:* the whole of them were males.

On Jan. 11 the *Leopards* were weighed. No. 1 weighed 91lbs.: it was fed in the usual manner with 4lbs. of beef daily in one meal given in the evening. No. 2 weighed 100½lbs.: it was supplied with 2lbs. of beef at eight o'clock in the morning, and with a like quantity at the same hour in the evening daily. On Feb 16, (after an interval of five weeks,) they were again weighed. No. 1 had gained in weight 1lb.: No. 2 had diminished in weight ½lb. No alteration was observed in the latter animal as regarded his daily exercise; but he became more ferocious than he had previously been, and was particularly violent.

On Dec. 23 the *Hyænas* were weighed. No. 1 weighed 86lbs.: it was fed as usual with 3lbs. of beef daily at one meal in the evening. No. 2 weighed 93lbs.: it was supplied with the same quantity of beef daily, divided into two equal portions, one of which was given in the morning and the other in the evening. On Feb. 16, (after an interval of eight weeks,) they were again weighed; and No. 1 was found to have increased in weight 1lb., while No. 2 had diminished in weight 1lb. The latter animal was observed to take less exercise than he had previously been accustomed to, and slept more than usual: his temper was not affected, and he did not exhibit unusual signs of hunger.

During the continuance of the experiment all the animals were fasted one day in each week in common with the other carnivorous species kept in the Menagerie.

From these experiments it appears that carnivorous *Mammalia* fed with two meals daily, do not continue in equally good condition with those which have the same quantity of flesh daily in one meal only. It further appears that in one instance (that of the *Leopard,*) the temper changed for the worse, and thus animals of the genus *Felis* might become more dangerous in a Menagerie from the ferocity they would acquire under such treatment; and that in another instance the habits were altered as regarded exercise, a diminution of which, in confined

animals, must be injurious to health. The inference deduced in the Report is consequently in favour of the continuance of the accustomed mode of feeding the purely carnivorous animals with one meal daily.

The Report further stated that an experiment had been tried at the same time on the feeding of two animals less completely carnivorous than the preceding. They were weighed on Jan. 11. No. 1, a *Paradoxure Gennet*, weighed 4½lbs.: it was fed as usual with bread and milk in the morning, and with meat in the evening. No. 2, a *spotted Gennet*, weighed 7lbs.: it was fed with equal portions of bread and milk on the morning and evening of one day; and with equal portions of flesh on the morning and evening of the next day; the quantity of food at each meal being the same as usual. On Feb. 16, (after an interval of five weeks,) the animals were again weighed. No. 1 weighed as before, and was in perfect health. No. 2 had lost in weight 1lb.: it had been during the alteration in its feeding much duller than usual.

The result of this experiment is in favour of the continuance of the plan hitherto pursued of feeding partially carnivorous animals with each kind of food on each day, and not on alternate days.

The exhibition of the new species of *Mollusca* and *Conchifera* collected by Mr. Cuming, which had been commenced Feb. 28, was resumed. The several shells exhibited were accompanied, as on the former occasion, by characters and descriptions from the pens of Mr. Broderip and Mr. G. B. Sowerby.

Genus Cancellaria.

Cancellaria pulchra. *Canc. testâ subovatâ, albicante, brunneo-fasciatâ; spirâ breviusculâ, acuminatâ; anfractibus 6, ventricosis, costatis; costis muricato-aculeatis, lineis elevatis spiralibus decussatis; aperturâ ovatâ; labio intùs sulcato; peritremate crenato; columellâ triplicatâ, plicâ intermediâ minore; labio interno ruguloso; umbilico mediocri, margine elevatâ; canali recurvo: long.* 1$_{7}^{1}$, *lat.* $_{7}^{6}$ *poll.*

Hab. ad littora Sanctæ Elenæ.

This species, which approaches in its characters more nearly to *Canc. cancellata*, Lam., than to any other, may nevertheless be distinguished at once by its strongly spinous ribs.

It was dredged from a sandy bottom in from eight to ten fathoms water.—G. B. S.

Cancellaria solida. *Canc. testâ subovatâ, crassâ, fulvâ, lævi; spirâ brevi, mucronatâ, supernè costato-decussatâ; anfractibus 6, ventricosis, ultimo maximo, supernè rotundato-subanguloso; aperturâ oblongâ, spirâ duplò longiore, intùs transversim sulcatâ; peritremate acuto, infrà subemarginato; columellâ triplicatâ, plicâ inferiore exiguâ; labio interno expanso, infrà ruguloso; canali brevissimo, subrecurvo: long.* 1$_{7}^{6}$, *lat.* 1$_{7}^{4}$ *poll.*

Hab. ad littora Americæ Centralis. (Real Llejos and St. Elena.)

A species remarkable for its deviation from the character of the genus, in being very smooth.

It was found in dredging in from eight to ten fathoms, with a sandy bottom.—G. B. S.

CANCELLARIA TUBERCULOSA. *Canc. testâ subglobosâ, albicante; spirâ breviusculâ, subacuminatâ; anfractibus 5, bullatis, supernè obtusè angulatis, spiraliter sulcatis et tuberculatis, tuberculorum triplici serie; suturâ latè canaliculatâ; aperturâ obtusè subtrigonali, infrà integrâ; peritremate acuto; columellâ biplicatâ, plicis parvis, obliquis; umbilico magno: long.* $1\frac{4}{10}$, *lat.* $1\frac{1}{10}$ *poll.*

Hab. ad littora Americæ Meridionalis. (Iquiqui.)

Remarkable for its dull, calcareous, tuberculated surface, its wide expanded aperture, and its widely channelled or contabulated spire.

Dredged in seven fathoms water with a sandy muddy bottom.—G. B. S.

CANCELLARIA BULLATA. *Canc. testâ subglobosâ, cinereo-fuscescente; spirâ mediocri, acuminatâ; anfractibus 5, bullatis, spiraliter striatis, ultimo tuberculorum triplici serie ornato; suturâ canaliculatâ, subcrenatâ; aperturâ obtusè subtrigonali, infrà integrâ; peritremate acuto; columellâ biplicatâ, plicis parvis, obliquis; umbilico magno: long.* $1\frac{3}{10}$, *lat.* 1 *poll.*

Hab. ad littora Americæ Meridionalis et Centralis. (Payta and Gulf of Nocoiya.)

Very like the last; it differs, however, in colour, in being more acuminated, and in its tubercles being less prominent; it is, moreover, a thinner shell.

Found in twelve fathoms water with a muddy bottom.—G. B. S.

CANCELLARIA MITRIFORMIS. *Canc. testâ oblongâ, brunneâ; spirâ elongatâ, acuminatâ; anfractibus 7, cancellatis, prope suturam unicarinatis; aperturâ oblongâ, in canalem longiusculam recurvam desinente; peritremate infrà sinuato, margine externâ fimbriato-laceratâ; columellâ biplicatâ, plicâ superiore magnâ, alterâ parvâ et basi columellæ rugulosâ: long.* $1\frac{8}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. ad Panamam.

A single specimen of this interesting shell was dredged in sandy mud.

It is the most elongated species hitherto seen by Mr. Sowerby, and in appearance approaches to the *Mitres*.—G. B. S.

CANCELLARIA GONIOSTOMA. *Canc. testâ oblongâ, fuscâ; spirâ acuminatâ, gradatâ; anfractibus 6, supernè contabulatis, spiraliter striatis, longitudinaliter tuberculato-costatis; aperturâ trigonali, albicante; peritremate reflexo, crenato; columellâ biplicatâ, plicis obsoletiusculis, obliquis; umbilico maximo: long.* $1\frac{4}{10}$, *lat.* $\frac{8}{10}$ *poll.*

Hab. ad littora Americæ Centralis. (Conchagua, San Salvador.)

A very fine and interesting species, of which a single specimen alone was brought up from a sandy bottom in eight fathoms water.

It is an approximation to the shell named *Delphinula trigonostoma* by Lamarck, which would be properly placed in the genus *Cancellaria* next to this species.—G. B. S.

CANCELLARIA TESSELLATA. *Canc. testâ oblongâ, ovulatâ, albicante, brunneo-tessellatâ; spirâ brevi, obtusiusculâ; anfractibus 4, decussatis, ultimo maximo; aperturâ oblongâ, ad basin integrâ; labio*

externo intùs sulcato; labio interno supra anfractum ultimum extenso; columellâ biplicatâ, plicâ superiore majore: long. $\frac{8}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab. in Americâ Meridionali. (Bay of Caraccas, St. Elena, and Xipixapi.)

A very elegant, small species, of a white colour, with three rows of squarish brown marks; like that of *Canc. nodulifera* (Sowerby in Tankerville Catalogue, Appendix), the inner lip is spread over part of the last volution, giving the full-grown shell somewhat of the appearance of a *Cassis*.

Dredged in a sandy muddy bottom in from seven to ten fathoms.—G. B. S.

CANCELLARIA CLAVATULA. *Canc. testâ turritâ, brunneâ, albicante bivittatâ, varicosâ; spirâ attenuatâ, acuminatâ; anfractibus 7, rotundatis, spiraliter striatis, longitudinaliter costatis et varicosis, varicibus sparsis; aperturâ subovali, in canalem desinente; labio externo intùs sulcato; columellâ biplicatâ; peritremate reflexo: long.* $1\frac{8}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad Panamam et Paytam.

A turrited, fusiform, varicose species, which very nearly resembles one of the Italian fossils.

It was taken up from a sandy muddy bottom in seven fathoms water.—G. B. S.

CANCELLARIA OBESA. *Canc. testâ ovatâ, acuminatâ, lævi, ponderosâ, pallidâ; spirâ brevi, attenuatâ, decussatim striatâ; anfractibus 6—8 ventricosis, spiraliter leviter striatis, ultimo maximo, lævigato; aperturâ oblongâ, utrâque extremitate acuminatâ, infrà in canalem brevem desinente; labio externo intùs sulcato; peritremate tenuiore, infrà subsinuato; columellâ triplicatâ, plicâ superiore maximâ, bilobatâ, inferiore minimâ: long.* $2\frac{5}{10}$, *lat.* $1\frac{1}{10}$ *poll.*

Hab. ad oras Americæ Centralis. (Gulf of Dulce.)

When young, this shell is prettily decussated with rather prominent though very narrow ribs; but with age it becomes nearly smooth, with obsolete *striæ*.

Two young ones were brought from Puerto Portrero, and an aged specimen was dredged in fifteen fathoms in the Gulf of Dulce.—G.B.S.

CANCELLARIA BREVIS. *Canc. testâ subglobosâ, albidâ, brunneo-variâ; spirâ brevi, contabulatâ; anfractibus 4—5, supernè angulatis, crenatis, spiraliter sulcatis, et longitudinaliter costatis; aperturâ obtusè trigonâ; labio externo intùs sulcato; peritremate obtusiusculo, crenulato; columellâ biplicatâ; umbilico magno, margine crenatâ: long.* $\frac{8}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis et Centralis.

Another of those interesting species which form as it were the passage from the typical *Cancellariæ* to the species which Lamarck has placed among the *Delphinulæ* under the name of *Delph. trigonostoma*.

Two specimens were found, one at Puerto Portrero, the other at St. Elena.—G. B. S.

CANCELLARIA RIGIDA. *Canc. testâ ovatâ, rigidâ, pallidâ vel brunneâ concolore; spirâ brevi, acuminatâ, contabulatâ; anfractibus 5, supernè angulatis, spiraliter striatis, et longitudinaliter costatis, costis rariusculis, sublamellosis, acutis; aperturâ subtrigonali, infrà in canalem brevissimam desinente; labio externo intùs sulcato; peritremate acuto; columellâ triplicatâ, plicâ inferiore minimâ; labio interno corrugato; umbilico mediocri, margine elevatiusculâ: long.* $\frac{8}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad Puerto Portrero, Americæ Centralis.

A single specimen was dredged in thirteen fathoms with a sandy bottom. Mr. Sowerby has several much larger specimens, with whose locality he is unacquainted.—G. B. S.

CANCELLARIA CASSIDIFORMIS. *Canc. testâ ovali, fulvâ; spirâ brevi, apice acuminato; anfractibus 6, spiraliter sulcatis, superioribus angulato-nodulosis, ultimo maximo, prope suturam serie unicâ tuberculorum, infrà fasciâ pallidâ, instructo; suturâ distinctâ, infrà subcanaliculatâ; aperturâ oblongâ, infrà in canalem brevem desinente; peritremate obtuso; labio interno expanso; columellâ triplicatâ, plicâ superiore majore: long.* $1\frac{6}{10}$, *lat.* 1 *poll.*

Hab. ad Panamam.

The young shells of this species resemble those of the *Canc. nodulifera*, in the Appendix to the Tankerville Catalogue, p. xv. The full-grown shell is here described from a specimen in Mr. Sowerby's collection, all those obtained by Mr. Cuming being young.

Dredged from a sandy muddy bottom in sixteen fathoms water.—G. B. S.

CANCELLARIA OVATA. *Canc. testâ ovali, lævigatâ, brunneâ, epidermide tenui fuscâ indutâ; spirâ brevi, subacuminatâ; anfractibus 7, spiraliter sulcatis, ultimo maximo, ventricosiusculo; suturâ distinctâ; aperturâ elongatâ, supernè angustiore, acuminatâ, infrà emarginatâ, canalem brevissimam efformante; peritremate acuto, prope basin sinuato, labio externo intùs sulcato; columellâ plicis duabus, validis, tertiâ inferiore obsoletâ; umbilico minimo vel nullo: long.* $1\frac{5}{10}$, *lat.* $\frac{9}{10}$ *poll.*

Hab. ad Sanctam Elenam, Columbiæ occidentalis.

This species resembles *Canc. reticulata* more nearly than any other; its proportions are however very different, and it is a much smoother shell: the smaller volutions are somewhat cancellated.

Found in from eight to ten fathoms water with a sandy bottom.—G. B. S.

CANCELLARIA ACUMINATA. *Canc. testâ ovato-oblongâ, lævigatâ, fulvescente, pallidiore subfasciatâ; spirâ mediocri, subulato-acuminatâ; anfractibus 6—7, spiraliter sulcatis et longitudinaliter obsoletè costatis, ultimo magno; aperturâ mediocri, supernè acuminatâ, infrà emarginatâ, canalem brevem efformante; peritremate acuto, crenulato, prope basin sinuato; labio intùs sulcato; columellâ plicis duabus validis, tertiâ obsoletâ inferiore; umbilico minimo vel nullo: long.* $\frac{7}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad Guacamayo, Americæ Centralis.

Found in a sandy muddy bottom at a depth of about twelve fathoms. It may easily be distinguished from the last by its proportions as well as by the form of the spire.—G. B. S.

CANCELLARIA BUCCINOIDES. *Canc. testâ oblongâ, corrugatâ; spirâ mediocri, acuminatâ; anfractibus 7, subventricosis, longitudinaliter granoso-costatis, et spiraliter sulcatis, (nonnunquam ex ætate varicosis); aperturâ ovato-oblongâ, obliquâ, ad basin emarginatâ, brevissimè canaliferâ; peritremate obtusiusculo, prope basin subsinuato; labio externo intùs lævi, nonnunquam leviter denticulato; columellâ biplicatâ, plicis parvis: long.* $1\frac{5}{10}$, *lat.* $\frac{9}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis et Centralis. (Real Llejos, Iquiqui, Callao, and Puerto Portrero.)

This species has very much of the appearance of a *Buccinum*, from which genus it is only distinguished by the two folds on the *columella*; it varies in colour, some specimens being of a very pale, others of a darker fawn colour; some again are of a dark brown colour all over, while others are of a dark brown with a light band perceptible within the aperture.

Found in from seven to fifteen fathoms with a sandy muddy bottom. —G. B. S.

CANCELLARIA INDENTATA. *Canc. testâ oblongâ, clathratâ, fuscâ; spirâ mediocri, acuminatâ; anfractibus 6, decussatim costatis, costis noduliferis; aperturâ ovato-oblongâ, obliquâ, ad basin subcanaliferâ; peritremate indentato; columellâ triplicatâ, plicâ inferiore minimâ; umbilico parvo, margine distinctâ: long.* $1\frac{1}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab. ad Panamam.

Nearly like the last in shape, but not having a distinct canal;—its having three folds on the *columella*, and an *umbilicus* with a strongly raised border, also distinguish it.—G. B. S.

CANCELLARIA HÆMASTOMA. *Canc. testâ ovato-pyramidali, albicante, fusco-fasciatâ, ore aurantiaco; spirâ pyramidali; anfractibus 6, rotundatis, supernè obtusè angulosis, spiraliter striatis, longitudinaliter costatis, costis paucis, obtusis, prope suturam elevatis; aperturâ subrotundâ, in canalem brevem desinente; peritremate acutiusculo, crenulato; labio externo intùs sulcato, interno corrugato; columellâ triplicatâ; umbilico mediocri, margine elevatâ: long.* $1\frac{1}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. ad insulas Gallapagos.

A very beautiful species; nearly white, with a broad dark-brown band surrounding the upper part of the volutions: its brilliant orange-coloured mouth is also remarkable.

Taken in from ten to sixteen fathoms with a sandy bottom.—G.B.S.

CANCELLARIA CHRYSOSTOMA. *Canc. testâ globoso-pyramidali, albicante, fusco-fasciatâ, ore aurantiaco; spirâ brevi, acuminatiusculâ; anfractibus 6, rotundatis, spiraliter sulcatis, longitudinaliter costatis, costis plurimis, obtusis, prope suturam elevatis; aperturâ subrotundatâ, supernè subacuminatâ, infrà in canalem brevem reflexam, desinente; peritremate crenato; labio externo intùs sulcato, interno*

corrugato; columellâ triplicatâ; umbilico mediocri, margine elevatâ: long. $1\frac{1}{10}$, *lat.* $\frac{1}{2}$ *poll.*

Hab. ad Panamam et Sanctam Elenam.

This species somewhat resembles the last, it may however be distinguished by its more globose form, its more numerous longitudinal ribs, and its more distinct recurved canal: there are other minor differences.

Dredged in from eight to ten fathoms with a sandy bottom.—G.B.S.

Cancellaria gemmulata. *Canc. testâ ovato-ventricosâ, albidâ; spirâ brevi, obtusiusculâ; anfractibus 5—6, longitudinaliter granoso-plicatis et spiraliter sulcatis; suturâ distinctâ, crenatâ; aperturâ oblongâ, supernè acuminatâ, infrà in canalem brevem desinente; peritremate indentato; labio intùs sulcato; columellâ triplicatâ, plicâ inferiore minimâ; umbilico minimo, margine elevatâ: long.* 1, *lat.* $\frac{1}{2}$ *poll.*

Hab. in Sinu Nocoiya, Americæ Centralis.

A very elegant species, of which a few specimens were dredged from a sandy muddy bottom.—G. B. S.

Cancellaria decussata. *Canc. testâ ovato-acuminatâ, brunnescente; anfractibus 6, decussatim costellatis, costellis granulosis; suturâ crenulatâ; aperturâ oblongâ, supernè acuminatâ, infrà in canalem brevem, acuminatam desinente; peritremate acutiusculo; labio intùs leviter sulcato; columellâ triplicatâ, plicâ inferiore minimâ; umbilico minimo, margine elevatâ · long.* $1\frac{5}{10}$, *lat.* $\frac{8}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis et Centralis. (Panama and Puerto Portrero.)

Found at various depths from ten to thirteen fathoms, with a sandy muddy bottom.—G. B. S.

Cancellaria Bulbulus. *Canc. testâ oblongâ, medio ventricosâ, apice acuminatâ; anfractibus 6—7, superioribus carinato-decussatis, ultimo ventricoso, lævi, infrà sulcato; aperturâ oblongâ, infrà in canalem brevem decurrente; peritremate acuto; columellâ triplicatâ, plicâ superiore majore, infimâ subobsoletâ; labio interno supernè incrassato, subtùs subgranoso: long.* $1\frac{2}{10}$, *lat.* $\frac{1}{2}$ *poll.*

Hab. ad littora Americæ Centralis.

Two young specimens of this species were found in company with *Canc. solida* at Real Llejos.—G. B. S.

Genus Scalaria.

Scalaria Diadema. *Scal. testâ oblongâ, subcylindraceâ, albâ; anfractibus 7, lævibus, superioribus longitudinaliter costatis, supernè anguliferis, angulo crenulato; ultimo costis obsoletis, carinâ obtusâ prope basin: long.* $\frac{8}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. ad insulas Gallapagos. (James's Island.)

A very neat and curious small species, of which Mr. Sowerby had seen but one individual until Mr. Cuming's arrival. A fluid secreted by the animal produces a bright purple dye.—G. B. S.

Genus Cardita.

Cardita Cuvieri. *Card. testâ subcordatâ, albidâ, rufo-variâ;*

costis radiantibus latis, valdè elevatis, complanatis, geniculato-nodosis; intùs albâ; epidermide fuscâ: long. $2\frac{8}{10}$, *lat.* $2\frac{3}{10}$, *alt.* $2\frac{7}{10}$ *poll.*

Hab. in Sinu Fonseca, Americæ Centralis.

This fine species, far exceeding in size and beauty any *Cardita* hitherto discovered, was dredged from sandy mud in eleven fathoms water, about seven miles from the shore. After its capture the dredge was kept at work for some hours, but no other specimen could be procured. The ribs are broad, flattened on their superior surface, but very elevated and strongly geniculated, the geniculations being, for the most part, three-tenths of an inch from each other. The shell is a very striking object, and has almost the appearance of a carved work. —W. J. B.

Cardita tumida. *Card. testâ subtrigonâ, tumidâ, costis radiantibus latis, subdepressis; carneâ vel fulvâ, maculis purpureo-spadiceis et flavis variâ; umbonibus recurvis, subacuminatis; lunulâ depressâ; epidermide fuscâ: long.* 2, *lat.* $1\frac{4}{5}$, *alt.* $2\frac{1}{5}$ *poll.*

Hab. ad Americæ Centralis et Meridionalis oras.

Found in a young state at Puerto Portrero, at a depth of eleven fathoms, in fine sand and gravel; and in a full-grown state at the Isle of Plata, in coral sand, at the depth of seventeen fathoms.—W. J. B.

Cardita varia. *Card. testâ subtrigonâ, costis radiantibus depressis; violaceo-spadiceâ, maculis albis variâ: long.* $1\frac{1}{4}$, *lat.* $1\frac{2}{3}$, *alt.* $1\frac{3}{10}$ *poll.*

Hab. ad insulas Gallapagos.

Dredged in fine sand at the depth of six fathoms.—W. J. B.

This resembles *Venericardia flammea*, (tab. 6 in Guerin's 'Magazin de Conchyliologie',) but is undoubtedly distinct.

Genus Crassatella.

Crassatella undulata. *Crass. testâ ovali, brunneâ, fusco-maculatâ, epidermide fuscâ indutâ; intùs brunneâ, prope marginem anticam albicante; umbonibus undulatis; latere antico inclinato rotundato, postico longiore, acuminato, angulifero: long.* $2\frac{7}{10}$, *lat.* 1, *alt.* $1\frac{9}{10}$ *poll.*

Hab. ad Puerto Portrero, Americæ Centralis.

Dredged from sandy mud in eleven fathoms water. The young shell is of a lighter colour than that which is fully grown; the undulations, moreover, extend over its entire surface.—G. B. S.

Crassatella gibbosa. *Crass. testâ subovali, gibbosâ, pallescente, epidermide fuscâ indutâ; intùs albicante, latere postico brunneo; umbonibus undulatis, compressis; latere antico inclinato, rotundato, sulcis nonnullis brevibus; postico arcuato, elongato, acuminato: long.* $1\frac{8}{10}$, *lat.* 1, *alt.* $1\frac{3}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (St. Elena and Xipixapi.)

Dredged from sandy mud in eleven fathoms water. This is the most ventricose species known to Mr. Sowerby; its young is nevertheless exceedingly compressed, and is, moreover, covered with undulations.—G. B. S.

Genus Amphidesma.

Amphidesma pulchrum. *Amph. testâ ovali, pallidâ, superficie concentricè striatâ; intùs albidâ, purpureo-varid; latere postico breviore; margine anticâ inclinatâ, striis nonnullis radiantibus, strias incrementi decussantibus: long.* $1\frac{3}{10}$, *lat.* $\frac{4}{10}$, *alt.* 1 *poll.*

Hab. in Sinu Caraccensi, Americæ Meridionalis.

This species resembles *Amph. variegatum*, Lam., in form; it is white within, very prettily mottled with purple.—G. B. S.

Genus Marginella.

Marginella Cypræola. *Marg. testâ ovali, asperâ, purpureo-nigricante; spirâ brevissimâ, obtusâ; anfractu ultimo supernè ventricoso, lineâ dorsali lævi; labio externo incrassato, involuto, intùs denticulato; labio columellari transversim plicato: long.* $\frac{3}{10}$, *lat.* $\frac{2}{10}$ *poll.*

Hab. sub lapidibus et in locis arenosis ad littora Acapulcæ et Sanctæ Elenæ.

A most interesting species, inasmuch as it appears to be the link connecting *Marginella* with *Cypræa:* though covered nearly all over with a fine asperity, it has nevertheless a polished surface; the spire is very small, and the mantle of the animal must have been almost equal on both sides, since there is a nearly central dorsal line which is quite smooth and free from the asperity which covers the remainder of the last volution.—G. B. S.

Marginella Frumentum. *Marg. testâ ovali, politâ, pallescente, lineis undulatis per series tres dispositis pictâ; spirâ retusâ, aperturâ longitudine testæ; peritremate acuto, lævi; columellâ infrà plicis nonnullis: long.* $\frac{2}{10}$, *lat.* $\frac{2}{10}$, *paulò minùs, poll.*

Hab. ad oras Americæ Meridionalis. (St. Elena and Salango.)

A very pretty little species, dredged in from eight to ten fathoms with a sandy bottom.—G. B. S.

Genus Chiton.

* Ligamento marginis lævi.

Chiton pusillus. *Chit. testâ minimâ, obovatâ, albicante; dorso elevato; valvis intermediis angustis, minutissimè punctulatis, areis lateralibus subdistinctis; valvâ posticâ majori, vertice centrali, posticè inclinato: long.* $\frac{3}{10}$, *lat.* $\frac{1}{10}$ *poll.*

Hab. ad littora Peruviæ. (Pacasmayo.)

Distinguished from all the other *Chitons* by the comparative height and proportions of the posterior valve, which has a central *vertex* inclined backwards.

Found on a coral reef in seventeen fathoms water nine miles from land.—G. B. S.

Chiton Grayii. *Chit. testâ oblongâ, pallidâ, rufescente fuscoque varid; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ aread posticâ radiatim granoso-striatis; arearum lateralium marginibus anticis elevatis, posticis crenulatis; valvarum intermediarum areis centralibus et valvæ posticæ aread anticâ ob-*

liquè longitudinaliter granuloso-striatis; valvæ 3tiæ, 4tæ, 5tæ, 6tæ et 7mæ medio longitudinaliter bisulcatâ: long. $1\frac{2}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. in Insulâ S^{ti} Laurentii in Sinu Callao, Peruviæ.

This species resembles *Chit. crenulatus*, but may be distinguished by attention to the above characters.

Two specimens only were found on shells in seven fathoms water. —G. B. S.

CHITON CHILOENSIS. *Chit. testâ oblongâ, lævi, coloribus luridis variâ; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ aream posticâ radiatim punctato-striatis; valvarum intermediarum areis centralibus et valvæ posticæ aream anticâ longitudinaliter punctato-striatis: valvis sex posticis prope medium longitudinaliter sulcatis: long.* $2\frac{5}{10}$, *lat.* $1\frac{8}{10}$ *poll.*

Hab. sub lapidibus ad littora Insulæ Chiloe.

Somewhat similar to, but very distinct from *Chit. Chilensis*, Frembl. —G. B. S.

CHITON ROSEUS. *Chit. testâ ovato-oblongâ, lævi, roseâ; dorso rotundato; valvâ anticâ, et valvarum intermediarum areis lateralibus longitudinaliter, areis centralibus transversim sulcatis; valvæ posticæ vertice centrali, sulcis concentricis: long.* $\frac{7}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad Insulam Platæ, Columbiæ occidentalis.

Found on dead shells in seventeen fathoms water.—G. B. S.

** Ligamento marginis granoso.

CHITON DISPAR. *Chit. testâ ovali, lævigatâ, cinereâ, albido nigroque variâ; valvarum areis centralibus lævibus, posticè longitudinaliter subsulcatis; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ aream posticâ granulosis: long.* 1, *lat.* $\frac{8}{10}$, *poll.*

Hab. sub lapidibus ad littora Insulæ Sabogæ in Sinu Panamæ.

The name has been suggested by the circumstance of the central areæ being quite smooth, while the lateral areæ are covered with granules.—G. B. S.

CHITON RUGULATUS. *Chit. testâ oblongâ, lævigatiusculâ, olivaceâ, albicante variâ; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ parte posticâ concentricè undulato-rugulosis; areis centralibus lævibus, marginibus rugulosis: long.* $\frac{8}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad oras Americæ Centralis. (Puerto Portrero and Inner Lobos Island.)

Found under stones at low water.—G. B. S.

CHITON COLUMBIENSIS. *Chit. testâ ovatâ, depressiusculâ, cinerascente; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ aream posticâ sparsim granulosis; intermediarum areis centralibus et posticæ aream anticâ longitudinaliter granoso-lineatis: long.* $1\frac{5}{10}$, *lat.* $\frac{11}{16}$ *poll.*

Hab. in Sinu Panamæ.

Found under stones at low water.—G. B. S.

CHITON PUNCTULATISSIMUS. *Chit. testâ ovato-oblongâ, lævi, colo-*

ribus variis pictâ; valvis omnibus omninò minutissimè punctulatis, squamulis marginalibus perexiguis: long. $\frac{7}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Bays of Mexillones, Iquiqui, and Arica.)

Found on dead shells in from six to ten fathoms water. A white variety with a black border and somewhat varied with black has been very rarely found.—G. B. S.

*** Ligamento marginis velutino et fasciculato.

CHITON HIRUDINIFORMIS. *Chit. testâ oblongâ, planiusculâ, nigrescente-viridi; valvis rotundatis, granulosis; valvarum areis centralibus elongatis, posticè acuminatis, lævisculis; margine densissimè pilosâ, quasi velutinâ, fasciculis pilorum* 9, *concoloribus: long.* 1, *lat.* $\frac{1}{2}$ *poll.*

Hab. ad littora Peruviæ (Ancon, Lobos Island, and Payta), et ad insulis Gallapagos. (Chatham Island.)

Found under stones at low water.—G. B. S.

**** Ligamento marginis squamoso.

CHITON LÆVIGATUS. *Chit. testâ ovato-oblongâ, planiusculâ, lævigatâ, subfuscâ, nigro rufoque longitudinaliter variegatâ; carinâ marginali obtusâ, elevatiusculâ inter areas laterales et centrales valvarum intermediarum: long.* $1\frac{6}{10}$, *lat.* $\frac{9}{10}$, *poll.*

Hab. sub lapidibus in Sinu Californiensi.

Found under stones at low water, by Mr. Ealing of H. M. S. Sapphire, at Guaymas.—G. B. S.

CHITON ARTICULATUS. *Chit. testâ ovatâ, lævigatâ, viridescente-fuscâ, pallescente longitudinaliter variegatâ; dorso elevatiusculo, rotundato, carinâ marginali inter areas laterales et centrales valvarum intermediarum ferè obliteratâ; limbo olivaceo pallidè articulato: long.* $2\frac{1}{10}$, *lat.* $1\frac{9}{10}$ *poll.*

Hab. sub lapidibus in Sinu Californiensi. (St. Blas.)

Found under stones at low water. In many characters it resembles *Chit. lævigatus*, but differs in its proportions as well as in the particular form of each valve.—G. B. S.

Genus CYCLOSTOMA.

CYCLOSTOMA FLAVUM. *Cycl. testâ subglobosâ, flavâ, crassiusculâ, anfractibus* 5, *creberrimè fasciato-striatis; striis elevatis; umbilico parvo; operculo corneo: long.* $\frac{3}{10}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. in Annaa.

This, at first sight, has all the aspect of a marine shell, and even when examined more accurately bears a close resemblance to *Littorina*, especially in its *operculum*. But it was found alive, by Mr. Cuming, buried in the earth under the roots of a palm-tree, which was surrounded with vegetation, and at a considerable distance from high water mark. May it not be one of the links which connect the marine with the terrestrial *Mollusca?* I have placed it with the *Cyclostomata*, to which genus among the land shells it seems to be most nearly related.—W. J. B.

Genus Stilifer. (*Brod.*)

Testa hyalina, turbinata, apice spiræ stilum mentiente. *Apertura* subovata, supernè acuminata. *Labrum* acutum, sinuatum.

Pallium crassum, carnosum, cyathiforme, testæ anfractus ultimos obtegens. *Proboscis* longissima, retractilis. *Tentacula* rotunda, crassa, subacuminata, ad basin proboscidis posita. *Oculi* ad basin tentaculorum, sessiles, minimi. *Branchiæ* stirps solitaria.

Animal marinum.

Stilifer Astericola. *Stil. testâ subglobosâ, diaphanâ, lactescente; anfractibus ventricosis, longitudinaliter leviter striatis, ultimo maximo; apicis anfractibus duobus: long.* $\frac{3}{10}$, *lat.* $\frac{3}{20}$ *poll.*

Hab. ad Insulas Gallapagos, *Asteriæ solaris* cutem penetrans. (Lord Hood's Island.)

The arrival in this country of the shell above recorded, with the soft parts, has afforded data for a generic character indicating a distinct family among the *Pectinibranchiata*, the form and disposition of whose mantle differs from that of any other genus in the order. This mantle (which in *Stil. Astericola* is of a green hue,) is thick, fleshy and cup-shaped, with a small aperture at its base and a free posterior margin, enveloping the soft parts and the last whorls of the shell, which has thus somewhat the appearance of a small acorn set in its cup. On the ventral aspect of this mantle is the rudiment of a foot; and from the small basal aperture a retractile *proboscis* (which when exserted is as long as the whole animal) is protruded. At the base of this *proboscis* are two thick, round, somewhat pointed *tentacula*; and at the base of them are the eyes or rather ocular specks without pedicles. The *branchia* is placed on a single stem. At the base of the *proboscis* is a spherical muscular stomach, and the intestine ascends into the spire of the shell, where it becomes attached to the liver, which, in the present species, is of an orange colour.

Mr. Cuming found this elegant parasite burrowed in different parts of the rays of the oral disk of *Asterias solaris*, Gray, where it is almost hidden from sight, so deeply does the animal penetrate into the substance of the *Starfish*, in which it makes a comfortable cyst for itself, wherein it most probably turns by the aid of its rudimentary foot. All the specimens infested with *Stiliferi* appeared to be in the best health, though there is reason to believe that these *Mollusca* feed upon the juices of the *Starfish*. With that instinct of self-preservation imparted to all parasites whose existence depends upon that of their nidus, the *Stilifer*, like the *Ichneumon* among insects, appears to avoid the vital parts; for, in no instance did Mr. Cuming find it imbedded anywhere save in the rays, though some had penetrated at their base and very near the *pelvis*. When extracted, the older shells have much the appearance of a milky-clouded glass bubble; the younger shells are of an unclouded transparency.

Dr. Turton, in the second volume of the 'Zoological Journal' (p. 367, pl. xl.), described and figured a shell under the name of *Phasianella stylifera*, adding that he found a dozen attached to the spines of *Echinus esculentus* dredged up in Torbay. It is clear that Dr. Tur-

ton's shell is not a *Phasianella*, for it is described as having no *operculum*; and the similarity of the shell leaves no doubt, when joined to the parasitic habits of the animal, that it is one of the congeners of *Stilifer Astericola*: I, therefore, propose to name it *Stilifer Turtoni*.

Mr. Sowerby possesses a third species, which, although its habits are unknown, may be referred to this genus with the name of

STILIFER SUBULATUS. *Stil. testâ turritâ, subulatâ, attenuatâ, diaphanâ, anfractibus numerosis, subrotundatis; apice longissimo: long.* $\frac{5}{10}$, *lat.* $\frac{3}{12}$ *poll.*

Hab. in Indis Occidentalibus.

This shell is so beautifully transparent that the *columella* in fine specimens can be as distinctly seen as if there were no intervening medium. The long *apex*, which consists of many close-set whorls, is generally out of the perpendicular.—W. J. B.

Mr. Owen, to whom Mr. Broderip acknowledged himself indebted for the anatomical particulars which he had recorded of *Stilifer Astericola*, subsequently exhibited a series of drawings of the animal and of its various parts, so far as he had been enabled to observe them in the specimens brought home by Mr. Cuming. He also read a more detailed description of the peculiarities remarked by him during the dissection of the individuals which had been entrusted to him for that purpose.

April 10, 1832.

Joseph Cox Cox, Esq., in the Chair.

A Report from Devereux Fuller, the Head Keeper, was read. It was communicated to the Committee by the President.

It stated that the period of gestation of the *Puma, Felis concolor*, L., had been ascertained to be 96 or 97 days, the female in the Society's Menagerie having admitted the male on Dec. 28, and brought forth on the night of April 2 two young. The ground-colour of these is of a paler fawn than that of either of the parents, and they are deeply spotted, as was noticed on the former occasion (Part I. p. 158). The eyelids of one of them were partially unclosed on April 9. The mother, whose temper was always mild, has since become remarkably gentle, purring when the keeper goes into her den, and allowing her young ones to be handled and carried about without appearing to be annoyed by such treatment. The young, on the contrary, were when first born extremely fierce, hissing and scratching with all their might; they have, however, since become better tempered, though they are still spiteful. The manners of both the mother and the young are similar to those of the *domestic Cat* and her kittens, the former carrying the latter about from place to place in her mouth. For a day or two previously to her littering she pulled the straw in her inner den into pieces and thus formed a nest.

On the former occasion the period of gestation could not be determined, the female having admitted the male several times; the last of which was 97 days prior to her parturition; a month after this latter occurrence (her single young one having been born dead,) she admitted the male once only, and became pregnant with her present, litter.

A Note was read from Mr. Henry Tripp, of Orchard Wyndham, Somersetshire, respecting the provision made by a male *Hawk*, after the destruction of its female, for the nourishment of their young. On the morning after the first night of her absence five small birds were found placed on the side of the nest. These having been taken away, nine others were found on the second morning; among them were a *Blackbird* and a *Thrush*. All of them were picked but not in the least broken. On the third night the male bird was caught in a gin set in the nest for that purpose. He had previously been so shy as to evade all attempts at shooting him, while the female, on the contrary,

was got at so readily as to induce the keeper to destroy her, notwithstanding his wishes first to destroy her mate.

Specimens and drawings of numerous animals referable to the genus *Paradoxurus* were laid upon the table; and Mr. Gray entered into a detailed account of the distinguishing characters of the group, which he prefaced by some observations on the family of *Viverridæ* in general, and concluded by the description of several new species. He observed that the family may be divided, independently of the characters furnished by the teeth, into three sections, distinguished by the baldness or hairiness of the soles of their hinder feet, and by concurrent differences in the structure of their odorous glands. The first of these is limited to the true *Civets*, the genus *Viverra*, in which the under part of the hind-feet is entirely covered with hair, except on the tips of the toes and the large tubercles at their base; and the pouch secreting the civet forms a deep cavity on each side near the *anus*. The species of this group are: 1, the *African Civet*, *Viverra Civetta*, L.;—2, the *Zibet* of Buffon, Hist. Nat. tom. ix. t. 34, *Viv. Zibetha*, L., which is the *Viv. undulata*, Gray, Spic. Zool. p. 9, t. 8;—3, the *spotted Civet*, *Viv. Tangalunga*, Gray, which is the *Viv. Zibetha* of M. F. Cuvier, Dr. Horsfield, and Sir Stamford Raffles, and is readily distinguished from the last-mentioned species by a continuous longitudinal band occupying the upper surface of the tail, the numerous irregular rings being separated only on its inferior half;—4, the *Gunda Civet*, *Viv. Rasse*, Horsf., *Viv. Gunda*, Ham. MSS., which Dr. Horsfield believes to be distinct from *Viv. Indica*, Geoffr.;—5, the *pale Civet*, *Viv. pallida*, Gray;—and 6, the *Delundung*, *Viv. Linsang*, Hardw., *Felis gracilis*, Horsf. Of these the last three have the slender form of the *Gennets*; and one, the last, has been formed into a separate genus by Dr. Horsfield; the teeth however, according to the figure of that naturalist, agree exactly with those of the *Civets*, except in the deficiency of the last upper molar.

The second section is likewise limited to a single genus, *Genetta*, in which the soles of the hinder feet have a narrow bald line extending from the heel and bifurcating, so as to inclose a small triangular hairy pad near the toes, the basal tubercle of which, and the tips of the toes themselves, are bald. In this section also the anal pouches exist, and the animals belonging to it, as well as to the former, when in confinement, frequently retrovert their tails, in order to press out, by rubbing against any hard substance within their reach, the odorous secretion contained in the pouches. The species are: 1, the *Fossane*, *Viv. Fossa*, Erxl.;—2, the *Senegal Gennet*, *Viv. Senegalensis*, Fisch., from M. F. Cuvier's 'Mammifères Lithographiés';—3, the *feline Gennet*, *Viv. felina*, Thunb., which has certainly no affinity with the *Civette de Malacca* of Sonnerat, doubtfully referred to it by M. Fischer;—and 4, the *common Gennet*, *Viv. Genetta*, L.

In the third section, which includes two very distinct subdivisions, the entire sole is bald from the toes to the heel. One of the subdivisions has long, slender, and nearly free toes; anal pouches of greater or less depth; and hair of a peculiarly harsh character and grizzled

appearance: this includes the genera *Herpestes* and *Ryzæna*, and probably also *Crossarchus* and *Atilax*; but as Mr. Gray had not seen the two latter, he could not speak confidently with respect to them. *Crossarchus* and *Ryzæna* differ in having one false molar tooth less than the other genera. The remaining subdivision has the toes short, and united by a membrane as far as the base of the claws; it has no anal pouch, but in place of that organ a bald secreting fold over the sheath of the *penis*; and its fur is rather rigid with a woolly undercoat. In most cases the tail has the faculty of rolling itself up spirally from the tip, from which circumstance M. F. Cuvier deduced the generic name of *Paradoxurus* applied by him to the animals of this subdivision. One species, the *Benturong* of Major Farquhar, has since been separated by M. Valenciennes under the generic name of *Ictides*.

All the animals of this subdivision which Mr. Gray has seen living, agree in having a very narrow linear perpendicular pupil, but this character he considered as only of secondary importance; the *Foxes* having linear, while all the other *Dogs* have round pupils, and the *common Cat*, and some others of the genus *Felis*, having them perpendicular, while the *Lion*, *Tiger*, *Leopard*, *Jaguar*, *Puma*, and *hunting Leopard*, have them circular. The naked space extending the whole length of the *frænum* of the *penis* from the *anus* to the tip of the sheath, and secreting a brown odorous substance, appears to have been first noticed by Pallas in his description of the *Viv. hermaphrodita*, to which, by a not unapt comparison, it gave a name. It appears to have been entirely overlooked by M. F. Cuvier, but is readily seen even in the dried skin, and most probably exists in the genus *Ictides* also. In this latter, according to Major Farquhar, the tail is truly prehensile, and is used by the animal in climbing trees, but, like that of the *Kinkajou*, it has no bald portion near the tip. The degree indeed in which the convolutive peculiarity of this organ manifests itself, appears to vary greatly in the different species. When not twisted up, the tail is generally trailed along the ground with a slight turning over at the tip, which occasions the hair, especially on the older specimens, to be more or less worn away on either surface.

The teeth of the genus *Paradoxurus* agree in number and structure with those of *Viverra*, *Genetta*, and *Herpestes*, but differ in the form of the cheek-tooth and tubercular molars, which in both jaws are shorter, broader and more bluntly tubercular, indicating more frugivorous habits. In their examination, not only in this genus but in the whole order, it is necessary to observe the change that takes place both in their distribution and form on the shedding of the milk-teeth, which are widely different from those by which they are succeeded. In the young of *Paradoxurus* there are in the upper jaw only four molars on each side, viz. two false molars, one cheek-tooth, and one tubercular; while the adult animal has one additional false molar, and a second tubercular, the third false molar taking the place of the cheek-tooth, and the cheek-tooth that occupied by the tubercular, of the young animal. The teeth of the adult are also much stronger and larger, the anterior ones becoming less, and the poste-

rior more, lobed and tubercular. In the first set, the false molars are thin and compressed, and the second is distinctly three-lobed; this last is replaced by a strong thick conical tooth with a slight raised margin behind, and the third or new false molar is nearly similar, but furnished with a very small tubercle in the middle of the inner side of the base of its crown. The cheek-tooth of the first set is also compressed and has a small lobe in the middle of the inner side; while in the second set this tooth is triangular, broad in front and narrow behind, with a large distinct lobe on the front of its inner margin. It is much larger than the tubercular tooth of the first set which it replaces, and which is little different in form from the first tubercular of the second set, although the latter is also larger and has more prominent and distinct tubercles.

Mr. Gray observed that it was on this discrepancy between the milk and second teeth that the generic character of *Paguma*, described by him in the 'Proceedings' of the Committee, Part i. p. 95, was founded, he not having at that period noticed the change that takes place on the shedding of the former set. The description there given was taken from a skull belonging to a young animal about to part with its milk-teeth, which still however remained perfect, while the jaw had elongated sufficiently to allow of the partial development of the two tubercular teeth of the new set, which were rendered visible by scraping. In this state the true number of teeth belonging to the family was present, the tubercular tooth of the first set still retaining the place of the cheek-tooth of the second, for which it was described. Subsequently, however, Mr. Gray has been enabled, by cutting away the bone below this tooth, to lay bare the true cheek-tooth, which resembles that of the other species of *Paradoxurus*, to which genus the animal in question must therefore revert. The explanation of this change is the more interesting inasmuch as the Civets in general appear to attain nearly their full size previous to its occurrence, and consequently do not offer the usual indications of immature age.

Mr. Gray then proceeded to enumerate the following species of the genus *Paradoxurus*, all of them, as far as their *habitat* has been ascertained, natives of India and the Indian Islands.

1. *Paradoxurus Typus.* F. Cuv., Mamm. Lith.
   Genette de France. *Buff., Hist. Nat. Suppl.* iii. t. 47.
   Viverra nigra. *Desm., Mamm.* p. 208.

This species appears to be the *Musk* and *Musky Weasel* of Pennant's Quadrupeds, both taken from Sir Elijah Impey's drawings, but not the *Piloselle Weasel* of the same author, which has hairy soles. There is a variety now living in the Gardens of the Society, which may be called *fuliginosus*, it being nearly black in consequence of the length and number of the black hairs, which only show the fulvous under-fur between their roots. It has a very distinct pale spot above, and another beneath, the eye.

The three following species are only known by the drawings of Dr. Hamilton and Gen. Hardwicke, the former of which were liberally lent to Mr. Gray by Dr. Wilkin and Dr. Horsfield, in order to enable

him to determine by actual comparison the species described from them by M. de Blainville. The first two appear to agree with *Par. Typus* in having nearly naked ears, and may possibly be only varieties of that species; the third approaches more nearly to *Par. Muangas.*

2. Paradoxurus Pennantii. *Par. pallidè cinerascenti-brunneus, fasciis obscuris saturatioribus lateralibus; auriculis nudiusculis; orbitis albidis; artubus caudæque dimidio apicali nigrescentibus.*

This animal is stated by Gen. Hardwicke, from whose drawings the character is taken, to be found in the upper provinces of Bengal, and to be very destructive to poultry and game. Its head and body measure 21, its tail 23,—making a total length of 44 inches. The ears and sides of the nose are pale flesh-coloured.

3. *Paradoxurus Bondar.*

Ichneumon Bondar. *Ham., MSS.*

Viverra Bondar. *Blainv., in Desm. Mamm.* p. 210.

This species inhabits Bengal, where it is called the *Musk-Cat.* Its head and body measure 25, its tail 24,—making a total length of 49 inches. Dr. Hamilton's reduced figure, from which this animal was described by M. de Blainville, agrees with Gen. Hardwicke's drawing in almost every particular, except that in the former the nose is rather sharper, and the tail not quite so bushy, as in the latter.

4. *Paradoxurus prehensilis.*

Ichneumon prehensilis. *Ham., MSS.*

Viverra prehensilis. *Blainv., in Desm. Mamm.* p. 208.

This species is only known from Dr. Hamilton's drawing; it appears distinct from any of the others, more especially in the bands of the sides of the back being formed of oblong nearly confluent spots, and in the length of the tail, which has a long white tip. The central dorsal streak is not very distinctly marked, and the dark line in the drawing may perhaps be intended for the shadow.

5. *Paradoxurus Musanga.*

Viverra Musanga. *Horsf., Zool. Res.* t. 5.

Viverra fasciata. *Desm., Mamm.* p. 209 ?

The very young animal is pale ash-coloured with three distinct black dorsal bands, and the sides spotted. Its fur is very close and soft, mixed with scattered very rigid rather longer black hairs.

6. Paradoxurus dubius. *Par. pallidè flavescenti-cinereus, pilis dorsi longioribus apice brunneis, subtùs flavescenti-albidus; dorso fasciis centralibus tribus, lateribusque maculis brunneis inconspicuis; capite, auriculis pilosis, pedibusque castaneis; caudâ præter imam basin nigro-brunneâ; maculæ utrinque ad nasum, alterius supra genas, fasciæque interauricularis transversæ pilis albo-apiculatis.*

This species is described from a young specimen sent to the British Museum by Dr. Horsfield: it may be only a variety of *Par. Musanga,* but cannot be the general state of the young of that species,

which is described above. It is probably the Javanese variety of the *Musang* described and figured by Dr. Horsfield.

7. *Paradoxurus hermaphroditus.*

Viverra hermaphrodita. *Pallas, in Schreb. Säugth.* p. 426.

The description of the glandular fold between the *anus* and *penis* proves this species, which is only known by Pallas's description, to be a *Paradoxurus.* It appears to resemble the preceding, but differs in having the entire throat black, and in its black dorsal bands.

8. Paradoxurus Pallasii. *Par. nigrescenti-griseus, nigro alboque intermixtus, infrà pallidior; dorso fasciâ latiusculâ maculisque parvis utrinque biserialibus nigris; artubus, lateribus infernè, caudâque nigrescentibus; facie nigrâ, maculâ utrinque ad nasum, alterâ sub oculos, fasciâque transversâ per frontem pone genas ad gulam usque ductâ, albis; auriculis nudiusculis; guld anticè nigrescenti-cinereâ, posticè cinereo-albidâ; caudâ corpore longiore.*

Par. albifrons. *List in Report of Council Zool. Soc.* 1831, *haud F. Cuv., Mém. Mus.* ix.

This species is described from a living specimen in the Gardens of the Society, brought from India, and presented by Mr. Buchanan.

9. Paradoxurus Crossii. *Par. suprà nigrescens, pilis plumbeis nigro-apiculatis, infrà flavescens, pilis albo-apiculatis; auriculis apice nudiusculis; facie, auriculis externè ad basin, pedibus, caudæque dodrante apicali nigro-brunneis; maculâ rotundâ palidâ ad nasum utrinque, alterâque minore sub oculos; fronte flavescente.*

The length of the head and body is 21 inches, of the nose to the front of the ear $3\frac{1}{2}$, of the tail 16, of the fore-foot to the elbow-joint $4\frac{1}{2}$, and the distance from the back of the fore-foot to the front of the hind-, 8 inches. The species is described from a specimen lately living in the Surrey Zoological Gardens, and since presented by Mr. Cross to the British Museum, where both the skin and skeleton are preserved.

10. *Paradoxurus leucopus.* Ogilby, in Zool. Journ. iv. p. 304.

11. Paradoxurus Hamiltonii. *Par. auriculis pilosis; dorso griseo-cinerascente, pilis nigro-apiculatis intermixtis, seriebus sex vel septem macularum rotundarum nigrarum; facie dorso concolore, strigâ angustâ nigrâ inter, alteráque utrinque supra, oculos; fasciâ nuchali mediâ nigrâ, laterali utrinque breviore pallidè brunneâ; pedibus dorso concoloribus; caudâ corpore sesquilongiore, rufescenti-brunneâ, annulis angustis subæqualibus nigris versus apicem remotioribus.*

This species is described from a living specimen in the Surrey Zoological Gardens, which has been in Mr. Cross's possession about two years.

