

Mammalia Room

S. MAM.

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PROCEEDINGS

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J. Wolf. Lith

M. & N. Hanhart, Imp.

BALÆNICEPS REX, *Gould*

PROCEEDINGS
OF THE
ZOOLOGICAL SOCIETY OF LONDON.

January 14, 1851.

Prof. Owen, F.R.S., Vice President, in the Chair.

The following papers were read:—

1. ON A NEW AND MOST REMARKABLE FORM IN ORNITHOLOGY.
By JOHN GOULD, F.R.S. ETC.

(Aves, Pl. XXXV.)

I have the pleasure of introducing to the notice of the Society on the present occasion the most extraordinary bird I have seen for many years, and which forms part of a collection made on the banks of the upper part of the White Nile, by Mansfield Parkyns, Esq., of Nottingham. For this bird I propose the generic name of *BALÆNICEPS*, with the following characters:—

Bill enormously robust, equal in breadth and depth; sides of the upper mandible much swollen; culmen slightly elevated, depressed in the middle of its length, and terminating at the point in a very powerful hook; tomia sharp, turning inwards and very convex; lower mandible very powerful, with a sharp concave cutting edge and a truncated tip; nostrils scarcely perceptible, and placed in a narrow slit at the base of the bill, close to the culmen; orbits denuded; head very large; occiput slightly crested; wings very powerful, the third, fourth and fifth feathers the longest; tail of moderate length and square in form; plumage soft and yielding; skin of the throat loose, and capable of dilatation into an extensive pouch; tibiae and tarsi lengthened, the latter a fourth shorter than the former; the lower third of the tibiae denuded; toes four in number, all extremely long, and without the slightest vestige of interdigital membrane; hind-toe on the same plane as the anterior ones and directed inwards; tibiae and tarsi reticulated, the reticulations becoming much smaller

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on the joints ; upper surface of the toes scutellated ; nails powerful, and not much curved ; the nail of the centre toe impectinated.

BALÆNICEPS REX.

Bill pale yellow, becoming horn-colour on the culmen and tip, and blotched with dark brown ; orbits pale yellow ; head and neck slaty grey, darkest on the crown ; chest ornamented with lanceolate feathers of a similar colour, with a dark stripe down the centre ; abdomen, flanks, thighs and under tail-coverts very pale grey ; upper surface generally very dark grey, most of the feathers margined with light grey ; primaries, secondaries and tail blackish grey ; rump and upper tail-coverts light grey ; legs greyish black.

Total length, from the tip of the bill to the extremity of the tail, 52 inches ; from the tip of the bill to the end of the centre toe, 67 ; bill, from