12. *Paradoxurus larvatus.*

Gulo larvatus. *Ham. Smith, in Griff. An. Kingd.* ii. p. 281.

Viverra larvata. *Gray, Spic. Zool.* p. 9.
Paguma larvata. *Gray, Proc. Comm. Zool. Soc.* i. p. 96.

13. PARADOXURUS TRIVIRGATUS. *Par. nigrescenti-griseus, infrà griseus; capite saturatiore; dorso fasciis tribus longitudinalibus mediis nigrescentibus; pedibus caudâque corpore longiore nigris; facie immaculatâ.*

Viverra trivirgata. *Reinw., Mus. Leyd.*

This species is described from a specimen in the Leyden Museum, sent from the Moluccas. The teeth agree with those of the genus in every particular, except that the cheek-teeth are rather shorter.

14. *Paradoxurus? binotatus.*

Viverra binotata. *Reinw., Gray, Spic. Zool.* p. 9.

Mr. Gray referred this animal to the genus *Paradoxurus* with some doubt, he not having seen the teeth. Its walk, however, is truly plantigrade. The *habitat* of Ashantee, given to it in the Leyden Museum, may be questioned: it was obtained from an old Dutch collection, in which it is possible that the localities were not strictly preserved.

To this enumeration Mr. Gray added the indication of an animal known only by a rough sketch brought by Mr. Finlayson from Siam, and deposited in the Library of the East India Company. This he proposed to call *Paradoxurus Finlaysonii*, and described as being pale brown; with a band across the middle of the muzzle, and another across the orbits (including the eyes and expanding on the back of the cheek), the ears, and three continuous narrow lines along the middle of the back, blackish brown; the feet blackish; and the tail cylindrical. He also considered it probable that the *Civette de Malacca* of Sonnerat, *Voy.* t. 91, the *Viverra Malaccensis* of Gmelin, belonged to this genus, with which it agreed in several particulars of its mode of colouring, although it differed in having a black streak along the middle line of its belly, a character confined to few among the *Mammalia*.

With respect to the *Paradoxurus aureus* of M. F. Cuvier, he stated that he was inclined to believe that it really belonged to the genus on account of its naked soles, but was certainly not, as had been imagined, the young of *Par. Typus*.

Mr. Gray added, that figures of the *Parr. Pennantii, Bondar, prehensilis, Pallasii*, and *Hamiltonii*, are engraved for the forthcoming No. of the 'Illustrations of Indian Zoology'.

Preparations were exhibited of the stomach and *cæcum* of a *Capromys* which had recently died at the Society's Gardens, and Mr. Owen read his notes of the dissection of the animal. He commenced by remarking that its external characters agreed with those described by M. Desmarest as existing in his *Capromys Fournieri*; while its admeasurements, especially those taken from the osseous system, corresponded closely with those given by Mr. Say in the Journal of the Academy of Natural Sciences of Philadelphia, when describing his

Isodon pilorides, the species on which the generic characters were first pointed out. He further observed that the affinity of this genus to *Cavia*, indicated by Mr. Say from the comparison of *crania*, received corroboration from various particulars of the anatomy of the animal; an affinity, he conceived, not to be denied on account of the existence in *Capromys* of perfect clavicles, and their absence in *Cavia*; for an anatomical character, he observed, is not the less artificial if taken without reference to the rest of the organization.

"The individual examined was a fully grown male, and measured 1 foot 6 inches from the end of the nose to the setting on of the tail, the length of the tail being $7\frac{1}{2}$ inches.

"On the *abdomen* being laid open the *viscera* were found covered, as in the *Agouti*, with an extensive *omentum*, which was loaded with lardaceous fat. The sternal layers of the *omentum* extended along the stomach and spleen across the whole of the *abdomen*; but the dorsal layers, which were continued from a fold of the *colon*, extended from the right side only to the mesial line, where they terminated by a free edge without adhering to the sternal layer, and consequently left at that part a large orifice by which the fingers could be introduced into the omental bag. The liver, stomach, and spleen, occupied as usual the hypochondriac and epigastric regions, and the gall-bladder was also distinctly visible lying between two separate lobes and not in a partial fissure at the under surface of the liver. The *cæcum*, a capacious, elongated and sacculated bag, extended, as in the *Cavies*, from below the stomach down the left side and across the lower part of the *abdomen*, terminating in the right iliac region with its *apex* directed towards the diaphragm. A long and loose fold of the *colon* extended obliquely across the *abdomen* from the right hypochondriac to the left iliac region, and the remaining space above the *cæcum* was occupied by convolutions of small intestine. In the *regio pubis* the *testes* were situated, of the large size which seems peculiar to this fertile order of *Mammalia*, with the *globus major* of the *epididymis* only projecting through the abdominal ring: these projecting portions were about the size of kidney-beans and appear to have been mistaken by M. Desmarest for the *testes* themselves, which, however, are rather larger than olives. The abdominal ring is large enough to permit the whole of the gland to be protruded, and from the attachment of the inferior fibres of the internal oblique and *transversalis* muscles to the *globus major*, and their capability of forming a cremasteric bag for the *testes* when these are pushed out of the *abdomen*, it is most probable that they are so protruded, as in other *Rodentia*, during the rutting season.

"The stomach is of an oblong shape, pretty equally rounded at both extremities. The *œsophagus* is narrow, and after a short course in the *abdomen* terminates at 2 inches 2 lines from the left extremity of the stomach; a pouch of the same extent is continued from the right of the *pylorus*, which is situated only $1\frac{1}{2}$ inch to the right of the *cardia*. The length of the stomach when distended is 6 inches,

the circumference at the widest part 8 inches, at the narrowest part 6 inches.

"The *duodenum* is wide at its commencement, as in *Anæma* and *Dasyprocta*, but has not a capacity so considerable as in *Cælogenus*, where, according to Sir E. Home, it projects like a *cæcum* above the *pylorus*: its circumference at this part is 2 inches; but where it receives the biliary secretion, viz. at a distance of 1 inch from the *pylorus*, its circumference is diminished to one half that size. It is a loose intestine, having a mesentery through the whole of its course. It rises at first towards the liver, then descends in a curved form behind the *colon* and in front of the right kidney, a process of *peritoneum* passing off from the lowest part of the curvature and attaching the intestine to the right *psoas* muscle; it then ascends again as high as the liver and is continued without crossing the spine into the *jejunum*; the mesentery which attaches it to the spine is narrowest at the commencement and at the termination of this intestine, and between its layers is situated the *pancreas*, beautifully ramified, much flattened, and of a minutely granular structure. The circumference of the small intestines is nearly uniform throughout, being about 1 inch; but the *ileum*, after becoming gradually and slightly contracted, widens just at its termination: the expanded orifice is applied, as it were, to the side of the *cæcum* over a much smaller orifice in that gut; the *parietes* of the *cæcum* so included forming a semilunar valve. The length of the small intestines was 17 feet 10 inches; that of the *cæcum* 13 inches; and its circumference at the widest part 6 inches.

"The *parietes* of the *cæcum* are puckered up by two longitudinal muscular bands, one of which is continued along the *colon* for a short distance. The extent of the *cæcum* above the orifice of the *ileum* is very clearly indicated by two lateral dilatations or *sacculi*, which are separated from the *colon* by a valvular structure similar to that at the termination of the *ileum*; the two orifices of the blind intestine being analogous to the *cardia* and *pylorus* of the stomach. This structure I have had occasion also to observe very distinctly in the *Beaver*, the *Cavies*, and in some *Monkeys*, as *Macacus Cynomolgus*. The *colon* is widest at its commencement, but not sacculated; its circumference here is 3 inches 4 lines; but it soon diminishes to less than half that extent. It ascends obliquely from the left lumbar to the right hypochondriac regions, then makes the long and loose fold before described, and, after having thus returned upon itself, performs many small convolutions along the middle line and back part of the *abdomen*, to which it is attached by a broad *meso-colon*, and is thus continued into the *rectum*. The *fæces* begin to be separated at the commencement of the long fold, and there also the *colon* is connected by continuity of *peritoneum*, with the *duodenum*.

"The liver presents a singular structure, being subdivided into almost innumerable angular lobules, varying in size from 3 to 5 lines: nevertheless these lobules are so compacted, that the *viscus* presents

a uniform smooth convex surface towards the diaphragm; and they are so grouped together that the usual larger divisions or lobes are distinctly recognisable. The number of these may be reckoned five; the first on the right side is the smallest, and projects in the situation of the *lobulus Spigelii.* The gall-bladder is situated as above described between the third and fourth lobes, having an entire investment of *peritoneum.* The coronary ligament is attached to the fourth lobe; it does not extend to the sternal margin of the lobe, nor does it dip down into a deep cleft, but the lobules closely adhere to it as soon as it reaches the surface of the *viscus:* the trace of the obliterated umbilical vein was very slight. The lobules, though closely in contact, are quite detached from each other, being appended, as it were, by their *apices* to the larger branches of the *vena portæ* and hepatic arteries and veins. Each of the lobules is partially subdivided into still smaller lobules, the whole structure approximating to a complete natural unravelling of this conglomerate gland to its component *acini.*

"The gall-bladder is about the size of a pigeon's egg; its contents were limpid and of a greyish green colour, and had not stained the surrounding parts. This departure from the usual colour and consistency of the bile might have led to the idea that it was connected in some way with the peculiar structure of the secretory organ just described; but I hadpreviously noted a limpid and almost colourless state of the bile in some other *Glires,* viz. the *Guinea Pig,* the *Acouchy,* and the *crested Porcupine,* which had a small gall-bladder, and in none of which did the liver deviate from the ordinary configuration. Mr. Say, who described and very correctly figured the peculiar liver of *Capromys,* makes no observation on the bile. The cystic duct in the present instance was joined by the hepatic duct at an acute angle after the course of an inch; the *ductus choledochus* terminated distinctly from the pancreatic at the upper part of the *duodenum* lying upon the gut, and becoming a little larger and making a bend at a right angle near its termination.

"The *pancreas* consists of two parts, one more compacted extending behind the stomach from the spleen; the other thin and ramified in the duodenal mesentery.

"The spleen is loosely attached to the left end of the stomach, of an elongated trihedral form, $2\frac{1}{2}$ inches in length, and 8 lines across at the lower extremity, which is the broadest part.

"The kidneys are of a simple form and structure, having a single *papilla* in each, which is broad and projecting: the *pelvis* is small. On injecting them with size and vermilion, the former substance passed through the *tubuli uriniferi* into the *pelvis,* the colouring matter stopping at a line's distance from the termination of the tubes. Their shape being more globular than in Man, they were more prominently situated in the lumbar regions, and had a greater investment of *peritoneum.* The right kidney was higher than the left by its whole length; in the *Acouchy, Agouti,* and *Rat,* there is less difference in the relative height of these glands. The supra-renal glands are of

an oblong rounded form, nearly as large as hazel-nuts. The right, as usual, was closely attached to the *vena cava inferior*, and both were situated mesiad of the upper extremities of the kidneys. The above structure of kidney and large size of the supra-renal glands appear to be common to all the *Glires* that have been hitherto examined.

"The lungs were divided into three lobes on the left side and four on the right, the additional lobe or *lobulus impar* occupying the usual situation between the *pericardium* and diaphragm; having the *œsophagus* behind and the *vena cava inferior* in front of it.

"The heart was more pointed at the *apex* than in the *Acouchy*, and the great vessels were given off from the arch of the *aorta* in a different manner; the left subclavian arising separately, the right subclavian and carotids by a common trunk: in the *Rat* these vessels arise as in Man. Nothing unusual was observed in the structure of the heart, but the coagulated fibrine in the cavities was firmer, and adhered more strongly to the *parietes* than ordinary. This organ had evidently been in a state of inflammation, for the *pericardium* had contracted an adhesion to the base of the right ventricle, and the serous covering of that cavity was thickened and opake. The contour of both auricles was rounded and entire; there being a great similarity between them, as in the *Cavies*. The blood returned from the head and anterior extremities, was emptied into the right auricle by a single vein. In the *Rat*, *Porcupine*, *Elephant*, and in all the *Marsupiata* that I have examined, viz. *Macropus*, *Phalangista*, *Phascolomys*, *Phascolarctos*, and *Perameles*, there are two distinct *superior cavæ* entering the auricle, as in *Birds* and *Reptiles*. In the *Hog* the left *azygos* vein enters the auricle near the inferior *cava*; being previously joined by the coronary vein.

"The *thymus* gland is about the size of a pea, of a red colour, and of a firm fleshy texture.

"The transverse section of the *trachea* is somewhat triangular, the cartilages forming the two anterior sides, and a small part of the posterior; but gradually encroaching upon that side towards the termination of the tube, where their extremities are occasionally bifid. The *bronchiæ* quickly lose their cartilaginous structure after having entered the lungs: they had been in a state of acute inflammation at the time of death.

"The thyroid gland is proportionally larger in this than in any other quadruped I have dissected; it is composed of two lateral lobes, each 10 lines in length, from 3 to 4 lines in breadth, and from 2 to 3 in thickness: these lobes are joined by a distinct band, 2 lines in breadth, passing obliquely between their lower extremities across the third, fourth, and fifth rings of the trachea. When these dimensions are compared with those of the animal itself, it will be seen that this gland, in proportional magnitude, is even greater than in the human subject. Its structure was lobulated, and apparently healthy.

"The thyroid cartilage is of a rounded form, bulging out at the lower part, and is larger in proportion to the cricoid than in the *Acouchy*.

The arytenoid cartilages present the same peculiarity as in the above-named animal, being continuous with each other at their *apices*. This adhesion does not of course prevent their being drawn apart at their bases where the *chordæ vocales* are attached; the *crico-* and *thyreo-arytenoidei* being strongly developed for that purpose. The *chordæ vocales* are distinct shining ligamentous threads; the *crico-thyroidei*, which render these chords tense, were largely developed, covering the whole of the anterior space between the two cartilages to which they are attached. They are no doubt materially concerned in producing the sharp cry of this animal. The *sacculi laryngis* are narrow but deep. The *epiglottis* is broad and of a rounded form; it has a linear depression at its base, and a longitudinal ridge along the middle of its posterior or laryngeal surface, which fits into the *rima glottidis* when the cartilage is depressed. The margin of the soft palate was in close contact with the tongue anterior to the *epiglottis*, which, together with the *apices* of the arytenoid cartilages, rose into the posterior *nares*; the structure, indeed, seemed to forbid the *epiglottis* passing under the soft palate, although we must suppose it to do so when the shrill cry is produced; but the grunting noise appears to be emitted by the nose.

"The tongue corresponds in form to the space between the two rows of inferior *molares*; is compressed laterally, and deeper than it is broad. It grows gradually narrower to the *apex*, which is neatly rounded and is impressed with small follicular apertures. Half an inch of the extremity only is free. The *papillæ* on the surface are extremely minute; towards the *dorsum* they are conical and retroverted, and numerous delicate lines converge towards the root of the tongue. Like the *Acouchy*, it wants the elevated or super-imposed portion observable in the *Beaver* and *Guinea-pig*.

"The *parietes* of the *pharynx* are extremely thick; the *isthmus faucium* is long, narrow, and conical, diminishing backwards, as in the *Beaver*; the sides are not produced into folds, but the whole of this structure is evidently adapted to the same end, as was first pointed out by Mr. Morgan in the structure of the *fauces* of the *Capybara*. The inner membrane of the *œsophagus* is disposed in longitudinal *rugæ*.

"The eye is stated by M. Desmarest to be moderately large, but the largest diameter of the globe does not exceed 5 lines; the apparent magnitude is owing to the great proportion in the *cornea*, the diameter of its base being only one line less than that of the globe itself. This large size of the *cornea* is found in most of the *Rodentia*, especially in those whose habits are nocturnal. It prevails also in the *Lemuridæ*; and is evidently for the purpose of admitting as much light as possible into the globe. The loss of refractive power is in most of these cases compensated by a greater convexity in the *lens*; which in *Capromys* is 3 lines in the long and 2 in the short diameter. The conjunctive membrane has a brown stain round the margins of the *cornea*; the rest is white and of a firm texture. The sclerotic is so thin as to be discoloured by the *pigmentum nigrum* beneath, so that the anterior half is nearly black; which, when seen through the white

conjunctive, gives the grey appearance to the *white* of the eye. The *membrana nictitans* is extremely small, being about a line in length and breadth. At the back part of the cavity of the eye there is a little light-coloured pigment.

"The black skin covering the end of the nose is remarkably lax, and the muscles going to it are well developed: its motions are said to be very free.

"Among the peculiarities of the muscular system the most remarkable is a blending together of the *obliqui externi* and *recti abdominis* muscles, so that the origin of the latter partook of the character of the insertion of the mesial pillars of the abdominal rings; the left *rectus* arising thick and fleshy from the right *os pubis*, and passing through a large slit in the origin of the right, which arose in a corresponding manner from the *os pubis* of the left side: as there was no tendon covering these fleshy columns, it was doubtful at first whether to consider them as fleshy insertions of the external oblique, or decussated origins of the *rectus:* the latter muscles are however evidently distinct from the external oblique at the epigastric region of the *abdomen*, and pass over the cartilages of the true ribs to be inserted into the upper part of the *sternum*, and have no other attachment to the *pubis* but through the medium of the fibres before described. The external oblique muscles had the usual serrated origins from the ribs, the atlantal fibres passing obliquely downwards, and blending with those of the *recti*, the lower fibres being inserted distinctly into the *rami* of the *pubis*, and forming the lateral or outer pillars of the abdominal opening. The decussating *fasciculi* of the *recti* formed the mesial or internal pillars of the same opening; through which, as before mentioned, the *epididymis* projected, inclosed in a muscular pouch or *cremaster*, formed by the fibres of the internal oblique and *transversalis*.

"The *pectoralis major* arose from the whole length of the *sternum*, and was continued into the deltoid without any line of separation, and inserted with it into the upper and outer half of the *humerus*. Beneath the preceding musole were two distinct slips, or accessory pectoral muscles, one arising from the lowest part of the *sternum* and inserted into the anterior tubercle of the *humerus*; the other arising from the cartilages of the three lower true ribs, and attached to the posterior tubercle of the *humerus* along with the *subscapularis*; between these portions the long head of the *biceps* passed. A distinct slip from the *latissimus dorsi* goes over the long tendon of the *biceps* to be inserted on its outer or anterior side, the rest of the tendon being inserted as usual. The *pectoralis minor* is inserted into the acromial end of the clavicle, which has also a well-developed *subclavius* muscle attached to it.

"The situation and form of the *testes* have been already noticed: they are the same as in most of the *Glires*. The *epididymis* was attached throughout its whole length to the *testis*, following the greater curvature of the gland, and measuring 1 inch 9 lines in length. The *tubuli testis* were much more minute and tortuous than in the *Rat*. The fatty processes that are found hanging from the *testes*

loose in the *abdomen* in some *Glires* were here developed in an extraordinary degree, measuring 5 inches in length, from 1 to 1½ inch in breadth, and giving off long conical processes like the *appendices epiploicæ* from the human great intestine. The *testes* in the *Batrachia*, it may be remarked, have similar appendages. The *vasa deferentia* continue slightly tortuous till they reach the *vesiculæ seminales*, along the mesial aspect of which they pass down to the neck of the bladder, and terminate separately at the commencement of the *urethra*: they gradually enlarge, but are not suddenly dilated at their extremities.

"The *vesiculæ seminales* are thin membranous bags, with a white glistening exterior, of an elongated form, and give off, on one side principally, from fifteen to twenty obtuse blind processes, which are more easily unravelled than in Man. The whole length of the vesicle in its natural state was 2 inches 3 lines. It becomes gradually smaller at the lower extremity, and forms what may be termed a duct of 10 lines in length. The prostate gland, as in other *Rodentia*, takes the form of accessory *vesiculæ*, being composed of a number of distinct tubes, which are compacted together by cellular texture, and form, in this species, four principal masses or lobes. The component tubes are flattened, thin, and easily torn, grow smaller towards the *urethra*, and ultimately join so as to terminate by a few small orifices.

"The manner in which the spermatic fluid and the accessory secretions from the above tubular glands enter the *urethra* differs from what is generally observed in the *Mammalia*, but, as far as I have observed, with some slight modifications, is common to the *Glires*. The *urethra* at its commencement forms a small *cul-de sac* behind the neck of the bladder; so that on laying open this part, together with the *urethra* anteriorly, the orifice of the bladder is seen to be separated from the canal of the *urethra* by a transverse ridge. Behind this ridge, at the distance of 4 lines from the orifice of the bladder, there projected a middle rounded process or *verumontanum*, 1½ line in length, on each side of which was a cavity, in which terminated separately the orifices of the *vas deferens*, *vesicula seminalis*, and accessory vesicles. A white coagulated substance was found projecting a few lines from the duct of the *vesicula seminalis*. In the *Acouchy* an amber-coloured substance, with a resinous fracture, was impacted in the duct of the *vesicula seminalis*, and projected in a similar manner into the *urethra*. Daubenton has noticed a similar circumstance in the *Agouti*.

"The membranous part of the *urethra* is 15 lines in length; it is closely embraced by a thick *stratum* of muscular fibres, disposed in a penniform manner from a middle posterior *raphé*. The true *accelerators* surround the bulb of the *urethra*, which is large. The *crura penis* are embraced by short and strong *erectores*. This organ is also provided with small *levatores* arising from the *symphysis pubis*, but terminating in a single tendon which runs along the *dorsum penis*, following the curvature, where it is bent backwards, and inserted in an elongated flattened bone which lies above the *glans*. This bone is 8

lines in length, pointed at either extremity, and concave towards the *urethra*, which terminates just below it. There were no lateral *ossicula* as in the *Cavies;* neither is the *penis* provided with the horny appendages which give it so singular an aspect in *Cælogenus.* The *glans* is naturally inverted, but when distended has a remarkable bulbous form. The preputial sheath was $1\frac{1}{2}$ inch in length, and distant from the *anus* for the same extent.

"The urinary bladder when distended approached to a globular form. The *urachus* was continued from the middle of its anterior part."

April 24, 1832.

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

Lieut. Colonel Sykes, having brought before the Committee at previous meetings various *Birds* of the *Raptorial* and *Insessorial* Orders, collected by him during his residence in Dukhun, completed on the present evening the exhibition of his collection of those Orders. He limited his observations on the several species to brief extracts from the copious notes which he had made in India respecting their habits, internal anatomy, and geographical distribution. In bringing them in succession under the notice of the Committee, he observed the order adopted in the following

Catalogue of Birds of the Raptorial and Insessorial Orders (systematically arranged,) observed in the Dukhun by Lieut. Colonel W. H. Sykes, Bombay Army, F.L.S., F.G.S., F.Z.S., M.R.A.S.

ORDER I. RAPTORES, *Ill.*

Fam. *Vulturidæ*, Vigors.—Genus *Vultur*, Auct. *Vulture.*

* 1. *Vult. Indicus*, Lath. *Vautour Indou*, Temm., Pl. Col. 26. *Mahah Dhoh* of the Mahrattas.

Irides deep brown. Length 42 inches, inclusive of tail of 10¼ inches. A stone half an inch in diameter was found in the stomach of one bird. The proportional length of the intestine to the body in these birds is 3 to 1, while in the *Neophron Percnopterus* it is 5·20 to 1. They congregate in flocks of twenty or thirty. On a dead camel, or horse, or bullock being thrown out on the plain, numbers of these *Vultures* are found assembled round it in an incredibly short time, although they may not have been seen in the neighbourhood for weeks before. Col. Sykes's specimens are no doubt referable to M. Temminck's species, although the latter bird is described as having whitish *irides.*

* 2. *Vult. Ponticerianus*, Lath. *Vautour Royal de Pondicherry*, Sonn., p. 182. pl. 104.

The *irides* are described by Shaw as red, while in two of Colonel Sykes's specimens they were of a deep brown, and in the third of a bright straw-yellow; but as the last had allowed itself to be captured by hand, had only grass and stalks of herbaceous plants in the stomach, and was evidently ill, the pale colour of the *irides* may be attributed to disease. Sexes alike in plumage. Mostly solitary: Colonel Sykes seldom, if ever, saw more than two together. The remarkable flatness of the crown, and very great width of the *cranium*, would seem to indicate

a generic difference between this species and the *Vult. fulvus* and *Bengalensis*. Length of bird 36 inches, inclusive of tail of 11 inches.

* 3. *Vult. Bengalensis*, Gmel. *Bengal Vulture*, Lath. *Geed* of the Mahrattas.

Of a smaller size, and with shorter and stouter legs than *Vult. Indicus*. Habits similar. Sexes alike. Length 30 inches, inclusive of tail of 10 inches. Colonel Sykes was induced to consider this species of Gmelin as distinct from *Vult. cinereus*, with which it has been classed by M. Temminck, in his Manuel d'Ornithologie, p. 4.

Genus *Neophron*, Sav.

* 4. *Neophron Percnopterus*. *Vultur Percnopterus*, Linn. *Rachamah*, Bruce, Trav. Append. p. 163.

Irides intense red brown. Gregarious. Sexes alike in adult birds; but non-adult birds vary in plumage from fuscous to mottled brown and white. These birds are always found in cantonments and camps. For the most part of the day they continue on the wing, soaring in circles. When on the ground, they walk with a peculiar gait, lifting their legs very high. They are efficient scavengers. Length 29 inches, inclusive of tail of 11 inches.

Fam. *Falconidæ*, Leach.

Sub-Fam. *Aquilina*. *Eagles*.

Genus *Haliaëtus*, Sav. *Sea Eagle*.

* 5. *Hal. Ponticerianus*. *Falco Ponticerianus*, Lath. *Aigle de Pondicherry*, Buffon, p. 136. Pl. Enl. 416. Called *Bruhmuny Kite* by Europeans in India.

Irides reddish brown. It is seen constantly passing up and down rivers at a considerable height, but prepared to fall at an instant on its prey. Usually it seizes while on the wing, but occasionally dips entirely under water, appearing to rise again with difficulty. It is quite a mistake to suppose it feeds on carrion. Colonel Sykes has examined the contents of the stomach and craw of many specimens, and always found fish, and fish only, excepting on one occasion, when a crab was met with. Sexes alike. Female lays two large white eggs. Length, inclusive of tail, 19 to 21 inches: tail 9 inches.

Genus *Circaëtus*, Vieill.

* 6. *Circ. brachydactylus*. *Falco brachydactylus*, Wolf. *Aquila brachydactyla*, Meyer. *Falco Gallicus*, Gmel., p. 295. sp. 52. *Le Jean le blanc*, Pl. Enl. 413.

Colonel Sykes's specimen was a female. *Irides* deep orange at the external margin, passing to straw-yellow at the internal margin. The remains of a snake and two rats were found in the stomach. Length, inclusive of tail, 30 inches: tail 11 inches.

Genus *Aquila*, Auct.

7. *Aq. chrysaëta.* *Falco chrysaëtos*, Linn. *Golden Eagle*, Lath.
Colonel Sykes's specimen differs so slightly from the European bird as not to justify its separation.

8. *Aq. bifasciata*, Hardwicke and Gray's Ind. Zool.
Irides brownish yellow ochre. Sexes alike in plumage; non-adult birds paler than adults. A whole rat found in the stomach of one bird. A second bird was shot by Colonel Sykes at the dead carcase of a royal tiger; but it had not tasted the banquet, as the stomach was empty. Length, inclusive of tail, 30 inches: tail 11 inches.

Genus *Hæmatornis*, Vigors.

9. *Hæm. Bacha.* *Falco Bacha*, Daud. pl. 22. *Le Bacha*, Le Vaill., Ois. d'Afr. pl. 15.
Colonel Sykes does not possess a specimen, but he identified a specimen in the possession of a friend, shot in the Dukhun.

Sub-Fam. *Accipitrina.* *Hawks.*

Genus *Accipiter*, Ray. *Sparrow Hawk.*

10. ACCIPITER DUKHUNENSIS. *Acc. suprà fusco-brunneus, plumarum marginibus pallidioribus, capite postico nuchâque albo variegatis; subtùs albus, pectore abdomineque notis subrotundatis grandibus, femorum tectricibus parvis, rufescentibus striatis; rectricibus fusco fasciatis, fasciis externarum confertioribus; tarsis subbrevibus.*
Irides stramineo-flavæ, margine gracili nigro circumdatæ. Longitudo *corporis* 14½ unc., *caudæ* 6½, *tarsi* 1¼.
Sexes alike in plumage. Resembles the *Acc. fringillarius*, but differs in the longitudinal broad reddish patches on the breast, in less red on the sides, in a black narrow streak down the throat, in shorter wings, in the tail having six broad bars instead of four, in the male bird being as large as the European female, and finally in the shorter *tarsi* and centre toes.

11. *Acc. Dussumieri.* *Falco Dussumieri*, Temm., Pl. Col. 308. female.
Irides bright yellow, with an exterior narrow margin of black. Wings short. Tail long and narrow, being only the width of the upper feather. M. Temminck's specific characters are taken from a female, the male being unknown. Colonel Sykes has but one specimen, and that a female, the male being unknown to him. Length, inclusive of tail, 12½ inches: tail 6½ inches.

Genus *Astur*, Auct. *Goshawk.*

12. ASTUR HYDER. *Ast. corpore suprà et subtùs brunneo, dorso imo rufescenti, plumarum rhachibus fuscis, alarum tectricibus albo notatis; abdomine maculis albis fasciato; frontis fasciâ gracili guttureque albis, hoc lineis tribus latis fuscis, unâ in medio, cæteris utrinque ad latera, notato; femorum tectricibus crissoque albis, rufo fasciatis; caudâ suprà rufâ, fasciis quinque gracilibus, ferè obsoletis, alteráque prope basin latâ, fuscis notatâ;*

remigibus fusco-brunneis ad apicem fuscis, pogoniis internis fasciis quinque fuscis gracilibus, alboque ad basin notatis.

Rostrum ad basin flavum, ad apicem nigrum. *Pedes* flavi; *unguibus* nigris. Longitudo *corporis* $16\frac{1}{2}$—17 unc., *caudæ* $6\frac{1}{2}$—7.

This bird has the three stripes upon the throat, and the aspect of *Falco trivirgatus*, Temm., fig. 303, but it is a much larger bird than M. Temminck's, and has otherwise characters in the plumage to entitle it to a specific distinction. A couple of mice were found in the stomach of one bird. Sexes alike in plumage. Female a little larger than the male.

Sub-Fam. *Falconina.*

Genus *Falco*, Auct. *Falcon.*

† 13. *Falco Tinnunculus*, Linn. *Kestril.*

Irides intense brown. A very abundant bird in the Dukhun. Both sexes are absolutely identical with the European birds in their characteristic plumage. Colonel Sykes, nevertheless, mentions his being in possession of a male bird exactly like the female of the *Kestril* in plumage and size, and, consequently, larger than the male *Kestril:* and as this was shot from a party of five or six, perched on the same tree, and without a male *Kestril* in company, he is induced to believe there is a distinct species, in which both sexes have the plumage of the female European *Kestril.* Remains of rats, mice, lizards, grasshoppers, and a bird, were found in the stomach of several specimens. In one stomach theremains of no less than four lizards were met with.

* 14. *Falco Chicquera*, Lath. *Le Chicquera*, Le Vaill., Ois. d'Afr. pl. 22.

Irides sanguineous. A common bird in the Dukhun. Sexes alike in plumage. Female usually the larger bird; but Colonel Sykes has a male quite as large as any female. A sparrow was found in the stomach of one male bird, and a young bat in the stomach of another.

Sub-Fam. *Buteonina. Buzzards.*

Genus *Circus*, Auct. *Harrier.*

† 15. Circus pallidus. *Circ. pallidè griseus, alis dorsoque saturatioribus; subtùs albus; uropygio albo, griseo fasciatim notato; rectricibus, duabus mediis exceptis, griseo alboque fasciatis; remigibus tertiâ quartâ quintâque fuscis.*

Irides viridi-flavæ. ♂. Longitudo *corporis* $19\frac{1}{2}$ unc., *caudæ* $9\frac{1}{2}$; ♀ *corporis* $21\frac{1}{2}$; *caudæ* 10.

This bird has usually been considered the *Circ. cyaneus* of Europe; but it differs in the shade of its plumage (male and female); in the back-head of the male not being white spotted with pale brown; in the absence of dusky streaks on the breast; in the rump and upper tail-coverts being white barred with brown ash; in the inner webs of four of the tail-feathers not being white; and in the bars of the under tail being seven instead of four. The female resembles the female of *Circ. cyaneus*, but

the plumage is two shades lighter, the tail is barred with six broad fuscous bars, instead of four, and the tail-feathers are much more pointed. The remains of six lizards were found in the stomach of one bird. Colonel Sykes never saw these birds perch on trees. They frequent the open stony plains only. The sexes were never seen together.

16. Circus variegatus. *Circ. capite suprà, nuchâ, ptilis, pectoreque rufis, plumis in medio latè brunneis; dorso, scapularibus, remigibusque externis intensè brunneis; pteromatibus, remigibus internis, caudâque griseis; abdomine femorumque tectricibus rufis; caudæ tectricibus superioribus rufo albo brunneoque, inferioribus griseo saturatiore, notatis.*

Longitudo *corporis* 21 unc., *caudæ* 10.

This is a very remarkable bird, and in its plumage seems to possess much of the united characters of the sexes of this genus, which are known generally to exhibit a marked difference. Colonel Sykes possesses but one specimen, a male.

Sub-Fam. *Milvina.*

Genus *Milvus*, Auct. *Kite.*

17. Milvus Govinda. *Milv. capite, nuchâ, corporeque subtùs rufescenti-brunneis, plumis in medio fusco lineatis; dorso, alis, caudâque satis furcatâ saturatè brunneis, illarum pteromatibus pallidioribus, hâc fusco obsoletè fasciato.*

Longitudo *corporis* 26 unc., *caudæ* 11.

This bird differs from the *Falco Cheele* in the want of white spots on the wing-coverts, white before the eyes, and white bar on the tail; in having the inner webs of the tail-feathers barred with numerous narrow bars, and in the shafts of the feathers about the head and neck, and generally underneath, being very dark. Sexes alike. Constantly soaring in the air in circles; watching an opportunity to dart upon a chicken, upon refuse animal matter thrown from the cook-room, and occasionally even having the hardihood to stoop at a dish of meat carrying from the cook-room to the house.

Fam. *Strigidæ*, Leach.—Genus *Otus*, Cuv.

18. *Ot. Bengalensis*, Franklin, Proceed. Zool. Soc. I. p. 115. *Goobur* of the Mahrattas.

Irides, external margin dark orange, gradually changing to yellow at the internal margin. Very common in the Dukhun. Generally found on the open rocky plains. A whole rat, (the tail hanging out of the mouth, and the head and most part of the body in the stomach, and partly decomposed,) was found in one bird: another had a crab, a third a *Pastor*; but the usual food appeared to be rats.

Genus *Strix*, Auct.

19. *Strix Javanica*, Horsf.

Although at a superficial view this species appears to be the *barn-*

door Owl of Europe (*Strix flammea*), a comparison of several specimens with the European bird satisfies Colonel Sykes that Dr. Horsfield was right in separating it. Neither sex is unspotted white underneath, nor has the Indian species a white disc. Sexes alike, with the exception of the plumage of the female being a shade or two lighter than that of the male. Length, inclusive of tail, 17 inches: tail 5 inches. One of Colonel Sykes's specimens was captured alive while lying on its back on the ground, defending itself against the attacks of a body of crows. *Irides* reddish dark brown.

+ 20. Strix Indranee. *Strix capite suprà pallidè brunneo, plumis albido marginatis; dorso imo, pteromatibusque rufescenti-brunneis, fasciis albis fusco marginatis notatis; dorso medio, ptilis, remigibus caudâque brunneis, his rufescenti fasciatis, hâc fasciis albidis gracilibus notatâ, ad apicem albo marginatâ; gulâ crissoque albescentibus; abdomine subrufo, brunneo graciliter fasciato; regione circumoculari nigrâ; disco rufo, brunneo marginato.*

Irides rufo-brunneæ. Longitudo *corporis* 21 unc., *caudæ* 9. Inhabits the woods of the Ghauts: rare. The specimen described is a young bird, and a female.

Genus *Ketupa*, Less.

+ 21. *Ketupa Leschenaulti*, Less., Traité d'Ornith. p. 114. *Strix Leschenaulti*, Temm., Pl. Col. 20. *Scops? Leschenaulti*, Steph., vol. 13. p. 53.

A rare bird in the Dukhun. Independently of the naked legs of this bird, its aquiline aspect authorizes its separation from the genera with which it had been placed previously to M. Lesson's arrangement.

Genus *Noctua*, Sav.

+ 22. *Noct. Indica*, Frankl. *Peenglah* of the Mahrattas.

Irides King's yellow. Sexes alike. Mice and beetles found in the stomach. An exceedingly noisy bird, and frequently heard chattering during the day-time in dense trees. The Mahrattas have a superstition respecting this species; and a class of persons, called from it *Peengleh*, live on the credulity of the people by pretending to consult it, and predict events. Length, inclusive of tail, $9\frac{1}{2}$ to 11 inches: tail $2\frac{1}{2}$ to 3 inches. Numerous in the Dukhun, and found in families of four or five.

Order II. INSESSORES, *Vigors.*

Tribus Fissirostres, *Cuv.*

Fam. *Meropidæ.*—Genus *Merops*, Linn.

23. *Merops viridis*, Linn. *Indian Bee-eater*, Lath. *Guêpier à collier de Madagascar*, Buff.

Fam. *Hirundinidæ*, Leach.—Genus *Hirundo*, Auct.

24. *Hirundo filifera*, Steph., vol. 13. p. 79. *Hir. filicaudata*, Frankl. Very abundant in Dukhun, and very beautiful, with its thread-like tail-feathers floating behind when in flight.

25. HIRUNDO JEWAN. Mas. *Hir. capite, dorso, tectricibus alarum, uropygio, rectricibus mediis fasciaque latâ pectorali metallicè nigris; corpore subtùs rosaceo-albo; gutture rufo; remigibus rectricibusque lateralibus fusco-nigris, his internè albo maculatis.*

Fœm. et jun. *Gutture magis rufo notato.*

Irides intensè rufescenti-brunneæ. Longitudo *corporis* 6 unc., *caudæ* 3 $\frac{3}{10}$.

This bird differs from the common English *Swallow*, (*Hir. rustica*,) only in its somewhat smaller size, larger bill, and in the lateral tail-feathers not being equally elongated. The tail is less forked, and the rufous colour of the throat extends more on the breast.

26. HIRUNDO CONCOLOR. *Hir. fuliginoso-brunnea, sericea; caudâ æquali, rectricibus, externis mediisque exceptis, internè albo guttatis.*

Longitudo *corporis* 5 unc., *caudæ* 2$\frac{1}{2}$.

These birds live on the banks of rivers. The plumage of the sexes does not differ.

27. HIRUNDO ERYTHROPYGIA. *Hir. metallicè nigra; uropygio collarique nuchali rufis; corpore subtùs albo, pallidè rosaceo tincto, plumis in medio graciliter brunneo striatis.*

Longitudo *corporis* 6 unc., *caudæ* 3.

This species appeared in millions in two successive years in the month of March on the parade-ground at Poona: they rested a day or two only, and were never seen in the same numbers afterwards.

Genus *Cypselus*, Ill.

28 *Cypselus affinis*, Hardw. *Allied Swift*, Hardw.

These birds are so rare in Dukhun that Colonel Sykes obtained only two specimens.

Fam. *Caprimulgidæ*, Vigors.—Genus *Caprimulgus*, Auct.

29. *Caprimulgus monticolus*, Frankl. *Great Bombay Goatsucker*, Lath.

30. *Caprimulgus Asiaticus*, Lath. *Bombay Goatsucker*, Id.

31. CAPRIMULGUS MAHRATTENSIS. *Capr. pallidè cinereo-griseus, brunneo ferrugineoque undulatus variegatusque; thorace, remigibus tribus externis in medio, rectricibusque duabus lateralibus ad apices, albo notatis.*

Longitudo *corporis* 8 $\frac{8}{10}$ unc., *caudæ* 5 $\frac{5}{10}$.

This species differs from the two preceding in the prevalent grayness of the plumage, and in the absence of the subrufous collar on the nape of the neck.

Fam. *Halcyonidæ*, Vigors.—Genus *Halcyon*, Swains. *Crab-eater.*

32. *Halcyon Smyrnensis. Alcedo Smyrnensis*, Linn. *Smyrna Kingsfisher.*

In the description of this bird authors appear to have omitted to mention the chestnut small wing-coverts, and fine rich chocolate black medial wing-coverts. This species frequents well irrigated gardens and old wells rather than brooks or rivers. Grasshoppers were frequently found in the stomach.

Genus *Alcedo*, Auct. *Kingsfisher.*

33. *Alcedo rudis*, Linn. *Black and White Kingsfisher*, Edw., pl. 9.

In all Colonel Sykes's specimens the male bird is distinguished from the female by a single or broken double black bar across the breast.

34. *Alcedo Bengalensis*, Gmel. *Little Indian Kingsfisher*, Edw., pl. 11.

This species affects brooks: it is never seen in gardens.

Genus *Ceyx*, La Cép.

35. *Ceyx tridactyla*, La Cép. Buff., Pl. Enl. 778. fig. 2.

This very beautiful bird differs from Buffon's drawing only in a purple spot terminating the ridge of the bill, and in a reddish spot on each side of it.

Tribus Dentirostres, *Cuv.*

Fam. *Muscicapidæ*, Vigors.—Genus *Muscipeta*, Cuv.

36. *Musc. Paradisi*, Cuv. Mas. *Musc. alba; capite cristato colloque violaceo-atris; pteromatilus remigibusque atris albo marginatis; rhachibus rectricum atris.*

Fœm. *Dorso, alis, caudáque castaneis; corpore subtùs albo; gutture, collo, pectore, nuchâque griseis, hâc saturatiori; capite cristato violaceo-atro; remigibus fuscis.*

Longitudo *corporis* 10½ unc., *caudæ* 6.

Muscicapa Paradisi, Linn. *Paradise Flycatcher*, Lath. *Avis Paradisiaca orientalis*, Seba, 1. t. 52. f. 3. *Pied Bird of Paradise*, Edw., pl. 113.

37. *Muscipeta Indica*, Steph., vol. 13. p. 111. Mas. *Musc. corpore suprà castaneo, subtùs albo; pectore grisescenti; capite cristato colloque violaceo-atris.*

Fœm. *mari similis, rectricibus duabus mediis paullum elongatis.*

Statura præcedentis. *Irides* intensè rufo-brunneæ.

Avis Paradisiaca cristata, Seba, 1. t. 30. f. 5. *Upupa Paradisea*, Linn. *Promerops Indicus cristatus*, Briss. *Crested long-tailed Pie*, Edw., pl. 325.

These two birds have lately been erroneously considered to belong to one species. They were never found however by Colonel Sykes (who shot many,) in the same locality, nor did he observe any intermediate stage of plumage. The difference between the females of the two birds noticed above at once decides the distinction of species. The two central tail-

feathers of the males (not of the females) are elongated to three or four times the length of the body: in one specimen they are $15\frac{3}{4}$ inches long. They feed principally on the ground, and on very minute insects.

There has been much confusion among the early descriptions of these birds. Linnæus describes the *Musc. Indica* as an *Upupa*; Brisson as a *Promerops*; and others as a *Pica*, *Icterus*, *Todus*, *Manucodiata*, &c. The specific name of *Indica* seems to have the right of priority over that of *castanea* given by M. Temminck, (See M. Kuhl's 'Systematic Catalogue of the Pl. Enluminées,' page 5,) as having originally been assigned to the bird by Brisson. Other well marked species, nearly allied to the two preceding, the males of which have similarly elongated tail-feathers, are found in Africa and China.

38. *Muscipeta flammea*, Cuv. *Gobe-mouche flammea*, Temm., Pl. Col., 263. Male and Female.

The cry of this bird is *wheet, wheet, wheet*. In the colours, the female has yellow where the male has scarlet. *Irides* brown-black.

39. *Muscipeta peregrina*. *Parus peregrinus*, Linn. *Crimson-rumped Flycatcher*, Lath.

Genus *Muscicapa*, Auct.

40. *Muscicapa melanops*, Vigors. Figured in Gould's 'Century of Himalayan Birds.'

41. *Muscicapa Banyumas*, Horsf. *Banyumas Flycatcher*, Lath. *Gobe-mouche chanteur*, Temm.

42. MUSCICAPA POONENSIS. *Musc. suprà cinereo-brunnea; subtùs sordidè alba; mandibulâ superiori nigrâ, inferiori ad basin albâ.*

Longitudo *corporis* $4\frac{5}{10}$ unc., *caudæ* $1\frac{8}{10}$.

These birds sit on the extreme twigs of trees, and dart on passing insects in the manner of the *Merops viridis*.

43. MUSCICAPA CŒRULEOCEPHALA. *Musc. cinereo-brunnea, cæruleo leviter tincta; capite thoraceque lazulinis; pectore sublazulino; abdomine crissoque albis.*

Longitudo *corporis* $5\frac{7}{10}$ unc., *caudæ* $2\frac{1}{2}$.

44. MUSCICAPA PICATA. *Musc. suprà atra, subtùs sordidè alba; strigâ a mento ad nucham utrinque extendente, fasciâ alarum, uropygio, crisso, apicibusque rectricum duarum lateralium albis.*

Longitudo *corporis* $5\frac{3}{8}$ unc., *caudæ* $2\frac{1}{4}$.

Genus *Rhipidura*, Vigors & Horsf. *Fan-tailed Flycatcher.*

45. *Rhipidura albofrontata*, Frankl.

46. *Rhipidura fuscoventris*, Frankl.

Colonel Sykes has shot both these birds in the same localities. The male has a very sweet note. He spreads and raises his tail over his head in hopping from bough to bough. Both species have the aspect and habits of the Australian bird *Muscicapa flabellifera*, Gmel. *Irides* deep sepia brown.

Fam. *Laniadæ*, Vigors.

Genus *Dicrurus*, Vieill.—*Edolius*, Temm.

47. *Dicrurus Balicassius*. *Corvus Balicassius*, Linn.

48. *Dicrurus cœrulescens*, Linn. *Lanius Fingah*, Shaw, t. 7. p. 291.

Genus *Hypsipetes*, Vigors.

49. HYPSIPETES GANEESA. *Hyps. griseo-brunnea, subtùs pallidior; alis remigibusque brunneis; capite suprà vix cristato metallicè atro.*

Longitudo *corporis* 10 unc., *caudæ* 4. *Irides* intensè rufo-brunneæ.

Tongue bifid, and deeply fringed; sexes exactly alike. Stony fruit found in the stomach. Neck short, and head sunk into the shoulders; flight very rapid. Found only in the dense woods of the Ghauts. The tongue is that of *Pastor*, the legs those of *Dicrurus*.

Genus *Collurio*, Vigors.

50. COLLURIO LAHTORA. *Coll. pallidè griseus; strigâ frontali per oculos utrinque ad nucham extendente, alis, rectricibusque mediis nigris; corpore subtùs, fasciâ alarum, scapularium marginibus, rectricibus externis, apicibusque duarum sequentium albis.*

Longitudo *corporis* $9\frac{1}{2}$ unc., *caudæ* $4\frac{1}{2}$.

This is the variety C. of *Lanius Excubitor* of Dr. Latham. It is closely allied to the North American and European *Lan. Excubitor*, but differs in the black bar extending across the forehead. The male has a sweet note.

51. *Collurio erythronotus*, Vigors, Proceed. Zool. Soc. I. p. 42.

This bird differs from the *Lan. Bentet* of Dr. Horsfield only in the crown being ash-coloured instead of black, and in the defined black bar across the forehead.

52. Jun.? *abdomine graciliter fasciato.*

Supposed young of the above. Length $7\frac{1}{2}$ inches: tail $3\frac{1}{10}$.

53. *Collurio Hardwickii*, Vigors, Proceed. Zool. Soc., I. p. 42. *Bay-backed small Shrike*, Lath.

Genus *Lanius*, Auct.

54. *Lanius Muscicapoïdes*, Frankl. *Keroula Shrike*, Lath.

A rare bird. Colonel Sykes's specimen, a female, corresponds with Major Franklin's specific characters, and with his specimen, a male bird.

Genus *Graucalus*, Cuv.

55. *Graucalus Papuensis*, Cuv. *Corvus Papuensis*, Gmel. *Papuan Crow*, Lath.

Irides rich lake.

Genus *Ceblepyris*, Cuv.

56. *Ceblepyris fimbriatus*, Temm. *Echenilleur frangé*, ♀ Pl. Col. *Irides* orange.

Colonel Sykes's birds, full-grown males, correspond only to the

female of *Ceb. fimbriatus*, and not at all to the male. Met with only in thick hedges on the plains.

57. *Ceblepyris canus. Le Grand Gobe-mouche cendré de Madagascar*, Pl. Enl. 541.

Irides intense red brown. Black ants only found in the stomach. This bird does not correspond with the later descriptions of *Ceb. canus* (*Muscicapa cana*), and the history of both these species of *Ceblepyris* requires further illustration. Found only in thick bushes. Specimens of both species from Bengal and Wynaad resemble those collected by Colonel Sykes.

Fam. *Merulidæ*, Vigors.—Genus *Oriolus*, Auct.

58. *Oriolus Galbula*, Linn. *Golden Oriole*, Lath. *Mango Bird* of Dukhun.

Very abundant in Dukhun just before the rains. It is called *Pawseh* by the Mahrattas, from being the precursor of the monsoon. It is a quarrelsome bird. *Irides* rich lake.

59. *Oriolus melanocephalus*, Linn. *Black-headed Oriole*, Lath.

Rare. Seen by Colonel Sykes only in the immediate neighbourhood of the Ghauts. Found also in Africa.

60. Oriolus Kundoo. *Or. corpore suprà flavo-viridi; uropygio, crisso, pogoniis internis rectricum ad apices, abdominisque lateribus nitidè flavis; alis olivaceo-brunneis; corpore subtùs sordidè albo, brunneo striato; rostro nigro.*

Irides rufo-brunneæ. Longitudo *Or. Galbulæ*.

Both sexes alike. Size of *golden Oriole*, and much resembling the female of that bird; but the bill is always black, and the *irides* reddish-brown instead of lake.

Genus *Turdus*, Auct.

61. *Turdus macrourus*, Gmel. *Long-tailed Thrush*, Lath.

Rare. Found in dense woods of the Ghauts.

62. *Turdus Saularis. Gracula Saularis*, Linn. *Pastor Saularis*, Temm. *Little Indian Pie*, Edw., pl. 181.

63. *Turdus cyanotus*, Jardine and Selby, pl. 46.

This bird has the tongue of a *Pastor*. *Irides* intense red brown. Stony fruit and *Cicadæ* found in the stomach. Has the naked spot behind the eyes, but the bird has not the air of a *Pastor*. Inhabits the Ghauts.

Genus *Petrocincla*, Vigors.

64. Petrocincla Pandoo. *Petr. brunnescenti-cyanea; pteromatibus, remigibus, rectricibusque fuscis.*

Irides fuscæ. Statura minor quàm *Turd. cyanei*.

This bird differs from the *solitary Thrush* of Europe (*Turd. cyaneus*, Linn.) in its smaller size, slighter form, brighter cœrulean tint, want of orange eyelids and white tips to the feathers. Found only in the dense woods of the Ghauts. Flight low and rapid. It appears to correspond with var. A. of Dr. Latham's *solitary Thrush*, vol. 5. p. 47.

65. PETROCINCLA MAAL. *Petr. suprà griseo-brunnea, subtùs rufescenti-alba, plumis brunneo marginatis; crisso rufescenti, fusco-brunneo fasciato.*
Statura præcedentis.
This bird corresponds as closely as possible with what is stated to be the female of the *Turd. cyaneus*, and may by analogy be supposed to be the female of *Petrocincla Pandoo*; but it inhabits only the prickly milk-bushes (*Euphorbia tortilis* and *pentagona*) of the rocky plains of the Dukhun. Colonel Sykes never saw it in the Ghauts, nor in company with *Petr. Pandoo*.
66. *Petrocincla cinclorhyncha*, Vigors, Proceed. Zool. Soc. I. p. 172.
Figured in Gould's Century of Himalayan Birds.

Genus *Timalia*, Horsf.

67. TIMALIA MALCOLMI. *Tim. pallidè grisescenti-brunnea, uropygio pallidiori, remigibus rectricibusque mediis saturatioribus, his fusco obsoletè fasciatis; subtùs albescens, leviter rosaceo tincta; frontis plumis subcyaneis, in medio albo striatis.*
Irides flavo-aurantiæ. *Rostrum* brunneum, mandibulâ inferiori ad basin flavescenti. Longitudo *corporis* 11½ unc., *caudæ* 5½.
Kokuttee of the Mahrattas. Congregate in flocks of ten or a dozen; fly low, slowly, and with difficulty: never cease chattering, and all at the same time. Food, grasshoppers and grain. Colonel Sykes has dedicated this species to Sir John Malcolm, G.C.B., who zealously aided his researches in India.
68. TIMALIA SOMERVILLEI. *Tim. rufescenti-brunnea; abdomine, crisso, dorso imo caudâque dilutè rufis, hâc saturatiori obsoletè fasciatâ; remigibus brunneis; gutturis pectorisque plumis in medio subcyaneo notatis.*
*Rostrum pedes*que flavi. Longitudo *corporis* 9½, *caudæ* 4½.
Irides pallidè flavæ.
A size less than *Tim. Malcolmi*, but shorter. *Irides* bright yellow: same habits as the preceding, but found in the Ghauts only; the latter on the plains. Colonel Sykes has dedicated this bird to Dr. William Somerville, F.R.S. in testimony of his respect.
69. *Timalia Chataræa*, Frankl. *Gogoye Thrush*, Lath.?
Habits of the preceding, but about half the size of *Tim. Malcolmi*. *Irides* red brown; legs yellow.

Genus *Ixos*, Temm.

70. *Ixos jocosus*. *Lanius jocosus*, Linn. *Jocose Shrike*, Lath.
This is also the *Lanius Emeria* of Shaw. The male has a sweet note. Found only in the lofty woods of the Ghauts. *Irides* fuscous. Lives on fruit: sexes alike.
71. *Ixos Cafer*. *Turdus Cafer*, Linn. *Cape Thrush*, Lath. *Le Courouge*, Le Vaill.
Inhabits gardens: destructive to fruit: without musical notes. Sexes alike.

72. *Ixos fulicatus.* *Motacilla fulicata*, Linn. *Sooty Warbler*, Lath. *Traquet noir des Philippines*, Buff.
Sir J. Anstruther's variety. Lath., vol. 7. p. 112. Female sooty-black or brown-black.

Genus *Pomatorhinus*, Horsf.

73. POMATORHINUS HORSFIELDII. *Pom. olivaceo-brunneus; strigâ superciliari, collo in fronte, pectore, abdomineque medio albis. Irides* fusco-sanguineæ. *Rostrum* flavum. *Pedes* fusci. Longitudo *corporis* $9\frac{7}{12}$ unc., *caudæ* $3\frac{7}{12}$.
Minute insects (Dipterous) found in the stomach. Birds remarkably shy, and only met with in the dense woods of the Ghauts. The note of the male is *hoot, whoot, whoot*, uttered slowly: the female answers *hooe*. The tongue and habits of this bird are those of a *Thrush* or *Timalia*. I have dedicated this species to a gentleman to whom science is deeply indebted.

Fam. *Sylviadæ*, Leach.—Genus *Jora*, Horsf.

74. *Jora Tiphia.* *Motacilla Typhia*, Linn. Lath., vol. 7. p. 128. var. A. Brown's Illust. pl. 36.
Dr. Horsfield's *Jora scapularis* appears to correspond with the female of *Jora Tiphia*. *Irides* gray.

Genus *Sylvia*, Auct. *Warbler.*

75. *Sylvia montana*, Horsf. *Prinia montana*, Swains.
Differs from the type of *Prinia* in its rounded tail. *Irides* fuscous.

76. *Sylvia sylviella*, Lath. *Lesser White-throat.*
Differs from the European bird only in the reddish tint of the white below.

77. SYLVIA RAMA. *Sylv. pallidè brunnea, subtùs albescens; caudâ obsoletè fasciatâ.*
Longitudo *corporis* $4\frac{7}{12}$, *caudæ* $1\frac{9}{12}$.
Sexes alike. A size smaller than *Sylv. montana*, and might be mistaken for it; but Colonel Sykes has shot them male and female, in several places in Dukhun, full-grown birds.

Genus *Prinia*, Horsf.

78. PRINIA SOCIALIS. *Prin. capite dorsoque intensè cinereis; remigibus rectricibusque rufo-brunneis, his prope apices fusco-fasciatis; subtùs rufescenti-alba, abdominis lateribus saturatioribus.*
Rostrum nigrum. *Pedes* flavi. *Irides* pallidè aurantiacæ. Longitudo *corporis* $5\frac{9}{12}$, *caudæ* $2\frac{2}{12}$.
Sexes alike in size and plumage. This species constructs the same ingenious nest, and has the same habits, same note (*tooee, tooee*), and feeds in the same manner, as the *Orthotomus Bennettii*.

79. PRINIA INORNATA. *Prin. suprà pallidè cinereo-brunnea, strigâ superciliari corporeque subtùs albescentibus, abdominis lateribus crissoque rufescentibus; caudâ obsoletè fasciatâ.*

Irides rufo-brunneæ. *Rostrum* brunneum; *mandibulâ* inferiori ad basin flavâ. Longitudo *corporis* 4 $\frac{7}{8}$ unc., *caudæ* 2 $\frac{7}{8}$. Sexes do not differ in size or plumage. Habits of *Prin. socialis*. Both the above species are remarkable for a struggling flight, as if they experienced difficulty in making their way.

Genus *Orthotomus*, Horsf. *Tailor Bird.*

80. Orthotomus Bennettii. *Orth. olivaceo-viridis; subtùs albidus; capite suprà ferrugineo; caudâ elongatâ obsoletè fasciatâ.*
Irides flavæ. Longitudo *corporis* 6 unc., *caudæ* 2 $\frac{7}{8}$.
Two central tail-feathers elongated beyond the rest for one inch, and two-tenths of an inch wide only. Sexes alike. This bird is very remarkable for the ingenuity shown in constructing its nest by sewing the leaves of trees together with cotton thread and fibres. Colonel Sykes has seen nests in which the thread used was literally knotted at the end. This species very closely resembles Dr. Horsfield's *Orth. Sepium*, but on a comparison of the birds they were found to have specific differences.

81. Orthotomus Lingoo. *Orth. olivaceo-brunneus, subtùs sordidè albus.*
Longitudo *corporis* 5 $\frac{8}{8}$ unc., *caudæ* 2 $\frac{1}{8}$.
This species differs from the type of *Orthotomus* in the short tail, but has the characters of the genus sufficiently marked to be included in it. Sexes exactly alike in plumage. Principal food black ants.

Genus *Budytes*, Cuv.

82. *Budytes citreola*. *Motacilla citreola*, Lath. This is the variety A. of *Mot. citreola* of Dr. Latham, vol. 6. p. 330.
Length 6 $\frac{7}{8}$ inches: tail 2 $\frac{8}{8}$.
This bird so closely resembles the European species that Colonel Sykes has not ventured to separate it. It has the habits of a *Motacilla*, but its long hind claw sufficiently distinguishes it, and M. Cuvier has facilitated research in forming a genus for such *Wagtails* as have this claw.

83. Budytes melanocephala. *Bud. olivaceo-viridis; corpore subtùs nitidè flavo; capite, nuchâ, rectricibusque nigris, harum duabus lateralibus albo marginatis; alis fuscis, plumis olivaceo-flavo notatis.*
Irides intensè rufo-brunneæ. Longitudo *corporis* 6 $\frac{8}{8}$ unc., *caudæ* 3.
These are solitary birds, and are rarely found, excepting in the beds of rivers. In seven specimens four birds only were examined, and they happened to be males; so that Colonel Sykes is uncertain with respect to the female.

84. Budytes Beema. *Bud. olivaceo-viridis, subtùs flavus; capite suprà griseo; strigâ superciliari albâ; alis fuscis plumis flavescenti marginatis; caudâ atrâ, rectricibus duabus lateralibus albis.*
Irides flavo-brunneæ. Statura præcedentis.

This bird very closely resembles *Budytes flava* of Europe, but differs in the shade of the upper plumage, in the hind claw being two-tenths of an inch longer, and in the base of the lower mandible being whitish. This is a solitary bird in beds of rivers: female not known.

Genus *Motacilla*, Auct.

85. *Motacilla variegata*, Steph., vol. 13. p. 234. *Pied Wagtail*, Lath., vol 6. p. 320. pl. 114. *Mot. picata*, Frankl.

86. MOTACILLA DUKHUNENSIS. *Mot. dorso scapularibusque pallescenti-griseis, caudæ tectricibus ad apicem nigrescentibus; capite suprà, nuchâ, gutture, pectore, rectricibusque mediis atris; frontis fasciâ latâ, corpore subtùs, plumarum marginibus, alarum remigibus primariis exceptis, rectricibusque duabus lateralibus albis; remigibus fuscis.*
Irides intensè rufo-brunneæ. Statura *Mot. albæ*.
Sexes do not differ in size or plumage; but young birds have the black less pronounced. This is the most common and abundant *Wagtail* in the Dukhun, frequenting not only the beds of rivers, but the plains; and Colonel Sykes has seen it in his own garden frequently. It very closely resembles the *Mot. alba*, of Europe, but differs in being of a light slate or cinereous instead of a blackish cinereous, and in the wing-coverts and secondaries being edged with broader white. It is almost identical with the *Mot. alba* of the Northern Expedition.

Genus *Megalurus*, Horsf.

87. MEGALURUS? RUFICEPS. *Meg. olivaceo-brunneus, subtùs albescens, pectore brunneo striato; capite genisque brunnescenti-rufis, strigâ superciliari rufescente; capitis dorsique plumarum rhachibus pallidioribus; rostro pedibusque luteis.*
Longitudo *corporis* 7¼ unc., *caudæ* 2¼.
Wings short: tail equal, narrow. Female unknown. Black ants only found in the stomach. This bird has the air of the *Anthus Richardi* figured in the *Planches coloriées*, 101. Frequents the plains only, like a *Lark*.

Genus *Anthus*, Bechst. *Pipit.*

88. ANTHUS AGILIS. *Anth. olivaceo-brunneus; subtùs rufescenti-albescens, fusco-brunneo striatus; remigibus flavo-olivaceo marginatis; ungue postico subelongato, subcurvato.*
Irides fusco-sanguineæ. Longitudo *corporis* 6¼ unc., *caudæ* 2,5.
Found on open stony lands: female unknown. Closely resembles the *Titlark* of Europe. Its chief difference is in the hind toe.

Genus *Saxicola*, Bechst. *Wheatear.*

89. *Saxicola rubicola*, Temm. *Stone Chat.*
Irides intense brown. These birds were met with only in low scattered bushes. Caterpillars, flies and ants found in the stomach.

90. SAXICOLA BICOLOR. *Sax. atra; fascid alarum, uropygio, abdomine medio, crissoque albis.*
*Rostrum pedes*que nigri. *Irides* fuscæ. Longitudo *corporis* $5\frac{8}{10}$ unc., *caudæ* $2\frac{4}{10}$.
Female unknown. Three males were examined. Black ants, caterpillars and beetles were found in the stomach. Habits of the preceding.

91. SAXICOLA RUBECULOÏDES. *Sax. cinereo-brunnea, subtùs alba; gulâ thoraceque rufis; rectricibus mediis nigrescentibus, cæteris ad basin albis.*
Irides intensè brunneæ. Longitudo *corporis* $4\frac{7}{10}$ unc., *caudæ* 2.

92. SAXICOLA ERYTHROPYGIA. *Sax. fusco-brunnea; subtùs rufo-brunnea, abdomine fusco vix striato; uropygio rufo; crisso rufo tincto.*
Statura *Sax. bicoloris*. Male unknown.

Genus *Phœnicura*, Jard. & Selb.

93. *Phœnicura atrata*, Jard. & Selb. *Indian Redstart*, Iid.
This bird is of the size of the *Redstart* of Europe, and has the same habits. It has a very peculiar manner of vibrating its tail when seated on a bough, as if it had an ague fit. A pair of these birds built their nest in an outhouse constantly frequented by Colonel Sykes's servants, and within reach of the hand. They had no alarms.

94. *Phœnicura Suecica*. *Motacilla Suecica*, Linn.
Not differing from the European bird. *Irides* deep brown. Length $5\frac{8}{10}$ inches; tail 2.

Fam. *Pipridæ*, Vigors.

Genus *Parus*, Linn. *Titmouse.*

95. *Parus atriceps*, Horsf. *Mésange Cap-nègre*, Temm., Pl. Col. 287. f. 2.

96. *Parus xanthogenys*, Vigors, Proceedings Zool. Soc. I. p. 23. Figured in Gould's 'Century of Himalayan Birds.'
Irides sienna brown. Tongue divided into four short *laciniæ* at the tip. Wasps, bugs, grass seeds, and the fruit of the *Cactus Opuntia* were found in the stomachs of both species.

Tribus CONIROSTRES, *Cuv.*

Fam. *Fringillidæ*, Vigors.—Genus *Alauda*, Auct.

97. *Alauda Gulgula*, Frankl.
This is the common *Lark* of the Dukhun, with the habits and notes of the *Skylark* of Europe. When confined in a cage and shrouded from the light, it learns to imitate the notes of other birds, and even quadrupeds. The male is crested. It is called *Chundoola* in Dukhun. *Irides* sepia brown. Length $6\frac{7}{10}$ inches; tail $2\frac{3}{10}$. Food, grasshoppers.

98. ALAUDA DEVA. *Al. rufescenti-brunnea brunneo intensiori notata; corpore subtùs strìaque superciliari rufescenti-albis, pectore*

brunneo striato; capite cristato brunneo striato; rectricibus brunneis rufo marginatis.

Statura minor quàm præcedentis.

99. ALAUDA DUKHUNENSIS. *Al. corpore suprà griseo-brunneo, plumis in medio fusco-brunneo notatis; subtùs albescens, pectore strigâque superciliari rufescentibus; rectricibus fusco-brunneis, duabus lateralibus albo marginatis.*

Irides intensè brunneæ. Longitudo *corporis* $6\frac{3}{10}$ unc., *caudæ* 2.

Grass seeds only found in the stomach. Frequents stony plains.

Genus *Mirafra*, Horsf.

100. *Mirafra phœnicura*, Frankl.

This bird is characterized by the lightness, shortness, abruptness, and sudden ascents and descents of its flight. *Irides* yellow-brown. Granivorous.

Genus *Emberiza*, Auct. *Bunting.*

101. *Emberiza melanocephala*, Scop.

This native of Corfu is common to Western India. It appears in considerable flocks at the ripening of the bread grain *Jowaree* (*Andropogon Sorghum*) in December. *Irides* intense brown. Length $7\frac{1}{10}$ inches: tail 3 inches. Granivorous. Allied to *Emb. luteola*, Mus. Carls. vol. 4. t. 93.

102. *Emberiza hortulana*, Linn. *Red-brown Bunting.*

This, although not absolutely identical, is so closely allied to the European bird that Colonel Sykes cannot separate it. *Irides* intense brown. Length $7\frac{3}{10}$ inches; tail 3 inches. Grass seeds only found in the stomach. Bird solitary.

103. *Emberiza cristata*, Vigors, Proceed. Zool. Soc. I. p. 35.

Length $6\frac{1}{2}$ inches: tail $2\frac{7}{10}$ inches. Rare in Dukhun, and found only on rocky and bushy mountains. Female of a uniform sooty brown. Grass seeds only found in the stomach. Native of China and Nepaul as well as Dukhun.

104. EMBERIZA SUBCRISTATA. *Emb. suprà intensè brunnea, plumis brunneo pallidiori marginatis; subtùs pallidè brunnea, fusco striata; alarum plumarum rectricumque lateralium marginibus, rectricibusque duabus mediis castaneis; capite subcristato.*

Irides intensè brunneæ. *Rostrum* rufo-brunneum. Longitudo *corporis* $6\frac{6}{10}$ unc., *caudæ* $2\frac{5}{10}$.

Sexes alike in size and plumage. Birds rare and solitary, and found only in the open spaces on high mountains. This bird is pronounced in Europe to be the female of *Emb. cristata*; but setting aside the fact of both sexes of each bird being in the present collection, their localities are different, and they were never seen together by Colonel Sykes.

Genus *Linaria*, Bechst. *Linnet.*

105. *Linaria Amandava*. *Fringilla Amandava*, Linn.

These beautiful little birds, so common in Goojrat, are rare in Dukhun.

Genus *Ploceus*, Cuv. *Weaver Bird.*

106. *Ploceus Philippensis*, Cuv. *Philippine Grosbeak*, Lath.

The *Weaver Bird* is very common in Dukhun, and there are few wells overhung by a tree where their nests are not seen pendent. They live in small communities, and are very noisy in their labours. They associate so readily with the *common Sparrow* that at the season of the falling of the grass seeds Colonel Sykes, in firing into a flock of *Sparrows* on the grass plats in his own grounds, killed as many *Weaver Birds* as *Sparrows*. Fruit of the *Ficus Indica* and grass seeds have been found in the stomach. *Irides* intense brown.

107. *Ploceus flavicollis*. *Fringilla flavicollis*, Frankl.

This bird has so nearly the bill, tongue, *irides*, size and aspect of *Ploc. Philippensis*, that Colonel Sykes has considered it a *Ploceus*. Grass seeds and a few grains of rice found in the stomach. Very rare in Dukhun.

Genus *Fringilla*, Auct. *Finch.*

108. *Fringilla crucigera*, Temm., Pl. Col. 269. fig. 1. *Duree Finch*, Lath.

This minute bird has the strange habit of squatting on the high roads and almost allowing itself to be ridden over ere it rises. Smaller than a *Sparrow*. *Irides* red brown. Coleopterous insects, maggots, and seeds of *Panicum spicatum* found in the stomachs of many specimens. This bird has the straight hind claw of a *Lark*, and should therefore neither be classed as a *Fringilla*, agreeably to M. Temminck, nor as a *Passer*, agreeably to Brisson. Its habits also separate it from both these genera. M. Temminck in his Plate has placed it on a twig, but it never perches.

Genus Lonchura.

Rostrum forte, breve, latum, altitudine ad basin longitudinem æquans; *mandibulis* integris, superiori in frontem angulariter extendente, cumque eo circuli arcum formante.

Alæ mediocres, subacuminatæ; *remigibus*, 1mâ brevissimâ subspuriâ, 2dâ 3tiâ 4tâque ferè æqualibus longissimis.

Cauda gradata, lanceolata; *rectricibus* mediis cæteras paullò longitudine superantibus.

Pedes mediocres, subgraciles.

The peculiar spear-head form of the tail, and the ridge of the upper mandible and the forehead, forming a segment of the same circle, together with the habits of the following species, afford sufficient characteristics to justify their separation from the genus *Fringilla* of M. Temminck. The *Gros-bec longicone* of the Pl. Col. 96. (*Emb. quadricolor*, Lath.) belongs to the same group.

109. *Lonchura nisoria*. *Fringilla nisoria*, Temm. *Gros-bec épervin*, Pl. Col. 500. Fig. 2.

Found only in the Ghauts. Grass seeds in the stomach. Length 5$\frac{1}{10}$ inches: tail 1$\frac{3}{10}$ to 2 inches. Sexes alike.

110. LONCHURA CHEET. *Lonch. pallidè cinnamomeo-brunnea; corpore subtùs uropygioque albis; remigibus rectricibusque intensè brunneis.*
Fœm. *coloribus minùs intensis.*
Irides intensè rufo-brunneæ. Longitudo *corporis* 5¾ unc., *caudæ* 2.

Tail lanceolate; central feathers longer than the rest, and ending in a point. Sexes alike. These birds live in small families. Colonel Sykes has frequently found them in possession of the deserted nests of the *Ploceus Philippensis;* but their own nest is a hollow ball of grass. Ten white eggs, not much larger than peas, were found in a nest. The cry of the bird is *cheet, cheet, cheet,* uttered simultaneously by flocks in flight.

111. *Lonchura leuconota. Fringilla leuconota,* Temm. *Gros-bec leuconote,* Pl. Col. 500. fig. 1.

Found only in the Ghauts. Length $4\frac{8}{10}$ inches, inclusive of tail $1\frac{8}{10}$ inch. Sexes alike. Grass seeds only found in the stomach.

Genus *Passer,* Auct.

112. *Passer domesticus,* Briss. *Fringilla domestica,* Linn.

On submitting the *Indian Sparrow,* male and female, to a rigid comparison with *Sparrows* shot in the Regent's Park, they were found to be absolutely identical.

Fam. *Sturnidæ,* Vigors.—Genus *Pastor,* Temm.

113. *Pastor tristis,* Temm. *Gracula tristis,* Lath.

The *irides* are red brown, and remarkable for being studded on the external margin with regularly arranged yellowish-white specks. Sexes alike: omnivorous: quarrelsome, noisy. Length $11\frac{8}{10}$ inches, inclusive of tail of $3\frac{6}{10}$.

114. PASTOR MAHRATTENSIS. *Past. suprà griseo-niger, remigibus caudâque saturatioribus; capite genisque atris; corpore subtùs subrufescenti-griseo; crisso pallidiori, plumis albo marginatis. Rostrum pedes*que flavi. *Irides* pallidè griseæ. Longitudo *corporis* 9¼ unc., *caudæ* $2\frac{8}{10}$.

Sexes alike. Found only in the Ghauts. Stony fruit in the stomachs of three birds. Resembles *Past. tristis,* but is a size less, possesses no crest, and has gray *irides.*

115. *Postor roseus,* Temm. *Turdus roseus,* Linn.

Irides intense red brown. Tongue bifid and fringed; not quite so much so as *Hypsipetes Ganeesa.* These birds darken the air by their numbers at the period of the ripening of the bread grains, *Andropogon Sorghum,* and *Panicum spicatum,* in Dukhun, in December. Colonel Sykes has shot forty or fifty at a shot. They prove a calamity to the husbandman, as they are as destructive as locusts, and not much less numerous.

116. *Pastor Pagodarum,* Temm. *Turdus Pagodarum,* Gmel. *Gracula Pagodarum,* Shaw, vol. 7. p. 471. *Le Martin Brame,* Le Vaill., Ois. d'Afr. pl. 95. tom. 2.

Irides greenish white. Length $8\frac{8}{10}$ inches, inclusive of tail of $2\frac{8}{10}$

to 3 inches. Sexes alike. These birds are great frequenters of the *Ficus Indica*, *Ficus religiosa*, and *Cactus Opuntia*, for their fruit. Insects also are found in the stomach. Birds lively and elegant in flight.

Fam. *Corvidæ*, Leach. Genus *Corvus*, Auct.

117. CORVUS CULMINATUS. *Corv. suprà splendenti-ater; subtùs fuliginoso-ater; rostri culmine elevato.*
Longitudo *corporis* 14 unc., *caudæ* 7.
Smaller than the European *Crow*. These birds are remarkable for their audacity. Bill with a considerable *culmen*.

118. *Corvus splendens*, Vieill. *Common Crow* of India.
This is no doubt Vieillot's *splendid Crow*, but in the thousands Colonel Sykes has met with he never saw the plumage ornamented with the pronounced green and blue in Vieillot's plate. Has the noisy, impudent, and troublesome habits of the English *Crow*. Length 18 inches, inclusive of tail of 6 inches. A wounded *Crow* was put into the cage with a *Viverra Indica*, in the expectation that the latter would make a meal of it. The *Crow* however stood so vigorously on the defensive, that a treaty of peace ensued, and they lived amicably together for several weeks, the *Crow* partaking of the food of the *Civet* until it died from its wound.

Genus *Coracias*, Linn. *Roller.*

119. *Coracias Indica*, Linn. *Coracias Bengalensis*, Steph. *Blue Jay from the East Indies*, Edw., pl. 326.
Very common in Dukhun. Called *Tus*, from its note, by the Mahrattas. Sexes do not differ in size or plumage. *Irides* intense red brown. A grasshopper $2\frac{1}{2}$ inches long was found in the stomach of one bird. Length $13\frac{3}{10}$ inches, inclusive of tail of $4\frac{7}{10}$ inches.

Fam. *Buceridæ*, Leach.

Hornbills are by no means rare in Dukhun, but from accident Colonel Sykes had not a specimen to produce.

Tribus SCANSORES, *Auct.*

Fam. *Psittacidæ*, Leach.—Genus *Palæornis*, Vigors.

120. *Palæornis torquatus*, Vigors.
Appear in considerable flocks in Dukhun, and are very destructive to the crops, particularly to the *Carthamus Persicus*. Fond also of the fruit of the *Melia Azadirachta*. The female differs from the male only in wanting the collar, and has in consequence been considered to belong to a different species. The Mahrattas call the bird *Ragoo* and *Keeruh*. Length $17\frac{1}{2}$ inches, inclusive of tail of $9\frac{1}{2}$ inches.

121. PALÆORNIS MELANORHYNCHUS. *Pal. viridis, corpore subtùs, notâ circumoculari, dorsoque imo pallidioribus; capite, collo in fronte nuchâque, columbino-canis; rostro, torqueque collari latâ*

nigris ; fronte, remigibus, rectricibusque mediis cyaneis, illo pallidiori ; rectricibus subtùs, apicibusque suprà flavis.
Irides albæ, subflavo-marginatæ. Longitudo *corporis* $14\frac{5}{10}$ unc., *caudæ* $7\frac{6}{10}$.
Found only in the Ghauts. Sexes alike. This bird has the aspect of *Pal columboides*, but differs in the black bill, broad black collar, pale green yellow beneath instead of dove colour, and in the want of the metallic green narrow collar and blueish rump.

Fam. *Picidæ*, Leach.—Genus *Bucco*, Linn. *Barbet.*

122. *Bucco Philippensis*, Gmel. *Barbu des Philippines*, Buff.
This well known bird is called *Tambut*, or the Coppersmith, by the Mahrattas. It sits on the loftiest and extreme twigs of trees, uttering the syllables *took, took, took*, deliberately, and nodding its head at each *took* ; the sound and the motion originating the idea of a coppersmith at work hammering. *Irides* lake colour. Length $6\frac{1}{2}$ inches, inclusive of tail $1\frac{1}{2}$ inch. Fruit and insects found in the stomach.

123. *Bucco caniceps*, Frankl.
Scarcely distinguishable from *Bucco corvinus* and *Bucco Javanicus*. Found only in the dense woods of the Ghauts. Its note is quite startling, and makes the hills echo. *Irides* red deep brown. Length $8\frac{7}{10}$ inches, inclusive of tail of $2\frac{7}{10}$ inches : the bird is consequently smaller than Major Franklin's. Stony fruit only found in the stomach.

Genus *Picus*, Linn. *Woodpecker.*

124. *Picus Mahrattensis*, Lath. *Mahratta Woodpecker*, Id.
Irides rich lake. Length $7\frac{4}{10}$ inches, inclusive of tail of $2\frac{4}{10}$ inches. Although this is called the *Mahratta Woodpecker*, Colonel Sykes met with three birds only in Dukhun during six years.

Fam. *Certhiadæ*, Vigors.—Genus *Upupa*, Linn. *Hoopoe.*

125. *Upupa minor*, Shaw. *La Huppe d'Afrique*, Le Vaill.
Irides almost black. Length 12 to $12\frac{1}{2}$ inches, inclusive of tail from $4\frac{3}{10}$ to $4\frac{5}{10}$ inches. Feeds on the ground, and does not hop.

Fam. *Cuculidæ*, Leach.—Genus *Leptosomus*, Vieill.

126. *Leptosomus Afer. Cuculus Afer*, Gmel. *Edolian Cuckoo*, Shaw. *Cuculus Edolius*, Cuv. *Cuc. serratus*, Shaw ?
Irides reddish deep brown. Length $13\frac{5}{10}$ inches, inclusive of tail of $6\frac{6}{10}$ inches. Rare in Dukhun.

Genus *Eudynamys*, Vigors & Horsf.

127. *Eudynamys orientalis. Cuculus orientalis*, Linn. Female *Cuc. Mindanensis.*
Called *Koel* or *Koeel* by the Mahrattas. A well known and noisy bird, with singularly loud notes, not at all like those of a *Cuckoo*. *Irides* rich lake. Length 17 inches, inclusive of tail

of 7 inches. These birds are frugivorous. In the stomachs of many the fruits of the *Bergera Kœnigi* and *Uvaria undulata* only were found. The difference in the plumage of the sexes is very remarkable. The female is the larger bird. The tongue of this bird is exactly that of the *Cuc. canorus*.

Genus *Cuculus*, Auct.

128. *Cuculus canorus*, Linn. *Common Cuckoo*, Lath.
Irides yellow. Length 14$\frac{5}{10}$ inches, inclusive of tail of 6$\frac{5}{10}$ inches. Rare in Dukhun.

129. *Cuculus fugax*, Horsf. *Bychan Cuckoo*, Lath.
Irides bright yellow. Length 13$\frac{6}{10}$ inches, inclusive of tail of 6 inches. Tongue as in 127. This bird has so much the aspect of a *Hawk* that Colonel Sykes passed it for one, until its note of *koeel, koeel*, exactly resembling that of *Eudynamys orientalis*, recalled him to the tree on which it was seated, and he shot the bird.

Genus *Centropus*, Ill. *Coucal.*

130. *Centropus Philippensis*, Cuv. *Coucou des Philippines*, Buff. *Chestnut-winged Coucal*, Lath. *Malabar Pheasant* of Europeans.
Irides rich lake. Length 19$\frac{1}{2}$ inches, inclusive of tail of 11$\frac{1}{2}$ inches. This is a very useful bird, as Colonel Sykes found a snake eight inches long, centipedes, noxious insects, and lizards in the stomach. In the stomach and *œsophagus* of one bird a lizard thirteen inches long was found.

Tribus Tenuirostres, *Cuv.*

Fam. *Meliphagidæ*, Vigors.—Genus *Chloropsis*, Jard. & Selb.

131. *Chloropsis aurifrons*, Jard. & Selby?

Fam. *Cinnyridæ*, Vigors.—Genus *Cinnyris*, Cuv. *Sun-bird.*

132. *Cinnyris lepida. Certhia lepida*, Sparrm. *Nectarinia lepida*, Temm.
Irides red brown. Length 4$\frac{8}{10}$ inches, inclusive of tail of 1$\frac{5}{10}$ inch. Female ashy brown above; light yellow below. Common in Dukhun. Feed on small insects; also suck honey.

133. *Cinnyris curucaria. Certhia curucaria*, Linn. *Grimpereau gris des Philippines*, Pl. Enl. 576. f. 2.
This has been considered a young bird; but Colonel Sykes can venture to affirm, from a long observation of its habits in his garden at Poona, that it is a species. *Irides* bright lake. Length 4$\frac{9}{10}$ inches, inclusive of tail of 1$\frac{5}{10}$ inch. A spider, a *Cicada*, and minute Coleopterous insects were found in the stomach of many birds of this species. They also hover before flowers, and suck the honey while on the wing, like the *Cinn. lepida*.

134. Cinnyris Vigorsii. *Cinn. collo suprà, nuchâ, ptilis, scapularibusque intensè sanguineis, collo infrà pectoreque coccineo-sanguineis; strigâ utrinque mentali sub rictu ad pectus exten-*

dente maculâque auriculari splendidè violaceis; capite suprà, caudæ tectricibus, rectricibus mediis, lateraliumque, externo excepto, pogoniis externis metallicè viridibus; alis, rectricibus lateralibus, dorsi inferioris lateribus, fasciâque subpectorali fuscis; abdomine griseo; dorso imo sulphureo.

Irides intensè brunneæ. Longitudo *corporis* $5\frac{1}{2}$ unc., *caudæ* $2\frac{3}{10}$.

Larvæ of flies, a spider, ants, and minute insects found in the stomach. Inhabits only the lofty trees of the dense woods of the Ghauts.—"I will here beg leave to speak in the first person. I have dedicated this magnificent bird to a gentleman whose enlarged views of natural affinities in zoology have contributed essentially to enhance the value of the science, and to facilitate the labours of every zoologist. The dedication is also influenced by a desire to testify my sense of the many kind attentions of Mr. Vigors."—W. H. S.

135. CINNYRIS MINIMA. *Cinn. capite nuchâque olivaceo-viridibus; pectoris notis, dorso, scapularibus, uropygioque intensè sanguineis, hoc violaceo splendenti; subtùs pallidè flavâ; alis caudâque fusco-brunneis.*

Fœm. *olivascenti-brunnea, uropygio rufo.*

Irides rufo-brunneæ. Longitudo *corporis* $3\frac{3}{10}$ unc., *caudæ* $1\frac{1}{2}$.

Met with only in the dense woods of the Ghauts. White ants and *larvæ* of flies were found in the stomach. One bird was seen sucking honey. Female of a uniform brown, with a patch of brick red on the rump and upper tail-coverts, and the yellow below fainter than in the male. Colonel Sykes believes this to be the smallest of the *Sun-birds*.

136. *Cinnyris Mahrattensis. Certhia Mahrattensis*, Shaw. *Cinnyris orientalis*, Frankl.

Dr. Latham does not mention the crimson joined to the yellow spot under the wing. These birds suck flowers while hovering on the wing; they eat minute insects also. Female not met with. Length $4\frac{9}{10}$ inches, inclusive of tail of $1\frac{5}{10}$ inch.

137. CINNYRIS CONCOLOR. *Cinn. viridi-olivacea, alis caudâque saturatioribus, corpore subtùs pallidiori.*

Irides intensè rufo-brunneæ. Longitudo *corporis* 4 unc., *caudæ* 1.

Insects with long *antennæ* were found in the stomach. As four specimens obtained by Colonel Sykes were all females, and as they were met with in the same locality as *Cinn. Vigorsii*, *Cinn. concolor* may be the female of that splendid species; but the difference in the size, form, and aspect of the bird, independently of colour, is opposed to this: they were never seen together. The bird has the outline of *Cinn. Mahrattensis*. The specific appellation of *concolor* is given provisionally.

Colonel Sykes, in concluding his notice of the birds of the two first Orders, observed that in the majority of instances his knowledge was derived from an observation of many specimens of the same species in the living state. For the most part also he had obtained both sexes, and was very rarely confined to a single specimen.

May 8, 1832.

W. Yarrell, Esq. in the Chair.

A preparation was exhibited of the generative organs of a hybrid male bird, bred by the Society, and produced between a *Muscovy Drake* and a *common Duck;* and Mr. Yarrell described the external and internal appearances of the individual from which the preparation was obtained.

He stated that the bird in its plumage, with the exception of a small chestnut-coloured patch on the chest, exhibited all the appearance of a true *Muscovy Drake.* The head, neck, back and wings were marked with the purple and violet tints which usually characterize that species; the curled feathers at the base of the tail, peculiar to the males of *Anas Boschas*, were wanting.

Internally the *viscera* generally partook more of the character of *Anas Boschas,* but particularly in the length of the intestines and cæcal appendages, which are remarkable for their variation in this respect, depending on the species, and having a due relation to the nature of the food selected by each. The organ of voice, a most valuable criterion of species throughout this numerous family, was in its form much more like that of *Anas Boschas* than that of *Anas moschata,* the bony enlargement being nearly globular, without any of the depression which is constant in this part in *Anas moschata.*

All the parts of the sexual organs were of large size, and apparently perfect.

Mr. Yarrell concluded by remarking that the hybrid bird in question strongly resembled the true *Muscovy,* while internally the *viscera* were as decidedly indicative of the *common, Duck.*

The Skeletons of *Capromys Fournieri,* Desm., and *Dasyprocta Acouchy,* F. Cuv., having been placed on the table, Mr. Owen entered into a series of remarks explanatory of their peculiarities, which he pointed out with reference to the skeletons of other *Rodentia* exhibited for the purpose of comparison. He showed that the *cranium* both in *Capromys* and in the *Acouchy* presents a gentle curve along the coronal aspect, and that this surface is bounded by nearly parallel lines, as in the *Agouti* and *Capybara,* differing from that of *Arvicola, Mus, Hypudæus, Bathyergus,* and many other *Rodentia,* in which the frontal bones are more or less compressed between the orbits. The orbits are more circumscribed by bone than in the *Rat,* in consequence of the developement of the post-orbital process. The *Acoucky,* however, resembles the *Rat* in the slenderness of the zygomatic arch; whilst *Capromys* has this arch broad and strong, as it exists in *Hystrix, Castor, Lepus,* and *Capybara,* although it is far from presenting the enormous developement exhibited in *Cælogenus.* The suborbital *foramina,* though larger

in *Capromys* than in the *Acouchy*, have not the same proportional magnitude as in the *Rat*. The lachrymal bone in *Capromys* is very small: in the *Acouchy* it is remarkably developed, as well as in the *Agouti*, but it does not form any part of the external boundary of the suborbital *foramen*, which is exclusivly formed by the superior maxillary bone, the ungueo-maxillary suture running parallel, but half a line posterior, to the anterior margin of that boundary. M. Cuvier, in describing the *cranium* of the *Agouti*, (Ossemens Fossiles, vol. v. part i., p. 21,) particularly notices this large size of the lachrymal bone, which, he states, "contribue à entourer le trou sous-orbitaire dans le haut, en sorte que l'anneau formé autour de ce trou par le maxillaire n'est pas complet, ce dont je ne connois point d'autre exemple:" but in examining, for this peculiarity, two skulls of the *Agouti*, (which, however, it is possible may not be of the identical species with the one described by the great anatomist above quoted,) Mr. Owen has not found it in either; the whole of the lachrymal bone being capable of removal without the integrity of the outer boundary of the suborbital *foramen* being thereby affected; the lachrymal bone, however, approaches nearer in the *Agouti* to the anterior margin of that boundary, than in the *Acouchy*. There is also this difference between the two species; in the *Agouti* the narrow process of the maxillary bone which separates the outer part of the lachrymal bone from the suborbital *foramen* is articulated by suture with the nasal process of the maxillary bone, affording a curious example of an articulation between two parts of the same bone; in the *Acouchy* there is no such suture, but the whole outer boundary of the suborbital *foramen* is one continuous piece of bone. The styloid processes are much stronger and the bony *meatus* more produced in *Capromys* than in either of the beforenamed animals. The lower jaw of *Capromys*, like that of the *Acouchy*, is deficient in the tubercular process that is seen on the middle of the outer surface of the ascending *ramus* in the lower jaw of the *Rat*.

The chief characteristic of the skeleton of *Capromys* is seen in the spinal column, and arises from the number of the dorsal or costal *vertebræ*, of which there are not less than 16. In the *Capybara* and the prehensile *Porcupine* there are 15, in the *Beaver* 14; but the more common number in this order is 12, as in the *Acouchy*, or 13 as in the *Rat*. Notwithstanding the excess of costal *vertebræ*, *Capromys* has the same number of lumbar *vertebræ* as the *Acouchy*, viz. 7; they are also proportionally larger. The sacral *vertebræ*, if reckoned according to form and *anchylosis*, amount to 4; but if considered as depending on the more definite character of articulation with the *ilia* are only 2. The caudal *vertebræ*, if the latter mode of considering the *sacrum* be adopted, are 22 in the specimen; but some were evidently wanting. The directions of the spines of the *vertebræ* in *Capromys* indicate considerable flexibility in the trunk: the principal centre of motion is marked by the erect spine in the 13th costal *vertebra*; in the *Acouchy* it is in the 12th or last but one.

In the extremities the bones of the *Capromys* participate in the

characters both of the *Rat* and *Acouchy;* those of the anterior extremity presenting, in addition to the perfect clavicles, some other characters in common with the former, while those of the posterior more resembled the corresponding bones in the *Acouchy*. Thus in the *scapula* the *acromion*, as in the *Rat*, projects beyond the glenoid cavity to join the clavicle, and the coracoid process is well developed; while in the *Acouchy* the former process is much less produced, and the latter almost obsolete. In the descending process of the *acromion*, *Capromys*, like *Cœlogenus* and *Hystrix*, is intermediate between the *Rat* and the *Acouchy*. The *humerus* of *Capromys* is proportionally stronger than in the *Acouchy*, and it has the deltoid process even more developed than in the *Rat;* this process is but slightly indicated by a ridge in the *Acouchy*. The internal condyle, like that of the *Acouchy*, the *Rat* and most *Rodentia*, is imperforate. The rest of the bones of the anterior extremity afforded no peculiar characters.

Passing over the bones of the *pelvis*, which also were destitute of any marked character, Mr. Owen observed that the *femur* of *Capromys*, like that of the *Acouchy*, has no middle process or second *trochanter*, such as is observable in the *Rat* and *Beaver*. The *tibia* and *fibula* were also distinct in *Capromys*, as in the *Acouchy;* the latter bone reaching to the *tarsus*, and not being, as in the *Rat* and *Beaver*, anchylosed to the lower third of the *tibia*. The metatarsal bones of *Capromys* agree in number with those of the *Rat*, but are broader and flatter, and correspond to the more plantigrade character of this animal.

Mr. Owen concluded his remarks on the osteology of these animals by presenting the following table, in which the points of admeasurement are for the most part the same as are used by Mr. Say, in his account of *Capromys* (*Isodon*) *Pilorides* (Journal of Acad. of Nat. Sci. of Philadelphia, ii. p. 334.).

Cranium.	*Capromys.*		*Acouchy.*	
	Inches.	Lines.	Inches.	Lines.
From the anterior edge of the sockets of the incisors to the posterior part of the occipital condyles	3	5	2	9
From ditto to the posterior part of the occipital crest	3	8	3	$\frac{1}{2}$
Distance between the remotest points of the zygomatic arches	2	0	1	6
Shortest distance between the orbits . .	1	1	0	$10\frac{1}{2}$
Length of a series of molar teeth	0	9	0	6
Width of the largest molar tooth	0	$2\frac{1}{4}$	0	$1\frac{1}{2}$
Vertical diameter of the *foramen magnum*	0	5	0	4
Transverse diameter of ditto	0	5	0	5
Vertical diameter of the suborbital *foramen* (anteriorly)	0	8	0	6
Ditto of the orbit	0	7	0	$10\frac{1}{2}$

	Capromys.		*Acouchy.*	
	Inches.	Lines.	Inches.	Lines.
Greatest vertical extent of the *zygoma* . .	0	$6\frac{1}{2}$	0	3
From the occipital spine to the coronal suture	1	$7\frac{1}{2}$	1	3
Length of the sagittal suture	1	$4\frac{1}{2}$	1	
Ditto of the nasal suture	1	2	1	$3\frac{1}{2}$
Length of the lower jaw from the anterior edge of the sockets of the incisors to the angle	2	4	1	10
From the angle to the summit of the condyle	1	0	0	10
Distance between the centres of the articulating surfaces of the condyles . .	1	3	1	2
Greatest basal width of the lower jaw . .	1	8	1	1

SPINE.	*Capromys.*	*Acouchy.*				
Number of the cervical *vertebræ*	7	7				
Length of that part of the column	..	..	2	6	1	7
Number of the costal *vertebræ*	16	13				
Length of that part of the column	..	..	4	3	3	9
Number of the lumbar *vertebræ*	7	7				
Length of that part of the column	..	..	6	6	3	8
Number of the sacral *vertebræ* (by *anchylosis*)	4	4				
Length of the *sacrum* . . .	..	..	..	..	1	6
Number of the caudal *vertebræ*	..	16				
Length of the tail	..	..	..	..	3	2
EXTREMITIES.						
Length of the clavicle			1	3	0	8
Scapula from the end of the *acromion* to the lower part of the base			2	5	1	10
——— greatest breadth at the base . . .			1	3	0	$10\frac{1}{2}$
Length of the *humerus*			2	$8\frac{1}{2}$	2	2
——— *ulna*			2	11	2	0
——— *radius*			2	$5\frac{1}{2}$	2	4
——— *femur*			3	3	2	7
——— *tibia*			3	2	3	0
——— bones of the hand			2	2	1	6
——— of the foot			3	6	3	5

The exhibition of the collection of *Shells* formed by Mr. Cuming on the western coast of South America and in the South Pacific Ocean was resumed, and the following new species were characterized by Mr. Broderip and Mr. G. B. Sowerby.

Genus Chiton.

* Ligamento marginis lævi.

Chiton bipunctatus.—*Chit. testâ ovatâ, lævi, virescente, nigro, albidoque variâ; margine concolori, plerùmque maculâ albâ utrinque inter valvam primam et secundam positâ: long.* ½, *lat.* ¼ *poll.*

Hab. ad oras Peruviæ. (Inner Lobos Island.)

Found under stones at low water. This species varies much in its colouring, some specimens being nearly black, others light green, and some much and prettily varied. In almost all a white mark may be observed on the margin just behind the anterior valve.—G. B. S.

Chiton exiguus. *Chit. testâ oblongâ, minimâ, rufescente, angustâ; valvarum intermediarum carinâ dorsali latissimâ, trigonâ, margine sulcatâ; arearum lateralium margine distinctâ: long.* $\frac{3}{16}$, *lat.* $\frac{1}{16}$ *poll.*

Hab. in Polynesiâ. (Lord Hood's Island.)

Found on the *Pearl Oysters*. This is the smallest species which Mr. Sowerby has seen: the dorsal keel of the intermediate valves is very broad, and distinguished by a groove on each side.—G. B. S.

Chiton catenulatus. *Chit. testâ oblongâ, pallidâ, virescente variâ; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ parte posticâ radiatim granulosis; intermediarum areis centralibus et posticæ aream anticâ longitudinaliter scabroso-sulcatis: long.* $\frac{7}{12}$, *lat.* $\frac{3}{12}$ *poll.*

Hab. ad oras Peruviæ. (Inner Lobos Island.)

Found under stones at low water. In general appearance this species resembles *Chit. luridus*: by careful attention to the above characters it may however be readily distinguished.—G. B. S.

Chiton graniferus. *Chit. testâ ovatâ, castaneâ, nigro albidoque variâ; dorso elevato; valvâ anticâ radiatim granosâ; valvæ posticæ parte posticâ et valvarum intermediarum areis lateralibus subradiatim graniferis; areis centralibus longitudinaliter granoso-lineatis: long.* 1, *lat.* $\frac{7}{12}$ *poll.*

Hab. ad oras Chiliæ.

A single specimen was found on a *Mytilus* in nine fathoms water at Conception.—G. B. S.

** Ligamento marginis squamoso.

Chiton stramineus. *Chit. testâ ovatâ, lævi, pallidè stramineâ; dorso rotundato; squamulis marginalibus sparsis: long.* $\frac{5}{12}$, *lat.* $\frac{3}{12}$ *poll.*

Hab. ad Insulam Chiloe Chilensium.

Found under stones at low water. All the specimens are of a uniform pale straw colour.—G. B. S.

CHITON PUSIO. *Chit. testâ ovali, lævigatâ, olivaceâ, punctulis viridibus numerosis ornatâ; valvarum marginibus anticis lateribusque rugulosis · long.* $\frac{6}{10}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. ad Valparaisam.

Found on *Amphidesma solidum* in from thirty to fifty fathoms water, with a sandy floor.—G. B. S.

Genus MARGINELLA.

MARGINELLA CURTA. *Marg. testâ ovatâ, cinerascente-fulvâ; spirâ brevi; labii externi reflexi margine externâ castaneâ, facie albâ; labii interni expansi et incrassati margine castaneâ; columellâ quadriplicatâ, plicis æqualibus: long.* $\frac{6}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad Iquiqui et ad Paytam.

The body-whorl, in fully grown specimens, is rather angular at the upper part, and it is wholly covered with white specks. It was dredged in fine black sand.—G. B. S.

Genus BULINUS.

* Labio externo tenui, acuto.

BULINUS VEXILLUM. *Bul. testâ pyramidali, albente, vittis castaneis fasciatâ; anfractibus 6 levissimè longitudinaliter striatis; umbilico subobsoleto: long.* $1\frac{1}{2}$, *lat.* $\frac{6}{7}$ *poll.*

Hab. in Sinu Panamæ. (King's and Saboga Islands.)

Found on the trunks of large trees.—W. J. B.

BULINUS PUSTULOSUS. *Bul. testâ fusiformi, e fusco albente, subdiaphanâ; anfractibus 6, striis moniliformibus frequentibus longitudinalibus; umbilico mediocri: long.* $\frac{7}{10}$, *lat.* $\frac{3}{10}$ (*circa*) *poll.*

Hab. in Chili. (Huasco.)

Found under stones on elevated ground.—W. J. B.

BULINUS PUPIFORMIS. *Bul. testâ griseo-albâ, pupiformi, longitudinaliter levissimè striatâ; apice nigro-fuscescente; labro subreflexo: long.* $\frac{1}{8}$, *lat.* $\frac{1}{4}$ *poll.*

Hab. in Chili. (Huasco.)

Found under stones and in shady places.—W. J. B.

BULINUS PANAMENSIS. *Bul. testâ ovato-fusiformi, subglabrâ, diaphanâ, pallidè fulvâ; anfractibus 6 subventricosis, labro vix subreflexo: long.* 1, *lat.* $\frac{1}{2}$ *poll.*

Hab. in Sinu Panamæ. (King's and Saboga Islands.)

Found on the trunks of large trees.—W. J. B.

BULINUS ALBICANS. *Bul. testâ ovato-ventricosâ, subpellucidâ, fuscâ lineolis strigisque longitudinalibus albis variâ; anfractibus 6 longitudinaliter striato-rugosis; columellâ et fauce rubro-castaneis; umbilico mediocri: long.* $\frac{9}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. ad Copiapo, Chili.

This species, which resembles *Bul. guttatus* in its white markings, but differs from that shell in shape and other characters, was found by Mr. Cuming at Copiapo, in the dry sand on the elevated ground, near the port. The upper part of the inner lip is some-

are known to have in determining the intensity or distribution of its colour.

The body-whorl of No. 1. is, generally speaking, more ventricose and deeper than that of any of the other varieties; and when No. 1. and No. 4. are placed side by side, the discrepancy may appear somewhat startling; but if the gradations be placed before us, these differences vanish, or are so melted down into each other that nothing remains fixed but the number of whorls, the style of sculpture, the relative size of the *umbilicus*, and the general form and make of the shell.

Mr. Cuming found all his specimens under stones.—W. J. B.

Bulinus mutabilis. *Bul. testâ cylindrico-attenuatâ, subalbidâ castaneo strigato-maculatâ; anfractibus 7 creberrimè granuloso-striatis; umbilico mediocri; epidermide fuscâ: long.* 1¼, *lat.* ⅜ *poll.*

Hab. in montibus Peruviæ. (Santos.)

Var. albo castaneoque alternatim fasciata, fasciis castaneis albo maculatis: long. 1⅛, lat. ⅜ poll.

Hab. in Peruviâ. (Campania of Truxillo.)

Both these varieties were found under stones.

The sculpture is very like that of the preceding species, but much finer and closer; and indeed there is a general resemblance at first sight; but the number of whorls, the cylindrical shape, and other points in the species before us, sufficiently mark the difference between them.—W. J. B.

Bulinus versicolor. *Bul. testâ ovato-pyramidali, albidâ maculis castaneis, vel castaneâ maculis albidis variâ; anfractibus 6 minutissimè longitudinaliter subdepresso-granuloso-striatis; labio exteriore albente; fauce subnigro-castaneâ; umbilico mediocri; epidermide tenui: long.* 1¼, *lat.* ⅜ *poll.*

Var. fasciâ albidâ basali.

Hab. in montibus Peruviæ. (Mongon, near Casma.)

This shell varies in its colouring almost as much as *Bul. multicolor*, King (*Helix multicolor*, Rang), and bears some resemblance to that species at first sight. On examination, the difference between the two species is very apparent. The whitish basal band of the variety is seen internally as well as externally.

Found on bushes.—W. J. B.

May 22, 1832.

Richard Owen, Esq., in the Chair.

Mr. Yarrell exhibited skeletons and stuffed specimens of several *Mammalia*, in illustration of the distinctive characters of two species of that class, which he had recently ascertained to be inhabitants of Britain.

The first of these additions to the British Fauna is the *oared Shrew*, *Sorex remifer*, Geoff., distinguishable from the more common *water Shrew* by its greater size and its uniform colour. The whole of the upper part of the head, the body, and sides, are velvet black; the situation of the ear is marked by a tuft of white hairs, more conspicuous than in the *water Shrew*, from the greater contrast of colour; there is a small patch of light brown under the lower jaw; the under surface of the body is rusty black; and the tail is black, with a line of pendent greyish white hairs along its under surface.

Mr. Yarrell remarked, that although the individual exhibited (the only indigenous specimen which he had yet seen,) was smaller than that described by M. Desmarest in his 'Mammalogie' (the length of the head and body being 3 inches 4 lines, and that of the tail 1 inch 9 lines), he had determined its identity with the species to which he referred it, by comparison with a specimen of *Sor. remifer*, transmitted by M. Baillon of Abbeville to the British Museum; the two specimens being perfectly similar in every particular of colour, markings, and measurement. He further observed, that the *Sor. ciliata* of Sowerby's 'British Miscellany,' pl. 49, is probably referable to the same species.

The second animal to which Mr. Yarrell more particularly directed the attention of the Committee, was a species of *Arvicola*, new, not only to Britain, but also apparently to science. It is so nearly related to *Arv. agrestis* (the *Mus agrestis* of Ray, and probably also of Linnæus, and apparently the *Mus arvalis* of Pallas), as to require that the characters of the latter, the common short-tailed *field Campagnol*, should be modified. Mr. Yarrell accordingly thus characterized the two species:—

ARVICOLA AGRESTIS. *Arv. suprà rufescenti-fusca, subtùs cinerea; auriculis vix prominulis; caudâ tertiam partem corporis longitudine vix æquante.*

ARVICOLA RIPARIA. *Arv. suprà saturatè castanco-rufescens, subtùs cinerea; auriculis paullò prominulis; caudâ dimidium corporis longitudine æquante, apicis pilis subelongatis.*

Mr. Yarrell pointed out, on the specimens exhibited by him, the external differences between these species, consisting chiefly in the size and colour of the body, and the relative length of the tail. He

further illustrated the differences of proportion between them by referring to skeletons of each, and laid before the Committee the following table of comparative measurements:—

	Arv. agrestis.		*Arv. riparia.*	
	in.	lin.	in.	lin.
Length of the head	0	10½	0	9¼
——— from the first dorsal *vertebra* to the last	0	10	0	9
——— of the six lumbar *vertebræ*	0	11½	0	7½
——— from the first dorsal *vertebra* to the tuberosity of the *ischium*	2	3	1	9½
——— of the *os innominatum*	0	7¾	0	6¾
——— from the sacral *vertebræ* to the end of the tail	1	9	2	2
——— of the *scapula*	0	5	0	4
——— *humerus*	0	5	0	4
——— from the *olecranon* to the *carpus*	0	6½	0	5½
——— of the *femur*	0	6¾	0	5½
——— *tibia*	0	7¾	0	7½
——— from the *os calcis* to the end of the longest toe	0	7	0	7¾

It hence appears that the relative dimensions of the body and tail in each of the species are nearly reversed. The number of the cervical, dorsal, lumbar, and sacral *vertebræ*, are the same in both, being 7, 13, 6, and 1, respectively; but the tail of the *field Campagnol* has but 19 *vertebræ*, while that of the *bank Campagnol* has 4 more, making 23. The cavity of the *thorax* is of much larger size in the *field* than in the *bank* species, the ribs being of greater expanse, and the *sternum* longer. The head of the *bank Campagnol* is shorter and more square in its form, exhibiting a greater appearance of strength; and although it is a smaller animal, with a shorter back as well as shorter limbs, it has actually longer feet than the *field* species.

Referring to the internal anatomy of the two species, Mr. Yarrell stated, that he had detected no difference in the *viscera* of the *thorax*. The stomachs were also of the same form, each presenting an apparent contraction at the distance of one-third from the cardiac orifice. The liver of the *bank Campagnol* was, however, more extensively divided than that of the *field* species, having seven lobes, while that of the latter presented but five: both are equally destitute of gall-bladder. But the difference in the comparative length of the small and large intestines was most marked:—

	Arv. agrestis.	*Arv. riparia.*
	inches.	inches.
Length of the small intestines	14½	9½
——— *cæcum*	2¾	4
——— large intestines	8	10

These measurements, in which it will be observed that the proportions are reversed, appear to indicate some difference in the choice of food, with which Mr. Yarrell stated that he was not yet

acquainted, the contents of the stomachs which he had examined having been too far digested to enable him to ascertain their nature.

Mr. Yarrell concluded by remarking, that, to the differences between the species, indicated in their fur, their osteology, and their internal anatomy, a fourth series might be added, derived from their habits. The *bank Campagnol* frequents hedge-bottoms and ditch-banks, and is said to make its nest of wool: the *field Campagnol* prefers living among the long herbage of water-meadows and moist pastures, and makes its nest of dried grass.

An Extract was read from the '*Analyse des Travaux de la Société d'Histoire Naturelle de l'Ile Maurice, pendant la 2de Année*': it was communicated to the Committee by its author, M. Julien Desjardins, Corr. Memb. Z. S., the Secretary of the Society whose labours are enumerated in it.

Among the novelties which have occupied that Society during the season of 1830–1831 have been some observations by M. J. Desjardins on the Zoology of the Mauritius as compared with that of the Isle of Bourbon, from which has resulted the curious fact, that notwithstanding that these islands are situated in such close proximity to each other, are of the same formation, and present a most remarkable analogy in their soil, their animals are not universally the same, some species being met with in the one which never occur in the other.

In the department of Ornithology Madagascar has furnished to M. J. Desjardins the opportunity of describing specimens obtained from thence of the *Ardea alba*, Linn., and *Ard. Garzetta*, Linn., and also of a *Platalea*, regarded by him as the †*Plat. leucorodia*, Gmel., but which, from his description forwarded to the Committee, is evidently the species described by Mr. Vigors, on February 22, 1831, (Part i. p. 41,) under the name of †*Plat. Telfairii*; it was at that time stated by mistake to be a native of the Mauritius; its true *habitat*, as pointed out by M. Desjardins, is Madagascar, where it was obtained in Imirne, a kingdom of the interior, in which is situated Tananarivoe the capital of the island. Of another bird, which is common in Madagascar, the *Cuculus canorus*, Linn., a single specimen has been shot in the Mauritius. An *Ibis*, which is regarded by M. Bojer as the species sacred among the ancient Egyptians, has been obtained, with several other birds, from Agalega, one of the islands of the north-eastern Archipelago of Madagascar. In some remarks on the bones of the *Dodo*, (consisting of a *sternum*, a *cranium*, and four bones of the extremities,) which were sent by M. Desjardins to Paris, and which excited so much attention during the past summer from M. Cuvier and M. de Blainville, occasion is taken to correct some errors which have crept into the published statements respecting them. They were discovered, in 1786, in a cavern on the island of Rodriguez.

In Ichthyology, three species have been described by M. Lienard, sen., two of which belong to the genera *Pleuronectes* and *Holocentrum*. Another fish belonging to the family of the *Perches* with a

single dorsal fin, has appeared to the same naturalist to require generic distinction, and he has accordingly described it as the type of a new genus, to which he has given the name of *Platysome:* it is evidently, from the brief notice contained in the '*Analyse*,' the *Dules caudavittatus*, Cuv. and Val., or a nearly allied species, a fish which certainly differs considerably, by its compressed form and other particulars, from many of those with which it was generically associated by the authors last quoted. M. J. Liénard has exhibited a drawing of an *Acanthurus:* and M. J. Desjardins has described three fishes of the genera *Serranus*, *Labrus*, and *Xirichthys;* and has also exhibited and described specimens, obtained from the north-western coast of Sumatra, of eight other fishes.

Among the *Crustacea*, two species of *Crabs* common on the coasts of the Mauritius, and belonging to the genera *Portunus* and *Podophthalmus*, have been described and drawn by M. J. Liénard.

Finally, M. E. Liénard has described minutely a marine substance which he has regarded as an *Alcyonium:* he proposes to continue to figure and describe the numerous zoophytes which abound in the adjoining seas to such an extent as to render the Mauritius highly favourable for the pursuit of zoological studies in this beautiful but intricate department of nature.

Mr. Gray exhibited living specimens of the *common Lizard, Lacerta agilis*, Linn., for the purpose of pointing out the marks of distinction between the sexes. The male is generally larger than the female, and more distinctly coloured; the under side of his body and base of his tail are very bright orange, while in the female these parts are pale yellowish green; his ante-anal scale is short and transverse, that of the female being much longer and hexagonal; and the under side of the base of his tail is flat, with a slight longitudinal middle depression just behind the vent, this part of the tail being in the female rounded and convex. In April and May the male may also be known by the base of the tail being dilated on the sides, just behind the thigh, a dilatation probably caused by the size of the *penes*, which are retracted into these parts.

Mr. Gray further explained various particulars of the habits of this species, observed by him in individuals which he had kept in a living state; and added, that in the only instance in which he had observed the *coitus*, one alone of the *penes* was inserted.

June 12, 1832.

Dr. Marshall Hall in the Chair.

The exhibition was resumed of the new species of *Shells* collected by Mr. Cuming on the western coast of South America and among the islands of the South Pacific Ocean.

The whole of the new species, thirty-nine in number, of the

Genus Columbella

contained in the collection, were illustrated by Mr. G. B. Sowerby. They are as follow:

Columbella pulcherrima. *Col. testâ ovatâ, spirâ subulatâ; anfractibus* 9, *primo minimo, albo,* 2*do,* 3*tio,* 4*to et* 5*to nigro-rufescentibus, politis;* 6*to,* 7*mo, et* 8*vo concoloribus, spiraliter sulcatis; ultimo ventricoso, longitudinaliter rugoso, et spiraliter sulcato, albido, sulcis brunneis; labio externo incrassato; peritremate polito, intùs supernè emarginato, infrà denticulato; labio interno tenui, polito; canali recurvâ: long.* 1, *lat.* $\frac{1}{2}$ *poll.*

Hab. ad oras Americæ Centralis. (Gulf of Dulce.)

A single specimen was found in ten fathoms, on a sandy muddy floor.

Columbella Harpiformis. *Col. testâ ovato-subtrigonâ, nigrâ, albido maculatâ, epidermide tenui fulvâ indutâ; spirâ brevi; anfractibus* 6–7, *marginibus crenulatis, ultimo trigonali, longitudinaliter costato; aperturâ elongatâ, supernè in canalem elongatam productâ; labio externo incrassato, inflexo, intùs denticulato; canali subrecurvâ long.* $\frac{7}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab. in Sinu Panamæ.

Found on dead shells in ten fathoms.

Columbella bicanalifera. *Col. testâ ovato-pyramidali, apice acuto, basi spiraliter sulcato; anfractibus* 7, *superioribus longitudinaliter rugosis, pallescentibus, fusco-variis; ultimo pallido, fusco strigato, strigis prope suturas saturatioribus; aperturâ oblongâ, in canalem supernè decurrente; labio externo incrassato, reflexo, subflexuoso, supernè acuminato · long.* $\frac{1}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab. ad Insulas Gallapagos.

Dredged in sandy mud at a depth of ten fathoms.

Columbella spurca. *Col. testâ oblongâ, castaneâ, albido maculatâ et guttatâ; spirâ acuminatâ; anfractibus* 7, *supernè angulosis, ultimo ventricoso, infrà spiraliter sulcato; aperturâ oblongâ, intùs violascente, supernè angulatâ; labio externo flexuoso, subincrassato, intùs denticulato; columellâ infrà unituberculatâ; labii interni margine ad basin denticulatâ: long.* $1\frac{2}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. sub lapidibus ad oras Peruvianas. (Inner Lobos Island.)

COLUMBELLA BUCCINOIDES. *Col. testâ oblongâ, lævi, piceo-nigrâ, prope suturas pallidè maculatâ; spirâ acuminatâ; anfractibus* 8, *ultimo infrà spiraliter striato; labii externi extùs subincrassati, intùs obsoletè denticulati, margine superiori subemarginatâ; canali brevissimâ · long.* $\frac{7}{10}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. ad oras Peruvianas.

Found under stones at low water mark, at Ancon. It very closely resembles a *Buccinum*.

COLUMBELLA CORONATA. *Col. testâ oblongo-acuminatâ, albâ, brunneo variegatâ; anfractibus* 7–8, *lævibus, tribus ultimis serie unicâ tuberculorum mucronatorum coronatis; labio externo intùs denticulato: long.* $\frac{3}{10}$, *lat.* $\frac{6}{20}$ *poll.*

Hab. in Sinu Panamæ sub lapidibus.

A very pretty species, which varies much in the arrangement of its colours.

COLUMBELLA LYRATA. *Col. testâ oblongâ, acuminatâ, albidâ, epidermide fuscâ indutâ; anfractibus* 10, *longitudinaliter costatis, costis infrà nigris; ultimo anfractu infrà spiraliter striato, supernè longitudinaliter costato, costis nigro-articulatis; aperturâ oblongâ, breviusculâ, medio coarctatâ, labio externo intùs denticulato: long.* $\frac{8}{10}$, *lat.* $\frac{7}{20}$ *poll.*

Hab. sub lapidibus in Sinu Panamæ et ad Chiriqui.

COLUMBELLA UNCINATA. *Col. testâ oblongâ, utrinque acuminatâ, fulvâ, fasciâ centrali albido-articulatâ; anfractibus* 6–7; *superioribus parvis, subnodulosis; ultimo maximo, supernè angulato; aperturâ longitudinali, elongatâ, flexuosâ, supernè in canalem brevem uncinatam porrectâ; labio externo incrassato, intùs denticulato, denticulis confertis; labio interno granuloso: long.* $\frac{8}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad oras Columbiæ. (Isle of Muerte, Bay of Guayaquil.)

Found in sandy mud at a depth of ten fathoms.

COLUMBELLA ELEGANS. *Col. testâ elongato-subulatâ, albâ fusco variegatâ et reticulatâ, epidermide tenui fulvâ indutâ; anfractibus* 11–12, *primis lævibus, cæteris longitudinaliter costatis; ultimo infrà spiraliter sulcato; labio externo incrassato; peritremate subreflexo, supernè intùs emarginato, demùm dentibus nonnullis internis; labio interno lamellari; canali incrassatâ: long.* $1\frac{5}{10}$, *lat.* $\frac{5}{20}$ *poll.*

Hab. ad Guacamayo in Americâ Centrali.

A very fine species, found in sandy mud.

COLUMBELLA UNIFASCIATA. *Col. testâ oblongo-pyramidali, lævi, castaneo-nigricante; anfractibus* 6, *medio spiraliter albido unifasciatis; aperturâ breviusculâ; peritremate intùs denticulis nonnullis: long.* $\frac{8}{20}$, *lat.* $\frac{2}{10}$ (*ferè*) *poll.*

Hab. ad Valparaiso.

Found under stones at low water.

COLUMBELLA GIBBERULA. *Col. testâ ovato-pyramidali; spirâ subulatâ; anfractibus* 8–9, *pallidis, brunneo nubeculatis, ultimi dorso supernè gibberulo, ad utrumque latus varicoso; aperturâ breviusculâ; peritremate incrassato, expanso, intùs denticulis nonnullis; labio interno supernè calloso, medio arcuato; canali brevi, reflexâ: long.* $\frac{6}{10}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis et Centralis.

Found in sandy mud at eleven fathoms depth, at the Bay of Caraccas and Puerto Portrero.

COLUMBELLA TURRITA. *Col. testâ elongato-pyramidatâ; spirâ subulatâ; anfractibus* 10, *albidis, fusco reticulatis, et prope suturam articulatis; aperturâ oblongâ, supernè acuminatâ, subcanaliferâ; labio externo incrassato; peritremate albo, subreflexo, intùs lævi; columellâ arcuatâ: long.* $1\frac{2}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad oras Americæ Centralis. (Bay of Montijo, and St. Elena.)

Found in coarse gravel and sandy mud at a depth of ten fathoms.

COLUMBELLA FULVA. *Col. testâ ovato-subulatâ, fulvâ, epidermide minutissimè reticulatâ indutâ; anfractibus* 10; *superioribus longitudinaliter costatis; ultimo infrà spiraliter striato, supernè longitudinaliter costato; aperturâ, labio externo dentibusque internis albis: long.* $\frac{9}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. ad Panamam, sub lapidibus.

COLUMBELLA RUGOSA. *Col. testâ oblongâ, medio gibbosulâ; epidermide fuscâ; spiræ apice plerùmque eroso; anfractibus* 7, *longitudinaliter costato-rugosis; ultimo infrà spiraliter costato, supernè longitudinaliter costato, costis omnibus supernè unituberculatis; aperturâ subapertâ: long.* $\frac{8}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Panama et Xipixapi.)

Found under stones.

In general appearance this and *Col. fluctuata* resemble each other nearly, but the aperture of *Col. fluctuata* is much narrower. When the *epidermis* is removed, the shell is white, covered nearly all over with black patches.

COLUMBELLA FLUCTUATA. *Col. testâ oblongâ, albâ, nigro vel castaneo maculatâ et fluctuatâ; epidermide fuscâ; spiræ apice plerùmque eroso; anfractibus* 7, *longitudinaliter costatis, ultimi costis abbreviatis; aperturâ medio coarctatâ; labio externo supernè emarginato, interno infrà denticulato: long.* $\frac{9}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. sub lapidibus ad oras Americæ Centralis. (Gulf of Nocoiyo.)

COLUMBELLA RECURVA. *Col. testâ oblongâ, turritâ, fulvâ; spirâ acuminato-pyramidali; anfractibus* 10–11; *primis* 6 *longitudinaliter costatis; cæteris serie tuberculorum unicâ instructis; ultimi dorso subgibbo, parte inferiore transversim striatâ; aperturæ elongatæ canali longiusculâ, recurvâ; labio externo reflexo, incrassato: long.* $1\frac{8}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Isle of Plata.)

Found among coral sand at a depth of seventeen fathoms.

COLUMBELLA LANCEOLATA. *Col. testâ oblongâ, turritâ, albidâ, fulvo variâ; spirâ acuminato-pyramidali; anfractibus* 10–12; *primis* 6–7 *lævigatis; cæteris serie unicâ tuberculorum instructis; ultimi dorso subgibbo, parte inferiore transversim striatâ; aperturæ elongatæ canali breviusculâ, subrecurvâ; labio externo incrassato, variciformi: long.* $1\frac{6}{10}$, *lat.* $\frac{6}{10}$ *poll.*

Hab. ad Insulas Gallapagos.

Found in fine coral sand in from six to eight fathoms.

COLUMBELLA MACULOSA. *Col. testâ oblongo-subulatâ, albidâ, irregulariter fulvo maculatâ; spirâ acuminato-pyramidali; anfractibus* 9–10; *primis* 7–8 *lævigatis; cæteris tuberculorum serie unicâ coronatis; ultimo serie alterâ adjectâ; aperturâ brevi, canali subrecurvâ: long.* 1, *lat.* $\frac{7}{20}$ *poll.*

Hab. ad littora Americæ Centralis. (Guacamayo.)

Dredged with *Col. subulata* in sandy mud.

COLUMBELLA HÆMASTOMA. *Col. testâ oblongâ, lævigatâ, apice acuminato; anfractibus* 7–8, *castaneis, albo maculatis, ultimo dorso nigro, infrà castaneo; aperturâ elongatâ, flexuosâ; labio externo extùs incrassato, supernè prominente, albo; peritremate aurantiaco; labio interno intùs denticulato; columellâ unituberculatâ: long.* $\frac{9}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad insulas Gallapagos et ad littora Panamæ.

Found under stones.

A dwarf variety occurs, which differs, however, very slightly in its proportions.

COLUMBELLA VARIA. *Col. testâ oblongâ, decussato-costatâ, apice acuminato; anfractibus* 8–9 *fuscis, albido variegatis, longitudinaliter costatis, interstitiis costarum sulcatis; aperturâ subovali, labii externi extùs incrassati margine supernè emarginatâ: long.* 1, *lat.* $\frac{7}{20}$ *poll.*

Hab. ad Panamam, sub lapidibus.

The ribs cease a little below the middle of the last volution.

COLUMBELLA SCALARINA. *Col. testâ ovatâ, longitudinaliter costatâ, apice pyramidali; anfractibus* 6–7, *supernè contabulatis, longitudinaliter costatis, interstitiis costarum decussatis, costis ad basin continuis; aperturâ coarctatâ, supernè emarginatâ; peritremate intùs denticulato, denticulis superioribus majoribus: long.* $\frac{7}{10}$, *lat.* $\frac{5}{20}$ *poll.*

Hab. ad Panamam et Chiriqui, sub lapidibus.

This shell is of a pale colour, with spiral dark brown bands; it is covered with a thin but rough *epidermis*. The ribs continue to the base.

COLUMBELLA PYROSTOMA. *Col. testâ ovatâ, medio turgidâ; spirâ brevi, conicâ; anfractibus* 6, *longitudinaliter tuberculato-costatis, costis nigris, interstitiis rufescentibus; aperturâ rufâ: long.* $\frac{6}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Panama and Gallapagos.)

This species somewhat resembles *Col. mendicaria*. Mr. Sowerby is doubtful as to the propriety of admitting it among the *Columbellæ*; although wherever *Col. mendicaria* is placed this species must of course follow. Perhaps it might not be inconvenient to separate these from *Columbella*, and to combine them with their cognate species from among Lamarck's *Purpuræ*, *Ricinulæ* and *Murices*, and thus bring together a number of shells which would form a very natural genus.

COLUMBELLA MAURA. *Col. testâ ovatâ, medio turgidâ; spirâ longiusculâ, conico-acuminatâ; anfractibus* 6—7, *tuberculato-costatis, nigris, albido nonnunquam variegatis; aperturâ pallidâ: long.* $\frac{8}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Panama and Gallapagos.)

Somewhat related to the last, though partaking rather less completely of the characters of *Columbella*.

Found with the last, under stones.

COLUMBELLA LIVIDA. *Col. testâ ovatâ, medio turgidâ; spirâ longiusculâ, conico-acuminatâ; anfractibus* 6—7, *longitudinaliter tuberculato-costatis, lividis, pallidè fusco fasciatis; labio externo intùs denticulis tribus: long.* $\frac{7}{10}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. ad Panamam, sub lapidibus.

This differs from the two last in several particulars, though it is so intimately related to them as to form a part of the same division of the genus.

COLUMBELLA NIGRO-PUNCTATA. *Col. testâ ovato-acuminatâ, albâ, nigro-punctatâ; anfractibus* 6, *tuberculorum infra suturam serie unicâ, medio longitudinaliter costatis, costis decussatis: long.* $\frac{9}{10}$, *lat.* $\frac{4}{10}$ *poll.*

Hab. ad Insulas Polynesias. (Lord Hood's Islands.)

Somewhat related to, but distinct from Lamarck's *Col. zonalis*.

Found on the *Meleagrinæ*.

COLUMBELLA OBTUSA. *Col. testâ oblongâ, subcylindricâ, lævi; anfractibus* 8, *albicantibus, castaneo maculatis, maculis angulatis subtrapeziformibus; anfractu ultimo ad basin sulcato: long.* $\frac{6}{10}$, *lat.* $\frac{3}{10}$ *poll.*

Hab. ad Insulam Huaheine dictam.

This appears to be a very rare species, since only two specimens were found on the reefs of Huaheine, one of the Society Islands.

COLUMBELLA FUSCATA. *Col. testâ ovato-acuminatâ, medio ventricosâ, castaneâ, albido guttulatâ, epidermide fuscâ induta; spirâ acuminatâ; anfractibus* 7, *ultimo maximo; aperturâ elongatâ, flexuosâ; peritrematis albidi aut violacei medio intùs denticulato; columellæ dimidio inferiore denticulato: long.* $\frac{9}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad oras Americæ Meridionalis. (Panama, St. Elena, and Monte Christe.)

Found under stones; it appears to be very common.

COLUMBELLA COSTELLATA. *Col. testâ oblongo-pyramidali, albidâ, castaneo-nigricante maculatâ; spirâ acuminatâ; anfractibus* 8—9, *longitudinaliter costellatis, ultimo ad basin spiraliter striato: long.* $\frac{1}{2}\frac{3}{5}$, *lat.* $\frac{5}{16}$ *poll.*

Hab. ad Panamam.

A single specimen was found at a depth of sixteen fathoms.

COLUMBELLA GUTTATA. *Col. testâ oblongo-pyramidali, lævigatâ, fuscâ, maculis guttulisque albidis notatâ; spirâ acuminatâ, plerùmque decollatâ; anfractibus* 7—8, *ultimo spiraliter striato ad basin; aperturâ albicante, dentibus internis peritrematis superioribus majusculis: long.* $\frac{1}{1}\frac{6}{0}$, *lat.* $\frac{1}{1}\frac{2}{0}$ *poll. paullò plùs.*

Hab. ad Panamam, sub lapidibus.

This species has been long well known; Mr. Sowerby is not however aware that it has been hitherto described.

COLUMBELLA VARIANS. *Col. testâ ovatâ, medio ventricosâ, albidâ, coloribus variis pictâ; spirâ breviter pyramidali; anfractibus* 4—6, *spiraliter sulcatis; supernè subangulatis, noduliferis; aperturâ angustâ, flexuosâ; peritremate supernè angulato, intùs denticulato; labio interno prope basin denticulato; columellæ dentibus tribus, parvis: long.* $\frac{4}{1}\frac{4}{0}$, *lat.* $\frac{2}{1}\frac{5}{6}$ *poll.*

Hab. ad insulas Gallapagos. (Hood's Island.)

A very pretty species, exceedingly variable in its colouring. It would appear that it abounds in some spots; for Mr. Sowerby has a great number brought by the Endeavour, Capt. Cook, many years since, but without locality.

COLUMBELLA ANGULARIS. *Col testâ oblongo-pyramidali, pallidâ, fusco variâ; spirâ subulatâ; anfractibus* 10, *longitudinaliter costatis, ultimi medio subangulato, basi reflexo; aperturâ subquadratâ, canali longiusculâ, latâ; peritremate extùs incrassato. long.* $1\frac{1}{1}\frac{1}{0}$, *lat.* $\frac{5}{16}$ *poll.*

Hab. ad Panamám.

COLUMBELLA CASTANEA. *Col. testâ ovato-oblongâ, castaneâ, punctulis albidis conspersâ; spirâ breviusculâ, acuminatâ; anfractibus* 5, *supernè anguliferis, ultimo magno, ad basin spiraliter sulcato; aperturâ elongatâ, flexuosâ, supernè angulosâ; peritremate aurantiaco; labio externo intùs denticulato; interno supernè callifero, medio albo eroso, infrà plicato-rugoso: long* $\frac{1}{1}\frac{8}{0}$, *lat.* $\frac{1}{1}\frac{5}{0}$ *poll.*

Hab. ad oras Americæ Centralis. (Real Llejos.)

A few specimens only of this species have been found; and some had already been brought to England long ago. All appear to have been picked up on the shore.

COLUMBELLA SULCOSA. *Col. testâ ovato-oblongâ, fulvâ, nigricante, vel rufo-nigricante lineatâ; spirâ acuminatâ; anfractibus* 7, *longitudinaliter costatis, decussatim spiraliter sulcatis; caudâ reflexâ; aperturâ supernè latiore, infrà canali distinctâ; labio externo extùs incrassato, intùs denticulis* 4 *centralibus; interno rugis basalibus nonnullis: long.* $1\frac{1}{1}\frac{0}{0}$, *lat.* $\frac{5}{16}$ *poll.*

Hab. ad Insulas Polynesias. (Annaa, or Chain Island, and Lord Hood's Island.)

COLUMBELLA MAJOR. *Col. testâ ovatâ, medio gibbosâ, castaneâ albido punctulatâ; spirâ breviusculâ, pyramidali, acuminatâ; anfractibus 6—7, lævigatis, ultimo maximo, supernè rotundato-turgido, infrà spiraliter sulcato; aperturâ elongatâ, flexuosâ, albâ, supernè angulatâ; labio externo supernè obtusè angulato, albo, intùs denticulato; labio columellari supernè callifero, infrà plicato-rugoso: long.* $1\frac{1}{10}$, *lat.* $\frac{7}{10}$ *poll.*

Hab. sub lapidibus ad oras Americæ Meridionalis. (Isle of Muerte.)

This species has long been known, and has commonly been called *Col. Strombiformis.* It does not, however, agree with Lamarck's description of that shell, and Mr. Sowerby possesses specimens of another which corresponds exactly with it.

COLUMBELLA PROCERA. *Col. testâ oblongo-pyramidali, medio ventricosâ, cærulescenti-albidâ, fusco punctatâ et maculatâ; spirâ gradatim acuminatâ; anfractibus 8—9, longitudinaliter costellatis; superioribus decussatis; medianis subtuberculiferis; ultimo medio lævigato, infrà spiraliter sulcato; aperturâ oblongâ, supernè acuminatâ, subtùs in canalem breviusculam desinente; labio externo intùs denticulato; columellâ arcuatâ, lævi: long.* $2\frac{3}{10}$, *lat.* $\frac{9}{10}$ *poll.*

Hab. ad Panamam.

This species is remarkable for its gigantic size. It must be placed with the *Columbellæ*, although not precisely according with the character given of that genus by Lamarck; for it is more nearly related to them than to any other genus. A single specimen only was found.

COLUMBELLA PYGMÆA. *Col. testâ ovato-oblongâ, pallescente; spirâ acuminatâ; anfractibus 6; superioribus 5 longitudinaliter costatis, fasciâ interruptâ nigrâ; ultimo supernè longitudinaliter costato, infrà spiraliter sulcato, fasciis duabus interruptis nigris; aperturâ latiusculâ; labii externi margine supernè emarginatâ: long.* $\frac{5}{20}$, *lat.* $\frac{5}{20}$ *poll.*

Hab. ad Sanctam Elenam.

Found on dead shells in sandy mud, at a depth of ten fathoms.

COLUMBELLA UNICOLOR. *Col. testâ ovatâ, medio ventricosâ, castaneâ; anfractibus 5, lævibus; suturâ profundiusculâ; aperturâ latiusculâ, ad basin subeffusâ; canali brevissimâ; labio externo extùs subincrassato, intùs denticulis obsoletiusculis nonnullis: long.* $\frac{4}{10}$, *lat.* $\frac{2}{10}$ *poll.*

Hab. ad Insulas Gallapagos. (Hood's Island.)

COLUMBELLA VERSICOLOR. *Col. testâ ovatâ, medio ventricosâ, pallidâ coloribus variis pictâ; spirâ acuminatâ; anfractibus 6, supernè rotundato-angulatis; suturâ profundâ; aperturâ supernè angulosâ; peritremate intùs denticulato: long.* $\frac{9}{20}$, *lat.* $\frac{5}{20}$ *poll.*

Hab. ad Insulas Polynesiæ. (Annaa, or Chain Island.)

COLUMBELLA DORSATA. *Col. testâ oblongo-pyramidali, albâ, lineis irregularibus, flexuosis, confertis, castaneis obtectâ; anfractibus* 8, *lævibus, supernè turgidulis; ultimi lateribus inflatis, dorso prominente; suturâ distinctâ; aperturâ angustâ, flexuosâ, albâ; peritremate extùs incrassato; labio columellari exarato: long.* 1, *lat.* ¼ *poll.*

Hab. ad oras Columbiæ. (Island of Muerte, Bay of Guayaquil.)

This species is somewhat like *Col. gibberula*, but it is much larger, and the middle of the columellar lip is worn away; there are also other minor differences.—G. B. S.

June 26, 1832.

William Yarrell, Esq. in the Chair.

Specimens preserved in spirit were exhibited of two species of *Mus* collected by Lieut.-Col. Sykes in Dukhun, both of which were apparently new to science. One of them is that referred to in Col. Sykes's 'Catalogue of the *Mammalia* noticed in Dukhun' (Proceedings, Part I. p. 103.). It was characterized by Mr. Bennett as

Mus oleraceus. *Mus caudâ longissimâ; auriculis rotundatis majusculis; suprà nitidè castaneus; ore, gastræo, pedibusque flavescenti-albidis.*

Long. *capitis corporisque*, 2¾ unc.; *caudæ*, 4¼; *capitis* 1; *auriculæ*, ½; *tarsi postici* cum digitis, ½; *tibiæ posticæ*, ⅝; *mystacum*, 1½.

Hab. in arvis Indiæ Orientalis, nidum e foliis graminum in plantis oleraceis construens.

The upper surface is thickly clothed with rather long smooth silky hairs of a bright pale chestnut colour; on the under surface and the inside of the limbs the quality of the hairs is the same, but their colour is nearly white with a yellowish tinge. This latter colour extends up the cheeks, round the mouth and the under surface of the muzzle, and over the upper surface of the feet; the hairs on the latter, on the muzzle, and on the long scaly tail, being very short. The claws are white and minute. The ears are rather large, rounded above, and very nearly naked. The muzzle is rather short and obtuse, and the eyes are placed at an intermediate distance between its end and the base of the ears. The moustaches are numerous and long, some of them being black, and others silvery or bright chestnut.

The extreme length of the tail, as compared with that of the body, and the comparative length of the hinder *tarsus*, furnish characters sufficient to distinguish this *Indian field Mouse* from all its congeners.

The second species belongs to that section of the genus *Mus* in which spines are intermixed with the fur. It was designated

Mus platythrix. *Mus caudâ corpus longitudine subæquante; auriculis mediocribus nudis subrotundatis: suprà fusco-canescens, pilis plurimis applanatis spinescentibus; infrà et ad pedes flavescenti-albidus.*

Long. *capitis corporisque*, 3¼ unc.; *capitis*, 1 1/7; *caudæ*, 3; *auriculæ*, ½; *tarsi postici* cum digitis, ¾; *mystacum*, 1½; *spinarum*, ½.

The head is rather flat, and the muzzle slightly elongated and

acute ; the tail regularly ringed with scales, from between which only a few scattered hairs make their appearance. The fur of the upper surface is of a light grey at the base ; but the longer hairs have a blackish shade, with an intermixture of testaceous brown, which is more obvious posteriorly and towards the lower part of the sides. The flattened spines, which are numerous, are white and transparent throughout the greater part of their length, with a dark margin and blackish acuminate tip, beneath which they exhibit, in certain lights, somewhat of a changeable gloss. The moustaches are few in number, black at the base and white at the tips, and reach beyond the ears, which are naked, rounded with a slight point, extremely open, membranaceous, and of a dusky black. The whole under surface, together with the insides of the limbs, the upper surface of the feet, and the claws, are of a yellowish or dirty white. The tail is of a uniform livid grey, but little darker above than beneath, and tapering to a very fine point.

Several imperfect skins of *Mammalia*, recently obtained by Mr. Gould from Algoa Bay, were exhibited ; and Mr. Bennett remarked, that notwithstanding their deficiency in the most important particulars, they were yet of sufficient interest to claim the attention of the Committee, on account of the extreme rarity of two of the species to which they belonged, and of the probability that a third was altogether unknown to science.

One of them, the skin of a *Monkey* deficient as to head and hands, was, Mr. Bennett stated, evidently referable to the *Colobus polycomus*, Illig. ; the long milk-white tail, strongly contrasting with the bright deep black fur of the body, being fully sufficient to characterize it. On the upper part of the skin, above the shoulders, some nearly white hairs were intermingled with the black ones. The only discrepancy observable between the specimen and the description of the species given by Pennant, was in the great length of the hairs of the body, the greater number of them being four or five inches long : this, it was remarked, might be dependent on age or locality.

Another skin, equally imperfect with the preceding, was that of the *Colobus ferrugineus*, Illig., with the state of which, described by M. Kuhl under the name of *Col. Temminckii*, the specimen agreed in every respect except in the absence of any yellow tinge in the rufous fur covering the under surface of the body.

The third skin was still more imperfect than the others, having attached to it no portion of the neck, extremities, or tail, and consisting only of that of the body. Its length is 2 feet, its width $1\frac{1}{2}$. The dorsal portion is of a bright rufous fawn, which is continued on the shoulders and on the buttocks, but from which the red nearly disappears on the under surface, that being pale fawn. Across the whole of the back, commencing between the shoulders and passing backwards, a series of broad transverse glossy black stripes are seen, which run down the sides, becoming narrower towards the belly. These stripes are twelve in number, and are preceded and succeeded by a few similar, closer set, and fainter stripes, of a deeper rufous

than the ground. The broadest of the dark stripes are on the loins, where they are fully an inch in width: their direction in passing down the sides is rather backwards. The commencement of a dark streak is also seen on the skin leading to the outside of the thighs. The quality of the fur is rather rigid, and the hairs are adpressed, resembling in these particulars the covering of the *Zebras*. It may not improbably belong to some species of *Antelope*, with which Europeans are yet unacquainted, but for which travellers to the country from whence the specimen was obtained may be induced to inquire, on being made aware of the existence of so beautiful an animal in that locality. The dark cross markings which ornament the fur are so uncommon among the *Mammalia*, that they alone will probably furnish a sufficient character to distinguish the quadruped in question from any other species inhabiting the interior of Africa, in the neighbourhood of Algoa Bay.

Several specimens were also exhibited of imperfect skins of *Cercopithecus Diana*, obtained from the same locality.

Specimens were exhibited of two species of *Hedgehog* from the Himalayan Mountains, which had recently been added to the Society's collection. Both of them belonged to that extra-European form of the genus *Erinaceus*, which is distinguished by the possession of long ears. Their characters were thus explained by Mr. Bennett:

ERINACEUS SPATANGUS. *Er. auriculis longis: spinis parallelim dispositis, apicibus longè cærulescenti-nigris, lateribus versus apices flavescenti annulatis; capite, pedibus, gastræoque brunnco-fuscis; auriculis mentoque albis.*

Long. *capitis corporis*que, 3¼ unc.; a naso ad auriculæ basin, ½; *auriculæ*, ¾; *caudæ*, ¼; *pedis postici* cum unguibus, 1.

The form of the body is oval, rather elongate, with the head projecting in front. The spines are not irregularly interwoven, as in the *Hedgehogs* generally, but are disposed parallel to each other, radiating from a point on the loins; a disposition which gives to this species a more smooth and elegant appearance than is observed in any one of the genus previously known. The spines are nearly white for rather more than one half of their length, the remainder being of the blueish black which constitutes the general colour of the upper surface, scarcely any of the white being seen: the only deviation from this general colour occurs in a rather broad patch on each side, where it is spotted with yellowish, an intermixture occasioned by the existence of a narrow ring of the latter colour near the tips of the spines in those situations.

The fur is generally of a dull brown; it is short on the upper surface of the head, and long on the under parts of the body. On the ears and chin the hairs are short and white.

The lengthened ears are rounded and somewhat thickened at their extremities. The *moustaches* are extremely long, and of a glossy brown.

The specimen described is probably not fully adult, there being

only two false molars on each side of the upper jaw. With this exception the development of the whole of the teeth appears to be complete.

The small size of the *Er. Spatangus*, its elongated form, the regular disposition of its spines, the more rounded form of its ears, and the comparative length of its hinder foot, distinguish it from the other species exhibited, which Mr. Gray was disposed to consider as the *Er. collaris* figured in the 'Illustrations of Indian Zoology,' but which Mr. Bennett rather regarded as a new species, it being destitute of a white collar, and differing in other particulars from the figure referred to. Mr. Bennett accordingly characterized it as the

Erinaceus Grayi. *Er. auriculis longis: spinis irregulariter intertextis, flavescenti apiculatis nigrescentique annulatis; capite grisescenti-brunneo; auriculis mentoque usque ad auriculas albescentibus; gastræo pedibusque dilutè brunneis.*

Long. *capitis corporis*que, 6 unc.; a naso ad auriculæ basin, 1⅛; *auriculæ*, 1; *caudæ*, ⅝; *pedis postici* cum unguibus, 1¼.

Jun. (edentulus). *Spinis haud flavescenti apiculatis, apicibus latè nigrescentibus, spinis aliquibus albis intermixtis.*

Long. *capitis caudæ*que, 3½ unc.; *pedis postici* cum unguibus, ¾.

The form of the body is broadly oval, approaching to globular. The spines are yellowish-white for about five eighths of their length, then ringed with blackish, and are terminated by a yellowish tip of about one eighth of their length: hence results a general colour of grizzled yellow and black.

The head is brown above, with an intermixture of white hairs. The ears are covered with short whitish hairs. The hairs of the chin and lower jaw are also white, with the exception of a patch of brown in the middle of the hinder part towards the throat. The under surface is pale brown.

The ears are less thickened towards the tip, and more acuminated than in the preceding species. The *moustaches* do not reach beyond the tips of the ears.

In the younger specimen the colour, both of the upper and under surface, is much darker than in the adult.

The exhibition was resumed of the new species of *Shells* collected by Mr. Cuming on the western coast of South America and in the islands of the South Pacific Ocean. Those exhibited on the present occasion were accompanied by descriptions from the pen of Mr. Broderip.

Genus Bulinus.

* Labio exteriore acuto.

Bulinus rubellus. *Bul. testâ tenui, diaphanâ, subpyramidali, pallidè rubrâ obscurè albido-maculosâ; anfractibus 7 longitudinaliter striatis; umbilico mediocri: long.* 1⅛, *lat.* ⅛ *poll.*

Hab. in Peruviæ montibus. (Truxillo.)

In very old or weathered specimens the transparency and colour are lost, and the shell has a more dense appearance. Some old specimens have a curved longitudinal external streak of chestnut rising from the *umbilicus*, and terminating near the base of the aperture at the lower edge of the inner lip. Found on bushes.—W. J. B.

Bulinus Nux. *Bul. testâ pyramidali, fuscâ; anfractibus 7 longitudinaliter rugosis; umbilico mediocri: long.* $\frac{1}{2}\frac{0}{2}$, *lat.* $\frac{9}{17}$ *poll.*
Hab. ad Insulas Gallapagos. (Charles's Island.)
Found on bushes.—W. J. B.

Genus Partula.

Partula rosea. *Part. testâ ovato-pyramidali, roseâ; anfractibus 6 longitudinaliter substriatis, lineis creberrimis sub-decussatis, ultimo maximo; epidermide tenui long.* $\frac{7}{8}$, *lat.* $\frac{1}{8}$ *poll.*
Var. α. purpureo-fusca.
Var. β. albida suturis et anfractûs ultimi basi roseis; epidermide flavâ.
Hab. in insulâ Huaheine.
Found by Mr. Cuming on the *Te* plant.—W. J. B.

Partula auriculata. *Part. testâ perforatâ, ovato-pyramidali, castaneâ; anfractibus 6 subventricosis, longitudinaliter striatis; aperturâ albâ, quasi auriculatâ, labiis complanatis crassis; dente in anfractûs basalis faciem internam albo: long.* $\frac{6}{8}$, *lat.* $\frac{4}{8}$ *poll.*
Var. flavicans aperturæ margine externo subroseo.
Hab. in Huaheine.
The thick flattened lips forming the aperture of this species are so disposed as to give the mouth, in many individuals, the appearance of a key-hole, while in others it is ear-shaped. The white tooth on the internal surface of the body whorl is not developed in some specimens. Found on bushes at Huaheine.—W. J. B.

Partula varia. *Part. testâ ovato-pyramidali, subglabrâ, levissimè longitudinaliter substriatâ, subdiaphanâ, fuscâ, fusco subviridi-fasciatâ, vel anfractibus superioribus fuscis, ultimo flavente. long.* $\frac{1}{2}\frac{2}{2}$, *lat.* $\frac{5}{17}$ *poll.*
Hab. in insulâ Huaheine.
This pretty species, of which hardly two individuals are exactly similar in colour, was found upon bushes.—W. J. B.

Genus Planorbis.

Planorbis Peruvianus. *Plan. testâ discoideâ, pellucidâ, utrinque concavâ, anfractûs basalis parte ultimâ subdepressâ; aperturâ subgibbâ, subdilatatâ: lat.* $\frac{8}{17}$, *long.* $\frac{4}{17}$ *poll.*
Hab. in Peruviâ. (Malabriga, province of Truxillo.)
Found in a muddy pond nearly dried up.—W. J. B.

Genus Purpura.

Purpura muricata. *Purp. testâ ovato-globosâ, transversim quadricarinatâ, carinis tuberculiferis imbricatis; subalbidâ lineis pallidè griseo-rufis cinctâ; columellâ flavescenti-carneâ, labro crenulato,*

carinas versus arcuato, in canali altâ supernè desinente, intùs substriato, pallidè carneo; spirâ mediocri: long. 2⅝, *lat.* 2¼ *poll.*

Hab. ad portum Sanctæ Elenæ in fissuris rupium.

This fine species, of which but very few were found by Mr. Cuming, has the upper carination very much developed, the tubercles being highly elevated and wavy, and thickly set with deeply imbricated foliations. On the next carination, these characters are less strongly marked; and on the two last, the tubercles almost entirely disappear. The ridge formed by the basal canal is very prominent.—W. J. B.

Genus Pectunculus.

Pectunculus maculatus. *Pect. testâ orbiculatâ, subauritâ, subæquilaterâ, convexâ, albente castanco-maculosâ, striis radiantibus subdecussatis creberrimis; intùs albâ, marginibus crenatis; epidermide fuscâ, villosâ: long.* 2⅜, *alt.* 2⅜, *lat.* 1⅝ *poll.*

Hab. in Portu Portrero.

The spots vary in different individuals; but the colouring matter appears to be very sparingly secreted as the animal advances in age, while in very young specimens it greatly predominates. The shell rapidly increases in convexity as it becomes older: when very young, it is comparatively lenticular. Found in fine gravel in eleven fathoms water.—W. J. B.

Pectunculus ovatus. *Pect. testâ obovatâ, convexâ, glabrâ, lineis transversis minutissimis, albente, umbonibus castaneo pallidè notatis; intùs albâ, marginibus crenatis; epidermide subvillosâ: long.* 1⅝, *alt.* 2, *lat.* 1⅜ *poll.*

Hab. ad insulam Lobos.

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

Pectunculus intermedius. *Pect. testâ suborbiculatâ, subglabrâ, subdepressâ, albidâ, castaneo umbones versus pallidè zonato-radiatâ; striis radiantibus subdistantibus, decussatis; intùs albâ, marginibus crenatis; epidermide subpilosâ: long.* 1⅝, *lat.* 1⅝, *alt.* 1 7/8 *poll.*

Hab. ad Iquiqui.

In many specimens the pale chestnut radiating zones near the *umbones* are effaced by decomposition. Found in coarse sand at a depth of ten fathoms.—W. J. B.

At the request of the Chairman, Mr. Spooner read the following Notes of the *post mortem* examination of the *Dromedary, Camelus Dromedarius,* Linn., which lately died at the Society's Gardens.

"On the cavity of the *abdomen* being laid open, several gallons of *serum* escaped, intermixed with a large portion of coagulable lymph, which, on a further investigation, appeared to have flowed from the liver. This *viscus* was constituted of one main lobe, having several small *lobuli* extending from its posterior edge, by means of which it became attached to the right kidney: it was confined to the right side of the spine. The posterior *vena cava* passed through its substance previously to piercing the diaphragm, situated to the right side of which vein was the *vena portæ*. There was no gall-bladder:

the bile was conveyed from the liver by the hepatic duct, which emptied itself into the *duodenum*, about 6 inches from the *pylorus*, in common with the pancreatic duct, as in the *Horse* and most of the *Deer* tribe. The peritoneal tunic of the liver was ruptured, and in many parts had undergone the ulcerative process. The gland presented one entire mass of disease, which was undoubtedly of a chronic character. It was morbidly enlarged to three times its natural bulk, having numerous abscesses in its substance; several hydatids were also adhering to its surface. The intestinal canal bore no marks of disease, other than a peculiar flabbiness and a slight blush of inflammation invading the peritoneal tunic. The kidneys were extensively diseased, and a great part of their cortical substance was absorbed: they were entirely detached from their capsules, floating loosely in them, and were of a very dark colour, and, for the most part, disorganized, the *pelvis* and *infundibula* being the only parts demonstrable. Considerable effusion had taken place into the cavity of the chest. The lungs exhibited extensive marks of disease: they were emphysematous; and *hydatids* and *vomicæ* invaded their structure. The heart was peculiarly flabby, and the right side was distended with coagulated blood."

Mr. Spooner described in detail the structure of the stomach, in which he found nothing to add to the accounts already given by Daubenton and Sir E. Home. He remarked, however, that the cells of the first cavity in this instance contained food; and he was therefore induced to suggest that doubts might be entertained of the correctness of the generally received opinion, that these sacs are destined to act as reservoirs for fluids.

Mr. Owen stated, that he also had found in the cells of the stomachs of *Lamas* which he had dissected, more or less of food: but he suggested the probability that this might have been forced into them by moving the animal about after death, when, muscular power being abolished, resistance to the admission of the food into the cells would have ceased. He added, that in the instance of the *Camel*, which was killed some years since at the Royal College of Surgeons, (the particulars of the examination of which have been published by Sir E. Home,) the cells of the second and first cavities of the stomach were found to be filled with water only: in this case, the animal had been kept without drink for three days; was then allowed to drink freely; was killed three hours afterwards; and was opened without being moved from its erect position.

Mr. Cox suggested, that the existence of food in the cells of the stomach, in the instances referred to, might perhaps be accounted for by the fact, that the animals in question had been kept for many years in this country, where they were at all times provided with water: under these circumstances, a receptacle for the preservation of fluid would not be called into use; and the cells having therefore ceased to be applied to that purpose, the muscular power of their apertures would have been consequently diminished.

Colonel Sykes added, that on examining, in India, the stomach of a *Camel*, he had found the cells devoid of food.

July 12, 1832.

Sir Thomas Phillipps, Bart., in the Chair.

At the request of the Chairman, Mr. Arthur Strickland, of Boynton near Burlington, Yorkshire, exhibited a specimen, from his collection, of a *Puffin* shot by Mr. George Marwood, jun., of Busby, "in the middle of August 1828, in a very stormy day, at the mouth of the Tees: it was seen early in the morning, sitting on the water like a duck, and was shot as it was rising: its manner of flight was consequently not noticed."

After observing on the confusion in which our knowledge of the entire group of the *Petrels* is at present involved, in consequence of the unsatisfactory descriptions of them contained in books, Mr. Strickland proceeded to state, that the addition to the British Fauna which he submitted to the examination of the Committee was apparently referable to the *Puffinus fuliginosus* (*Procellaria* (*Nectris*) *fuliginosus*, Kuhl). The description of this species given by M. Kuhl in his 'Beiträge,' rests upon two unpublished drawings, which form part of the valuable collection of Sir Joseph Banks, now deposited in the British Museum, one of which is marked *Procellaria fuliginosa* by Forster, and the other *Nectris fuliginosa* by Solander, in whose MS. Notes it is described under the latter name. The *Proc. fuliginosa* of the same MSS., though similar in size and colour, is entirely different, and at once distinguishable by having the bill short and powerful, and the nostrils in a raised tube, like the true *Procellariæ*. The *Proc. fuliginosa*, Lath., is also altogether distinct, being the *Thalassidroma Leachii*, Vigors: and the only description in the 'General History of Birds' which at all resembles the present species, is that of the *Proc. grisea*, a species distinct from that described under the same name by Linnæus.

Mr. Strickland stated, that he could detect no differences between his specimen and the drawings referred to, except that the latter represented a bird of somewhat larger size, and having the lower parts of the breast of a rather lighter colour. These differences were also observable on comparison with an apparently original specimen of Sir Joseph Banks's bird, preserved in spirit, which he had ascertained to exist in the Museum of the Royal College of Surgeons. He added, that Sir Joseph Banks's specimens, described by Dr. Solander, were obtained in the Southern Pacific Ocean, in various latitudes and longitudes, extending nearly from the coast of Chili to that of Van Diemen's Land; but remarked, that there was reason to believe, that birds of an equally distant locality had, in more instances than one, reached this country.

In its distinct and very little raised nostrils, the bird in question agrees with the *Shearwater Petrel, Puffinus Anglorum*, Ray: it has

no back toe, but in lieu thereof a strong claw; and its tail is rounded. It may be thus characterized:

PUFFINUS FULIGINOSUS. *Puff. brunneus sepicolor; alis saturatioribus; gulâ grisco leviter tinctâ; rostro concolore; tarsis externè digitisque externis brunneis; tarsis internè palamisque fusco-ochraceis.*

Long. 18 unc.; *alæ*, 12; *tarsi*, 2¼; *digiti medii*, 2½; *rostri*, a rictu ad apicem, 2½, a fronte ad apicem, 1⅞.

Mr. Strickland concluded by remarking, that although a single and perhaps purely accidental instance of a species appearing in this country may not fully entitle it to be ranked as a British bird, yet that the circumstance is worthy of being noticed, as it is only by carefully recording such instances as do occur that we can decide what is entitled to that appellation, and be thereby enabled to perfect our local catalogues.

At the request of the Chairman, Mr. Gould exhibited numerous specimens of two *Birds* hitherto confounded under the name of *Motacilla flava*. In a communication which accompanied his exhibition, Mr. Gould explained the differences between the species, and entered at some length into their history. One of them, the *yellow Wagtail* of England, was described by Ray under the name of *Mot. flava*: its head is of a fine olive colour, and the stripe above and below the eye is of a bright yellow. The other, the *Mot flava* of Linnæus, has the head of a lead colour approaching to blue, and the stripe above and below the eye of a clear white. The latter bird does not appear to have been ever met with in England: it is the one described by continental authors under the Linnean name; while British writers have as constantly described under that name the bird to which it was originally given by Ray, and which regularly visits their own country. For Ray's bird, Mr. Gould suggested that the name of *Mot. flava*, under which it was described by our illustrious countryman, ought, according to the established rules of nomenclature, to be retained. To that of Linnæus, M. Temminck, and other continental authors, he proposed to apply the name of *Mot. neglecta*.

The species may be thus characterized:

MOTACILLA FLAVA, Ray. *Mot. suprà olivaceo-viridis, subtùs flava; rectricibus duabus lateralibus dimidiato obliquè albis; capite olivaceo; strigâ supra- et infra-oculari flavâ.*

Fœm. *Coloribus magis obscuris; capite dorso concolore; strigis ocularibus obscurè flavis.*

MOTACILLA NEGLECTA. *Mot. suprà olivaceo-viridis, subtùs flava; rectricibus duabus lateralibus dimidiato obliquè albis; capite plumbeo; strigâ supra- et infra-oculari albâ.*

Fœm. *Coloribus magis obscuris; capite plumbeo-olivaceo; strigis ocularibus minùs conspicuis.*

Mr. Gould further remarked, that the differences pointed out in these characters do not depend upon season; there being on the table specimens of *Mot. neglecta*, the *blue-headed Wagtail*, from Swe-

den and Paris, and of *Mot. flava*, the *olive-headed Wagtail*, of England, all killed in the month of May.

He added, that he regarded the *Mot. cinerea* of Ray as the young or female of the *grey Wagtail, Mot. boarula*, Linn.

Mr. Gould also stated, that he had recently seen a fine specimen of *Cypselus alpinus*, Ill., which had been shot by the gardener of Mr. Holford, at Kingsgate, near Margate. This fine *Swift*, which has rarely been known to range westward of the European continent, had been only once previously observed in England.

Mr. Owen referred to his Notes (published in the First Part of the 'Proceedings,' pp. 141 and 154) on the anatomy of individuals of two subgenera of the Linnæan genus *Dasypus*; one of which, the *Das. 6-cinctus*, Linn., had not, he believed, been previously dissected. He stated, that two other individuals of that species, one an adult female, the other a young one of the same sex, having subsequently come under his examination, he was enabled to confirm some of the peculiarities observed in the dissection of the young male specimen, and particularly the existence of the double *cæcum*, and the additional lobe of the lungs. He was also enabled to add to that account a description of the genital and mammary organs.

"The number of nipples in the *Weasel-headed Armadillo* (*Das. 6-cinctus*) is two only, while the *nine-banded Armadillo* (*Das. Peba*, Desm.) has four (see Part I. p. 142). They are situated in the pectoral region, and in the adult female (which died before the young one had ceased to suck,) were elongated to the extent of an inch and a half; at the *apex* of each were six minute orifices of the *tubuli lactiferi*; the nipples were very soft and silky to the touch, and extremely flexible. On removing the integument from this region, one large mass of conglomerate mammary gland was found, extending across the whole sternal aspect of the *thorax*, from one *axilla* to the other, and measuring in length 5 inches, the thickness of the mass being from 3 to 4 lines: it was of a deep yellow colour. There was not the slightest trace of a division at the mesial line; but although I succeeded in injecting one side of this large gland with mercury, I was unable to force any into the opposite side.

"The *clitoris* in this animal was much longer than in the *nine-banded* species, measuring 9 lines in the undisturbed state, and resembling more the corresponding organ in the male: it was of a pointed form, was covered with a leaden-coloured integument, and was situated an inch anterior to the *anus*; the genito-urinary orifice was placed on an eminence half an inch from the extremity. From this orifice the genito-urinary canal extended 8 lines, receiving the *vagina* by a transverse semilunar slit, and being then continued for 5 lines further without any diminution of diameter, and terminating in the form of a *cul de sac*, into which the *urethra* opened by a very small orifice. In *Das. Peba*, the genito urinary cavity was not separated by a corresponding contraction from the urinary bladder, but was a more direct continuation of it; so that in both these species we

have a remarkable deviation from the ordinary structure of this part; the orifice of the *vagina* having nearly the same relation to the genito-urinary passage as the *urethra* has in the *Mammalia* generally, and the genito-urinary canal being, in consequence, a continuation of the urinary bladder rather than of the *uterus*. This was particularly observed in *Das. Peba;* but was less obvious in the *Weasel-headed* species, on account of the recent distension of the parts in parturition. In neither species is there any *os tincæ* between the *vagina* and *uterus;* so that the limits of the two parts can only be loosely defined by difference in diameter, and in the character of the lining membrane. In the *Weasel-headed* species, some of the muscular fibres had apparently been ruptured in parturition; for on injecting the parts with spirit, the external cellular texture was distended at the contracted part of the uterine canal, evidently with a force insufficient to have ruptured the coats without previous lesion. At this part there were numerous jagged longitudinal *rugæ;* two or three of which were continued along the *vagina,* but the interior of the *uterus* beyond was smooth. There was a difference of form in the *uterus* of the two species. In *Das. Peba* it is of an oval form, the *fundus* ending almost in a point, and the Fallopian tubes are continued from the sides of the *fundus* without any appearance of *cornua;* but in *Das. 6-cinctus* the *uterus* is triangular, the *fundus* forming a straight line, and the angles being produced a little, so as to form rudimentary *cornua,* from which the Fallopian tubes are continued. These tubes in both the species wound round the capsules of the ovaries, and terminated in the usual fimbriated extremities directed towards the ovary. The breadth of the base of the *uterus* in the *Weasel-headed Armadillo* was 1 inch, 1 line; from the *fundus* to the opening of the *vagina* into the genito-urinary canal, 2 inches. The ovaries were transversely oval, measuring 3 lines by $1\frac{1}{2}$. The Fallopian tubes became tortuous towards the extremity.

"In the absence of distinction between the *uterus* and *vagina,* and in the mode of communication of what may be considered a single elongated uterine tube with the genito-urinary canal, may be observed the first traces of that approximation to the oviparous type of the genital organs which peculiarly characterizes the *Marsupial Edentata.*

"The urinary bladder in the adult female was an oval cavity about the size of a pigeon's egg; its coats were tolerably thick. The ureters open close to the orifice, and very near together; a distinct groove or channel commences between the two orifices, and is continued into the narrow canal for about 2 lines, and then terminates on a ridge analogous to the *verumontanum.* The length of the *urethra* is 5 lines.

"The *cæca* in this individual were of equal size, half an inch in length, and the same in breadth; their relation to the *ilium* and the structure of the ileo-cæcal orifice were the same as in the young male.

"The *pancreas* was of large size, measuring in length $4\frac{1}{2}$ inches; a broad process, or subsidiary *pancreas,* extended from the duodenal end of the gland downwards into the mesentery, which confined the

duodenum, in the centre of which process there was a slight deficiency.

"The spleen was shorter and thicker than in *Das. Peba*, measuring 2½ inches in length, and 2 in breadth. There was no supernumerary spleen as in the young male.

"The suprarenal glands were as large as almonds: they were very elastic; and on pressure, the blood which they contained was propelled along the vein. In section they presented first a distinct fibrous cortical part, then a dark coloured portion, and lastly a firmer substance in the centre."

Mr. Owen subsequently adverted to several external peculiarities which he had observed in the 6-*banded Armadillo*, and which, he remarked, were of some interest, as connected with the burrowing habits of the animal. On the second toe from the inside there is a soft large cushion, evidently a modification of the organ of touch: at the hinder part of the fore-foot there is also a warty prominence, from which many hairs grow. There is a loose portion of integument below each eye, supported upon a prominence of the *zygoma*, hirsute, and resembling an inferior eyebrow; by means of which, and the coronal plate of armour above, the eye is well defended during the act of burrowing.

July 24, 1832.

William Clift, Esq., in the Chair.

A Letter was read, addressed by Sir F. Mackenzie to the Secretary of the Society, and dated July 16: it related to the breeding of some *Woodcocks, Scolopax rusticola*, Linn., at Conan on the eastern coast of Ross-shire, the estate of that gentleman.

For several years past, two or three of these birds have occasionally been seen in the woods, and about five years since a couple were shot just before St. Swithin's-day: these were, however, old birds, and from their being covered with fat, it was evident that they had not nestled. The keeper, in fact, had never been able to find one of their nests or to see a young bird, until the present season. In two small woods near his house he this year discovered four *Woodcocks'* nests, one having four, and the others three eggs each, all of which were hatched and ran. The young birds he repeatedly saw before they took wing; and now five or six couple may every evening, towards dusk, be observed flying about the lodge as they pass to their feeding grounds. The old birds give notice of their approach by a sharp cry of *twit-twit-twit*, repeated as rapidly as possible, and heard at three or four hundred yards distance; while the young ones are less noisy and more flagging in the motion of their wings. Than the flight of the *Woodcock* before and after incubation, Sir F. Mackenzie states that he knows nothing more rapid, as for an hour or two about dusk he (probably the male, though two have been seen together pursuing each other) flies in large circles over the tops of the trees, uttering his sharp and piercing cry, a whistle which sportsmen may have occasionally heard weakly when cocks are first flushed in the back flight in March. Sometimes his sudden flight will be arrested and changed into a sailing slowly, like a *pouter Pigeon*, his cry being at the same time varied to a purr or bleat resembling that of the *Ptarmigan*: then he will dart away with greater rapidity than a *Pigeon* in full flight, moving his wings, however, with a different action from that of the *Pigeon*, and with inconceivable rapidity.

The soil where the nests were found is gravelly and rather dry; the grass tolerably long, without underwood; and the trees, oak, birch, and larch not exceeding thirty years' growth. The situation is warm, and not 150 feet above the level of the sea; it is not far distant from the river. The woods are kept quiet, and several pheasants' nests were hatched in their close vicinity.

It is probable that the parent birds sought this spot for the purpose of breeding, as they must have arrived in the spring from other localities: for those who shot in the covers till February declare that they did not know of a single *Woodcock* being then left

in them; and had there been two or three, the keeper must have been aware of it.

The skeleton was exhibited of the *Weasel-headed Armadillo, Dasypus 6-cinctus*, Linn.; and Mr. Owen read the following Notes on the osteology of that species:—

"After the minute and elaborate descriptions and comparisons of the skeletons of the *Dasypodæ*, which have been given by the Baron Cuvier in the fifth volume of the 'Ossemens Fossiles,' but little remains to be added on that subject. As, however, the skeleton of the *weasel-headed Armadillo*, now before the Committee, has been prepared, with great care, from one of the adult specimens lately alive in the Society's Gardens, and as this species has been much more rarely subjected to anatomical examination than the *nine-banded*, a few observations on it may not be unacceptable.

"The *cranium* presents the elongated conical form common to the *Dasypodæ*, tapering gradually towards the nose, but it is shorter, broader and flatter than in *Das. Peba*. On the anterior part of the *os frontis* may be observed two broad but slightly raised eminences which occupy the whole breadth of the bone: they are most marked in the older subjects, where their smooth and shining surface presents a remarkable contrast to the rest of the *cranium*, which is sculptured by the perforations and canals of numerous vessels. On removing the thin layer of bone which formed the convexity of one of these eminences, I found the cavity beneath was principally a continuation of that of the *cranium*, and had lodged the olfactory ganglions. The rest of the cavity anteriorly was occupied by a very large and complicated turbinated process of the ethmoidal bone; the cribriform plate of the same bone was observed to be of great extent, and the whole structure displayed the high degree in which this animal is endowed with the sense of smell. These eminences are described by Cuvier as being more developed in the *Cabassou, Das. unicinctus*, Gmel. They correspond in situation to those which render the *os frontis* of *Chlamyphorus* so peculiar.

"The number of *vertebræ* and the length of each division of the vertebral column are as follows:

	No.	Length. Inches.	Lines.
Cervical	7	1	4
Dorsal	11	4	0
Lumbar	3	1	4
Sacral	8	3	0
Caudal	16	5	0

"The cervical *vertebræ* present the peculiarity observable in the other species of this tribe, that of being partially anchylosed together. In this instance the *axis* and the 3rd and 4th *vertebræ* are so joined; the lines of division between the two former being indicated only by the lateral orifices for the nerves, which are two on each side. This *anchylosis* of the cervical *vertebræ* is also found,

as is well known, in the *Cetacea*; and as in that order this firm connexion of the *vertebræ* assists materially in enabling the head to overcome the resistance of the dense fluid through which they perpetually move, so in the animals of this genus a like advantage may be derived from this structure during the act of displacing the denser material in which they excavate their retreats. The bodies of the 4th, 5th, 6th, and 7th cervical *vertebræ* are in the form of transverse bars, the bony sheath of the spinal marrow being of equal thickness at every part, resembling in that respect the cervical *vertebræ* of the *Mole*, *Talpa Europæa*, Linn.; they have, however, the transverse processes much larger than in that animal. In *Das. Peba* the 5th, 6th, and 7th cervical *vertebræ* have distinct spines, but these are deficient in the present specimen.

"Cuvier assigns twelve as the number of the dorsal *vertebræ* in the *Encoubert*, but there were not more than eleven in this specimen, as clearly appears from the number of the ribs, all of which have been carefully preserved: and indeed, the costal *vertebræ* are readily distinguishable from the lumbar by a well marked articular process on each side of the body, for the head of the rib; but the last cervical also participates in this character. The spines of the 1st, 2nd, and 3rd dorsal *vertebræ* are the longest, and slope considerably backwards; the rest of the spines, together with those of the lumbar *vertebra*, also incline in the same direction, but in a less degree.

"Every one who has seen the living *Armadillo* running about the open plot of ground in the Society's Gardens must have been struck with the machine-like manner in which the body is carried along. The short legs are almost concealed, and their motions are not accompanied by any corresponding inflections of the spine, the two extremities of the trunk not being alternately raised and depressed as in the *quadrupeds* which move by bounds. Hence there is no centre of motion in the vertebral column, or point towards which the spinous processes converge, but all these have a direction towards the *sacrum*. The relation which the structure of the vertebral column bears to the mode of progression of a *quadruped* is extremely interesting, and enables us to judge in some degree from the spine alone of the locomotive faculties of a fossil species.

"There is another peculiarity to be noticed in the spine of *Dasypus*, viz. the elongated form of the anterior articular processes, especially of the hinder dorsal and of the lumbar *vertebræ*: these project upwards, outwards and forwards, and like strutts or braces, assist in supporting the tegumentary mass which covers the body, and which may be not unaptly compared to a tiled roof. The spinal nerves pass out by *foramina* proper to each individual *vertebra*, and not in the interval of two.

"The ribs are on each side eleven in number, and six of these are true. The sternal portions are completely ossified, as in *Birds*, and joined to the dorsal portions by a distinct articulation. The first pair are short, and remarkably broad, measuring 1 inch in length and 7½

lines in breadth: the rest increase in length to the seventh, and then again diminish. The external surfaces of the posterior ribs do not present the deep excavations observable in those of *Das. Peba.* The sternal portions of the first pair of ribs are anchylosed to the vertebral portions. The small processes that intervene between the *manubrium* and the sternal ends of the clavicles in the young animal, are afterwards anchylosed to the latter bone, and being joined together form a part superadded to the *manubrium.* This part is evidently a rudimentary form of the Y-shaped bone placed anterior to the *manubrium* of the *Ornithorhynchus,* which Cuvier regards as analogous to the *os furcatorium* of birds; it thus affords an additional and very interesting example of the affinity of the *Edentata* to the *Monotremata,* and supplies a step which was wanting in tracing the recedence of the latter, in their remarkably constructed *sternum,* from the mammiferous to the oviparous type of the *Vertebrata.* The *manubrium* itself also presents a peculiarity observable in that of the *Monotremata,* viz., a mesial longitudinal ridge on the anterior surface. This appearance in the *Ornithorhynchus* is regarded by Cuvier as indicative of an original division in the bone itself, 'Ossemens Fossiles,' v. pt. 1, p. 149; but I have examined the fœtus of the *nine-banded* species, and find that ossification commences in the *manubrium* by a single central *nucleus,* and not by two lateral depositions. The other bones of the *sternum* appear, on an anterior view, to be almost deficient, being wedge-shaped, with the *apices* anterior; their number is four, exclusive of the ensiform cartilage.

"The *pelvis* in this skeleton presents all the peculiarities which have been so well described by Cuvier: the *ilia* are of a prismatic shape, not expanded as in *Megatherium,* but forming two short and thick props or supporters to the armour. At the posterior part of the *pelvis* the tuberosities of the *ischia* project in a similar manner, and form similar props. It is evident from the form of the *pubis* that only a small portion of what usually constitutes the *symphysis* is here joined to its fellow, viz. the anterior angle; and this approximation to the structure of *Birds* is rendered more evident in a nearly allied genus, *Chlamyphorus,* and in another edentate species, *Myrmecophaga didactyla,* where the *ossa pubis* remain entirely separate. An equally remarkable instance of the correspondence of this part of the skeleton,—the *pelvis,*—with that of *Birds,* obtains in the great breadth of the posterior part of the *sacrum,* the angles of which are anchylosed to the spines of the *ischia,* and convert the great ischiatic notches into complete *foramina.* The cavity of the *pelvis* is very wide, as may be inferred from the size of the young at the time of birth. The brim measures in the antero-posterior diameter 2 inches 3 lines; in the lateral diameter 1 inch 3 lines: the outlet is of a triangular form, and measures in the antero-posterior diameter 1 inch 6 lines; in the lateral diameter 1 inch 8 lines. The ischiatic *foramen* is of an oval form, 1 inch in the long, and ½ inch in the short diameter.

"The great size of the *pelvis* in this burrowing animal is the more remarkable when contrasted with the peculiarly diminutive dimensions of the same part in the *Mole*; in which it has been regarded as

one of the perfections of form, adapting that animal to its subterraneous mode of life. In the *Armadillo*, however, the burrows serve only as temporary retreats; for it is endowed with powers of rapid progression on the surface, and its organ of vision, though small, is accordingly perfect. Thus the *pelvis* is destined to afford attachment to numerous and powerful muscles, and the hind-legs are evidently of considerable use in clearing out the burrow, as may be inferred from the action of the *Armadillo* when he hides himself in the straw, which he throws behind him with great force: whereas in the *Mole*, the whole power of digging is concentrated in the anterior extremities, the peculiar mechanism of which is admirably adapted to that act.

"The caudal *vertebræ*, like the cervical, present in *Dasypus* a peculiarity which is also found in the *Cetacea*, viz. that of having inferior spines, or V-shaped bones. These are present beneath all but the two last *vertebræ*; they are of a triangular form, but are articulated, not by their bases, as in the *Whale*, but by their *apices*; or rather the part which corresponds to the *apex* is flattened, and produced into two lateral processes.

"With respect to the bones of the extremities, it may be remarked that the *scapula* is very concave towards the ribs, more so than in the *nine-banded* species; and that besides the two spines, there is also a third ridge near the superior *costa*. Below the articular surface on the inferior *costa* there is also a little tubercle, which does not exist in *Das. Peba*. The supra-spinal notch is large, and the *acromion* long and narrow, but not anchylosed, as in the *Sloth* and *Megatherium*, to the coracoid. The length of the *scapula*, from the base to the articular surface, is 2 inches 1 line; of the base, 2 inches; of the *acromion*, 11 lines. The clavicles in *Das. 6-cinctus* are slightly curved, and are shorter and stronger than in *Das. Peba*: their length is $1\frac{1}{2}$ inch. There is thus a correspondence between the clavicle and the rest of the anterior extremity, the claws being stronger, and the whole of the bones shorter and thicker than in *Das. Peba*. The *humerus* measures in length 2 inches 3-10ths: at the upper extremity are two large tuberosities and a deep middle groove; about the middle of the bone is a strong deltoid process: the bone is considerably twisted, and the inner condyle perforated as in most *Edentata*. The *supinator* ridge is strongly marked; the anconeal *fossa* large and shallow.

"The *ulna* measures in length 2 inches 3-10ths; it is a very strong bone, compressed, and arched backwards: the extremity of the *olecranon* is bent backwards in the form of a hook: the lower extremity has an equal share with the *radius* in the articulation with the carpal bones. The *radius* is in length 1 inch 4 lines. The large palmar sesamoid bone, formed at the expense of the tendons of the *flexor profundus digitorum*, is shaped like the head of a spade, with the concavity towards the *carpus*, and the sharp margin anterior: in length and breadth it measures half an inch. It is articulated by a distinct capsule and synovial membrane with the *ossa pisiforme* and *cuneiforme* on one side, and to the *naviculare* on the other. The *flexor profundus*

is in comparison to the *flexor sublimis* a very powerful muscle. The latter terminates only in two tendons, which are inserted into the first and second *phalanges* of the *index* and *digitus medius*, forming strong sheaths for the passage of the tendons of the *profundus*. This muscle arises by three distinct portions; one from the whole anterior part of the *olecranon*; a second from the anterior part of the rest of the *ulna*, and from the interosseous ligament; the third portion appears to hold the place of *flexor longus pollicis*, and comes from the anterior part of the *radius*. The whole is inserted into the spade-shaped bone, beyond which tendons are continued to the extreme *phalanges* of all the fingers.

"The greater length of the *index* finger depends on that of the first *phalanx*, which in all the other fingers is very short, and in the two external is a mere *lamina* of bone. This is a peculiarity found in most of the *Edentata*; so that in the *Sloths*, where the first *phalanx* is early anchylosed to the metacarpal bones, its existence was overlooked before the observations of Cuvier. The distal *phalanges* of the second and third fingers are the largest; at the lower part of them is the rudiment of the bony sheath supporting the claws. Besides the lever afforded by the palmar spade-shaped bone, there is a distinct sesamoid interposed between the last joints of each finger and the *flexor* tendon. The length of the whole hand is 2 inches 4 lines; its breadth 10 lines.

"There is scarcely any *cervix* to the *femur*, but immediately beyond the head are the two *trochanters*, and a large middle process, analogous to the deltoid in the *humerus*. The length of the *femur* is 2 inches 6 lines. The *patella* is oblong and narrow. The *tibia* and *fibula* are anchylosed at both extremities: the length of the *tibia* is 2 inches; the breadth of the interosseous space nearly 5 lines. The bones of the *tarsus* presented the same disposition as is described by Cuvier, and figured in Pl. xi. fig. 18. of the work above quoted. The small supernumerary bone on the tibial side of the *tarsus* has the tendon of a small muscle inserted into it, which seems to be a *fasciculus* separated from the *tibialis posticus*; the rest of the *tibialis posticus* is inserted as usual into the base of the internal cuneiform bone.

"The *flexor longus digitorum pedis* and the *flexor longus pollicis pedis* are united through nearly their whole extent. The common tendon, having reached the sole, expands and surrounds a sesamoid bone, smaller than, but analogous to, the spade-shaped sesamoid in the palm. Cuvier states that he had not observed this plantar sesamoid in any *Armadillo* except the *Cachicame, Das. Peba*. The length of the whole foot is 2 inches 8 lines; its breadth 1 inch."

August 14, 1832.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of the following *Fishes* collected on the coast of Madeira by the Rev. R. T. Lowe, and presented by him to the Society:

Alepisaurus ferox, Lowe.
Box Salpa, Cuv. & Val.
Raja clavata, Linn.
Torpedo marmorata, Risso.
Rhombus Maderensis, Lowe.
Caranx Cuv.
Pagellus breviceps? Cuv. & Val.
——— *Acarna*, Cuv. & Val.

At the request of the Chairman, the Rev. L. Jenyns exhibited an immature specimen of a second species of *crested Wren*, not hitherto recorded as having been met with in England; the *Regulus ignicapillus*, Temm. In its adult state this species is readily distinguishable from the more *common* one by the existence on each side of the face of three streaks, the upper and lower of which are white, and the intermediate one black, as well as by the patch on its head of a more deep and brilliant orange. In the immature state it may be distinguished by its somewhat smaller size; by its bill, which is much longer and is also broader at the base; by its first quill-feather being somewhat longer; and by the greater size, both in length and breadth, of its tail. The individual exhibited was killed by a cat at Swaffham in Cambridgeshire.

Mr. Jenyns also exhibited a specimen of *Sorex remifer*, Geoff., killed in a corn-field at the distance of half a mile from any water. Its chief interest was the confirmation afforded by it of the existence in England of this species, which has recently been added by Mr. Yarrell to the British Fauna on the authority of a specimen exhibited by him at a late Meeting of the Committee (p. 109).

Specimens were exhibited of a species of *Woodpecker*, hitherto undescribed, which had recently been obtained by Mr. Gould from that little-explored district of California which borders the territory of Mexico. The exhibition was accompanied by a communication from Mr. Gould, in which, after some general remarks on the *Picidæ* and their geographical distribution, he referred to the species before the Committee as possessing the characters of the genus *Picus* in their most marked development, together with the greatest size hitherto observed in that group. In this respect it as far exceeds the *ivory-*

billed Woodpecker of the United States, *Picus principalis*, as the latter does the *Pic. Martius* of Europe. Mr. Gould described it as the

Picus imperialis, Mas. *Pic. ater, virescenti splendens; cristâ elongatâ occipitali coccineâ; maculâ triangulari interscapulari, remigibus secundariis, primariarumque (præter trium quatuorve exteriorum) rhachibus internis albis; rostro eburneo.*

Fœm. *Paullo minor; cristâ occipitali cum corpore concolore.*

Longitudo maris, 2 ped.; *alæ* (clausæ), 1 ped.; *caudæ*, 10 unc.; *tarsi*, vix 2 unc.; *digiti externi postici*, eadem ac tarsi. *Ungues* validissimi, arcuati; *Rostrum* exactè cuneiforme, a rictu ad apicem 4 unc. long., ad basin 1 unc. latum.

This species is readily distinguishable from the *Pic. principalis* by its much larger size; by the length of its occipital crest, the pendent silky feathers of which measure nearly 4 inches; by the absence of the white stripe which ornaments the neck of that bird; and by the bristles which cover its nostrils being black, whereas those of the *Pic. principalis* are white.

August 28, 1832.

Dr. Marshall Hall in the Chair.

Mr. Owen read the following Notes on the Anatomy of the *Flamingo, Phœnicopterus ruber*, Linn.: they were derived from the examination of an individual which died about three months since in the Society's Menagerie.

"The anatomical differences observable in the groups of the *Wading Birds* are so considerable, that we find them generally alluded to by Cuvier in the characters of the families of the *Grallatores* in the 'Règne Animal.' Where they are omitted, we may presume that the illustrious author had not had the opportunity of examining the internal structure of the birds in question, and that they either had not before been dissected, or that their anatomy had been described with too little exactness to warrant his giving it on the authority of previous writers.

"This appears to have been the case with the three genera which he has placed at the end of the order, viz., *Chionis*, Forster, *Glareola*, Gmel., and *Phœnicopterus*, Linn.; and these are the most interesting in an anatomical point of view, as being the representatives of as many distinct families. With respect to the *Flamingo*, we must suppose that an opportunity of dissecting it had never occurred to Cuvier, and probably the absence of any allusion to *cæca* in Perrault's anatomical description (Mémoires de l'Académie, t. iii., 3. P., p. 462.), may have influenced his silence regarding the internal structure of a bird which he considers as one of the most extraordinary and most isolated of its class.

"The recent death of a male specimen which for a short time was living at the Society's Gardens, enables me to lay before the Committee some particulars respecting its anatomy which appear to throw light on its true affinities.

"The peculiar forms of the beak and tongue have long attracted attention, and have been repeatedly described. Cuvier, in allusion to the small tooth-like *laminæ* which are arranged along the margins of the upper mandible, points out the relation which in this particular the *Flamingo* bears to the *Anatidæ*; and a like correspondence is observable in the rest of the alimentary canal. The horny denticles of the upper mandible, and the transverse marginal furrows of the lower mandible, form together a sort of filter, and, like the plates of *Whalebone* in the *Balænæ*, allow the superfluous moisture to drain away, while the small *Mollusca* and other littoral *animalcula* are detained and swallowed. The structure of the gullet is in accordance with the size of the substances which serve for nutriment. In the typical *Grallatores*, as *Ardea* and *Ciconia*, which swallow entire fish and other food in large morsels, the *œsophagus* is remarkable for its

great and uniform capacity; but in *Phœnicopterus* it is not more than half an inch in diameter when dilated. At the lower part of the neck it expands into a considerable pouch, which measured in the specimen here described 3 inches in diameter, and 4¼ inches in length. In Perrault's specimen the diameter was only 1½ inch, and it was probably in a state of contraction, as he describes it as furnished internally with many small longitudinal *rugæ*. The circular fibres around this part were very distinct. Beyond this pouch the *œsophagus* again contracts to about 4 lines in diameter, and so continues for 3¼ inches, when it terminates in the *proventriculus*. This glandular cavity was 1 inch 8 lines in length, and 5 lines in diameter: the gastric follicles were broad, short, and simple, and were arranged in two long oval groups, blending together at the edges. The *proventriculus* terminates in a small but strong gizzard, of a flattened spheroidal form, measuring 1 inch 5 lines in length, and the same in breadth; the lateral muscles were each half an inch in thickness. The gizzard was lined with a moderately thick and yellow-coloured cuticle, disposed in longitudinal ridges, the extremities of which projecting into the pyloric aperture form a kind of valve, as in the gizzard of the *Ostrich*. In a *Flamingo* dissected by Col. Sykes, in which the *duodenum* was blocked up by two large *tape-worms*, the muscles of the gizzard were 1 inch in thickness.

"The duodenal fold extended towards the left side 4 inches from the *pylorus*. This intestine was 4 inches in diameter. The *pancreas*, which occupied its common situation between the two portions of the fold, had a more complete peritoneal covering than usual. The intestinal canal soon diminished in diameter to 3 and then to 2 lines. The small intestines formed an oval mass, and were disposed in twenty-one elliptical spiral convolutions, eleven descending towards the *rectum* and ten returning towards the gizzard in the interspaces of the preceding; a disposition analogous to that of the *colon* in *Ruminants*. The *villi* of the intestines were arranged in longitudinal zigzag lines. There were two *cæca*, each about 3¼ inches in length and 5 inches in diameter.

"The *testes* were about the size of grains of wheat, and were situated on the anterior part of the renal capsules. The latter bodies were about the size of hazel-nuts. Both these glands were of a bright yellow colour. The fat of this bird is of a remarkable orange tint.

"The principal diseased appearances were in the lungs, which were filled with tubercles and *vomicæ*. I was much struck with finding the inner surface of the latter cavities, and that of most of the smaller ramifications of the bronchial tubes, covered over with a green vegetable mould or *mucor*. As the individual was examined within 24 hours after its death, it seemed reasonable to conclude this *mucor* had grown there during the life-time of the animal. Thus it would appear that internal parasites are not exclusively derived from the animal kingdom, but that there are *Entophyta* as well as *Entozoa*.

"The tongue of the *Flamingo* is remarkable for its texture, magnitude and peculiar armature. It is almost cylindrical, but slightly flattened above, and obliquely truncate anteriorly, so as to correspond

with the form of the inferior mandible. The lower part of the truncated surface is produced in a pointed form, and is supported beneath by a small horny plate. The whole length of the tongue is 3 inches; its circumference 2½ inches. Along the middle of the flattened superior surface there is a moderately deep and wide longitudinal furrow, on either side of which there are from twenty to twenty-five recurved spines, but of a soft and yielding horny texture, measuring from 1 to 3 lines in length. These spines are arranged in an irregular alternate series: the outer ones being the smallest; and these, indeed, may be considered a distinct row. At the posterior part of the tongue there are two groups of smaller recumbent spines directed towards the *glottis*. The substance of the tongue is not muscular, but is chiefly composed of an abundant yielding cellular substance with fat of an almost oily consistence. It is supported by a long and thin concave cartilage, articulated to the body of the *os hyoides* by a shallow ginglymoid joint, allowing of a free motion. Excepting the straight *hyo-glossi*, the muscles all terminate at the base of the tongue. The tendons of the former muscles run along the under part of the lingual cartilage, and expand to be inserted at its extremity, where a few fibres again proceed forwards to the extreme point of the tongue.

"No *Entozoa* were met with in the specimen dissected by me: but Col. Sykes has been so obliging as to permit me to examine the *tape-worms*, before alluded to, which he found blocking up the *duodenum* of the *Flamingo* dissected by him in Dukhun.

"One of the specimens, together with a drawing of it, is now on the table. From the marginal disposition of the *lemnisci* and its general habit, it evidently appertains to the true *Tæniæ*, and from the structure of the head ranks among the rostellate species with an armed *proboscis*. It does not accord with any of those described in the 'Synopsis Entozoorum' of Rudolphi, and is of so peculiar a form that I feel no hesitation in characterizing it as follows.

"Tænia lamelligera. *Tæn. incrassata, capite subgloboso, rostello cylindrico obtuso; collo nullo; articulis brevissimis, marginibus lateralibus dilatatis, rotundatis, utrinque parùm extantibus; superficie utrâque lineâ longitudinali leviter impressâ; lemniscis lateralibus oppositis.*

"Longitudo corporis, 7 unc.; latitudo, 5 lin.; crassities, 1 lin.

"The segments are extremely numerous and short: they gradually increase in breadth and thickness for about 3 inches from the head; as they approach the opposite end of the body they slightly diminish in breadth, while they increase a little in length, but retain the same thickness. Along the middle of both the plane surfaces of the body the segments are separated by shallow indentations, and it is only towards the posterior extremity that the segments appear to overlap each other from before backwards; but at the sides of the body the posterior margins of the segments project abruptly from the surface and form a series of semicircular ridges, commencing on both sides of the body about a line's distance from the margin. On both margins of each segment immediately anterior to these ridges there is a small pyramidal eminence, perforated at the *apex*, through which perforation

a *cirrus* is protruded. A very slight impressed line traverses longitudinally the middle of both surfaces of the body; it is most distinct at the anterior half. Some of the segments at the posterior extremity of the body were partially separated from the rest and seemed about to be detached. In these alone were the traces of *ova* perceptible, which were extremely minute, and only apparent at the margins of the segments, near the base of the *cirrus* or *lemniscus*. From the thickness and opacity of the body, the nutrient vessels could not be detected. The joints or segments at the anterior part of the body were so short, that they resembled mere transverse *rugæ*; at the posterior end of the body they did not exceed half a line in length.

"The dilated margins of the segments, and the projecting *cirri* give this *tape-worm* a considerable resemblance to the *Nereis lamelligera* of Pallas."

September 11, 1832.

Richard Owen, Esq., in the Chair.

Dr. Weatherhead communicated to the Committee several extracts from a letter which he had recently received from Lieutenant the Hon. Lauderdale Maule of the 39th Regiment, now in New South Wales. They referred to the habits and œconomy of the *Ornithorhynchi*.

"During the spring of 1831," writes Lieut. Maule, "being detached in the interior of New South Wales, I was at some pains to discover the truths of the generally accepted belief, namely, that the female *Platypus* lays eggs and suckles its young.

"By the care of a soldier of the 39th Regiment who was stationed at a post on the Fish River, a mountain stream abounding with *Platypi*, several nests of this shy and extraordinary animal were discoverd.

"The *Platypus* burrows in the banks of rivers, choosing generally a spot where the water is deep and sluggish, and the bank precipitous and covered with reeds or overhung by trees. Considerably beneath the level of the stream's surface is the main entrance to a narrow passage which leads directly into the bank, bearing away from the river (at a right angle to it) and gradually rising above its highest water-mark. At the distance of some few yards from the river's edge this passage branches into two others which, describing each a circular course to the right and left, unite again in the nest itself, which is a roomy excavation, lined with leaves and moss, and situated seldom more than twelve yards from the water, or less than two feet beneath the surface of the earth. Several of their nests were, with considerable labour and difficulty, discovered. No eggs were found in a perfect state, but pieces of a substance resembling egg-shell were picked out of the *debris* of the nest. In the insides of several female *Platypi* which were shot, eggs were found of the size of a large musket-ball and downwards, imperfectly formed however, i. e. without the hard outer shell, which prevented their preservation."

In another part of his letter Mr. Maule states, that in one of the nests he was fortunate enough to secure an old female and two young. The female lived for about two weeks on worms and bread and milk, being abundantly supplied with water, and supported her young, as it was supposed, by similar means. She was killed by accident on the fourteenth day after her capture, and on skinning her while yet warm, it was observed that milk oozed through the fur on the stomach, although no teats were visible on the most minute inspection: but on proceeding with the operation two teats or canals were discovered, both of which contained milk.

The body of the individual last referred to (together with several others) has been preserved in spirit to be transmitted to Dr. Weather-

head, who stated his intention of examining it anatomically on its arrival, and of laying before the Committee the result of his observations on this interesting subject.

It was remarked, that the existence of milk in the situation described by Lieut. Maule is fully confirmatory of the correctness of the deductions made by Mr. Owen from the minute dissection of several individuals (including one in the Society's collection presented by Capt. Mallard, R. N., Corr. Memb. Z. S.), that the glands discovered by M. Meckel are really mammary. This opinion, with the anatomical reasons on which it was founded, have been lately laid by Mr. Owen before the Royal Society in a paper which will be published in the forthcoming Part of the Philosophical Transactions. Mr. Owen's dissections, however, though they established the existence of numerous minute tubes leading from the glands in question through the skin where it was covered by the wool, did not enable him to detect any canals so large as would appear to be indicated in Lieut. Maule's letter.

A specimen was exhibited of a claw obtained from the tip of the tail of a young *Lion* from Barbary, recently presented to the Society's Menagerie by Sir Thomas Reade, His Majesty's Consul at Tripoli. It was detected on the living animal by Mr. Bennett, and pointed out to the keeper, in whose hands it came off while he was examining it.

Mr. Woods, to whom the specimen had been submitted for description, communicated to the Committee an enlarged representation of it, with other illustrations of the subject, and gave a detailed account of previous observations bearing upon this curious formation.

He commenced by referring to the writings of Homer, who remarked (erroneously, however,) that the Lion when angry lashes his sides with his tail; a remark which was repeated by many of the ancient poets both Greek and Roman, and was carried by Lucan to a yet greater extent, when he stated that the Lion lashes himself into rage: Pliny also indicates his belief that by this means the animal increases the anger already kindled in him. None of these writers, however, advert to any peculiarity in the tail of the Lion to which so extraordinary a function might, however incorrectly, be attributed. The discovery of the existence of such a peculiarity was reserved for Didymus Alexandrinus, one of the early commentators on the Iliad, who found a black prickle, like a horn, among the hair of the tail, and immediately conjectured, it must be allowed with some degree of plausibility, that he had ascertained the true cause of the stimulus to the animal when he flourishes his tail in defiance of his enemies, for he remarks that when punctured by this prickle the Lion becomes more irritable from the pain which it occasions.

For centuries after this announcement the Lion's tail and its mysterious prickle were consigned to oblivion, the discovery of the learned commentator being either unnoticed, or disregarded, or doubted, until about twenty years since, when M. Blumenbach, in his 'Miscellaneous Notices in Natural History,' revived the subject, having verified the accuracy as to the fact, though not admitting the induction, of Didy-

mus Alexandrinus. He describes a small dark-coloured prickle in the very tip of the Lion's tail, as hard as a piece of horn, surrounded at its base by an annular fold of the skin, and adhering firmly to a singular follicle of a glandular appearance. All these parts were however, he remarks, so minute, and the little horny *apex* so buried in the tuft of hair, that the use attributed to it by the ancient scholiast cannot be regarded as any thing else than imaginary. Blumenbach's description was accompanied by a figure, which was copied in the 'Edinburgh Philosophical Journal,' in the 8th volume of which a translation of his paper was given.

The subject appears to have again slumbered until 1829, when M. Deshayes announced, in the 'Annales des Sciences Naturelles' (vol. vii. p. 79), that he had found the prickle on both a Lion and Lioness which died in the national Menagerie of France. It was described by him as a little nail or horny production, about two lines in length, presenting the form of a small cone, a little recurved upon itself, and adhering by its base only to the skin and not to the last caudal *vertebra*, from which it was separated by a space of 2 or 3 lines.

From the period when M. Deshayes' discovery was announced Mr. Woods has suffered no opportunity to escape him of examining the tails of every Lion, living or dead, to which he could gain access; but in no instance has he succeeded in ascertaining the existence of such an organ; nor had he ever observed it until the specimen now before the Committee was placed in his hands, within half an hour after its removal from the living animal, and while yet soft at its base where it had been attached to the skin.

It is formed of corneous matter like an ordinary nail, and is solid throughout the greater part of its length towards the *apex*, where it is sharp; at the other extremity it is hollow and a little expanded. Its shape is rather singular, being nearly straight for one third of its length, then slightly constricted, (forming a very obtuse angle at the point of constriction,) and afterwards swelling out like the bulb of a bristle to its termination. It is laterally flattened throughout its entire length, which does not amount to quite $\frac{3}{4}$ths of an inch. Its colour is that of horn, but becoming darker, nearly to blackness at the tip. Its appearance would lead to the belief that it was deeply inserted into the skin, with which, however, from the readiness with which it became detached, its connexion must have been very slight. The slightness of its adhesion is noticed by M. Deshayes, who attributes to this its usual absence in stuffed specimens. The same cause will account for its absence in by far the greater number of living individuals; for, as Mr. Woods remarks, its presence or absence does not depend upon age, as the Lions at Paris in which it was found were of considerable size, while that belonging to the Society is very small and young; nor upon sex, for although it is wanting in the female cub of the same litter at the Society's Gardens, it existed in the Lioness at the Jardin du Roi.

Mr. Woods, considering it probable that a similar structure might exist in other species of *Felis*, had previously examined the tails of nearly the whole of the stuffed skins in the Society's Museum, but failed

in detecting it in every instance but one. This was in an adult Asiatic *Leopard*, in which the nail was evident although extremely small. It was short and straight, and perfectly conical, with a broad base. It is stated in a note in the 'Edinburgh Philosophical Journal,' that a claw or prickle had also been observed by the editor of that work on the tail of a Leopard. No such structure was however detected on a living individual in the Society's Menagerie. In the Leopard, therefore, as in the Lion, it appears to be only occasionally present. In both it is seated at the extreme tip of the tail, and is altogether unconnected with the terminal caudal *vertebra*. From the narrowness and shape of its base, the circumference of which is by far too small to allow of its being fitted like a cap upon the end of the tail, it appears rather to be inserted into the skin, like the bulb of a bristle or *vibrissa*, than to adhere to it by the margin as described by M. Deshayes. Neither the published observations of that zoologist nor the present discovery, can throw any light on the existence or structure of the supposed glandular follicle noticed by Blumenbach.

Mr. Woods concluded his communication by remarking, that it is difficult to conjecture for what purpose these minute claws are developed in so strange a situation, that of stimulating the animals to anger being of course out of the question. It is at least evident, he observes, that they can fulfil no very important design in the animal œconomy, from their smallness, their variable form, their complete envelopement in the fur, and especially from the readiness with which they are detached and consequently the majority of individuals deprived of them for the remainder of their lives.

September 25, and October 9, 1832.

William Yarrell, and Joseph Cox Cox, Esqrs., in the Chair.

Colonel Sykes resumed the exhibition of the collection of *Birds* formed by him in Dukhun. On previous evenings he had brought under the notice of the Committee the *Raptores* and *Insessores* (page 77); and on the present he submitted the remaining orders in the series adopted in the following

Catalogue of Birds (systematically arranged) of the Rasorial, Grallatorial, and Natatorial Orders, observed in the Dukhun by Lieut. Colonel W. H. Sykes, Bombay Army, F.L.S., F.Z.S., &c.&c.

ORDER III. RASORES, *Ill.*

Fam. *Columbidæ*, Leach.—Genus *Ptilinopus*, Swains.

138. PTILINOPUS ELPHINSTONII. *Ptil. suprà fusco-brunneus; corpore infrà, capite, colloque cinereis; cervice nigro, plumis ad apices guttâ albâ notatis; interscapulio rubineo; collo pectoreque smaragdino, uropygio cinereo, nitentibus; remigum 2dæ, 3tiæ, 4tæ et 5tæ pogonis externis excavatis.*

Irides ochraceo-flavæ. Longitudo *corporis* 10,$^{1}_{0}$ unc., *caudæ* 5,$^{5}_{6}$.

This very fine bird, forming a link between the *Pigeons* proper and *Vinago*, has quite the figure and air of *Ptilinopus porphyreus*, figured in Stephens, vol. 14. (*Columba porphyrea*, Reinw., Temm., Pl. Col. 106.), but is much larger: it is a rare bird in Dukhun, and met with only in the dense woods of the Ghauts. Not gregarious. Stony fruit found in the stomach. Sexes alike. Flight very rapid. The lateral skin of the toes is very much developed.

Genus *Columba*, Auct. *Pigeon.*

139. COLUMBA MEENA. *Col. capite, collo, interscapulio, gastræoque saturatè vinaceis, ventre dilutiore; crisso, caudæque tegminibus inferioribus apiceque albis; tergo uropygioque ardosiaceis; tegminibus caudæ superioribus ad apices vinaceis; scapularibus alarumque tegminibus nigris, castaneo latè marginatis; remigibus caudâque fusco-brunneis, illis castaneo marginatis; tegminibus alarum inferioribus cinereis; collo utrinque nigro maculato, plumis cœrulescenti-albido ad apices marginatis.*

Fœm. *Crisso dilutè vinaceo; tegminibus caudæ inferioribus pallidè cinereis; rectricibus 4 intermediis albo haud terminatis.*

Irides aurantiacæ. *Rostrum pedes*que flavescentes. Longitudo *corporis* 8 unc., *caudæ* 5,$^{1}_{6}$.

Brown and Chestnut Dove *Hhulgah* of the Mahrattas.

This species might be mistaken for the European *Col. Turtur*, but on comparison is found to differ in the whole head, neck, shoul-

ders, breast and belly being richer vinaceous; in the back and rump being ash, and vent and under tail-coverts in the female light cinereous; in the four upper tail-feathers in the female being red brown without white tips; in the upper tail-coverts being tipped with faint chestnut; in the forehead and chin not being dull white; in orange *irides* instead of yellow; and finally in its greater size. Gregarious, found only in the woods of the Ghauts. Webs of 2nd and 3rd quills narrowed as in the *Ptilinopus*.

140. *Columba tigrina*, Temm., Pig. Pl. 43. *Surat Turtle.*

M. Temminck's figure does not sufficiently develope the dove-coloured or ochrey tips to the feathers of the back and wing-coverts, and the tips of the centre feathers of the tail are coloured reddish instead of being white. A remarkable feature in this bird is unnoticed in the description of it, namely, the elongated and subulated tail; unlike the last or most other species of *Dove*, instead of widening towards the tip, it is widest at the base when closed, and gradually narrows to the extremity; in fact, each feather is subulate. *Irides* lake colour or pinkish red. Sexes exactly alike. Found on the skirts of the woods in the Ghauts. Length, inclusive of tail, 12 inches: tail 5 inches.

141. *Columba humilis*, Temm., Pl. Col. 258 et 259. *Colombe terrestre.*

M. Temminck says that this bird "vit habituellement à terre," but from long observation Colonel Sykes can testify that this supposed habit is no more characteristic of this species than of any other *Dove* in his possession. Gregarious; not an inhabitant of the woods, but affecting mangoe-tree groves in the neighbourhood of cultivation. Length, inclusive of tail, $9\frac{4}{8}$ inches: tail $3\frac{4}{8}$. Tail, as in the last species, narrower at the extremity than at the base when closed.

142. *Columba risoria*, Linn. *La Tourterelle à collier du Sénégal*, Buff., Ois. 2, 550 & 553. pl. 26. Pl. Enl. 161 & 244. Le Vaill., Ois. d'Afr. 6. pl. 268.

Length, inclusive of tail, $13\frac{4}{8}$ inches: tail 5 inches. Gregarious, and common in the open country. Sexes alike. In spite of the proverbial gentleness of the Dove, Colonel Sykes has seen these birds fighting with the most inveterate hostility; seizing each other by the bill and rolling upon the ground together. Outer webs of 2nd, 3rd and 4th quill-feathers hollowed.

143. *Columba Cumbayensis*, Lath., Ind. Orn. 2. sp. 56. Temm., Pig. Pl. 45.

Colonel Sykes's bird is identical with the species figured in M. Temminck's plate, but it does not correspond with the description of the *Col. Cambayensis* of Shaw, vol. 11. p. 79. This species is distinguished from all other *Doves* with which Colonel Sykes has met, by the square red spots on the black patches on the side of the neck. Sexes alike. Frequents gardens and stable-yards. Length, inclusive of tail, $11\frac{4}{8}$ inches: tail $5\frac{4}{8}$ inches.

144. *Columba Œnas*, Linn. *Stock Pigeon. Parwa* of the Mahrattas.

The most common bird in the Dukhun, congregating in flocks of

scores, and a constant inhabitant of every old dilapidated building. Colonel Sykes saw the same species on board ship on the voyage to England, brought from China. *Irides* orange. Sexes alike. Length, inclusive of tail, 14 $\frac{1}{10}$ inches : tail 4 $\frac{7}{10}$ inches.

The Dukhun bird differs from the European species in the bill being black instead of pale red, in the utter want of white or black in the quills, the want of white in the tail-feathers, and in the legs being brown instead of black. As these differences are permanent, they might justify a specific name being applied to the *Dukhun Pigeon.*

Fam. *Phasianidæ*, Vigors.—Genus *Meleagris*, Linn. *Turkey.*

145. *Meleagris Gallopavo*, Linn.

The *Turkey* is met with only in the domestic state : it is reared in great numbers by the Portuguese.

Genus *Pavo*, Auct.

146. *Pavo cristatus*, Linn. *Peafowl. Mohr* of the Mahrattas.

The wild *Peafowl* is abundant in the dense woods of the Ghauts : it is readily domesticated, and many Hindoo temples in the Dukhun have considerable flocks of them. On a comparison with the bird as domesticated in Europe, the latter is found, both male and female, to be absolutely identical with the wild bird of India. *Irides* intense red brown.

Genus *Gallus*, Briss.

147. *Gallus giganteus*, Temm., Gall. Ind. 633.

Known by the name of the *Kulm Cock* by Europeans in India. Met with only as a domestic bird ; and Colonel Sykes has reason to believe that it is not a native of India, but has been introduced by the Mussulmans from Sumatra or Java. The *iris* of the real game bird should be whitish, or straw-yellow. Colonel Sykes landed two cocks and a hen in England in June 1831 : they bore the winter well. The hen laid freely, and has reared two broods of chickens. The cock has not the shrill clear pipe of the domestic bird, and his scale of notes appears more limited. A cock in the possession of Colonel Sykes stood 26 inches high to the crown of the head, but they attain a greater height. Length from the tip of the bill to the insertion of the tail 23 inches. Hen one third smaller than the male. Shaw very justly describes the habit of the cock, of resting, when tired, on the first joint of the leg.

148. *Gallus Sonneratii*, Temm., Gall. Ind. 659. *Jungle Cock. Rahn Komrah* of the Mahrattas.

Very abundant in the woods of the western Ghauts, where there are either two species or two very strongly marked varieties. In the valleys at 2000 feet above the sea, *Sonnerat's* species is found, slender, standing high on the legs, and with the yellow cartilaginous spots on the feathers even in the female. In the belts of wood on the sides of the mountains, at 4000 feet above the sea, there is a short-legged variety ; the male has a great

deal of red in his plumage, which *Sonnerat's* has not; the female is of a reddish brown colour, and is without cartilaginous spots at all: in fact, the female of this variety is the *Gall. Stanleyii* of Mr. Gray's 'Illustrations'. Eggs exactly like those of the domestic fowl in form and colour, but less in size. The wild hen would appear to sit on a much smaller number of eggs than the domestic, as Colonel Sykes shot a hen upon her nest in which were only three eggs, and the process of incubation had evidently commenced some days. In the craw and stomach of many birds nothing whatever was found, excepting the seeds of a stone-like hardness called *Job's tears* (*Coix barbata*). *Irides* brownish deep orange. The crow or call of this species is like that of the *Bantam Cock*.

149. *Gallus domesticus*, Ray. *Phasianus Gallus cristatus*, Linn.
The *domestic fowl* is so abundant in the Dukhun, that in parts of the country not much frequented by Europeans, Colonel Sykes has bought from eight to twelve full-grown fowls for two shillings. Many of the hens, particularly of the villages in the Ghauts, are not to be distinguished from the wild bird, excepting only in the want of the cartilaginous spot on the wing-coverts.

150. *Gallus Morio*, Temm., Gall. Ind. 660. Briss., Orn. 1. 174.
This supposed species very frequently occurs accidentally in the Dukhun. Although unsightly, the black fowl is very sweet eating.

151. *Gallus crispus*, Temm., Gall. Ind. 661. Briss. Orn. 1. 173. pl. 17.
Occurs accidentally like the last variety.

Genus *Numida*, Linn. *Pintado.*

152. *Numida Meleagris*, Linn. *Guinea Fowl.*
Met with only in the domestic state, and bred almost exclusively by European gentlemen. Thrives as well as in its native country.

Fam. *Tetraonidæ*, Leach.—Genus *Coturnix*, Cuv.

153. *Coturnix dactylisonans*, Temm., Gall. Ind. 740. *Tetrao Coturnix*, Linn., Syst. Nat. 1. 278, 20. *Lohah* of the Mahrattas. *Large Grey Quail.*
Rare in the Dukhun, and found only in pairs in tufts of grass near water-courses and ponds. Resembles the *Quail* of Europe in size and plumage: the *irides* are dusky red or reddish brown, like those of the European bird, which by mistake are described in Shaw as yellow. Female a little larger than male: one female measured 8 inches, inclusive of tail of 2 inches, but this was a large bird. Period of incubation in the monsoon.

154. *Coturnix textilis*, Steph., 11. 365. *Perdix textilis*, Temm., Pl. 35. *Perdix Coromandelica*, Lath., Ind. Orn. 2. 654. 38. *Black speckled-breasted Quail.*
Irides dusky red. Length 6$\frac{1}{8}$ inches, inclusive of tail of 1$\frac{5}{8}$ inch.

In pairs in the monsoon; gregarious the rest of the year. Very abundant in *Jowaree* fields, (*Andropogon Sorghum*).

155. Coturnix Argoondah. *Cot. suprà rufescenti-brunnea, fasciis angustis dilutè ferrugineis notata; infrà sordidè alba, fasciis equidistantibus nigris; fronte mentoque ferrugineis; strigâ superciliari rufescenti-albidâ.*

Fœm. *Fasciis magis obscuris.*

Irides fusco-rubræ. *Rostrum* nigrum. Longitudo *corporis* 5 unc., *caudæ* $1\frac{5}{8}$.

Always gregarious; frequenting only rocky places, or amidst low bushes. The covey rises with a startling whirl. Flight very short. Pugnacious, and used by the natives for combat.

156. Coturnix Pentah. *Cot. suprà saturatè brunnea; infrà rufescenti-albida nigro fasciata; ventre crissoque albido-ferrugineis; interscapulio scapularibusque nigro maculatis, plumarum rhachibus dilutè flavis; remigibus brunneis pallidè ferrugineo maculatis; strigâ superciliari sordidè albâ; mento rufescente.*

Fœm. *Infrà rufescens, haud fasciata; plumarum rhachibus albis.*

Irides ochraceo-brunneæ. *Rostrum* rufescenti-brunneum. *Pedes* flavescentes. Longitudo *corporis* $5\frac{1}{8}$ unc., *caudæ* $1\frac{7}{8}$.

Has the habits and somewhat the appearance of the last species, but is found only on the most elevated table-lands and slopes of the mountains, amidst reeds and grass. Colonel Sykes's specimens were shot at 4000 feet above the sea.

157. Coturnix erythrorhyncha *Cot. suprà saturatè brunnea, infrà dilutè castanea, nigro (præter ventrem medium) undequaque guttata, maculataque, scapularium maculis maximis, pectoris guttis minimis; scapularium tegminumque alarum superiorum albo fasciatarum rhachibus albis, crucem efformantibus; remigum pogoniis externis rufescenti fasciatis maculatisque; fronte nigro; strigâ frontali utrinque supra oculum productâ guláque albis.*

Fœm. *Fronte, strigâ inde ad utrumque latus ductâ, guláque dilutè castaneis.*

Irides obscurè flavo-ochraceæ. *Rostrum* rubrum. Longitudo *corporis* 5 unc., *caudæ* $1\frac{5}{8}$.

Colonel Sykes has found this very handsome bird only in the valley of Karleh, where it frequents the same ground as the *black Partridge* (*Perdix picta*). Gregarious and abundant. In closing his notices of the *Quails*, Colonel Sykes mentioned that grass seeds constitute their principal food.

Genus *Perdix*, Briss. *Partridge.*

158. *Perdix picta*, Jard. & Selby, Pl. 150.

This is called the *black Partridge* in Dukhun, by Europeans. It affects uncultivated tracts in the country, covered with tufts of rank grass and low bushes, where it is abundant. Colonel Sykes has never met with it in gardens. The call of the male is a kind of broken crow. Sexes exactly alike. *Irides* reddish dark brown. Length, inclusive of tail, 10 inches: tail $2\frac{5}{8}$ inches. Does not roost on trees.

Genus *Francolinus*, Steph. *Francolin.*

159. *Francolinus Ponticerianus*, Steph., 11. 321. *Perdix Ponticeriana*, Lath., Ind. Orn. 2. 649. 18. Temm., Pl. Col. 213. *Ferruginous and Grey Francolin. Teetur* of the Mahrattas.

Called a partridge in the Dukhun, where it is one of the most common birds, frequenting gardens and cultivated lands. *Irides* intense red brown. Length, inclusive of tail, 14 inches: tail $3\frac{9}{10}$ inches. Not met with in the Ghauts, unless in well cultivated valleys, and not at all on the mountains. Roosts on trees; and Colonel Sykes has on more than one occasion shot them on trees during the daytime; but this is a rare occurrence.

160. FRANCOLINUS SPADICEUS. *Franc. castaneus, suprà fusco tinctus, plumarum marginibus dilutioribus; capite, collo, ventre, crisso, tegminibusque caudæ inferioribus fusco-brunneis; vertice nigrescenti-brunneo; plumarum ventris crissique rhachibus elongatis, acutis.*

Fœm. *Suprà nigro castaneoque varius; pectoris abdominisque plumis castaneis ad apices lunulâ latâ nigrâ notatis.*

Pullus. *Fusco-ferrugineus, vittis tribus dorsalibus latis, intermediâ saturatè rufo-brunneâ, lateralibus flavescenti-albidis.*

Irides rufo-brunneæ. *Rostrum pedes*que rufescenti-cornei.

Longitudo *corporis* $9\frac{7}{10}$ unc., *caudæ* 5.

Perdix spadicea, Lath., Ind. Orn. 2. 644. 4. Temm., Gall. Ind. 719. *Tetrao spadiceus*, Gmel., Syst. Nat. 1. 759. 29. *Le Perdrix rouge de Madagascar*, Sonn., Voy. Ind. 2. 169. *Francolin spadice*, Temm., Pig. et Gall. 3. 315. *Koku-tree* of the Mahrattas.

The male only of this bird, which is very common in the thick brushwood of the Ghauts, appears to have been known to the writers quoted. Colonel Sykes has had both sexes alive in his possession for some time, and has no doubt they might be successfully introduced into Europe. They are excellent eating. Rarely take to wing or perch. Male has a harsh call of three syllables, *Kot-kut-ree*, whence the Mahratta name; female in confinement uttered little notes like the twittering of a chicken. A male in Col. Sykes's collection has three large spurs on one leg, and two on the other.

Genus *Pterocles*, Temm. *Ganga.*

161. *Pterocles exustus*, Temm, Pl. Col. 354 & 360. *Rock Pigeon* of Europeans in the Dukhun.

A very common bird in the Dukhun; gregarious; frequenting open stony plains only. Characterized by the height at which it flies, the rapidity of its flight, and its peculiar and piercing note announcing its approach ere it can be well seen. It feeds on a quadrangular hard small seed, which Colonel Sykes has found in the stomach of only one other bird.

Irides reddish brown. Sexes of the same size. The male has two of the tail-feathers linear and elongated, which is not the case with the female. Male, inclusive of tail, 14 $\frac{7}{10}$ inches: tail 5 inches.

162. *Pterocles quadricinctus*, Temm., Gall. 3. 252. *Painted Rock Pigeon* of the Dukhun.

Rare, and met with only in pairs, on open ground at the foot of hills. *Irides* reddish brown. Sexes of the same size. Length, inclusive of tail, 13¼ inches: tail 3 inches.

Genus *Hemipodius*.

163. *Hemipodius pugnax*, Temm., Pl. Col. 60. fig. 2.

Common in the Dukhun, and called the *Bustard Quail* by Europeans. Its reputed pugnacious qualities are not known. Solitary or in pairs, and mostly found in *Chillee* fields (*Capsicum annuum*). *Irides* light yellow. Length, inclusive of tail, $7\frac{5}{10}$ inches: tail $1\frac{5}{10}$ inch. Habits, tongue and internal organization of *Coturnix textilis*. M. Temminck describes the female as differing in plumage from the male; but in Colonel Sykes's specimens the sexes are exactly alike.

164. Hemipodius Taigoor. *Hem. suprà castaneus, plumis stramineo marginatis, nigroque undulatim fasciatis; tegminibus alarum stramineis nigro fasciatis; remigibus fuscis; mento gulâque albis; pectore nigro alboque fasciato; ventre crissoque dilutè ferrugineis.*

Irides pallidè flavæ. *Rostrum* nigrescens. Longitudo *corporis* $4\frac{8}{10}$ unc., *caudæ* $1\frac{7}{10}$.

Closely resembles the female of *Hem. pugnax* as described by M. Temminck, but the bill is longer and more slender, and Colonel Sykes has specimens of both sexes. Sexes alike.

165. *Hemipodius Dussumier*, Temm., Pl. Col. Called the *Button Quail* by Europeans.

Colonel Sykes never met with this bird otherwise than solitary: frequents thick grass or pulse fields, and sits so close as to expose itself to be trod upon. Flight so abrupt and short, that ere the gun is well up to the shoulder, the bird is down again. *Irides* straw-yellow. Length, inclusive of tail, $5\frac{7}{10}$ inches: tail $1\frac{4}{10}$ inches.

Fam. *Struthionidæ*, Vigors.—Genus *Otis*, Linn. *Bustard.*

166. *Otis nigriceps*, Gould's Cent. Himal. Birds.

This noble bird is so common in the Dukhun, that one gentleman has shot nearly a thousand. Gregarious. Egg, a perfect oval, brown olive, with obscure blotches of darker brown olive. Length $3\frac{4}{10}$ inches, diameter $2\frac{7}{10}$ inches. One only found in a hole in the earth on the open plain, and that considerably advanced in the process of incubation. *Irides* deep brown. Length, male, inclusive of tail, 56½ inches: tail 13½ inches. Female 41½ inches, inclusive of tail of 10½ inches. Male supplied with the remarkable gular pouch common to the *Otis tarda*.

167. Otis fulva. *Ot. suprà cacaotico-brunnea, plumis fulvo marginatis variegatisque; tegminibus alarum, collo, pectoreque fulvis, punctis lineisve brunneis parcè notatis; ventre, uropygio, femoribus, tegminibusque caudæ inferioribus fulvo-albis; teg-*

minibus alarum inferioribus lateribusque cacaotico-nigris; caudâ fulvâ fasciis quatuor cacaotico-brunneis notatâ; mento gulâque albis; vertice brunneo, strigâ mediâ longitudinali albâ. Irides rufescenti-lutescentes, radiis a pupillâ pallidè lutescentibus. *Pedes* flavescentes. Longitudo *corporis* ♂, 15 $\frac{6}{12}$ unc., *caudæ* 3 $\frac{7}{12}$: *corporis* ♀, 17 $\frac{3}{12}$, *caudæ* 3 $\frac{1}{12}$.

The wings are of unequal length in the sexes; and the quills are singularly acuminated.

Col. Sykes gives the following detailed description of the *Otis fulva*:

Forehead, crown, back, scapulars, and first three quills rich chocolate brown; feathers of the back and scapulars triangular at the point, edged with fulvous, and barred in the centre and near the base with a broad bar of fulvous mottled with chocolate. Round the eyes, a streak down the centre of the crown, whole neck, breast, wing-coverts, and tail buff or fulvous; the back neck closely speckled with minute dots of brown. On the wing-coverts a few scattered lines and specks of brown. Tail with 4 distant fuscous bars, the intermediate spaces beautifully barred with flexuose lines of fuscous. The fourth and following quills and secondaries marked like the tail. Two irregular fuscous streaks down the fore neck. Breast fulvous, with a few faint lines and spots of brown. Belly, vent, under tail-coverts, and thighs yellowish white. Under wing-coverts and sides of the body fine chocolate brown. Occasionally a feather is tipped with white on the wing-coverts. Upper mandible fuscous, lower yellowish. Chin and throat white extending up towards the ears. Sexes exactly alike in plumage. The down at the base of all the feathers pink. Primary quills singularly acuminated, particularly in the male, terminating in a point as fine as that of a needle; less so in the female, and the wings of the latter are from one to two inches longer than those of the male. This difference is constant.

Col. Sykes stated that his description was written from eight specimens lying before him, and that he had transmitted three similar to the India House.

Some of Col. Sykes's sporting friends in India having expressed a belief that the *Otis fulva* was the female of the *black Floriken* of the Dukhun, (a comparatively rare bird, the *Otis fulva* being common,) he was induced to pay particular attention to the organs of sex, and never found the *testes* and *ova* otherwise than fully developed. If therefore it be referable as an immature bird to a known species, (*Otis Bengalensis*, *Otis aurita*, or *Otis Indica*,) it appears in the Dukhun in hundreds, with all the indications of puberty, at a time when the supposed parents are rarely, if at all, to be met with. Col. Sykes's birds are identical with a specimen laid before the Society by Major Franklin on the 9th of August 1831, under the name of *Otis Indica*; Major Franklin at the same time expressing doubts of it being the *white-chinned Bustard* of Dr. Latham. The description of the *Otis Indica* has only two features common

to the *Otis fulva*, "chin white," and "under parts dusky yellowish cream colour;" as they differ in all other particulars, the birds cannot be identical: and a reference to a figure of the *Otis Indica*, which is only to be met with in J. H. Miller, confirms the impression. Col. Sykes believes with Major Franklin that the present species has been usually mistaken for the female of *Otis aurita*.—A correspondent in the Magazine of Natural History, No 16, for November 1830, under the signature of "A Subscriber," page 517, confirms Col. Sykes's opinion, stating that the *Chuij* or *ochreous Floriken* (*small Bustard* of India) is not the *Otis Indica* (*white-chinned Bustard*), nor the *Otis Bengalensis*, nor the *black Floriken* (*Otis aurita*) or *Leek* of Hindostan.

Col. Sykes stated the food of the *Otis nigriceps* and the *Otis fulva* to be almost exclusively grasshoppers; and he pointed out the absence of a gizzard (the stomach being simple), combined with the remarkable shortness of the intestinal canal, scarcely exceeding the length of the body, as distinguishing these birds from all others that had come under his observation.

Order IV. GRALLATORES, *Ill.*

Fam. *Gruidæ*, Vigors.—Genus *Grus*, Pallas. *Crane.*

168. *Grus Antigone*, Steph., 11. 531. *Grus orientalis Indica*, Briss., Orn. 5. 378. 7. *Kullum* of the Mahrattas.

Appear in flocks of hundreds in Dukhun during the cold season.

Fam. *Ardeidæ*, Leach.—Genus *Ardea*, Auct.

Section A. *Tarsi* long.

169. *Ardea Egretta*, Gmel., 1. 629. *Ardea Torra*, Buch. Franklin, Zool. Proceedings. *La Grand Egrette*, Buff., Ois. 7. 377. Pl. Enl. 925. *Large white Heron with yellow bill.*

Length, inclusive of tail, 35 to 36 inches: tail 5 $\frac{6}{10}$ inches. Length of the European bird 42 inches. *Irides* bright yellow. Solitary.

170. *Ardea Garzetta*, Linn, 1. 937. *L'Aigrette*, Buff., Ois. 7. 372. Pl. Enl 901. *Little Egret Heron.*

Length, inclusive of tail, 24 to 25 inches: tail 4 inches. Length of the European bird 24 inches. *Irides* light yellow.

Gregarious. Toes, as in the European bird, yellowish green or apple green, exhibiting a curious contrast to the greenish black of the legs.

171. Ardea Asha. *Ard. suprà ardosiacea, dorso brunnescente; mento, gulâ, lineâ longitudinali jugulari, corpore subtùs, tegminibusque caudæ inferioribus albissimis; tegminibus alarum tertiariis albo angustè marginatis.*

Irides dilutè flavæ. *Rostrum* corneum. *Tarsi* virescenti-nigri. Longitudo *corporis* 20¼ unc., *caudæ* 3¾.

Slate-coloured Heron.

A very rare bird in Dukhun. Has a good deal the aspect of

Ard. Novæ Hollandiæ, and several points of resemblance to *Ard. gularis*, *Ard. jugularis*, and the young of *Ard. cærulea*; but differs from all.

172. *Ardea cinerea*, Lath., Ind. Orn. 2. 691. 54. *Le Heron huppé*, Buff., Ois. 7. 342. Pl. Enl. 787.

Irides bright light yellow. Length, inclusive of tail, 38 inches: tail 6 inches.

Identical with European specimens. Solitary.

173. *Ardea nigrirostris*, Gray, Zool. Misc. 20. Fig. Ind. Zool. Part 12th. *Large white Heron with black bill.*

Differing only in having a black bill from *Ard. Egretta*; otherwise identical in size, form, colour, and internal organization; nevertheless as Col. Sykes has adult birds preserving the black bill, he considers Mr. Gray's specific distinction valid. *Irides* bright yellow.

Section B. *Tarsi* short.

174. *Ardea Malaccensis*, Gmel., 1. 643. *Crabier blanc et brun de Malacca*, Buff., Ois. 7. 394. Pl. Enl. 911. *Buglah* of the Mahrattas.

Irides light bright yellow. Length, inclusive of tail, 19 inches: tail 3 to 3¼ inches. One male bird measured 21 inches. White capillary worms found on the mesentery.

175. *Ardea Caboga*, Penn., Hindoos. 2. 158. *Gibraltar Heron*, Lath., var. A. *Small pure white Heron. Batty bird* of Europeans in Dukhun.

Attend oxen while grazing, and pick insects from them. Gregarious. Length, inclusive of tail, 19¼ to 21 inches: tail 3½ inches. *Irides* bright yellow. A shade of yellow ochre on the forehead in some individuals.

176. Ardea Grayii. *Ard. alba; dorso atro-rubente; capite, collo, pectore, scapularibusque sordidè flavescenti-albidis; occipitis plumis 3—5 longis, linearibus, albissimis.*

Irides nitidè flavæ. *Rostrum* ad apicem nigrum, ad basin flavescens. *Tarsi* fuscescenti-carnei. Longitudo (caudâ inclusâ) 18¼—19¾ unc., *caudæ* 3.

Marone-backed Heron.

The deep chestnut or marone feathers of the back are decomposed, and extend nearly to the end of the tail. The immature bird bears a very close resemblance to the *Ard. Malaccensis*.

177. *Ardea Javanica*, Horsf., Linn. Trans. 13. 190. *Indian green Heron* of Dr. Latham, No. 74.

Col. Sykes's specimens are identical with those from Java, and on comparing them with the descriptions of *Ard. virescens*, Ill., and the plate of Buffon (Pl. Enl. 908, *Crabier de Cayenne*), they differ in wanting the red stripes down the throat and neck, and in the tail being dark metallic green instead of black, and in smaller size. Dr. Horsfield's trivial name is therefore valid. *Irides* bright light yellow, surrounded by a very narrow red ring. Length, inclusive of tail, 16½ inches: tail 2½. Sexes

alike in size and plumage. Solitary on the woody banks of small streams.

178. *Ardea cinnamomea*, Gmel., 1. 643. *Entire chestnut Heron.* Identical with specimens in the British Museum and India House. Length, inclusive of tail, 15½ inches: tail 2¼ inches. *Irides* bright yellow.

Rare in Dukhun. Mostly solitary; never gregarious. Remarkably wary.

Genus *Botaurus*, Briss. *Bittern.*

179. *Botaurus stellaris*, Briss., Orn. 5. 414. *Ardea stellaris*, Linn., 1. 239. 21. *Le Butor*, Buff., Ois. 7. 411. Pl. Enl. 789. *Common Bittern.*

Identical with the European bird.

Rare in Dukhun.

Genus *Nycticorax*, Steph.

180. *Nycticorax Europæus*, Steph., 11. 609. *Ardea Nycticorax*, Linn., 1. 235. 9. *Le Bihoreau*, Buff., Ois. 7. 435. Pl. Enl. 758. *Night Heron.*

Irides broad, crimson. Length, inclusive of tail, 24 inches: tail $4\frac{1}{16}$ inches. Length of the European bird about 22 inches. *Irides* and legs of the same colour as those of the Asiatic bird.

Genus *Phœnicopterus*, Linn. *Flamingo.*

181. *Phœnicopterus ruber*, Linn., 1. 230. *Le Flammant*, Buff, Ois. 8. 475. Pl. Enl. 63. *Red Flamingo. Rajah Huns* of the Hindoos.

Irides light yellow. Length, inclusive of tail, 43½ inches: tail 6 inches.

In the *duodenum* of a female were found two thick, remarkable white worms composed of *annuli*; one 7 inches long, the other 4½ inches; and filling up the intestinal canal, so that liquid food only could have passed; nevertheless the bird appeared quite healthy.

Genus *Platalea*, Linn. *Spoonbill.*

182. *Platalea leucorodia*, Linn., 1. 231. 1. *La Spatule*, Buff., Ois. 7. 448. Pl. Enl. 405. *Crested white Spoonbill.*

Irides crimson. Length, inclusive of tail, 35½ inches: tail 5½ inches.

Although a little larger in size, it is otherwise absolutely identical with the European bird even to the colour of the *irides* and legs.

183. *Platalea junior.* The feathers with black shafts.

Mr. Stephens describes these birds as rarely occurring inland. Col. S.'s specimens were obtained 100 miles from the sea, and at an elevation of 2000 feet.

Genus *Ciconia*, Ray. *Stork.*

184. *Ciconia leucocephala. Ardea leucocephala*, Gmel., 1. 642.

Lath., Ind. Orn. 2. 699. 78. *Le Heron Violet*, Buff., Ois. 7. 370. *Heron de la côte de Coromandel*, Buff., Pl. Enl. 906. *Violet Heron*. *Kandehsur* or *Kowruw* of the Mahrattas.

It is singular that this well-marked bird should have been classed as a *Heron* for a long period, and remain as such at the present moment in Shaw. Length, inclusive of tail, 33 to 34½ inches: tail 8 inches.

Mostly seen on open stony plains or in ploughed fields. Food chiefly grasshoppers. Monogamous. *Irides* scarlet, margined with a narrow circle of black and an exterior circle of yellowish.

185. *Ciconia Argala*, Steph., vol. 11. p. 622. *Ardea dubia*, Gmel., 1. 624. *Ardea Argala*, Lath.

Is met with in Dukhun; but Col. Sykes has not a specimen. Called the *Adjutant* by Europeans, from its stiff soldier-like strut.

Genus *Anastomus*, Ill. *Courly*.

186. *Anastomus Typus*, Temm. *An. Coromandelianus*, Steph., 11. 632. *Ardea Coromandelica* (l'adulte) et *Ponticeriana* (le jeune), Temm. *Le bec ouvert des Indes*, Sonn, Voy. 2. pl. in p. 219. Buff, Ois. 7. 409. Pl. Enl. 932. *Cinereous Muscle-catcher*.

Irides bright yellow. Length, inclusive of tail, 32 to 33 inches: tail 6¼ to 6¾ inches.

Buffon's figure is excellent. Lives on the animals of a new and large species of *Unio*. The stomach of this bird is not less remarkable than its bill: the last exhibiting a beautiful adaptation of means to their end; the form of the mandibles enabling the bird to hold and open the bivalve shell of the *Unio*. Solitary.

The proportional length of the intestinal canal exceeds that of any other bird in the order *Grallatores*, in one specimen being five times the length of the body, neck and bill inclusive.

Genus *Tantalus*, Linn.

187. *Tantalus leucocephalus*, Lath., Ind. Orn. 2. 706. *Le Tantale de Ceylon*, Cuv., Règne Anim. 1. 481. *White-headed Ibis*.

Irides yellow. Length, inclusive of tail, 40½ to 43 inches: tail 6½ inches.

A large diaphanous spot on each side of the base of the upper mandible before the eyes does not appear to have been noticed in the description of the bird.

The generic characters, if this bird be made the type, require modification. The stomachs of three birds were distended with fibrous vegetable matters in a comminuted state. A fourth had the same vegetable matters and the half of a carp 9 inches long.

Genus *Ibis*, La Cép. *Ibis*.

188. *Ibis religiosa*, Cuv., Règne Anim. 1. 483. *Sacred Ibis*. *L'Ibis sacre*, Cuv., Recherches sur les Ossemens Fossiles, 1. 161.

Tantalus Æthiopicus. Ibis Macei, Cuv., Ann. Mus. 11. 125. *White Ibis with purple black secondary quill decomposed feathers*, Ind. Orn. 2. 706.

Col. Sykes carefully compared the descriptions and measurements of the larger *Mummy Ibis* of Cuvier; and is induced to believe the present bird is the same. Col. Sykes puts into juxtaposition the measurements of Cuvier's *Mummy Ibis* from Thebes and one of his own birds:

	Mummy Ibis. Inches.	*Dukhun Ibis.* Inches.
Length of beak and head together	8·27	8·15
Head	1·85	1·80
Tibia	5·90	5·80
Tarsus	4·01	3·80
Middle toe	3·81	3·50
Ulna	6·01	5·95
Hand	4·92	4·80

The individual of which the measurements are given has the two first quills tipped with violet, their shafts of the same colour, and four of the secondary quills are also violet and with their webs decomposed, according with Cuvier's description. The violet colour is not so deep as in the *Æthiopian Ibis*; but as in all Col. Sykes's specimens (nine in number) the violet feathers are in progress of development, the colour would no doubt subsequently be darker. Cuvier mentions that the *Mummy Ibis* varied a little in size. Col. S. has birds larger and smaller than that of which the measurements are given.

Appear in Dukhun in the cold weather only. Gregarious.

Irides narrow, lake colour. Food water-crickets, crabs, beetles, shrimps. Length, inclusive of tail, 30 to 35½ inches: tail $5\frac{1}{10}$ to $5\frac{7}{10}$. Bill and head to occiput $7\frac{8}{10}$ to $9\frac{6}{10}$ inches. Bill to the gape $6\frac{3}{10}$ to $7\frac{8}{10}$ inches.

189. *Ibis ignea. Tantalus igneus*, Lath., Ind. Orn. 2. 708. 12. *Ibis falcinellus*, Temm., Man. d'Orn., 2nd Edit. 2. 596.

Col. Sykes's birds, male and female, are identical with two European specimens in the British Museum labelled *Ibis ignea*, and viewed as the immature birds of *Ibis falcinellus*. Col. Sykes however has seen so many of both in India, appearing in different flocks at the same period of the year, and not having, as M. Temminck describes the birds before they are three years old, "partie inferieure du cou, poitrine, ventre, et cuisses d'un noir cendré; haut du dos et scapulaires d'un cendré brun," but of a rich fuscous brown, with brilliant metallic reflections; differing also in the proportions of the internal organization; and Dr. Latham moreover describes even the youngest birds of *Ibis falcinellus* as characterized by reddish brown. Herodotus speaks of the *smaller Ibis* as entirely black, a description inapplicable to the *Ibis falcinellus*, but applicable to the present species, which at a short distance appears entirely black. Col. Sykes is therefore induced to adopt the opinion of those writers who considered the bird distinct from *Ibis falcinellus*. Its

measurements correspond with those of the smaller species of *Mummy Ibis* given by Cuvier; and it agrees in plumage (intense blackish brown with metallic reflections, without any mention of chestnut or marone, the livery of the *Ibis ignea,*) with the descriptions of the ancients; it is therefore very probable, as M. Temminck suggests, that it is the sacred species worshiped and embalmed by the Egyptians.

Length (male), inclusive of tail, 25½ inches: tail 4¼ inches. Female 23½ inches: tail 4 inches.

Black beetles, *larvæ* of water insects, and numerous univalve shells found in the stomachs of these birds.

190. *Ibis papillosa*, Temm., Pl. Col. 304. *Black screaming Ibis. Indian variety of Bald Ibis*, Lath., 9. 156.

Soar high in the air in circles, uttering melancholy screams. Monogamous. Found in the stomach of several birds aquatic insects, multitudes of black beetles, *Jowaree* seeds, *Gryllotalpæ*, and vegetable matters. Col. Sykes's birds are much less brilliant in plumage than the specimen described and figured by M. Temminck.

Irides pale red. Length, inclusive of tail, 25 to 28½ inches: tail 7½ inches.

191. *Ibis falcinellus*, Temm., Man. d'Orn. 2nd Edit. 2. 599. *Tantalus falcinellus*, Linn., 1. 241. Gmel., 1. 648. *Le Courlis verd*, Buff., Ois. 8. 29. *Courly d'Italie*, Buff., Pl. Enl. 819. *Marone Ibis.*

Sexes do not differ in plumage; but the female is somewhat smaller than the male.

Length, inclusive of tail, 26 to 26½ inches: tail 4¼ inches. Multitudes of black beetles and grasshoppers, and univalve fresh-water shells, found in the stomach. An *immature* bird in possession of the Zoological Society, unlike the supposed immature bird (*Ibis ignea*), is characterized by the marone livery of the *Ibis falcinellus.*

Fam. *Scolopacidæ*, Vigors.—Genus *Totanus*, Bechst. *Sandpiper.*

192. *Totanus ochropus*, Temm., Man. d'Orn. 420. *Tringa ochropus*, Linn., 1. 250. *Green Sandpiper.*

Absolutely identical in plumage with a specimen from Hudson's Bay in the British Museum, and with English specimens.

Irides fuscous brown. Length, inclusive of tail, 9½ to 10 inches: tail 2½ inches.

For the most part solitary. The stomach approximates to a gizzard. Sexes alike. Cry, *Cheet, Cheet, Cheet.*

193. *Totanus Glareola*, Temm., Man. d'Orn. 2nd Edit. 2. 654. *Tringa Glareola*, Linn., 1. 250. *Wood Sandpiper.*

Differs from one specimen of *Tringa Glareola* in the British Museum in a defined white line over the eyes to the bill, more white on the throat and less brown speckled on the breast, and slightly longer bill; but is identical in plumage with another specimen.

Irides fuscous brown. Length, inclusive of tail, 9 to 9½ inches: tail $2\frac{3}{10}$ inches. Sexes alike. In April as delicate eating as the *common Snipe*. Cry, *Chit, Chit, Chit*; but the alarm cry is like the grating of a rusty hinge.

194. *Totanus hypoleucos*, Temm., Man. d'Orn. 424. *Tringa hypoleucos*, Linn., 1. 250. *Common Sandpiper*. *Tringa Guinetta*, Brit. Mus. *La petite Alouette de Mer*, Buff., Pl. Enl. 850.

Irides fuscous brown. Length, inclusive of tail, 8½ to 9 inches: tail $2\frac{1}{10}$ inches.

Cry, a sharp whistle like *Wheet, Wheet, Wheet*. Jerk the tail in a curious manner. Sexes alike. Generally solitary.

Genus *Limosa*, Briss. *Godwit.*

195. *Limosa Glottoides*. *Totanus Glottoides*, Gould's Century of Himalayan Birds.

Col. Sykes agrees with Mr. Gould in the propriety of separating this bird from the *Totanus Glottis* (*Scolopax Glottis*), or *Greenshanks* of Europe.

Irides fuscous red brown. Length, inclusive of tail, 14 to 14½ inches: tail 3 inches.

Sexes do not differ in plumage or size. Cry in flight, a sharp, shrill *Queek, Queek*. Very wary birds. Commonly seen alone; rarely three or four together. Minute fish, *larvæ* of water insects, and univalve shells found in the stomach.

196. Limosa Horsfieldii. *Lim. suprà brunnea, plumarum rhachibus lineisque transversis angulatis nigris; mento, corpore infrà, uropygio, dorsi dimidio, caudâ, marginibusque plumarum superiorum albis; remigibus fuscis rhachibus albis; caudâ lineis plurimis angulatis angustis nigris notatâ.*

Irides intensè rufo-brunneæ. *Rostrum pedes*que (hi gracillimi) nigri. Longitudo *corporis* 8—8¼ unc., *caudæ* 2½.

This is a miniature likeness of the preceding, but quite distinct, although similar in habits, manners, flight, and cry; but with a permanent difference in size and some markings. It is comparatively a rare bird. Col. Sykes had at first considered it a young bird of *Tot. Glottoides*, until an observation of some years convinced him of his mistake. So wary as to be rarely within reach of the gun. Female with the spots and markings fainter than in the male. Bill $1\frac{9}{10}$ inch long.

Genus *Gallinago*, Ray. *Snipe.*

197. *Gallinago media*, Ray. *Scolopax Gallinago*, Linn., 1. 244. *Becassine*, Buff, Ois. 7. 483. Pl. Enl. 883.

Appears only from November until March in Dukhun. Same as the European bird, with trifling exceptions, resulting probably from age. *Irides* intense brown. Size of *common Snipe*. Found in the stomach, vegetable matter, minute univalve shells, earth-worms, *larvæ* of water insects, and fine gravel. Sexes alike.

198. *Gallinago minima*, Ray, Syn. 105. A. *Scolopax Gallinula*,

Linn., 1. 244. 8. *Becassine sourde*, Temm., Man. d'Orn. 440. *Jack Snipe.*

Appears and disappears with the preceding species. Identical with the European bird and precisely similar in its habits. *Irides* intense brown. Length, inclusive of tail, $8\frac{3}{4}$ inches: tail $2\frac{3}{4}$ inches. Food the same as that of the *common Snipe.* Sexes alike.

Genus *Rhynchæa*, Cuv.

199. *Rhynchæa picta*, Gray, Proc. Zool. Soc. *Rhynch. Capensis*, Steph., 12. 65. *Scolopax Capensis*, Linn., 1. 246.

Col. Sykes has specimens in such states of plumage as to correspond with the above species, shot on the same ground. Migratory. *Irides* red brown. Length, inclusive of tail, 10 inches: tail $1\frac{3}{4}$ inches. Sexes alike. Feed like *Snipes.*

Genus *Pelidna*, Cuv. *Dunlin.*

200. *Pelidna Temminckii*, Steph., 12. 108. *Tringa Temminckii*, Leisl. Temm., Man. d'Orn. 401. *Small Dunlin.*

Identical with the European bird. *Irides* dark brown. Length, inclusive of tail, 6 to $6\frac{1}{2}$ inches: tail 2 inches. Feed like *Snipes.* Gregarious. Excellent eating.

Fam. *Rallidæ*, Leach.—Genus *Parra*, Linn. *Jacana.*

201. *Parra Sinensis*, Gmel., 1. 709. *Yellow back-necked Jacana.* Fig. in Gould's Century of Birds.

The immature bird is the *Parra Luzoniensis.* Dive remarkably well despite their long toes. *Irides* fuscous brown. Length, inclusive of tail, 18 to 19 inches: tail 9 to 10 inches. Found in the stomach of many birds vegetable matter, two species of univalve shells, bugs (*Cimex annulatus*), and fine gravel. Gregarious, and common on the rivers in Dukhun.

Genus *Gallinula*, Ray. *Gallinule.*

202. *Gallinula Javanica*, Horsf., Linn. Trans. 13. 196. *Poule Sultane de la Chine*, ou *Poule Sultane brune*, Pl. Enl. 896. *Pan Komree* of the Mahrattas.

This is the Variety β of the 'Index Ornithologicus.' Dr. Horsfield has judiciously separated it from the *Gall. phœnicura.* Col. Sykes's specimens differ from Dr. Horsfield's only in being a little larger. *Irides* fuscous red. Length, inclusive of tail, $11\frac{1}{2}$ to $12\frac{1}{2}$ inches: tail $2\frac{3}{4}$ to 3 inches. *Larvæ* of water insects found in the stomach. Legs very long.

Genus *Rallus*, Auct. *Rail.*

203. Rallus Akool. *Rall. corpore suprà lateribusque olivaceo-fusco-brunneis; alis caudâque fuscis; gutture, pectore, ventre, uropygioque cinereo-brunneis; tegminibus alarum caudæque inferioribus saturatè brunneis; mento albo.*

Rostrum virescenti-nigrum. *Pedes* carneo-brunnei. Longitudo *corporis* 8—9 unc., *caudæ* $2\frac{1}{2}$.

The only spot of white on the bird is at the chin. Wings and tail short. This bird appears quite distinct from any described species of *Rallus* or *Gallinula*. The nearest approach to it is the *Rall. niger* of Gmelin from the Cape of Good Hope. Sexes alike. Frequents sedgy and marshy places amidst low bushes. Shuns observation.

Genus *Porphyrio*, Briss.

204. *Porphyrio smaragnotus*, Temm., Man. d'Orn 2nd Edit. 2. 700. *Fulica Porphyrio*, Linn, 1. 258. *Le Talève de Madagascar*, Buff., Pl. Enl. 810.

These very beautiful birds are found on most of the very large tanks or ponds, the surface of which is a good deal covered with the broad leaves of the *Lotus*, on which the birds walk. Vegetable matters only found in the stomach of several birds, particularly parts of the green capsules of *Trapa bispinosa*. Sexes alike. *Irides* blood red. Length, inclusive of tail, 18 inches: tail $3\frac{1}{4}$ inches. Stomach a true gizzard.

Genus *Fulica*, Auct. *Coot.*

205. *Fulica atra*, Linn., 1. 257. *Le Foulque*, Buff, Ois. 8. 211. Pl. Enl. 197.

Differs only from Javanese specimens in being larger, and a shade lighter below. Much larger than the *common Coot* of Europe, but with the same coloured *irides* (crimson), and does not otherwise differ. Length, inclusive of tail, 18 to 19 inches: tail 2 inches. It has the habits of *Podiceps*, and with the gizzard, long *cæca*, and general internal organization of a *Duck*, seems to belong to the order *Natatores*. Water weeds and coarse sand found in the stomach.

Fam. *Charadriadæ*, Leach.—Genus *Cursorius*, Lath. *Courser.*

206. *Cursorius Asiaticus*, Lath., Ind. Orn. 2. 751. 2. *Cour-vite de Coromandel*, Buff., Ois. 8. 129. Pl. Enl. 892.

Irides dark brown. Length, inclusive of tail, 10 inches: tail $2\frac{1}{2}$ inches. Sexes alike. Numerous in Dukhun; but only on the open stony and grass plains. This bird has the shortness of intestine of the *Bustard* (equal to the length of the body), with a stomach nearly similar; feeding in the same manner on insects and their *larvæ* and with the same cursorial habits, and should therefore be placed near the *Struthionidæ*, after *Otis* and *Tetrao*.

Genus *Vanellus*, Briss. *Lapwing.*

207. *Vanellus Goensis*, Steph., 11. 514. *Tringa Goensis*, Lath., Ind. Orn. 2. 727. 7. *Parra Goensis*, Gmel., 1. 706. *Vanneau armé de Goa*, Buff., Pl. Enl. 807.

Irides fuscous crimson. Length, inclusive of tail, 14 inches: tail 5 inches. Affect open plains and beds of rivers. Gregarious. Water insects, shells, and corn found in the stomach. A watchful and noisy bird at night; uttering cries of *Did he doo it, Did he doo it*. Sexes alike.

208. *Vanellus bilobus.* *Charadrius bilobus*, Gmel. 1. 691. *Le Pluvier de la côte de Malabar*, Buff., Pl. Enl. 880.

The bird has a black bill, yellowish at the base; and not a yellow bill, as described in the 'Index Ornithologicus.' There are one or two other minor discrepancies; but no doubt it is the species figured by Buffon. Although it wants the hind toe, and is therefore, agreeably to generic characters, a *Charadrius*, its habits, figure, food, and almost its cry, are those of the preceding species. Col. Sykes has therefore classed it as a *Vanellus*. *Irides* yellowish. Length, inclusive of tail, 11¾ to 12 inches: tail 3¼ inches. Gregarious. Found only on the open stony and grass plains. Like the *Van. Goensis*, a restless noisy bird at night, crying *Deewit, Deewit*. Sexes alike.

Genus *Charadrius*, Auct. *Plover.*

209. *Charadrius pluvialis*, Linn., 1. 254. 7. *Le Pluvier doré*, Buff., Ois. 8. 81. Pl. Enl. 904. *Golden Plover.*

Identical with Javanese specimens. Smaller than one North American specimen and two English specimens in the British Museum; but absolutely identical with other British specimens. A rare bird in Dukhun, and appearing only in the cold weather. *Irides* almost black. Length, inclusive of tail, 10 inches: tail $2_{\frac{6}{10}}$ inches. Gregarious. In the stomach were found beetles, land insects, and coarse sand.

210. *Charadrius Philippensis*, Lath., Ind. Orn. 2. 745. 11. *Petit Pluvier à collier de Luçon*, Sonn., Voy. Ind. 84. pl. 46.

This little bird has the habits of *Totanus*; frequents the shores of fresh water only; and in firing into a flock of *Sandpipers* it is frequently killed in company with them. *Irides* fuscous crimson. Length, inclusive of tail, 7½ inches; tail $2_{\frac{3}{10}}$ inches. Gregarious. Sexes alike. Sonnerat, in his description, omits to mention that the margins of the eyelids are bright yellow; instead of which he calls the *irides* yellow.

Genus *Himantopus*, Ray. *Longshanks.*

211. *Himantopus melanopterus*, Horsf., Linn. Trans. 13. 194. *Charadrius Himantopus*, Linn., 1. 255. *L'Echasse*, Buff., Ois. 8. 114. Pl. Enl. 878.

There are slight discrepancies in the plumage between the birds of Java, India, and Europe; and in case of these being permanent, and not the result of nonage, specific differences might be established. *Irides* narrow, lake or crimson colour. Length, inclusive of tail, 16 inches; tail 3½ inches; to the end of the toes 22½ inches. Gregarious. Vegetable matters, *larvæ* of water insects, and minute univalve shells found in the stomach. These birds are strangely polluted with visceral worms of the tape and capillary kinds.

Genus *Œdicnemus*, Cuv. *Thick-knee.*

212. *Œdicnemus crepitans*, Temm., Man. 322. *Otis Œdicnemus*, Lath, Ind. Orn. 2. 661. 11. *Charadrius Œdicnemus*, Linn.,

1. 255. *Le grand Pluvier*, Buff., Pl. Enl. 919. *Great-headed Thick-knee.*

There is no visible difference between the Dukhun and British species. Eyes of very great size. *Irides* very broad, of a greenish yellow. Length, inclusive of tail, 17 to 18 inches; tail $4\frac{3}{4}$ inches. Gregarious. Frequents bushy wilds as well as grass plains. Not met with in woods. Land insects and seeds found in the stomach. Sexes do not differ in size or plumage. This bird rests on the first joint of the leg like the *Gallus gigantcus.*

Order V. NATATORES, *Ill.*

Fam. *Anatidæ*, Leach.—Genus *Plectropterus*, Leach.

213. *Plectropterus melanotos*, Steph, 12. 8. *Anas melanotos*, Gmel., 1. 503. *L'Oie bronzée de Coromandel*, Buff., Pl. Enl. 937. *Black and white Plectropterus. Nukta* of the Mahrattas.

The very large vertical compressed process on the upper mandible; the white lower part of the back; cinereous rump; and rudimentary black mane down the back neck are not noticed in descriptions of this species. This noble and splendid bird is not common in the Dukhun. Female considerably less in size than the male, and with the metallic reflections much less brilliant; destitute also of the comb or crest on the upper mandible. Seen in pairs. Horny process on the bend of the wing obtuse. Length, inclusive of tail, 30 to 34 inches; tail $5\frac{1}{2}$ to 6 inches. Seeds of water-grasses, and the remarkable quadrangular hard seeds met with in the stomach of the *Pterocles exustus* found also in the stomach of the *Plectropterus.* Digastric muscle of the remarkable thickness of $1\frac{1}{10}$ inch.

Genus *Anser*, Briss.

214. *Anser Girra. Anas Girra*, Gray, Indian Zool Illust. No. 4. fig. 6. *Girra Teal*, Lath. *Cotton Teal* of Europeans in Dukhun, from the quantity of white in the plumage.

Irides bright crimson.

This handsome bird is one of the smallest of the *Anatidæ.* Length, inclusive of tail, $12\frac{1}{2}$ to 14 inches; tail 3 to $3\frac{1}{4}$ inches. Sexes exactly alike. Monogamous. Vegetable matter and gravel found in the stomach. These birds, when wounded, dive, and on returning to the surface show only the bill above water, keeping the body below at pleasure.

Genus *Tadorna*, Leach.

215. *Tadorna rutila*, Steph., 12. 71. *Anas Casarca*, Linn., App. 3. 224. *Shieldrake. Bruhmuny Duck* of Europeans in Dukhun.

Irides yellowish brown. Length, inclusive of tail, male 28 inches, female 25 to 26 inches; tail $5\frac{1}{2}$ inches. For the most part of the year these birds are in pairs; but on the Nerbudda river in Guzerat, Colonel Sykes has seen them congregated in hundreds in April. Found in the stomachs of many birds, grass seeds and vegetable matters only. The female is destitute of

the black ring round the neck ornamenting the male. The intestinal canal twice the proportional length of that of the *Plectropterus*.

Genus *Anas*, Auct.

216. *Anas strepera*, Linn., 1. 200. *Chipeau*, Buff., Pl. Enl. 958. *Chestnut lesser wing-covert Duck.*

Males identical with specimens in the British Museum from Kent. No females for comparison. Length, inclusive of tail, male 24 to 25 inches, female 22 inches; tail 4 inches. Numerous in Dukhun. Gregarious. A tape-worm was found protruding through the coat of the intestine in one bird, without affecting its health or flesh.

Genus *Rhynchaspis*, Leach, MSS.

217. *Rhynchaspis virescens*, Leach, MSS. *Anas clypeata*, Linn., 1. 200. *Souchet*, Buff., Ois. 9. 191. Pl. Enl. 971, 972. *Black-headed Shoveler.*

Identical with British specimens of the *common Shoveler*; but differing from the description of that bird in Shaw. *Irides* yellowish brown. Length, inclusive of tail, 20 to 21 inches; tail 4 inches. Grass seeds, vegetable matters, pulse-like seeds, and gravel found in the stomach. Gregarious. The intestinal canal is more than seven times as long as the body, neck, and bill included; and in this particular is not approached within nearly two-sevenths by any other bird of the order *Natatores*.

Genus *Mareca*, Steph. *Wigeon.*

218. *Mareca pœcilorhyncha*, Steph, 12. 134. *Anas pœcilorhyncha*, Gmel., 1. 535. *Spotted-billed Duck*, Lath.

Irides red fuscous brown. Length, inclusive of tail, 22 to 25 inches; tail 4 to 4½ inches. Sexes alike in plumage. Grass seeds, vegetable matters, and small stones found in the gizzard. Colonel Sykes's birds identical with a specimen in the British Museum, from the Himalayan mountains. The spot at the end of the bill invariably yellow, but in books it is stated to be white. The digastric muscle thicker than the diameter of the cavity of the gizzard. Colonel Sykes does not consider this species a true *Mareca*.

219. *Mareca fistularis*, Steph., 12. 131. *Anas Penelope*, Linn., 1. 202. *Canard Siffleur*, Buff., Ois. 9, 169. Pl. Enl. 825. *Wigeon.*

Irides red fuscous brown. Length, inclusive of tail, 19 to 20 inches (males), 18½ to 19 inches (females); tail 3½ to 3¾ inches. Gregarious. Absolutely identical with specimens from Devonshire. Contents of the gizzard as in the preceding species.

220. Mareca Awsuree. *Mar. nigrescenti-brunnea; plumarum scapularium dorsique apicibus flavescenti-brunneis; tegminibus alarum minoribus caudæque superioribus saturatè castaneis; vertice lineâque cervicali fuscis; capite, collo, pectoreque pallidè flavescenti-brunneis, ventre uropygioque saturatioribus*

ferrugineis; mento tegminibusque caudæ inferioribus sordidè albis.

*Rostrum pedes*que nigri. Longitudo (caudâ inclusâ) 18½—20 unc., *caudæ* 2½. *Whistling Teal.*

This bird, of which Colonel Sykes has many specimens, is identical with a bird in the British Museum, from Africa; one in the Zoological Society, from Bengal; and one in the India House, from Java. In the whole of these, the lunules on the breast, neck, and upper part of the back, and the strong black short mane of the *Anas arcuata* are wanting. It is also larger than that bird, and Colonel Sykes is therefore led to believe this to be a distinct species, although strongly resembling it.

Gregarious, and abundant in Dukhun. Sexes alike in plumage. These birds are characterized by a very peculiar whistle when disturbed, by a proportionate length of intestine one third shorter than that of any other species of the *Anatidæ*, and by the inferior *larynx* being dilated into two oblong chambers, placed rather in front of, than lateral to the *trachea*.

Genus *Querquedula*, Ray. *Teal.*

221. *Querquedula Circia*, Steph, 12. 143. *Anas Circia*, Linn., 1. 204. *Sarcelle d'été*, Buff., Ois. 9. 268. Pl. Enl. 946. *Gargany Teal.*

Length, inclusive of tail, 16½ to 17½ inches; tail 3 to 3 ⅛ inches. Female the smaller bird, and quite dissimilar in plumage. Identical with British specimens. Gregarious. In addition to similar contents of the gizzard in other species, rice in the husk was found.

222. *Querquedula Crecca*, Steph., 12. 116. *Anas Crecca*, Linn., 1. 204. *Petite Sarcelle*, Buff., Ois. 9. 265. Pl. Enl. 947. *Common Teal.*

Identical with male and female British specimens. Length, inclusive of tail, 15½ to 16 inches; tail 3 inches. Water-weed and gravel in the stomach. Colonel Sykes has in his possession specimens (male and female) resembling the female of *Querq. Crecca*; but in which the proportional length of the intestinal canal differs so much from that of *Querq. Crecca* (3·30 to 1, and 5·57 to 1), that he is induced to believe they may belong to a distinct species. It will be observed that the proportional length of the intestine (5·57 to 1) closely approximates to that of a widely-different bird, the carrion-devouring *Percnopterus*.

Genus *Fuligula*, Steph. *Pochard.*

223. *Fuligula rufina*, Steph., 12. 188. *Anas rufina*, Pall. *Le Canard Siffleur huppé*, Buff., Ois. 9. 282. Pl. Enl. 928. *Red-headed Pochard.*

Length, inclusive of tail, 25 inches; tail 3½ inches. Digastric muscle remarkably thick. Rare in Dukhun. Vegetable matters and gravel in the stomach.

224. *Fuligula* ————. *Ash-brown Pochard with white speculum.*

This bird has a considerable resemblance to the female of *Ful. ru-*

fina, as described by Mr. Stephens, but it has a black bill; and Colonel Sykes is not able to meet with a specimen to institute a rigid comparison; he therefore leaves the bird for future consideration. Length, inclusive of tail, 24 inches; tail $3\frac{1}{2}$ inches. A coloured figure in Hunt's British Ornithology (Norwich) represents the female of *Ful. rufina* with a red bill, red legs, and reddish-brown plumage, which militate against its identity with the present bird.

225. *Fuligula cristata*, Steph., 12. 190. *Anas Fuligula*, Linn., 1. 207. *Morillon*, Buff., Ois. 9. 227. Pl. Enl. 1001. *Tufted Duck.*

Differs only in the more pronounced amethyst reflection of the back neck in the male from British specimens. Female identical. *Irides* bright yellow. Length, inclusive of tail, 18 to 19 inches; tail $2_{\frac{1}{10}}$ to $2_{\frac{7}{10}}$ inches. Female the smaller bird.

Fam. *Colymbidæ*, Leach.—Genus *Podiceps*, Lath.

226. *Podiceps Philippensis*, Steph., 13. 16. *Indian Grebe*, Lath., 10. 29. described from drawings of Sir John Anstruther. *Le Castagneux des Philippines*, Buff., Ois. 8. 246. Pl. Enl. 945. Buffon's plate is excellent.

Irides broad, of an ochry yellow; they dilate and contract. Length, from the bill to the rump, $9\frac{1}{2}$ to $9\frac{3}{4}$ inches; tail none. Common in Dukhun, where their unceasing habit of diving occasions their being called *Divers* by Europeans, although quite distinct from the genus *Colymbus*. From their remarkable quickness of eye, Colonel Sykes has known a dozen unsuccessful shots fired at the same individual, which constantly disappeared under water ere the shot reached him. Gregarious. Stomach simple, resembling that of *Herons*, and wholly unlike that of *Ducks*. Found in the stomach *larvæ* of water insects and shrimps, aliments common to the *Heron* tribe, and not found by Colonel Sykes in the gizzard of *Ducks*.

Fam. *Pelecanidæ*, Leach. Genus *Phalacrocorax*, Briss. *Cormorant.*

227. *Phalacrocorax Javanicus*, Steph., 13. 90. *Carbo Javanica*, Horsf., Linn. Trans. 13. 197. Figured in Illust. Ind. Zool., part 10. fig. 9. *Shag* of Europeans in Dukhun.

Absolutely identical with Dr. Horsfield's specimens from Java. Differs from *Pelecanus Africanus* (*Phal. Africanus*), with which it has been confounded, in the scapulars and wing coverts being reddish-fuscous-brown instead of blue-gray, and being margined and tipped with lighter brown instead of black; in the first three quill-feathers being black instead of pale brown; in the secondaries not being so long as the quills; tail graduated instead of cuneiform; in the front of the neck being reddish and fuscous instead of black and white; finally, in the belly being rusty black instead of white varied with dusky. There can be no question, therefore, of the propriety of its being considered a distinct species by Dr. Horsfield. Colonel Sykes has seen hundreds of them, and notes these differences with several specimens lying before him. *Irides* remarkably nar-

row, crimson. Length, inclusive of tail, 22 to 23 inches; tail 6 inches. Sexes alike. The only spot of white on the bird is at the chin. Very numerous in Dukhun, appearing in the rivers in flocks of hundreds. Fish (some 3 inches long) and prawns found in the stomach of many birds; also capillary worms. Colonel Sykes remarks, that the generic character, "Face and throat naked" is inapplicable to this species.

Genus *Plotus*, Linn. *Darter.*

228. *Plotus melanogaster*, Gmel. 1.580. *Anhinga noir du Senegal*, Buff., Ois. 8.453. Pl. Enl. 930 & 107. *Black-billed Darter*, called the *Snake-bird* in Dukhun.

Irides bright yellow. Length, inclusive of tail, 37½ inches; tail 9½ inches. Solitary. Rare in Dukhun, but frequently met with below the Ghauts. This bird has the singular faculty of being enabled to swim with the whole of its body under water, the long neck and head alone being visible, looking like a snake. Colonel Sykes's limits do not permit him to enlarge on the very peculiar formation of the stomach, more resembling that of a ruminant than a bird. Seven small carp and much deep-green vegetable fibre were found in the stomach of a female.

Fam. *Laridæ*, Leach.—Genus *Sterna*, Linn. *Tern.*

229. *Sterna acuticauda*, Gray, Illust. Ind. Zool., part 6. fig. 3. *Small yellow-billed Tern. Sterna melanogaster*, Temm., Pl. Col. 434?

Irides reddish deep brown. Length, inclusive of tail, 13½ to 14½ inches; tail 6¾ to 7 inches, very forked and acute; the lateral feathers being subulate. Fish found in the stomach. Although the wings are so long, the flight is slow and with a good deal of flapping. Take their prey while on the wing by darting obliquely upon it. Do not dip under water, nor dart perpendicularly, like *Alcedo rudis*. This elegant and slender species Colonel Sykes shot 160 miles inland, and at an elevation of 1800 feet above the sea. Gregarious. Common in Dukhun.

230. *Sterna similis*, Gray, Illust. Ind. Zool., part 6. plate 8. fig. 2. *Tern with a fuscous lake-coloured bill.*

Length, inclusive of tail, 11½ to 12 inches; tail 3 1/10 to 3 15/10 inches; slightly forked, and without the lateral, elongated, and subulate feathers of *Sterna acuticauda*. Fish only found in the stomach. Gregarious. Habits and locality of the last species. Colonel Sykes states it as curious, that all his specimens, seven in number, of *Sterna acuticauda* and *Sterna similis* proved to be females. Common in Dukhun.

231. Sterna Seena. *Sterna suprà cinerea; fronte, vertice, cervicèque saturatè nitidè atris; corpore infrà albo, hypochondriis parùm cinereo tinctis; rectricibus lateralibus albis.*

Irides saturatè rufescenti-brunneæ. *Rostrum* forte, flavum. *Pedes* rubri. Longitudo (caudâ inclusâ) 17—17½ unc., *caudæ* 8—8¼, *rictûs* 2 15/10.

This species differs from *Sterna affinis* of Ruppell, tab. 14. p. 23, in its smaller size, and having red instead of black legs; in the

white not being so brilliant, and in a stronger bill. Ruppell's *Sterna velox* appears to correspond in size with it. In the numerous species in the British Museum there is not one with which it can be identified. Proportionably to the shortness of the legs the claws are long, much arched, slender and sharp, and turn outwards. Hind claw never touches the ground. Same locality and habits as the preceding species, although rare in Dukhun. In the stomach and *œsophagus* of one bird were found the extraordinary number of thirteen *Cyprini*, one of them 2½ inches long. Tail very much forked; lateral tail-feathers subulate, white, 8 inches long. Wings very narrow and long, reaching nearly to the end of the tail.

Genus *Viralva*, Leach.

232. *Viralva Anglica*, Steph., 13. 174. *Sterna Anglica*, Mont., Orn. Dict. *Sterna aranea*, Wils., Amer. Orn. 8. 143. pl. 72. fig. 6? *Marsh Tern*, Lath. *Gull-billed Viralve.*

Colonel Sykes's specimens correspond exactly with specimens of this rare British bird in the British Museum, both in their winter and summer plumage. *Irides* deep red brown. Length, inclusive of tail, 14½ to 16½ inches; tail 4½ to 5¾ inches. Sexes alike in plumage, but the female somewhat smaller than the male. Numerous fish found in the stomach of many birds. With the aspect, length of wing, lazy flight, and habits of the *Tern*, this bird has a bill approximating to that of the *Gull*, not quite identical with the bill of the *Viralve.*

Colonel Sykes states, that the *domestic Duck* (*Anas Boschas*) is extensively bred by the Portuguese in Western India, and that it is subject to a kind of apoplexy, which carries it off in a few minutes, although previously in apparent health. He has known a trader lose a flock of more than thirty in the course of one day; and he has himself had ten ducks struck simultaneously, stagger about for a short time as if drunk, run round in circles, fall on their backs, and die. He has not been able to discover any morbid appearances in the brain. In no instance, in the stomachs of the *Anatidæ*, were animal matters met with; the contents consisted of grains, seeds, vegetables, and gravel.

Colonel Sykes, in closing his Catalogue of the birds of Dukhun, mentioned that the details he had given resulted from personal observation of the specimens, in a living or recent state. With few exceptions, the whole were shot by himself; and, to guard against false impressions, he accumulated several individuals of the same species and of both sexes, and was rarely confined to a solitary bird.

October 23, 1832.

Lieutenant-Colonel Sykes in the Chair.

The exhibition was resumed of the collection of *Shells* formed by Mr. Cuming on the western coast of South America, and among the islands of the Southern Pacific Ocean. The new species were accompanied, as on the previous occasions, by descriptions from the pens of Mr. Broderip and Mr. G. B. Sowerby.

Genus Cancellaria.

Cancellaria uniplicata. *Canc. testâ oblongâ, utrinque acuminatâ, fuscâ; anfractibus 5—6 decussatis, prope suturam crenulatis, et posticè unicarinatis, carinâ granosâ; aperturâ oblongâ in canalem anticè productâ; labio externo intùs denticulato, margine crenulatâ; columellâ uniplicatâ: long.* 0·75, *lat.* 0·35 *poll.*

Hab. in Americâ Meridionali prope Panamam.

This is the only species known to Mr. Sowerby with a single fold on the *columella*: two specimens were dredged in sand at a depth of ten fathoms, near Panama, by Mr. Cuming.—G. B. S.

Genus Ovulum.

Ovulum rufum. *Ov. testâ oblongâ, posticè acuminatâ, rufâ; labio externo incrassato, pallidiore; aperturâ angustâ, anticè latiore; columellâ intùs lineâ longitudinali depressâ, plicâque subspirali: long.* 0·50, *lat.* 0·15 *poll.*

Var. testâ totâ pallidâ.

Hab. ad Columbiam Occidentalem.

A few specimens were dredged in sandy mud at a depth of seven fathoms in the Bay of Caraccas.—G. B. S.

Ovulum Avena. *Ov. testâ oblongâ, rufâ, extremitatibus subacuminatis; dorso subgibboso, transversim tenuissimè striato; labio externo incrassato, pallidiore; aperturâ angustâ, anticè latiore, posticè emarginata; columellâ posticè uniplicatâ: long.* 0·55, *lat.* 0·22 *poll.*

Hab. in Americâ Centrali. (Conchagua.)

This species varies much in the intensity of its colouring.—G. B. S.

Ovulum inflexum. *Ov. testâ oblongâ subcylindricâ, lævi, pallidâ, posticè subrostratâ, inflexâ; aperturâ anticè subeffusâ; labio externo incrassato, columellari intùs carinato; columellâ posticè uniplicatâ: long.* 0·70, *lat.* 0·25 *poll.*

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

A single specimen only was found; Mr. Sowerby possesses two others, which were in G. Humphrey's collection.—G. B. S.

OVULUM ÆQUALE. *Ov. testâ oblongâ, subcylindricâ, rufâ; labio externo incrassato; extremitatibus obtusiusculis; aperturâ latiusculâ, utrâque extremitate æquali; columellâ carinâ internâ distinctâ: long.* 0·45, *lat.* 0·18 *poll.*

Hab. ad Panamam.—G. B. S.

Genus MUREX.

MUREX RUBESCENS. *Mur. testâ subrhomboideâ, trifariam varicosâ, varicibus subfrondescentibus, tuberculo interstitiali magno, transversim sulcatâ et striatâ; canali mediocri subrectâ, roseâ; varicibus tuberculis frondibusque nigricantibus: long.* 1⅛, *lat.* ⅞ *poll.*

Hab. ad insulam Taheiten.

Found on the coral reefs.—W. J. B.

MUREX PINNIGER. *Mur. testâ fusiformi, sordidè purpureo-albidâ, transversim substriatâ, tripinnatâ, pinnis elevatis, laciniatis, tuberculo interstitiali majusculo; aperturâ ovali; canali tubulari: long.* 2 *circ., lat.* 1⅛ *(pinnis inclusis) poll.*

Hab. in Americâ Meridionali. (Xipixapi.)

Found in sandy mud at the depth of eight fathoms.—W. J. B.

MUREX RECURVIROSTRIS. *Mur. testâ ventricosâ, trifariam spinosâ, spinis brevibus magnis, interstitiis* 3- *vel* 4-*seriatim tuberculosis, tuberculis parvis subasperis, subcancellatâ, sordidè albâ transversim castaneo lineatâ; canali longâ recurvâ, basin versùs spinosâ; operculo rugoso: long.* 3, *lat.* 1⅛ *poll.*

Obs. testa junior tantum non inermis.

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

Found in sandy mud at the depth of nine fathoms.—W. J. B.

MUREX TETRAGONUS. *Mur. testâ pyramidali, albidâ, quadrifariam varicosâ, transversim costatâ, subcancellatâ; aperturâ violaceâ, prominente; labii limbo unduloso-crenulato; canali brevi, recurvâ: long.* 1½, *lat.* ⅝ *poll.*

Hab.?

Mus. Sowerby.

This specimen, the only one I ever saw, is very much water-worn, but the leading characters of the species are uninjured.—W. J. B.

MUREX MAURUS. *Mur. testâ rhomboideâ, ponderosâ, quadrifariam varicosâ, tuberculo interstitiali unduloso, transversim creberrimè granuloso-striatâ et sulcatâ, roseâ, sulcis striisque nigricantibus; labri intùs crenulati limbo denticulato, roseo; aperturâ albâ: long.* 1½, *lat.* 1⅛ *poll.*

Hab. ad insulam Annaan in Oceano Pacifico.

Found on the reefs.

The rosy ground colour of this species is almost entirely obscured by the blackish granulose elevated transverse ridges and lines.—W. J. B.

MUREX EROSUS. *Mur. testâ fusiformi, quinquefariam varicosâ, transversim sulcatâ, sulcis approximatis, crenulatis; canali brevi subrecurvâ: long.* 1⅞, *lat.* 1⅜ *poll.*

Hab. ad Panamam.
Found under stones.—W. J. B.

MUREX EXIGUUS. *Mur. testâ quinquefariam frondosâ, frondibus brevissimis, planiusculis, transversim altissimè sulcatâ, sordidè albâ; spirâ brevi; canali mediocri, recurvâ: long.* $\frac{3}{8}$, *lat.* $\frac{1}{8}$ *poll.*
Hab ad Salango.
Found on a sandy bottom at the depth of ten fathoms.—W. J. B.

MUREX HUMILIS. *Mur. testâ ovato-fusiformi, albido-castaneâ, quinque- vel sex-fariam varicosâ, varicibus submuricatis, transversim sulcatâ et striatâ; operculo rugoso: long.* $1\frac{1}{8}$, *lat.* $\frac{3}{8}$ *poll.*
Hab. ad portum Sanctæ Elenæ.
Found in sandy mud at the depth of seven fathoms.—W. J. B.

MUREX PUMILUS. *Mur. testâ rhomboideâ, quinquefariam subfrondosâ, frondibus brevibus, planiusculis, subrecurvis, a latere crenulatis, nigro-fuscâ albo subfasciatâ; canali mediocri, subrecurvâ; labri limbo crenulato: long.* $\frac{1}{2}$, *lat.* $\frac{3}{10}$ *poll.*
Hab. ad Insulas Gallapagos.
Found under stones.—W. J. B.

MUREX LUGUBRIS. *Mur. testâ subovatâ, transversim costatâ, subatropurpurcâ, sexfariam frondosâ, frondibus brevibus recurvis fasciâque basali albidis; canalis medio clauso: long.* $1\frac{1}{4}$, *lat.* $\frac{7}{8}$ *poll.*
Hab. in Americâ Centrali. (Puerto Portrero.)
Found in the coral rocks.—W. J. B.

MUREX PRINCEPS. *Mur. testâ subrhomboideâ, ventricosâ, sexfariam frondosâ, frondibus longioribus laciniatis, transversim substriatâ, albâ rufo-purpureo fasciatâ; operculo crasso, parvo: long.* $5\frac{1}{8}$, *lat.* $3\frac{3}{8}$ *poll.*
Hab. in Americâ Centrali. (Puerto Portrero.)
Found in coral reefs.—W. J. B.

MUREX CARDUUS. *Mur. testâ ovato-acutâ, sexfariam varicoso-spinosâ, transversim sulcatâ et striatâ, albâ fasciis rufo-castaneis: long.* $1\frac{3}{10}$, *lat.* $\frac{9}{10}$ *poll.*
Hab. in oceano juxta Pacosmayo Peruviæ.
From a coral reef twelve miles from the land, at the depth of twenty-five fathoms.—W. J. B.

MUREX NUCLEUS. *Mur. testâ subrhomboideâ, septemfariam subvaricosâ, transversim rugoso-sulcatâ, sulcis creberrimis, sordidè albâ; canali brevissimâ subrecurvâ: long.* $\frac{1}{2}$, *lat.* $\frac{4}{10}$ *poll.*
Hab. ad Insulas Gallapagos.
Found in fine coral sand at the depth of eight fathoms.—W. J. B.

MUREX VIBEX. *Mur. testâ turritâ, septemfariam varicosâ, varicibus subnodosis, transversim sulcatâ, subluteâ; aperturâ albâ, internè sulcatâ; labri limbo crenulato; canali brevissimâ; epidermide fuscâ, rugosâ: long.* $1\frac{1}{4}$, *lat.* 1 *poll.*
Hab. ad Sanctam Elenam et ad Panamam.
This shell appears to be intermediate between *Murex* and *Turbi-*

nella. It has the *varices* of the former, and the plaits on the *columella* which distinguish the latter.

Found in sandy mud, from six to twelve fathoms.—W. J. B.

MUREX INCISUS. *Mur. testâ ovatâ, septemfariam varicosâ, varicibus rotundatis elevatis, transversim creberrimè carinatâ et striatâ, carinis striisque crenulatis; albidâ, carinis subcastaneis: long.* 1½, *lat.* ¾ *poll.*

Hab. ad portum Sanctæ Elenæ.

Found on a rocky bottom at the depth of eight fathoms.—W. J. B.

MUREX VITTATUS. *Mur. testâ ovato-acutâ, septemfariam varicoso-spinosâ, spinis brevibus, transversim sulcatâ, albâ, nigro fasciatâ: long.* ¾, *lat.* $\frac{7}{17}$ *poll.*

Hab. ad Guayaquil. (Isle of Muerte Bay.)

From sandy mud at the depth of eleven fathoms.—W. J. B.

MUREX OXYACANTHA. *Mur. testâ pyriformi, transversim striatâ, septemfariam spinosâ, spinis canaliculatis, albâ, epidermide fuscâ; spirâ brevi; canali longiusculâ, subrecurvâ: long.* 2½, *lat.* 2¼ *(spinis inclusis) poll.*

Hab. in Americâ Centrali. (Real Lleijos.)

Found in sandy mud at the depth of eight fathoms.—W. J. B.

MUREX NITIDUS. *Mur. testâ subrhomboideâ, octofariam spinoso-varicosâ, transversim striatâ; anfractu basali ventricoso, albo viltis lineatis nigro-castaneis 3-fasciato, et spinis magnis, canaliculatis, sublaciniatis coronato; spirâ brevi; canali mediocri, spinosâ, ad apicem nigricante; aperturâ albâ; labro intus denticulato: long.* 1½, *lat.* ⅝ *(spinarum coronâ inclusâ) poll.*

Hab. in Americâ Centrali. (Real Lleijos.)

This pretty shell was found in the cleft of a rock. No other individual was obtained, and it is believed to be unique.—W. J. B.

MUREX HORRIDUS. *Mur. testâ subrhomboideâ, novem- ad decemfariam varicosâ, sulcis striisque interstitialibus transversis creberrimis, aspero-rugosis, sordidè albidâ; aperturâ glabrâ, albâ: long.* 1½, *lat.* ⅝ *poll.*

Hab. ad Sanctam Elenam et ad Panamam.

Found in sandy mud at the depth of from eight to twelve fathoms.—W. J. B.

MUREX CRISPUS. *Mur. testâ subovatâ, multifariam frondosâ, frondibus brevibus, striatis, crispis, transversim costatâ, albâ, costis frondibusque albido-brunneis; anfractibus supernè complanatis: long.* 2½, *lat.* 1⅜ *poll.*

Hab. in pelago juxta Peruviam.

Taken from a coral reef twelve miles from Pacosmayo, in twenty-five fathoms water.—W. J. B.

MUREX SQUAMOSUS. *Mur. testâ sordidè albidâ, ovato-pyriformi, ventricosâ, multifariam varicosâ, (varicibus rotundatis,) striis transversis elevatis squamosis asperâ; anfractibus angulatis; columellâ lævi; labri limbo intùs substriato; canali valdè apertâ, brevi, subrecurvâ: long.* 1½, *lat.* 1 *poll.*

Hab. ad Peruviam. (Payta.)

The transverse scaly *striæ* are so arranged as to present three and sometimes four smaller interstitial ones between the more elevated. The scales on the *striæ* are suberect, and very numerous and minute. The abrupt descent from the angle to the suture gives the whorls, more especially the last, a coronated appearance. Found in sandy mud, at the depth of six fathoms.—W. J. B.

MUREX MARGARITICOLA. *Mur. testâ ovato-acutâ, multifariam subvaricosâ, aspero-rugosâ, nigricante; aperturâ albido-purpureâ, columellâ crenulatâ, labro intùs dentato; canali apertâ, subrecurvâ: long.* 1¾, *lat.* ⅝ *poll.*

Hab. in Oceano Pacifico, (Lord Hood's Island,) *Meleagrinæ margaritiferæ* adhærens.—W. J. B.

MUREX LAPPA. *Mur. testâ subrhomboideâ, albâ, nodulis acutis, spinulisque horridâ, anfractu basali spinis longioribus coronatâ; labro crenulato intùs altè striato, striis distantibus; umbilico magno; spirâ productâ: long.* 1⅛, *lat.* ⅞ *poll.*

Hab. ad Sanctam Elenam.

Found on a rocky bed at the depth of twelve fathoms.—W. J. B.

Genus TYPHIS, *De Montfort.*

De Montfort, after referring to *Murex pungens*, Brander, as the type of this genus, adds: "La coquille qui nous sert de type pour l'établissement de ce genre n'est encore bien connue qu'à l'état fossile; quoique Bruguière dise très-positivement que son analogue marin existoit à Londres dans le cabinet du Docteur Hunter, fait que malheureusement nous ne pouvons point verifier, mais que cependant nous devons adopter d'après les profondes connoissances et la perspicacité qui distinguèrent si eminemment ce conchyliologue françois." In the *Dictionnaire des Sciences Naturelles* the statement of Bruguière is noticed; but M. Blainville observes, that he was not fortunate enough to find the shell. I have examined the Hunterian Collection in London, with the assistance of Mr. Clift and Mr. Owen, with no better success. It may, perhaps, have been in the cabinet of Dr. William Hunter, now at Glasgow; but on consulting Captain Laskey's 'General Account of the Hunterian Museum' there, I find no mention of the shell. Be this as it may, I am now enabled to lay before the Zoological Society five recent species of *Typhis*; having been led to the inquiry by finding two species in Mr. Cuming's collection, and having been supplied with one from this Society's Museum, and with two by the liberality of Mr. James Sowerby and Mr. George Sowerby.—W. J. B.

TYPHIS CUMINGII. *Typhis testâ subpyriformi, subventricosâ, quadrifariam varicosâ, spinosâ, varicibus spiram versus in spinam cavam desinentibus, longitudinaliter substriatâ; aperturâ integrâ, ovatâ; labri limbo externo subspinoso; canali longissimâ, gracillimâ, subrecurvâ: long.* 1 1/2, *lat.* 7/8 *poll.*

Mus. Cuming.

Hab. ad Caraccas.

A single specimen was found by Mr. Cuming in sandy mud at the depth of seven fathoms.—W. J. B.

TYPHIS CORONATUS. *Typhis testâ pyriformi, albidâ, subventricosâ, quinquefariam varicosâ, varicibus magnis, rotundatis, in spinam subtilem subincurvam spiram versùs desinentibus, transversim substriatâ, striis subremotis; canali elongatâ: long.* 1, *lat.* ½ *poll.*

Hab. ad Colombiam Occidentalem. (Salango.)

Mus. Cuming.

The short, sharp, incurved spine which forms the termination of each *varix* overhangs that part of the spire which is immediately opposite to it. The suture of the spire between each *varix* is deeply excavated into a succession of little pits or wells. Found by Mr. Cuming in sandy mud at the depth of six fathoms.—W. J. B.

TYPHIS BELCHERI. *Typhis testâ subovatâ, albidâ; ventricosâ, transversim substriatâ, tubulis recurvis, quinquefariam varicosâ, varicibus laminatis sublaciniatis in frondem crispam spiram versus desinentibus; canali elongatâ, subrecurvâ, gracili: long.* $\frac{9}{10}$, *lat.* ½ *poll.*

Hab. ad Africam Occidentalem. (Cape Blanco.)

Mus. Zool. Soc.

Found by Captain Belcher, R N., whose name this species, which approaches nearly to *Typhis frondosus* (J. Sowerby), bears. *Typhis frondosus* is a Grignon fossil.—W. J. B.

TYPHIS SOWERBII. *Typhis testâ subovatâ, albidâ, quadri- vel quinque-fariam varicosâ, varicibus laminatis subfrondentibus; tubulis subrectis; canali brevi, subrecurvâ, gracili: long.* ⅞, *lat.* ½ *poll.*

Hab. in Mari Mediterraneo.

Mus. Jac. Sowerby, Georg. Sowerby.

Named after Mr. James Sowerby, who kindly placed at my disposal his fine collection of fossil species, and who also furnished me with the most perfect individual which I have seen of *Typhis Sowerbii*.—W. J. B.

TYPHIS PINNATUS. *Typhis testâ albâ, fusiformi, trifariam pinnatâ, transversim striatâ, striis frequentibus, interstitiis punctatis; labri limbo crenulato: long.* ⅝, *lat.* ¼ *poll.*

Hab.

Mus. Jac. Sowerby.

Obs. The sides of the canal in the specimen are broken, but the canal does not appear to have been entire close to the aperture, though the sides of it approximate there very nearly.—W. J. B.

The fossil analogues of this genus have been hitherto found in the London clay, calcaire grossier, and subapennine beds.—W. J. B.

Genus RANELLA.

RANELLA VENTRICOSA. *Ran. testâ ovato-acutâ ventricosissimâ, tuberculatâ, transversim striatâ, subgranosâ, albidâ, fasciis angustis castaneis; aperturâ albâ, crenatâ: long.* 3½, *lat.* 2½ *poll.*

Hab. ad Peruviam. (Bay of Callao.)

Obs. Tubercula seriatim disposita, elevata, magna, subacuta, ut plurimum serie unicâ in quoque anfractu, ultimo excepto.

Found in sandy mud from seven to ten fathoms.—W. J. B.

RANELLA NITIDA. *Ran. testâ subrhomboideâ, valdè depressâ, transversim tuberculato-striatâ, (tuberculis subacutis), nigro-purpureâ, interdum albo fasciatâ, varicibus latis, pinnatis, laciniatis, albis; columellâ lævi; labri limbo intùs denticulato; canali subelongatâ: long.* 1, *lat.* ¼ *poll.*

Hab. ad Columbiam Occidentalem. (Bay of Caraccas.)

Found under stones in the bay.—W. J. B.

RANELLA MURICIFORMIS. *Ran. testâ subpyriformi, fuscâ, fulvâ vel sordidè albâ, transversim striatâ (striis subremotis), varicibus pinnatis, latiusculis, albidis, interstitialiter tuberculatâ vel subfoliatâ; columellâ lævi; labri limbo intùs denticulato; canali elongatâ, subrecurvâ: long.* 1½, *lat.* ⅞ *poll.*

Hab. ad Columbiam Occidentalem. (Bay of Montija.)

This species, which approaches very closely to *Murex*, was found in loose gravel at the depth of seven fathoms.—W. J. B.

RANELLA AFFINIS. *Ran. testâ pyramidali, depressâ, ponderosâ, striis transversis frequentibus tuberculata-granosis, albido-rubente maculis fasciisque castaneis; columellâ valdè rugosâ; labri crenulati, subfimbriati limbo intùs dentato: long.* 2½, *lat.* 1⅛ *poll.*

Hab. in Oceano Pacifico. (Annaa.)

This differs from *Ran. granifera* of Lamarck in having a much more ponderous shell, with its *varices* much thicker and wider in proportion, and the border of the outer lip much wider. It is also much more depressed and broader in proportion to its length.

Found on the reef.—W. J. B.

RANELLA CÆLATA. *Ran. testâ pyramidali, subponderosâ, castaneâ, costis striisque transversis granoso-moniliformibus, nigricantibus; aperturâ rugoso-granosâ, fulvâ, dentibus rugisque albidis; labri limbo fimbriato, lato, fusco, albo radiato: long.* 1⅛, *lat.* 1⅛ *poll.*

Hab. ad Panamam.

This handsome species reminds the observer of some of the antique carved ornaments in oak and chestnut. The *apex* of the spire is generally eroded.

Found under stones.—W. J. B.

RANELLA TUBERCULATA. *Ran. testâ pyramidali, seriatim tuberculatâ, transversim striatâ, subfulvâ albo fasciatâ, tuberculis subæqualibus nigricantibus; aperturâ albidâ; columellâ subrugosâ; labri limbo intùs dentato, dentibus subremotis: long.* 1½, *lat.* 1 *poll.*

Hab. in Oceano Pacifico. (Taheite.)

Only one individual of this pretty species was found, and that was on the reef.—W. J. B.

Mr. Owen exhibited a preparation of the mammary gland of *Echidna Hystrix*, Cuv.; and read the following Notes:—

"It is well known that the idea of constituting a new class for the

reception of the *Monotrematous Quadrupeds* of New Holland, and of separating them altogether from the *Mammalia*, arose chiefly from the supposition of the total absence of a mammary apparatus in them. This circumstance was at the same time regarded as a strong proof of an essential difference in their mode of producing the young: and it was inferred that the latter, in the absence of the lacteal nourishment, must have derived the materials necessary for their development from some store of nutriment analogous to the yelk of the embryo in the oviparous and ovoviviparous tribes.

"But the converse of this proposition, that a mammiferous animal must necessarily be viviparous, by no means follows. The development of an animal may be carried on to a certain degree either in the oviparous or ovoviviparous mode of generation, and yet after incubation or birth, additional store of nutriment may be required from the parent in order that the processes of organization may be completed to the extent necessary to enable the young animal to gain a subsistence by its own exertions. Indeed, when we consider how long, in many of the orders of *Birds*, the unfledged young are totally dependent on their parent for their nutriment; that this nutriment, though in general foreign matter, collected with much industry and frequently at great risk, yet is sometimes, as in the *Pigeon*, a secretion from the parent's body; and when we further reflect that generation in the *Marsupiata* is essentially of the ovoviviparous kind, —we shall have no difficulty in reconciling ourselves to the consideration of the *Monotremata* as oviparous or ovoviviparous, and at the same time as mammiferous, animals.

"With respect to the *Ornithorhynchus*, it seems incontrovertible that the apparatus discovered by Meckel is truly mammary, and executes the important function of providing the lacteal nutriment for the young. Nevertheless, this discovery leaves us just as much in the dark as we were before respecting its mode of generation, and equally dependent on the exertions of those naturalists who may have the good fortune of observing facts in the living animal respecting this most interesting and important subject. It is obvious also, that the discovery of the mammary glands in the other monotrematous genus, although highly confirmatory of their accordance with the rest of the *Mammalia* in the characteristic function of lactation, yet by no means renders less necessary an unremitting attention to every habit of the living animal which may elucidate the processes of generation.

"In the meanwhile, however, it affords me much pleasure to be able to lay before the Committee preparations of the mammary glands from the *Echidna Hystrix*, which, as the following description will show, afford an additional instance of the close affinity subsisting between it and *Ornithorhynchus*, notwithstanding the great dissimilarity existing between them in external form and in the nature of their integuments. These glands were discovered in a female specimen not quite arrived at maturity, and which therefore in all probability had never been impregnated. They are consequently very small, as compared with those which have been observed in *Ornithorhynchus*, but are precisely analogous in number, form, composi-

tion, situation, and mode of termination on the outer surface of the integument.

"The terminal ducts, which are fewer in number than in *Ornithorhynchus*, are similarly grouped together, so as to form a small oval *areola*, 3 lines in the greater and 2 in the lesser diameter. Each *areola* is situated half an inch from the mesial line, and $3\frac{1}{2}$ inches from the orifice of the vestibule of the *cloaca*. They are much more readily discovered than in *Ornithorhynchus*, in consequence of the hairs in the *Echidna* being scantier and stiffer, so that the orifices for their transmission are larger than the orifices of the ducts, which is the reverse of what is observed in *Ornithorhynchus*: this, however, may not be the case in the fully developed gland. The *areolæ* are also slightly raised above the surrounding integument, but there is no vascular *rete* or erectile tissue discoverable at these parts. The lactiferous ducts, before penetrating the *corium*, pass between the fibres of a dense *panniculus carnosus*, which is here, as in *Ornithorhynchus*, interposed between the glands and the integument. The number of the ducts is about sixty. The lobules of the gland are proportionally shorter and broader. Their texture under the lens appears the same as in *Ornithorhynchus*; that is to say, minutely cellular, and in neither instance consisting of simple *cæca* or elongated follicles. From their small size in the *Echidna* they could not be injected.

"The smallest size which these glands have presented in *Ornithorhynchus* is about one third larger than those in the *Echidna* now exhibited; in this state the ovary and uterine tubes were small, and apparently in a state of quiescence. When the ovary is fully developed, and the uterine tubes correspondently enlarged, the mammary glands are about 2 inches in the long, and 1 in the short, diameter. When the ovary is found large but flaccid, and apparently after having shed its contents; and when the uterine tubes are still large; then the mammary glands exhibit their greatest development, equalling 5 inches in the long, and 3 in the short diameter, and being nearly half an inch in thickness. In this state they may be readily injected; when the lactiferous ducts, to the number of about one hundred and fifty, are seen to terminate in a small oval *areola* on the external surface, not on any raised eminence, but on the level integument, from which the hairs grow as freely as in the surrounding parts. Nevertheless, from the glands being confined to the female, and exhibiting by their variation of size that their function is temporary, and as the period of their greatest activity is shown by the state of the uterine organs to be subsequent to the development and expulsion of the fœtus, they must be regarded as being true mammary glands, destined to provide nourishment for the newly-born animal. The peculiar development of the *panniculus carnosus* over the ventral region, both in *Echidna* and *Ornithorhynchus*, will assist in explaining the mode in which the lacteal secretion is coveyed from the parent to the offspring. The gland lying between this muscle and the expanded cartilages of the ribs and the marsupial bones, is subject to compression, and the young animal need only apply its soft and flexible lips to the *areola* in order to receive the secretion."

November 13, 1832.

Lieutenant-Colonel Sykes in the Chair.

A numerous collection of *Fishes* was exhibited which had been formed in Ceylon by Dr. Sibbald, Corr. Memb. Z.S., and had been presented by him to the Society. It included upwards of seventy species, among which were types of various genera not previously contained in the Society's Museum. They were severally brought under the notice of the Committee by Mr. Bennett, who dwelt particularly on those which he regarded as new to science. They are as follow:

Diacope spilura. *Diac. vittis rufis latis parallelis utrinque quinque, quarum secundâ tertiâque oculum attingentibus, quartâ axillam, quintâ commissuram oris; labio inferiore aurantiaco; maculâ magnâ nigrâ ante basin pinnæ caudalis; pinnæ dorsalis parte spinosâ supernè infernèque angustè nigrescenti marginatâ.*
D. $\frac{1}{1}\frac{1}{2}$. A. $\frac{3}{8}$.

Diac. octolineatæ, &c. affinis. Differt a speciebus adhuc cognitis numero radiorum et picturâ. Dens angularis anticè utrinque in maxillâ superiore maximus; inter hos duo majores; in maxillâ inferiore dentes duo laterales utrinque majores.

Diagramma Sibbaldi. *Diag. albescens, fasciis tribus longitudinalibus, (quarum mediâ latâ posticè ramosâ per pinnam caudalem mediam excurrente, superiore latissimâ basin pinnæ dorsalis includente anticè posticèque interruptâ, inferiore mediocri simplice,) naso, maculâ suborbitali, fronte, maculâ ante basin pinnæ pectoralis, pinnâ pectorali præter marginem superiorem, plagâ triangulari ad basin pinnæ analis, aliisque duabus submarginalibus pinnæ caudalis, castaneo-nigris; infrà et ad apicem pinnæ analis flavus.*
D. $\frac{1}{1}\frac{3}{8}$. A. $\frac{3}{8}$.

Chætodon xanthocephalus. *Chæt. suborbicularis: pinnis rotundatis: pallidè brunnescens; fasciâ oculari haud ultra oculum extensâ; lineis transversis quinque vel sex subfractis parùm saturatioribus; capite (præter opercula strigamque argenteam infra-ocularem,) guld, pectore, pinnis ventralibus, lineâque post-opercularî per basin pinnæ pectoralis ductâ, flavis; pinnarum dorsalis analisque parte molli externè nigrescente flavo fimbriatâ, basin versus flavescente lineâ sanguineâ internè cinctâ; caudâ pinnâque caudali supernè infernèque flavis, hâc quadratâ hyalinâ brunneo ad radios lineatâ.*
D. $\frac{1}{1}\frac{4}{8}$. A $\frac{3}{2}\frac{3}{3}$.

Striga prima a radio spinoso quarto pinnæ dorsalis pone axillam decurrit; hanc sequuntur strigæ tres quatuorve ventrem tantum versus ibique indistinctæ; secunda a basi radii spinosi sexti; tertia oc-

tavi; quarta decimi; quinta duodecimi; inter secundam et tertiam dorsum versus lineæ transversæ aliquot indistinctæ brevissimæ.

Chætodon guttatissimus. *Chæt. latè ovatus: pinnis verticalibus posticè rotundatis, caudali quadratâ: fasciâ oculari nigrâ flavo marginatâ: lutescens, squamis corporis singulis (præter pectoris) guttâ nigrâ notatis lineas interruptas longitudinales efformantibus; pinnis dorsali analique nigrescentibus, extrorsùm saturatioribus, flavescenti latè fimbriatis, illius parte molli obscurè nigro guttatâ, hujus nigro punctatissimâ; pinnæ caudalis basi flavâ immaculatâ, medio nigro lunatim fasciato, apice hyalino.*

D. $\frac{1}{2}\frac{3}{2}$. A. $\frac{3}{17}$.

Affinis videtur *Chæt. miliari*, Quoy & Gaim. Differt numero radiorum spinosorum pinnæ dorsalis atque coloribus, præsertim pinnarum et maximè pinnæ caudalis.

Holacanthus xanthurus. *Hol. latè ovatus: pinnis verticalibus posticè rotundatis: aculeo præoperculari longo: olivaceo-brunneus, squamis singulis lunulâ lutescenti notatis, pinnis dorsali analique saturatioribus albo fimbriatis; infrà flavescens, pinnis ventralibus maculâque utrinque labii inferioris concoloribus; pinnâ caudali osseque suprascapulari flavis, illius apice hyalescente.*

D. $\frac{1}{1}\frac{1}{8}$. A. $\frac{1}{18}$.

Acanthurus leucosternon. *Ac. pinnâ caudali lunatâ: cæruleo-nigrescens; capite nigro; fræno maxillæ inferioris ultra commissuras oris supernè ducto guldque ad basin pinnarum pectoralium extensâ niveis; maculâ elongatâ transversa post-operculari albescente; pinnis verticalibus ventralibusque rufescentibus lineâ nigrescente marginatis alboque fimbriatis; pinnæ caudalis fasciâ basali, alteraque apicali latâ lunatâ, marginibusque nigris; pectorali subhyalinâ externè nigrescente, basi tantum axilldque flavis.*

D. $\frac{9}{3}$. A. $\frac{3}{27}$.

Julis zeylonicus. *Jul. pinnâ caudali rotundatâ: lutescens, capite plumbeo, aurantiaco rivulato; pinnis verticalibus, vittâ ad basin pinnæ dorsalis cæruleo infernè marginatâ, vittâ interruptâ apud lineam lateralem ductâ, fasciâ longitudinali laterali supernè infernèque cæruleo marginatâ, ramis inde plurimis abbreviatis ventrem versus ductis, lineâque obliquâ per basin pinnæ pectoralis ad ventrem extensâ, aurantiacis; pinnâ dorsali ad basin lineâ crassâ brevi obliquâ inter singulos radios, secundâ in medio ad radios partis mollis, guttâque versus apicem, cæruleis notatâ; pinnæ analis vittâ mediâ alterâque subapicali, pinnæque caudalis rivulis subinterruptis verticalibus tribus, cæruleis.*

D. $\frac{9}{11}$. A. $\frac{3}{11}$.

Ad commissuram oris utrinque dentes majores duo approximati; in maxillâ superiore anticè dentes maximi duo, duos majores anteriores maxillæ inferioris inter se (ore clauso) recipientes.

Julis porphyrocephala. *Jul. pinnâ caudali lunatâ: flavescenti-rufescens, lineolis saturatioribus transversis interruptis ubique no-*

tatus; capite, maculâ fissâ dimidium superiorem pinnæ pectoralis tegente, lineâ latâ intra margines superiorem et inferiorem pinnæ caudalis, vittâ baseos pinnæ analis, vittâque indistinctâ versus apicem pinnæ dorsalis partis mollis, purpureo-nigris; pectoris vittis quinque, quarum externis mediâque lutescentibus, intermediis saturatè rubris; pinnâ dorsali ad basin cum corpore concolore, ad apicem flavescenti fimbriatâ; anali ad apicem caudalique flavis; verticis lineâ longitudinali mentique fasciis duabus lutescentibus.

D. $\frac{8}{3}$. A. $\frac{2}{7}$.

Julim lutescentem (*Labrus lutescens*, Sol. MSS.) quodammodo refert, numerisque radiorum cum illo convenit; sed differt coloribus et maximè capitis. Dentium in utrâque maxillâ duo antici majores, sequentes gradatim decrescentes.

Leuciscus zeylonicus. *Leuc. elongatus, compressus: pinnâ dorsali mediâ, supra pinnas ventrales positâ, radio ultimo subelongato; anali brevi; caudali latè bifurcâ: rostro acuto; ore angulato: lineâ laterali rectâ paullò supra medium ductâ; argenteus; squamis minimis.*

D. 14. A. 9. V. 11. P. 13. C. 18.

Tetrodon argyropleura. *Tetr. capite oblongo: pinnâ caudali bilobâ: dorso ventreque hispidis: suprà et ad latera nigrescens, infrà albus; capite dorsoque supernè nigro guttatis; fasciâ latâ longitudinali laterum mediâ maculâque præorbitali argenteis; pinnis dorsali analique anticè præaltis.*

D. 12. A. 11. P. 18. C. 12.

Specimens were exhibited of numerous *Fishes* collected at the Mauritius by Charles Telfair, Esq., Corr. Memb. Z.S., and presented by him to the Society. Among them Mr. Bennett pointed out as apparently hitherto undescribed the two following species;

Atherina punctata. *Ath. flavescens, vittâ laterali mediâ latâ argentea; squamis dorsalibus ocellis minutissimis numerosis pupillâ cæruleâ iride nigrâ in lunulis plerumque dispositis.*

D. 5, 11. A. 16.

Julis strigiventer. *Jul. pinnâ caudali rotundatâ: ovato-lanceolatus, capite acuto: suprà brunneus? guttis saturatioribus; infrà pallidior, lineis longitudinalibus argenteis utrinque sex; capite dimidiato, supernè flavescenti-brunneo, infernè argenteo; pinnis hyalinis, dorsali analique puncto unico nigro prope basin radii mollis penultimi notatis.*

D. $\frac{8}{1}$. A. $\frac{2}{9}$.

The new species of *Cowries* contained in the collection formed by Mr. Cuming in the Southern Pacific Ocean were exhibited and characterized by Mr. Gray.

Genus Cypræa.

Cypræa Goodallii. *Cyp. testâ ovato-oblongâ, albâ, dorso obscurè brunneo punctato maculâque subtetragonâ brunneâ punctis rotundatis albis variegatâ notato; basi planiusculâ, margine*

subincrassatâ; latere dextro subangulato extremitatibusque minutè brunneo punctatis; ore lineari, sublato; dentibus numerosis submagnis, labii interni minoribus, externi ad baseos medium extensis; columellæ parte anticâ subimpressâ, latè porcatâ: long. 6¼, *lat.* 3 *lin.*

Hab. in Oceano Pacifico. (Reefs of Elizabeth Island.)

This shell much resembles the small varieties of *Cyp. cribraria*, but the brown occupies only the centre of the back, and the teeth are more numerous than in that species, and not half the size.—J. E. G.

Cypræa Pacifica. *Cyp. testâ oblongâ; porcis transversis acutis subdistantibus; lineâ dorsali angustâ impressâ; roseo-albidâ, punctis rufis brunneisve suffusâ, maculisque duabus irregularibus subtetragonis alternantibus ad utrumque latus lineæ dorsalis; margine extremitates versus subproductâ, rosea; basi maculâque suprà extremitatem utramque albis; ore lineari, posticè abruptè recurvo; labio externo convexo, baseos dimidium latitudine æquante; columellæ dimidio antico concavo: long.* 4, *lat.* 2½ *lin.*

Jun. *testâ hyalinâ, flavescente, ore albido.*

Hab. ad Insulas Gallapagos, sub lapidibus.

Very like *Cyp. suffusa*, but the four dorsal spots alternate, and the break of the mouth is more sharply recurved, and has a larger tubercle before it; the outer lip also is rather broader.—J. E. G.

Cypræa rubescens. *Cyp. testâ ovato-subglobosâ, pallidè rufescenti-brunneâ, tenui, pellucidâ, immaculatâ; porcis transversis angustis, acutis, subapproximatis, per lineam dorsalem continuis; ore lineari, subcurvâ; labio externo angusto, subinflexo; columellæ dimidio antico concavo, margine internâ acutâ denticulatâ. long.* 4, *lat.* 2½ *lin.*

Jun. *testâ lævi, hyalinâ, rosea.*

Hab. ad Insulas Gallapagos, sub lapidibus.

Very like small spotless specimens of *Cyp. Pediculus*, but darker coloured, and having the outer lip one half only of the breadth in that species; there are also one or two more ribs on the inner lip.—J. E. G.

Cypræa Maugeri. *Cyp. testâ ovato-oblongâ, pellucidâ, roseâ, maculis tribus subtetragonis saturatioribus per dorsum medium dispositis; porcis transversis subapproximatis, angustissimis, acutis; lineâ dorsali impressâ angustâ indistinctâ; basi convexâ; margine externâ subincrassatâ; ore lineari, anticè parum latiore; labio externo latitudinis baseos dimidium subæquante; columellæ dimidio antico concavo sulcato: long.* 8, *lat.* 5½ *lin.*

Var. minor, crassior, lineâ dorsali impressâ distinctâ: long 6, lat. 4½ lin.

Hab. ad Insulas Gallapagos, sub lapidibus.

Intermediate between *Cyp. Australis* and *Cyp. rosea*. It resembles the former in shape, and in the structure of the mouth and lips; and the latter in size, ribs, and colour, having, however, the addition of three dark spots along the middle of the back.—J. E. G.

Cypræa Cumingii. *Cyp. testâ ovato-oblongâ, pallidè flavescenti-brunneâ, maculis albis brunneo angustè cinctis; lineâ dorsali*

angustâ laterali; basi subplanâ suprà labium internum productâ, atque in medio labii externi extante; margine albâ, brunneo supernè punctatâ, ad labium externum abruptè productâ; ore angusto lineari, dentibus marginalibus minimis; labio columellari sublævi, per totam longitudinem concavâ; labii externi extremitatibus internè declivibus sulcatis: long. 6¼, *lat.* 3¼ *lin.*

Hab. ad Insulas Societatis. (Raie-tea.)

This species approaches in form most nearly to *Cyp. Margarita*, but the base is flatter and smooth, and the edge of the outer margin is entire: it also differs in the pale spots being larger, and surrounded by a dark ring. From the spotted margined variety of *Cyp. cribraria* it differs in the form of the outer margin, in having much smaller teeth; and in the columellar lip being more concave.—J. E. G.

Cypræa contaminata. *Cyp. testâ ovato-ventricosâ, cinereo-albâ, fasciis tribus latis subsaturatioribus, fulvo obscurè punctatâ; basi convexâ, brunneo-nigro punctatâ; margine externâ extremitatibusque acutis; ore lineari, dentibus subparvis numerosis, labii interni minoribus, externi ad baseos medium extensis; columellâ anticè planâ, uni- vel bi-plicatâ: long.* 6, *lat.* 3 *lin.*

Hab. in Oceano Pacifico.

This species, described by Mr. Gray from his own collection, is like *Cyp. Goodallii*, but is more ventricose; has no brown dorsal spot dotted with white; is spotted on the base; and has the *columella* less concave and less ridged in front.—J. E. G.

Cypræa Broderipii. *Cyp. testâ ovatâ, subventricosâ, lactea, fasciis interruptis roseis; dorso brunneo reticulato, maculis inæqualibus rotundatis; lateribus haud arenosis, maculis convexis inæqualibus margaritaceis; basi convexâ, brunneâ, maculis rotundatis saturatioribus, suprà obscurè albo punctatis; lineâ dorsali continuâ, sublatâ, laterali; ore sublato, dentibus albis, labii externi magnis distantibus, interni magis approximatis numerosisque, et ad baseos marginem paullum extensis; columellæ concavitate anticâ brevi, profundâ, plicatâ: long.* 2¾, *lat.* 1¾, *alt.* 1 $\frac{5}{7}$ *poll.*

Hab. in Oceano Indico. (Madagascar.)

This shell, which is one of the most beautiful of this fine genus, agrees with *Cyp. Dama* in almost every character, and especially in the sides not being sandy, and in the dorsal line being lateral; but it differs from that species in being larger, in the back being of a much brighter colour and having more numerous spots, and in the sides being ornamented with distinct unequal-sized white spots. These characters are all of so little importance in a genus so variable in regard to colour and size as the *Cowries*, that Mr. Gray would have been disposed to regard it as only a very fine specimen of *Cyp. Dama*, but for the shortness and depth of the concavity on the front of the *columella*, and the rather greater production of the teeth of the inner lip over the base. In *Cyp. Broderipii* the concavity extends the length of five folds only. In *Cyp. Dama* it extends to double that number.—J. E. G.

A skull of the *Capybara, Hydrochærus Capybara*, Erxl, was exhibited, and Mr. Owen read some Notes thereon. After adverting in terms of high eulogium to the genius of Cuvier, as shown by his detection of concealed affinities among the animal kingdom, he observed that "perhaps the most extraordinary instance of the enlarged views which result from unwearied observation of the internal structure of animals is afforded by Cuvier's bold enunciation of the affinity of the *Elephant* to that order of the *Mammalia* which contains the most minute forms of the class." Mr. Owen dwelt in succession on each of the evidences adduced in the 'Ossemens Fossiles' in support of this affinity, and then proceeded as follows:

"The truth of these observations was very strongly impressed on my mind when examining the *cranium* of a huge *Rodent*, which Mr. De la Fons obligingly left with me for the purposes of comparison, and for the exhibition of which this evening the Committee is indebted to that gentleman. The person from whom he procured it assured him that it was from Africa; but this is only another of the numerous instances of the little confidence to be placed in the assertions of ignorant salesmen, since the specimen presents all the characters of a genus exclusively South American, *viz.*, the *Capybara, Hydrochærus*, Erxl. It has every appearance of having belonged to an old animal, and is much larger than a *cranium* in the museum of the Royal College of Surgeons, which, from its dentition, I had always regarded as having appertained to an adult specimen. Nevertheless, although the *cranium* belonging to Mr. De la Fons is wholly deficient of the teeth, as well as wanting the lower jaw, I have no doubt, from the perfect accordance between the two specimens in the forms and connexions of the several bones, that they are identical as to species.

"There is, however, a difference exhibited in the *alveolæ* of the last molar tooth in Mr. De la Fons's specimen, which, although by no means sufficient for the founding of a specific difference, is important, as evidencing an additional analogy between the *molars* of the *Rodent* and those of the *Elephant*; *viz.*, that the number of transverse *laminæ* increases as the jaw enlarges with age, the whole number not coming into use at once.

"In the *Capybara*, the posterior grinders, like those of the *Elephant*, present a greater number of component *laminæ* than the anterior ones which are of earlier formation. Those of the upper jaw, according to the figure and description in the 'Ossemens Fossiles' (v. pl. 1. p. 24.) are composed of eleven *laminæ*, of which all but the first (which is notched externally) are simple. In the figure too, it is worthy of observation that the last or eleventh *lamina* is imperfect, and exhibits a construction analogous to the imperfectly-formed *laminæ* or denticles in the *Elephant's* grinder, viz., a division into component columns. In the work of M. Fred. Cuvier 'Sur les Dents des Mammifères,' the number of *laminæ* in the last grinder of the upper jaw of the *Capybara* is stated as "onze ou douze;" but eleven only are exhibited in the figure, and we may suppose therefore the doubt as to the precise number to be founded on uncertainty as to the pro-

priety of considering the first deeply notched *lamina* as single or double.

"In the *cranium* in the College Museum the number of *laminæ* is twelve, the forked one being regarded as single. In Mr. De la Fons's specimen the *alveolæ* clearly indicate that the number of *laminæ* of the last molar had been thirteen, with the rudiment of a fourteenth; the extent of the grinding surface is, however, proportionally larger than would result from the additional *laminæ* alone; for as these *laminæ* do not cease to grow so long as the animal lives, they increase in thickness as age advances.

"The following are the admeasurements of the two *crania* alluded to, compared with the indications to be derived from Cuvier's figure:

	De la Fons.		*College.*		*Cuvier.*	
	Inches.	Lines.	Inches.	Lines.	Inches.	Lines.
Total length of the *cranium*	10	0	7	4		
Total breadth of *ditto* (taken from the outsides of the *zygomata*) ..	5	4	3	10		
Total breadth of the *occiput*	3	1	2	4½		
Length of the molar surface, upper jaw.....	3	6	2	6	2	6
Length of the last *alveola*, ditto ..	1	11	1	5	1	4½
Depth of ditto	1	7	1	1		

"The depth of the last *alveola* is greatest at its anterior part; being the reverse of what exists in the *Elephant*, where in consequence of the formation of fangs, the growth of the tooth is arrested, and absorption of the roots takes place as the anterior *laminæ* are worn down."

November 27, 1832.

Richard Owen, Esq., in the Chair.

A letter was read, addressed to the Secretary of the Society by W. Smith, Esq., Secretary of the Hudson's Bay Company. It referred to an *Arctic Fox*, *Canis lagopus*, Linn., recently presented by the Hudson's Bay Company to the Society. This individual, which is now living in the Society's menagerie, was caught, as Capt. Hanwell of the Company's ship Prince of Wales informed him, "on the ice, on the 18th of August, in lat 56° 54' N., long. 83° 30' W., about one hundred miles from the land: the Indians who visited Moose Factory called it *Mistatarganish*, and said that it was a cross between a *Fox* and some other animal, probably a *Wolf*."

At the same time with the *Arctic Fox*, the Hudson's Bay Company presented to the Society a living *Pekan* or *Fisher Martin*, *Mustela Canadensis*, Schreb.

A specimen was exhibited of the *Falco rufipes*, Bechst., a bird of exceedingly rare occurrence in Britain. It was shot near Doncaster, and is preserved in the collection of W. H. Rudstone Read, Esq., by whom it was communicated for exhibition to the Committee.

At the request of the Chairman, Mr. Gould exhibited a very extensive collection of *Bird-skins*, from the Orkneys, and pointed out particularly those which he regarded as most interesting, either on account of their rarity or the state of their plumage. They included beautiful specimens of the *Ivory Gull*, *Larus eburneus*, Temm., and of the *King Duck*, *Somateria spectabilis*, Steph., as well as of other rare species. In many of them, as in the *black Guillemot*, *Uria Troile*, and *red-breasted Merganser*, *Mergus Serrator*, the series was complete, commencing from the egg, and proceeding to the adult plumage of the birds, which were generally exhibited both in their summer and winter dress. Nearly the whole of them were accompanied by specimens of their eggs.

The collection contained individuals of all the species of *parasitic Gull* hitherto discovered on our coasts, and Mr. Gould remarked on the differences existing between them, which he illustrated by reference to the specimens on the table. The species are *Lestris Cataractes*, *Lest. Pomarhinus*, *Lest. Richardsonii*, Swains., and *Lest. parasiticus*; the latter being now for the first time added to the British Fauna, the bird previously described by English writers under that name being identical with the species described by Mr. Swainson in the 'Fauna Boreali-Americana' as the *Lestris Richardsonii*.

A paper was read, containing "a brief account of a particular function of the nervous system," in which Dr. Marshall Hall detailed a series of experiments tending to prove the existence of a source of muscular action distinct from all those hitherto noticed by physiologists: viz. volition, the irritation of the motor nerves in some part of their origin or course, or that of the muscles themselves. The peculiarity of this motion he stated to consist in its being excited "by irritation of the extreme portion of the sentient nerves, whence the impression is conveyed through the corresponding portion of brain and spinal marrow as a centre, to the extremities of the motor nerves."

The animals experimented on were Salamanders, Frogs and Turtles. In the first of these the tail, entirely separated from the body, moved as in the living animal, on being excited by the point of a needle passed lightly over its surface. The motion ceased on destroying the spinal marrow within the caudal *vertebræ*. The head of a frog having been removed, and the spine divided between the third and fourth *vertebræ*, an eye of the separated head was touched: it was retracted and the eyelid closed, a similar movement being observed in the other eye. On removing the brain these phænomena ceased. On pinching the skin or the toe of one of the anterior extremities, the whole of this portion of the animal moved. On destroying the spinal marrow this phænomenon also ceased. Precisely similar effects were observed on pinching the skin or toe of one of the posterior extremities; and on removing the last portion of the spinal marrow this phænomenon ceased. The head of the turtle continues to move long after its separation from the body: on pinching the eyelid it is forcibly closed; the mouth is opened and the membrane expanded under the lower jaw descends as in respiration. On pinching any part of the skin of the body, extremities, or tail, the animal moves. The posterior extremities and tail being separated together, the former were immoveable; the latter moved on the application of the flame of a lighted taper to the skin. Those extremities had no connexion with the spinal marrow. All movement ceased in the tail also on withdrawing the spinal marrow from its canal.

"Three things," Dr. Hall observes, "are plain from these observations: 1. that the nerves of sensibility are impressible in portions of an animal separated from the rest; in the head, in the upper part of the trunk, in the lower part of the trunk: 2. that motions similar to voluntary motions follow these impressions made upon the sentient nerves: and 3. that the presence of the spinal marrow is essential as the central and cementing link between the sentient and motor nerves."

Dr. Hall then proceeded to adduce another series of experiments still more conclusive. If a frog be made to swallow a watery solution of opium, it becomes affected with symptoms very similar to those of tetanus and hydrophobia; the body and limbs become rigidly extended; but besides this state of spasm, the cutaneous nerves become extremely susceptive, and the motor nerves extremely excitative; a shake, a touch, a breath of air even, induces spasmodic movements of the body and limbs. A frog made tetanic by opium

was decapitated and divided just below the third *vertebra*. The eyes continued drawn in, and no motion could be detected on irritating the eye, eyelid, or skin. But both the anterior and posterior parts remained tetanic as before. The limbs were moved in the same spasmodic manner by the same slight impressions. The exalted condition of the function of the sentient and motor nerves continued in each part. All was changed on removing the brain and the respective portions of spinal marrow. The eyes were immovable, but no longer retracted; the muscles of the limbs were flaccid, and there was no evidence of irritability in the sentient nerves.

"These experiments," Dr. Hall continued, "appear to me to establish a property or function of the nervous system,—of the sentient and motor nerves,—distinct from sensation and voluntary or instinctive motion. However doubtful this conclusion might appear in reference to the first series of experiments upon the animal in its natural state, it can scarcely admit of doubt when we compare with them the phænomena observed in the frog made tetanic by opium. In this case the contraction of the muscles is plainly *not* the result of volition; and it obeys the same laws, in regard to its continuance and extinction, as the similar function or property in its natural and unexalted state. Neither does it arise from the irritation of the motor nerves, or muscular fibre; for it ceases on removing the spinal marrow, while the property of irritability continues unimpaired after the destruction of the nervous centre. I conclude, then, that there is a property of the sentient and motory system of nerves which is independent of sensation and volition;—a property of the motor nerves independent of immediate irritation:—a property which attaches itself to any part of an animal, the corresponding portion of the brain and spinal marrow of which is entire. This property is capable of exaltation, in the frog, from the influence of opium, and doubtless of strychnine; and I may add, that it is diminished or extinguished by the hydrocyanic acid. It is naturally greatest in animals of lowest *sensibility*, as the cold-blooded."

With regard to the office performed by this property of the nervous system in the animal œconomy, Dr. Hall stated that it appeared especially to preside over all those functions which, from appearing neither exclusively voluntary nor independent of the will, have been designated mixed. That the function of respiration is of this kind he considered plain from the phænomena presented by the separated head of the turtle, in which the submaxillary integuments became alternately inflated and contracted as in ordinary respiration. The actions of coughing, sneezing, vomiting, &c. are of the same kind. So apparently is the singular effect produced by tickling. Of all the parts of the human frame the *larynx* and the *anus* appear to be most under the influence of this peculiar power. No part is so impatient of irritation as the former; none so much in need of automatic action as the latter, with the other sphincters. These very parts are subject moreover to peculiar morbid affections of this function: in regard to the *larynx* it is observed in some affections of dangerous tendency referred to spasm: in the sphincters it is seen in those sin-

gular and painful affections termed strangury and tenesmus. There are also peculiar affections of the system of voluntary muscles referrible to the same property. In hydrophobia and tetanus, in each of which the extremities of the sentient nerves have been wounded, there is a peculiar exaltation of this function: the morbid action appears to be propagated to the spinal marrow; and then along the motor nerves, producing those dreadful sensations and spasms so fearfully characteristic of these affections. The least external shock or impression is terrible; the immediate muscular contractions are intolerable.

December 11, 1832.

William Yarrell, Esq., in the Chair.

A specimen was exhibited of a *Hedgehog* from the interior of South Africa, which formed part of a rich collection of preserved animals, recently brought from that country by Mr. A. Steedman, to whom the Committee was indebted for the exhibition. Mr. Bennett pointed out various characters distinguishing it from the several species of *Erinaceus* previously known, and proposed for it, on account of a remarkable band of long white hairs passing from below and behind the ears across the forehead, the name of

ERINACEUS FRONTALIS. *Er. oblongo-ovatus; spinis variè intertextis, ad basin albis in medio purpurascentibus, versus apicem albidis brunneo apiculatis; pilis brunneis, fasciæ frontalis albæ rigidis, auriculas oblongas obtegentibus.*

Hab. in Africâ Australi.

Long. *corporis*, 5½, lat. 3 unc.; long. *auriculæ*, 7 lin.; *pedis* postici cum unguibus, 1 unc. 5 lin.

In form this new species approaches the *European Hedgehog*, which it also resembles in its general colouring and in its concealed ears: but these organs, although not at first sight visible, are, in the *Cape Hedgehog*, long, their auricle, which is rather narrow and nearly oblong, being produced more than half an inch, while in the *Er. Europæus* this part is not at all lengthened, but forms merely a narrow margin surrounding the ears. In *Er. auritus*, and in the two species from the Himalayan Mountains, recently described by Mr. Bennett, (page 123,) the auricles are not only considerably produced, but are quite uncovered, forming a striking part of the physiognomy of these animals.

Among the brown hairs which cover the under part of the sides, and the belly and limbs, a few white bristles are intermixed; and in the individual exhibited, there is a white patch occupying the inside and base of one of the fore legs, and a second, covering about one half of the lower jaw on one side; these marks Mr. Bennett regarded as accidental.

He stated that Mr. Steedman had informed him that he had possessed a second individual of the same species, which he had transferred to M. Verreaux.

A specimen was exhibited of the *Phasianus lineatus*, Lath., obtained from the Tennasserim coast by G. Swinton, Esq., Corr. Memb. Z. S., by whom it was presented to the Society.' The species was characterized by Mr. Vigors in the First Part of the 'Proceedings,' page 24.

The exhibition was resumed of the collection of *Shells* formed by Mr. Cuming on the Western coast of South America, and among the islands of the Southern Pacific Ocean. The new species were accompanied, as on the previous occasions, by descriptions from the pens of Mr. Broderip and Mr. G. B. Sowerby.

Genus Murex.

Murex buxeus. *Mur. testâ subfusiformi, multifariam undulosovaricosâ, transversim striatâ, fuscâ albo transversim lineatâ; aperturâ albâ; labro intùs denticulato: long.* 1·$\frac{8}{10}$, *lat.* $\frac{8}{10}$ *poll.*

Hab. ad Iquiqui.

Found on a sandy bottom at the depth of eighteen fathoms.—W. J. B.

Murex Dipsacus. *Mur. testâ fusiformi, multifariam varicosâ, varicibus subfrondentibus, transversim costatâ, quasi cancellatâ, albâ fusco subfasciatâ; spirâ productâ, canali mediocri: long.* 1, *lat.* $\frac{1}{2}$ *poll.*

Hab. ad Sanctam Elenam.

From a rocky bottom at the depth of twelve fathoms.—W. J. B.

Murex pallidus. *Mur. testâ fusiformi, albâ, novemfariam varicosâ, costis transversis frequentibus et lineis longitudinalibus creberrimis cancellatâ; canali valdè apertâ: long.* $\frac{8}{10}$, *lat.* $\frac{5}{10}$ *poll.*

Hab. ad Insulas Falkland dictas.—W. J. B.

Genus Ranella.

Ranella pyramidalis. *Ran. testâ elongato-pyramidali, valdè compressâ, albâ, transversim costatâ, anfractibus suturam versus coronatis; lineâ longitudinali interstitiali utrinque solitariâ, elevatâ; spirâ valdè productâ: long.* $\frac{7}{8}$, *lat.* $\frac{4}{8}$ *poll.*

Hab. ad Uliteam et Panamam.

The interstitial longitudinal line which traverses the whole length of the shell, both on the upper and under sides, may be almost termed a *varix*.

Found on the reefs.—W. J. B.

Ranella pusilla. *Ran. testâ pyramidali, albâ, granulosâ: long.* $\frac{8}{12}$, *lat.* $\frac{6}{12}$ *poll.*

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

Found on the reefs.—W. J. B.

Genus Cardita.

Cardita tricolor. *Card. testâ ovato-rhombeâ, longitudine altitudinem superante, radiatim costatâ, albidâ, fasciis fuscis longitudinaliter notatâ; margine dorsali postico, latereque antico brevi, aurantiacis; latere postico longiore; costis, anticis præsertim, subgranosis: long.* 1·5, *lat.* 1, *alt.* 1·1 *poll.*

Hab. in Americâ Centrali.

Found among sand and mud, at a depth of ten fathoms, in the Bay of Guayaquil.—G. B. S.

CARDITA LATICOSTATA. *Card. testâ ovato-rhombeâ, turgidâ, longitudine altitudinem superante, radiatim costatâ, epidermide fulvescente indutâ, fasciis brunneis longitudinaliter notatâ; margine dorsali postico elevatiusculo; costis latis, anticis præsertim, lineis elevatis decussatis: long.* 2·1, *lat.* 1·4, *alt.* 1·6 *poll.*

Hab. in Americâ Centrali (Guacomayo).

Found in sand, at a depth of from six to twelve fathoms, at St. Elena, Panama, and Real Llejos.—G. B. S.

CARDITA RADIATA. *Card. testâ oblongâ, pallescente, maculis vel fasciis fuscis variegatâ; latere antico brevi, postico elongato; costis paucis latis radiatâ, costis anticis transversim decussatis, medianis posticè angulatis, posticis rotundatis, dorsali squamiferâ: long.* 2·1, *lat.* 0·6, *alt.* 0·9 *poll.*

Hab. ad Salango, Columbiæ Occidentalis, et ad Panamam.

Found in muddy sand at from six to twelve fathoms.—G. B. S.

CARDITA AFFINIS. *Card. testâ oblongâ, pallidâ, fusco-variâ, latere antico brevi, postico elongato; costis paucis latis radiantibus, anticis obsoletiusculis, posticis prominentibus angulosis, subsquamiferis: long.* 1·4, *lat.* 0·6, *alt.* 0·6 *poll.*

Hab. in Americâ Meridionali.

Dredged from sandy mud, at a depth of from six to twelve fathoms, in the Bay of Montejo and Gulf of Nocoiya.—G. B. S.

CARDITA SPURCA. *Card. testâ obovatâ, albâ, epidermide olivaceâ indutâ; costis radiantibus eminentibus granosis ornatâ; latere postico supernè anguloso: long.* 1, *lat.* 0·55, *alt.* 0·7 *poll.*

Hab ad oras Peruviæ.

Dredged among coarse sand and gravel, in from six to ten fathoms, at Iquiqui, in Peru.—G. B. S.

CARDITA MURICATA. *Card. testâ obovatâ, albicante, costis radiantibus muricatis ornatâ, posticis magnis distantibus, anticis minoribus approximatis; latere antico brevissimo: long.* 1·1, *lat.* 0·55, *alt.* 0·55 *poll.*

Hab. ad littora Insularum Maris Pacifici.

Found attached to and under stones on the beach of Crescent and Rapa Islands. A few brown spots are occasionally to be seen ornamenting the dorsal and lateral parts of these shells.—G. B. S.

Genus PECTUNCULUS.

PECTUNCULUS MULTICOSTATUS. *Pect. testâ suborbiculari, albâ, castaneo rubiginoso cinereoque variegatâ; costellis numerosis, ex umbone radiantibus, transversim striatis: long.* 1·5, *lat.* 1·2, *alt.* 1·5 *poll.*

Hab. in Americâ Meridionali.

Found in coarse sand and gravel, in twelve fathoms water, off the Island of Muerte, in the Bay of Guayaquil.

This is one of the most beautiful of the *Pectunculi*, being of a pure white, elegantly mottled with chestnut, rust-colour, and ash-grey: it is remarkable that in the young shells some of the radiating ribs

are more prominent than others in the proportion of two large to one small.—G. B. S.

PECTUNCULUS INÆQUALIS. *Pect. testâ subcordiformi, obliquâ, inæquilaterali, altitudine longitudinem superante, gibbosâ, obtusè radiatim striatâ, striis per fasciculos costiformes congestis, interstitiis striatis: long.* 1·5, *lat.* 1·15, *alt.* 1·6 *poll.*

Hab. ad Panamam et Real Llejos.

A very beautiful species, of a white colour, varied with blueish grey, and very irregularly splashed over with dark chestnut brown: the ligament is short, and a very small part of it is anterior to the *umbones.*

Found in sandy mud in ten fathoms.—G. B. S.

PECTUNCULUS ASSIMILIS. *Pect. testâ subcordiformi, obliquâ, inæquilaterali, altiùs quàm longâ, subgibbosâ, radiatim sulcatâ et striatâ, striis per fasciculos costiformes congestis, interstitiis latiusculis, lævibus: long.* 1·3, *lat.* 1, *alt.* 1·5 *poll.*

Hab. in Americâ Centrali et Meridionali.

Dredged in sandy mud and gravel, in from eight to twelve fathoms, at Puerto Portrero and in the Bay of Guayaquil.

It is a beautiful species, varying much in colour: in general the ground colour is white, and it is splashed over with greyish brown, rust-colour, and chestnut brown.—G. B. S.

PECTUNCULUS TESSELLATUS. *Pect. testâ orbiculari, subglobosâ, albâ, castaneo tessellatâ et variegatâ; costis rotundatis, subdistantibus, radiantibus: long.* 0·9, *alt.* 1, *lat.* 0·7 *poll.*

Hab. ad littora Columbiæ Occidentalis.

From sandy mud and gravel, in from eight to ten fathoms, at Monte Christe and in the Bay of Xipixapi.—G. B. S.

PECTUNCULUS STRIGILATUS. *Pect. testâ orbiculari, subventricosâ, albidâ, roseo tinctâ et rubiginoso strigatâ et variegatâ; costis rotundatis, distantibus, radiantibus, interstitiis lævibus; long.* 1, *lat.* 0·65, *alt.* 1·05 *poll.*

Hab. ad Sanctam Elenam.

Dredged from a depth of six to eight fathoms in sandy mud.—G. B. S.

PECTUNCULUS LONGIOR. *Pect. testâ elliptică, albicante, radiatim sulcatâ, latere postico breviore, ferrugineo, ventrali roseo-fuscescente, antico longiore; intùs albicante, purpurascente-brunneo infectâ; long.* 1·4, *lat.* 0·7, *alt.* 1·2 *poll.*

Hab. ad littora Brasiliæ.

Two specimens only were brought from Rio de Janeiro.

This species is remarkable for being proportionally longer than others.—G. B. S.

Genus CAPSA.

CAPSA ALTIOR. *Capsa testâ oblongo-subtrigonâ, pallescente, intùs violaceâ, epidermide olivaceâ indutâ; marginibus dorsalibus inclinatis; latere antico rotundato-acuminato, postico subtruncato,*

ventrali antico rotundato, postico leviter flexuoso ; umbonibus nigricanti-purpurascentibus : long. 3·3, *alt.* 2·3, *lat.* 1·35 *poll.*

Hab. in Peruviâ et Americâ Centrali.

Dredged among coarse gravel, in twelve fathoms water, in the Gulf of Nocoiyo. A smaller variety, which is also rather higher, was found at Tumbez, at a depth of five fathoms, in thin mud.—G. B. S.

Genus Solenella, G. Sowerby.

Testa ovalis, æquivalvis, subæquilateralis, compressa, nitens, epidermide olivaceo-viridi, tenui, induta ; dentibus cardinalibus nullis, lateralibus anticis in utráque valvâ, tribus ad quatuor, lateralibus posticis plurimis, seriem rectiusculam efformantibus, omnibus parvis acutis ; impressionibus muscularibus duabus, lateralibus, subdistantibus ; impressione pallii sinu magno : ligamento externo, elongato.

An interesting new genus of marine bivalves, in which the general form and characters of M. Blainville's *Solenocurtus* are combined with the series of minute sharp teeth characteristic of *Nucula*. It appears to belong to the family of the *Solenaceæ*, and it may at once be separated from the *Mactraceæ*, to which *Nucula* belongs, by the circumstance of the whole of the ligament being external.

Solenella Norrisii. *Sol. testâ albido-cœrulescente ; epidermide olivaceo-viridi, zonis concentricis saturatioribus : long.* 1·6, *alt.* 1, *lat.* 0·4 *poll.*

Hab. ad Valparaiso.

Discovered by Mr. Cuming, in soft mud, at from fourteen to forty-five fathoms depth.

This is the only species of the genus I have seen ; but Mr. Cuming informs me that he obtained a single valve of another and very different species. By the specific name I wish to honour and keep in remembrance Thomas Norris, Esq., of Redvales, near Bury, Lancashire.—G. B. S.

Genus Nucula.

Nucula elongata. *Nuc. testâ elongatâ, lanceolatâ, tenui, albâ, epidermide fuscâ prope marginem ventralem indutâ ; subæquilaterali, latere antico breviore ; margine dorsali rectiusculâ, posticè subreflexâ ; serie dentium posticâ divaricatâ : long.* 2·7, *lat.* 0·25, *alt.* 0·7.

Hab. in Columbiâ Occidentali.

Dredged in sandy mud, at a depth of twelve fathoms, at Xipixapi.

Nucula crenifera. *Nuc. testâ elongatâ, lanceolatâ, lævigatâ, tenuissimè longitudinaliter striatâ ; marginibus dorsalibus carinatis, carinis concinnè crenulatis : long.* 1·4, *alt.* 0·4, *lat.* 0·2 *poll.*

Hab. ad Xipixapi.

This species approaches nearly in shape to *Nuc. lanceolata* ; it is, however, broader and higher, and its dorsal margin, when the two

valves are closed, is flat, with angular crenated edges. It was dredged in sandy mud, at a depth of nine fathoms.—G. B. S.

NUCULA POLITA. *Nuc. testâ oblongâ, anticè rostratâ, albâ, epidermide virescente, politâ; margine dorsali anticâ lævi; striis nonnullis obliquis anticis: long.* 1·4, *alt.* 0·6, *lat.* 0·45 *poll.*

Hab. ad Panamam.

A single specimen of this very beautiful species was dredged up in sand from a depth of seven fathoms.—G. B. S.

NUCULA PISUM. *Nuc. testâ parvâ, obliquè ovali, latere antico brevissimo, margine dorsali inclinatâ: long.* 0·25, *lat.* 0·15, *alt.* 0·2 *poll.*

Hab. ad Valparaiso.

Dredged in coarse sand and gravel, at various depths from seven to forty fathoms.—G. B. S.

NUCULA COSTELLATA. *Nuc. testâ oblongâ, tenui, anticè rostratâ, acuminatâ, costis duabus dorsalibus approximatis, crenulatis; costellis acutis concentricis, totam superficiem tegentibus: long.* 0·8, *alt.* 0·3, *lat.* 0·2 *poll.*

Hab. ad Panamam.

Two specimens were taken in sandy mud at a depth of ten fathoms. A thin *epidermis* covers the shell.—G. B. S.

NUCULA GIBBOSA. *Nuc. testâ oblongâ, gibbosâ, anticè acuminato-rostratâ, longitudinaliter sulcatâ; dorso antico depresso, marginibus centralibus elevatis: long.* 1·2, *lat.* 0·55, *alt.* 0·6 *poll.*

Hab. ad littora Peruviæ.

Found in soft mud, at a depth of five fathoms, at Tumbez in Peru. A variety, with a less elevated ridge in the centre of the anterior dorsal margin, and of much smaller size, was found in mud, at twelve fathoms, in the Gulf of Nocoiyo.—G. B. S.

NUCULA ELENENSIS. *Nuc. testâ ovatâ, gibbosâ, longitudinaliter sulcatâ, anticè rostrato-acuminatâ; limbo dorsali antico arcuato, marginibus crenulatis: long.* 0·5, *lat.* 0·25, *alt.* 0·35 *poll.*

Hab. ad Sanctam Elenam.

Dredged in sandy mud at a depth of six fathoms.—G. B. S.

NUCULA EBURNEA. *Nuc. testâ ovatâ, gibbosâ, longitudinaliter sulcatâ, nitidâ, eburneâ, anticè rostrato-acuminatâ: long.* 0·65, *lat.* 0·3, *alt.* 0·35 *poll.*

Hab. ad oras Columbiæ Occidentalis.

Found in sandy mud, at a depth of from seven to nine fathoms, in the Bay of Caraccas.—G. B. S.

NUCULA CUNEATA. *Nuc. testâ ovato-cuneiformi, gibbosâ, epidermide virescente, nitidâ, latere postico rotundato, antico acuminato; superficie concentricè sulcatâ: long.* 0·4, *lat.* 0·2, *alt.* 0·25 *poll.*

Hab. ad Valparaiso.

Dredged in coarse sand and gravel, at various depths, from fourteen to forty-five fathoms.—G. B. S.

NUCULA EXIGUA. *Nuc. testâ parvâ, obliquè ovatâ, albicante, pel-*

lucidâ, concentricè sulcatâ ; latere postico longiore, subacuminato, antico brevissimo : long. 0·2, *lat.* 0·1, *alt.* 0·15 *poll.*

Hab. ad Columbiam Occidentalem (Bay of Caraccas).

A single specimen found in sandy mud at nine fathoms depth.—G. B. S.

Genus Amphidesma.

Amphidesma roseum. *Amph. testâ suborbiculari, roseâ, concentricè costatâ, epidermide fuscâ, lucidâ, indutâ ; latere postico subemarginato ; costis confertis, acutis : long.* 2·5, *alt.* 2·3, *lat.* 1·1 *poll.*

Hab. ad littora Peruviæ.

Shell of a rose colour all over ; darker about the *umbo*. A single valve was found at Tumbez in Peru.—G. B. S.

Amphidesma Rupium. *Amph. testâ subovali vel suborbiculari, subirregulari, radiatim striatâ, costis interruptis concentricè rugosâ ; umbone lævigato ; intùs albâ ; dentibus lateralibus subapproximatis, brevibus, crassis, margineque dorsali posticâ purpureis : long.* 1·25, *alt.* 1, *lat.* 0·65 *poll. ; long.* 1·3, *alt.* 1·2, *lat.* 0·7 *poll.*

Hab. in Oceano Pacifico.

Outside of the shell white ; a few rose-coloured rays are occasionally observable near the basal margin. Found in coarse gravel in the crevices of rocks in coral reefs at Lord Hood's Island. A variety which is white all over, both inside and out, occurs in the clefts of rocks in coarse gravel at the Gallapagos Islands.—G. B. S.

Amphidesma formosum. *Amph. testâ ovali, albicante, roseo radiatâ et purpureo maculatâ, concentricè costatâ, costis confertis, antiè posticèque rugulosis ; umbonibus intùs lutescentibus : long.* 2, *alt.* 1·6, *lat.* 0·7 *poll.*

Hab. ad Sanctam Elenam.

The most beautiful of all the *Amphidesmata* I have yet seen. Only two odd valves were dredged in seven fathoms water.—G. B. S.

Amphidesma pallidum. *Amph. testâ ovali, pallidè purpurascenti-fulvâ, umbonibus saturatioribus, tenuissimè concentricè striatâ, epidermide tenui, subirridescente indutâ ; latere postico subtruncato, dorsali rotundato : long.* 1·25, *lat.* 0·45, *alt.* 0·9 *poll.*

Hab ad Salango, Columbiæ Occidentalis.

The young shells are paler and more fulvous in colour. Dredged in sandy mud at a depth of seven fathoms.—G. B. S.

Amphidesma læve. *Amph. testâ ovatâ, albâ, lævigatâ, epidermide corneâ, tenui indutâ ; latere postico breviore, rotundato, antico longiore subacuminato ; sulco obsoleto posticali, ab umbone ad marginem ventralem decurrente : long.* 1·45, *alt.* 1·1, *lat.* 0·35 *poll.*

Hab. ad Xipixapi, Columbiæ Occidentalis.

A single specimen of this very delicate species was dredged from a depth of ten fathoms in sandy mud.—G. B. S.

Amphidesma purpurascens. *Amph. testâ ovali, purpurascente ; margine anticâ rotundatâ, posticâ subacuminatâ, subtruncatâ, dor-*

sali posticâ rectiusculâ crenulatâ; costis concentricis, acutis, crenulatis, confertissimis, tenuibus, fulvis: long. 1·9, *alt.* 1·5, *lat.* 0·65 *poll.*

Hab. ad Sanctam Elenam.

A single valve of this elegant species was picked up on the sands at St. Elena.—G. B. S.

AMPHIDESMA PUNCTATUM. *Amph. testâ ovali, crassiusculâ, albicante, sparsim roseo fulvoque maculatâ; posticè subtruncatâ, plicâ flexuosâ posticali distinctâ; disco externo concentricè impresso-punctato; marginibus, inferiori costis nonnullis concentricis latis, dorsalibus anticè et posticè roseo maculatis; long.* 1·7, *alt.* 1·35, *lat.* 0·6 *poll.*

Hab. ad Insulas Gallapagos.

A perfect specimen and a single valve are all that Mr. Cuming obtained.—G. B. S.

AMPHIDESMA LENTICULARE. *Amph. testâ albâ, lenticulari, lævigatâ, tenuissimè radiatim striatâ; parte mediand anticâque striis elevatis, subconcentricis, flexuosis decussatâ; margine posticâ subflexuosâ; epidermide tenuissimâ, flavescente: long.* 0 87, *alt.* 0·8, *lat.* 4·5 *poll.*

Hab. ad Sanctam Elenam.

A single specimen was dredged from a depth of six fathoms in sandy mud.—G. B. S.

AMPHIDESMA ELLIPTICUM.—*Amph. testâ ellipticâ, albâ, subobliquâ, lævi, epidermide fuscâ; latere antico longiore, rotundato, postico breviore, obliquè subtruncato; superficie concentricè leviter striatâ: long.* 2, *alt.* 1·7, *lat.* 0·75 *poll.*

Hab. in Columbiâ Occidentali (Monte Christe).

Inside pure white. Dredged at a depth of nine fathoms in sandy mud.—G. B. S.

AMPHIDESMA CORRUGATUM. *Amph. testâ suborbiculari, albicante, radiatim striatâ, concentricè rugulosâ; epidermide fuscâ; margine dorsali posticâ rectâ, inclinatâ; intùs flavescente: long.* 2·1, *alt.* 1·9, *lat.* 1 *poll.*

Hab. in Peruviâ et ad Iquiqui.

Dredged from coarse gravel in ten fathoms water.—G. B. S.

AMPHIDESMA AUSTRALE. *Amph. testâ suborbiculari, rotundatâ, albicante, radiis pallidè roseis nonnunquam pictâ, concentricè rugosâ: long.* 1, *alt.* 1, *lat.* 0·5 *poll.*

Hab. in littoribus Novæ Hollandiæ et ad insulas Oceani Pacifici.

Found by Mr. Cuming in the crevices of the coral rocks at Lord Hood's Island.

I have had the printed descriptions of the three last species by me for several years, but they have never been published.—G. B. S.

Genus NERITINA.

NERITINA LATISSIMA. *Ner. testâ rotundatâ, ventricosâ, striis longitudinalibus, minutis, creberrimis, fuscâ luteo maculatâ, maculis numerosissimis; labro dilatato, latissimo, spiram longè præterеunte; labio crenulato, subluteo: long.* 1⅜, *lat.* 1⅛ *poll.*

Var. flavescens fasciis duabus nigris.

Hab. ad Real Llejos, in fluvio, rupibus adhærens.

A very curious species, probably the analogue of *Strombus latissimus* among the river shells.—W. J. B.

NERITINA DILATATA. *Ner. testâ ovato-truncatâ, dorso convexo, albido-fuscâ lineis nigris angulatis reticulatâ; spirâ obliquè incurvâ; labro tenui supernè sub-biauriculato; labio subarcuato, denticulato: long.* $\frac{5}{8}$, *lat.* $\frac{3}{4}$ *poll.*

Hab. ad insulam Taheiten in rivis, saxis adhærens.

A species approaching *Ner. auriculata*, Lam., but very distinct from it.—W. J. B.

NERITINA GLOBOSA. *Ner. testâ globosâ, flavescente vel fuscâ, quasi guttatâ, guttarum limbis nigricantibus; labio subrugoso, denticulato: long.* 1, *lat.* 1 *poll.*

Hab. ad Chiriqui Colombiæ Occidentalis in fluvio.—W. J. B.

NERITINA NUX. *Ner. testâ ovato-globosâ, fuscâ, longitudinaliter striatâ, striis creberrimis; labio serrato, unidenticulato: long.* $\frac{6}{8}$, *lat.* $\frac{5}{8}$ *poll.*

Hab. ad insulam Taheiten in rivis, saxis adhærens.—W. J. B.

NERITINA INTERMEDIA. *Ner. testâ suborbiculari, olivaceo-fuscâ, nigro reticulatâ; dorso subgibboso, labio externo intùs lævi, albicante; columellari subflavo, planulato, margine centrali rugulosâ: long.* 0·75, *lat.* 0·85 *poll.*

Hab. in Americâ Centrali.

Found abundantly on stones in a mountain stream in the Isle of Lions, Bay of Montejo. It bears a distant resemblance to *Ner. pulligera*. A smaller variety occurs in a rivulet at San Lucas in the Gulf of Nocoiya.—G. B. S.

NERITINA CHLOROSTOMA. *Ner. testâ suborbiculari, ellipticâ, olivaceo-fuscâ, nigro reticulatâ, subfasciatâ; aperturâ intùs flavâ; labii columellaris margine obtusè unidentatâ, rugulosâ: long.* 0·5, *lat.* 0·55 *poll.*

Hab. ad Insulam Taheiten.

Found on stones in the rivulets.—G. B. S.

NERITINA PICTA. *Ner. testâ subglobosâ, cinerascente, maculis, sphacelis, vittisque diversimodò pictâ; labio interno castaneo: long.* 0·5, *lat.* 0·4 *poll.*

Hab. ad Panamam.

Found in abundance on a mud-bank partially overflowed with fresh water.—G. B. S.

NERITINA RETICULATA. *Ner. testâ subovali, transversim striatâ, aterrimâ, albo reticulatâ et maculatâ; aperturâ omninò lutescente: long.* 0·45, *lat.* 0·48 *poll.*

Hab. ad Insulas Polynesias.

From Lord Hood's Island; found in fine sand on the reefs, occasionally overflowed.—G. B. S.

NERITINA MORIO. *Ner. testâ subovali, transversim striatâ, atrâ;*

aperturâ pallescente; columellâ supernè emarginatâ, in medio denticulatâ: long. 0·7, *lat.* 0·75 *poll.*

Hab. ad Insulas Polynesias.

Found on the coral reefs at Ducie's and Easter Islands.—G. B. S.

Genus Ancylus.

Ancylus obliquus. *Anc. testâ subovatâ, diaphanâ, longitudinaliter minutissimè striatâ; mucrone verticis obliquo: long.* $\frac{1}{10}$, *lat.* $\frac{1}{15}$ *poll.*

Hab. in Chili in rivulis, saxis adhærens.—W. J. B.

The stomach, *cæca, cranium*, &c. of *Hyrax Capensis* were exhibited, the former forming part of the collection of Mr. Thomas Bell. Mr. Owen, who had anatomically examined the individual from which they were obtained, read the following account of its structure.

"It is unnecessary to enter before this Committee into the scientific history of *Hyrax Capensis*, since it has already been fully given in the 'Ossemens Fossiles,' and in the 'Decas Mammalium' of Hemprich and Ehrenberg: it may even appear presumptuous in me to occupy your time with the anatomical description of an animal that has already been described by the most accomplished anatomist and zoologist of his age. Since the time, however, that the *Cape Hyrax* was dissected by Pallas, no other original account of the structure of the soft parts of this animal has appeared; for I infer from the descriptions of some parts, as the digestive organs, which appear in several places of the 'Leçons d'Anatomie Comparée,' that Cuvier had not, at the period of his preparing that work for the press, himself dissected the *Hyrax*; and this may probably account for his silence respecting some other remarkable anomalies in the structure of the *Hyrax* described by Pallas, but which the illustrious author of our only text-book in comparative anatomy was probably averse to give his sanction to, without having confirmed them by personal observation. On this account I feel that even a simple confirmation of the observations of Pallas would be acceptable to every zoologist; but in the following communication some additional facts, as well as more particular descriptions of the most remarkable anomalies, have been given, the amount of which will be readily appreciated by whoever will compare this account with the original description of *Cavia Capensis*, in the 'Spicilegia,' and 'Miscellanea Zoologica,' of Pallas.

"The specimen here described was a full-grown male, placed temporarily in the Society's Menagerie by Thomas Bell, Esq. It lived in the Gardens through the greater part of last summer, and died at the winter repository for the smaller animals a few days ago.

"As it was already skinned when I first saw it, its dimensions will be more safely given from the skeleton; I shall only therefore here observe that its length from the anterior surface of the upper *incisors* to the vent was 1 foot $5\frac{1}{2}$ inches.

"On laying open the *abdomen*, which was of considerable capacity, the *viscera* were found disposed in the following manner:—the liver occupied the epigastric region and the atlantal part of both *hypo-*

chondria * ; below or sacrad of the liver appeared the great curvature of the stomach, extending quite across the *abdomen*; from this part the *omentum* extended half-way down the rest of the *abdomen*: on lifting up the *omentum* there appeared what Pallas justly calls, "insignis crassorum intestinorum apparatus", consisting of an enormous *cæcum*, and *colon*; below which, extending upwards from the iliac regions, were the extremities of the two accessory *cæca*. These latter parts were overlapped by what may be termed the spermatic *omenta*, two duplicatures of *peritoneum*, including fat, continued from the spermatic vessels, *testes* and *vasa deferentia*, and extending from the lumbar and iliac regions towards the middle line of the *abdomen*. These, in the fœtal *Hyrax* are remarkably large and loaded with fat. On turning aside the *cæca*, (which can easily be done, as they have an entire investment of *peritoneum*, and are not closely attached to the abdominal *parietes*,) the convolutions of the small intestines, and of the rest of the *colon*, were brought into view.

"The *duodenum* is not so loosely connected with the back part of the *abdomen* as in most of the *Rodentia*; but it has throughout its course one entire investment of *peritoneum*. It descends in front of the right kidney for 4 inches, and then suddenly returns upon itself, passing behind the ascending *colon*, and runs along the middle of the spine as high as the stomach, where it becomes a loose intestine, or *jejunum*. At its commencement it is not dilated as in many *Rodentia*.

"The small intestines were about 8 lines in diameter, and were convoluted upon a mesentery about 1 inch and $\frac{3}{4}$ths in breadth, in the curve of which ran a chain of dark-coloured lacteal glands. Pallas counted eleven. On laying open the small intestines they presented a peculiarity I have not met with in any other quadruped, viz. a series of about twelve small pouches, distant from 3 to 5 inches from each other, about 3 lines in diameter and the same in depth, their orifices pointing distad, or towards the *cæcum*. These pouches make no projection externally, being situated wholly beneath the muscular coat. They consist of duplicatures of the mucous membrane, and are surrounded by the *glandulæ aggregatæ* which open into them by numerous orifices. Their use would appear to be to prevent the secretion of these glands being mixed as soon as formed with the chyme, but, by retaining it, to alter its qualities in some degree. The whole inner surface of the small intestines is beset with fine *villi*, giving them considerable resemblance to the intestines of a bird. For the extent of about a foot from the commencement of the small intestines many of these *villi* terminated in a black point, a circumstance which Pallas also observed, "intus punctis contiguis atris villosum." The length of the small intestines was 4 feet 6 inches.

"The *cæcum* seemed at first sight to have a great analogy to that

* Pallas observes that the whole of the liver was in his specimen situated in the right *hypochondrium*, and did not extend beyond the mesial line of the diaphragm. In a *viscus* so loosely attached as this is in the *Hyrax*, variety in respect to position is to be expected.

of the *Hare* and other *Rodents*, being sacculated, and distended with a blackish pultaceous matter; but in form one would compare it rather with that of the *Tapir*, its magnitude arising more from its breadth than its length. Its length from the orifice of the *ileum* is 3 inches, its circumference 8 inches. The *colon* gradually diminishes as it leaves the *cæcum*, 4 inches from which its diameter is nearly that of the small intestines: the dilated part of the *colon* is bent in a sigmoid form, and the remainder is convoluted on a broad *mesocolon*, and at a distance of 2 feet from the dilated part (when unravelled) terminates between two conical *cæca* in a second dilated intestine. Each of these singular *cæca* was an inch and a half in diameter at its base, and gradually contracted till it terminated in a glandular vermiform appendage about half an inch long, and 2 lines in diameter. The intestine continued from these was 3 inches in diameter, but also gradually contracted, so that at a distance of 6 inches it also became as small as the small intestines. The whole length of this intestine, the "intestinum bicorne" of Pallas, or second *colon*, was 2 feet 6 inches in length; making the length of the whole intestinal canal, exclusive of the *cæca*, 9 feet 4 inches, or about six times the length of the animal. Nothing in particular was observed either in the first or second divisions of the *colon*; but the contents of the latter were much drier than those of the former, and were collected into detached fibrous masses, or *scybala*. Notwithstanding the complexity of the intestinal canal, it is suspended from a single continuous duplicature of the *peritoneum* advancing from the bodies of the *vertebræ* and extending from the beginning of the *jejunum* to the *rectum*.

"In looking through the *Vertebrata* for an analogous formation of the intestinal canal, we shall find the *Hyrax* standing almost alone in this respect: among the *Mammalia* it is only in a few of the *Edentate* species that the double *cæcum* is to be met with, as, *e. g. Myrmecophaga didactyla*, Linn., and *Dasypus 6-cinctus*, Linn.; whilst in *Birds*, although the double *cæcum* more generally prevails, yet an additional single *cæcum*, anterior to these, has only been found in a few species. This structure, however, completes the analogy, *quoad* the number of *cæca*, but with respect to function the cases are widely different; the single anterior *cæcum* of *Hyrax* evidently performs an important part in digestion, while in the *Bird* it exhibits merely a trace of a structure peculiar to embryonic life. I should consider, however, the double *cæcum* of *Hyrax* as indicating an affinity to the group which intervenes, in the system of Cuvier, between the order it was originally placed in, and the one to which that great naturalist has transferred it. And it is interesting to find that while the *facies* of *Hyrax* so far simulates that of a *Rodent* as to have deceived the older naturalists, and to have concealed from them those unerring indications of its alliance with the *Pachydermata* which the osseous system exhibits, yet that Nature, as if in confirmation of her abhorrence to the *saltus*, had left in the internal structure of this singular animal an impression borrowed from the type of the *Edentata*.

"Although the stomach of some of the *Rodentia*, as the *common Rat*, and of the *Edentata*, as the *Manis*, exhibits a partial cuticular

lining, yet it is among the *Pachydermata* that this structure is most prevalent. In the *Hyrax*, two thirds of the stomach on the cardiac side are lined with a thick, white and wrinkled cuticle; along the greater curvature it was raised in the present instance into a number of warty excrescences, the consequences of disease. The stomach is of an oblong form, contracted and bent upon itself where the cuticle terminates. Its greatest length, when moderately distended, is $5\frac{1}{2}$ inches; its depth, opposite the cardiac orifice, 3 inches; the extent of the cardiac *sacculus*, beyond the œsophageal opening, 2 inches. The pyloric end was lined by a vascular and villous membrane. No difference could be detected in the state of the matters situated at the cardiac and pyloric ends of the stomach: they consisted of well-masticated vegetable substances. Immediately beyond the *pylorus* were the orifices of a number of follicles. The *œsophagus* had a course of 2 inches in the *abdomen*, before terminating at the *cardia*; this depended on the greater distance at which the stomach was situated from the diaphragm.

"The liver had the same form and number of lobes as described by Pallas. The middle lobe had the usual two notches, into the left of which the coronary ligament entered; but the right contained no gall-bladder, which in the *Hyrax*, as in some of the *Rodentia*, and many of the *Pachydermata*, is deficient. A compensation for this deficiency was, however, in some measure apparent in this animal; for the hepatic ducts, immediately on leaving the lobes of the liver, dilated into three globular receptacles, the united capacities of which would have equalled a moderate-sized gall-bladder; the duct formed by the union of these receptacles was 3 lines in diameter and 1 inch 3 lines in length; it grew gradually narrower as it approached the intestine, and terminated three fourths of an inch from the *pylorus*.

"In the largest of the above-mentioned dilatations of the hepatic ducts there was a *Distoma*, probably the same species as the *Liver fluke of Sheep*; and both in that and the other receptacle there were small pulverulent biliary concretions, of a bright yellow colour. I therefore feel uncertain whether these receptacles should be considered as altogether normal.

"The *pancreas* was a small flattened gland, but terminated by two distinct ducts, one close to the hepatic, the other 1 inch beyond it, lower down the *duodenum*. This disposition of the ducts, and the sudden bend of the *duodenum*, also reminds one of the structure of birds.

"The spleen had the same position and flattened semilunar form as Pallas describes.

"The relative size and position of the kidneys, and of the *capsulæ renales*, also accorded with the observations of that great anatomist. The *tubuli uriniferi* terminated in each kidney in a very prominent pointed *papilla*; the left kidney I observed to be peculiarly flattened on the outer or lateral side, which presents generally a regular convexity.

"In the 'Spicilegia Zoologica,' Pallas describes the peculiar in-

sertion of the ureters with a note of admiration; and I am not aware that a parallel structure has since been discovered in any animal possessing an urinary bladder. It is not, however, precisely in the *fundus* or summit of the bladder that the ureters open; they enter between the muscular fibres at the back part of the *fundus*, at the angles, analogous to the situation at which the *tubæ Fallopianæ* enter the human *uterus*; but they run obliquely downwards and inwards for 2 lines before they terminate, leaving, however, a full inch of space between them and the orifice of the *urethra*. The long diameter of the distended bladder is 1 inch 4 lines. For what purpose this structure is designed in the *Hyrax*, or whether the urine undergoes any change in consequence of it, I cannot conjecture; but it is a curious fact, that, according to Hemprich, both the natives of Arabia, and the boors of the Cape, regard the urine of *Hyrax* as medicinal.

"In accordance with the length of the loins in *Hyrax*, (a circumstance which Cuvier particularly notices,) the parts in relation with that region seem peculiarly elongated. The muscular part of the *urethra* is a full inch in length, and the *vesiculæ seminales*, opening into the termination of this part, lie on either side of it, so that their *apices* only reach the bladder. The *vasa deferentia* also are much longer than is usually seen in the true *Testiconda*, the *testes* being situated just below the kidneys, 3 inches anterior to the bladder. Pallas has accurately described their form and situation, and also the course of the *vasa deferentia*, and the convoluted mass, like a second *epididymis*, behind the bladder. They terminate distinctly from the ducts of the *vesiculæ seminales*, beneath a valvular fold of the inner membrane of the *urethra*, at the termination of the muscular part of that canal. These *vasa deferentia* are remarkably attenuated, as in all *Testiconda*, before they reach the bladder; they then begin to enlarge, and by means of their convolutions, must form a considerable receptacle for the *semen*. Yet here the *vesiculæ seminales* are as large and complex, proportionally, as in the *Boar*, a circumstance which seems to afford a strong additional argument to those advanced by Tyson (Phil. Trans., xiii. p. 370,) and Hunter (Anim. Œcon., p. 31,) against their supposed use as mere receptacles.

"These *vesiculæ seminales* were situated on either side the muscular part of the *urethra*; not behind the bladder, but in the space between it and the bulb of the *urethra*. They were each 1½ inch in length, and 8 lines in breadth, giving off a number of short wide processes, which, as they are compacted together, give to the external surface a brain-like appearance. Their ducts are wide, and terminate behind the valvular fold at the end of the muscular part of the *urethra*.

"Two prostate glands, of a tubular structure, lie at the lower ends of the *vesiculæ seminales*.

"The bulb of the *urethra* commences by a wide *cul-de-sac*: the spongy part of the *urethra*, which forms its *parietes*, is 2 lines in thickness, and this is embraced by *acceleratores* of remarkable

strength for so small an animal. Two small flattened Cowper's glands, of a circular figure, open by long ducts into this part of the *urethra*; the remainder of the canal is narrow.

"The *penis* is abruptly bent backwards, and terminates in a truncate extremity, which I have observed frequently hanging down in the living animal. The *erectores* muscles are short and strong, but quite inadequate to perform the office their name implies. The erection or extension of the *penis* is performed, as in other retromingents, by two muscles arising from the *symphysis pubis*, and inserted near the *glans* by a single tendon, which traverses the *dorsum penis*. One can hardly conceive how even these muscles can be adequate to the complete extension of the *penis*, unless assisted by the action which Cuvier attributes to the *acceleratores urinæ*, viz. that of expelling the accumulated blood from the bulbous part, and chasing it to the other end of the *penis*,—an action which one can readily conceive must have a considerable influence in the erection, as well as in driving onwards the fluids accumulated in the bulb.

"The viscera of the chest, the tongue, and the *larynx* presented nothing remarkable.

"The chief peculiarity observed in the muscular system was a modification of the digastric muscle of the lower jaw, which arose, as in the *Armadilloes*, from the upper part of the *sternum*, instead of the *occiput* or temporal bone; and was inserted into the whole *ramus* and angle of the lower jaw; it was of remarkable strength, being as large as the *sterno-cleido-mastoideus* in man. It is this muscle which occasions the peculiar fulness of the neck in the *Hyrax*."

The following extract from the Report of the Council to the General Meeting on December 6th, was read:

"In their last Annual Report, the Council adverted with unmixed satisfaction to the meetings of the Committee of Science and Correspondence, and to the published Proceedings which have emanated from those meetings. The Council saw in them proofs of the scientific zeal of the Members of the Society, both at home and abroad; and subsequent meetings and proceedings have confirmed the impression made by them, that much important information was likely to be afforded to the public by the industry and talent of those Members who have taken a share in producing them, as well as of other Members, not less qualified to add to the general stock of zoological knowledge. Aware from such ample evidence that the Society may, by the exertions of its Members, assume a rank in the scientific world commensurate with its resources and their zeal, the Council have under consideration a plan for substituting in lieu of meetings of a Committee, general meetings of the Society for scientific purposes. They trust to be able to lay before an early meeting the details of such a plan. With it will be connected the publication, with the requisite illustrations, of all the more important papers which may be communicated to the scientific meetings."

It was announced as probable that the contemplated arrangements would be so far completed in the course of the month as to take effect on the 8th of January next.

In their Report to the General Meeting on January 3rd, 1833, the Council presented a series of By-Laws, establishing General Meetings for the transaction of scientific business, and determining the publication of Transactions as well as of Proceedings. They proposed that these By-Laws should be considered as provisionally in force, until the day on which, according to the Charter, they should be submitted for confirmation by the Society, and suggested, therefore, that the General Meetings for scientific purposes should commence on the 8th of January.

The Report then proceeded as follows:

"On the adoption of these propositions, the Meetings of the Committee of Science and Correspondence may be considered as concluded, and the Council deem it right that the occasion should not pass without recording the satisfaction which they, in common with the Society at large, have felt in the proceedings of that Committee. The active Members of it (and they are numerous), and the Correspondents and friends who have added to the stock of knowledge through its means, are well entitled to the best thanks of the Society for their valuable communications. It is hoped that their exertions in the cause of science will be unremittingly continued; that fellow-labourers, not less numerous nor less active, will vie with them in the cultivation of the extensive field of investigation on which they have hitherto been engaged; and that the Scientific Meetings of the Society will go on increasing in interest and in estimation as a most effectual means of acquiring and imparting Zoological knowledge."

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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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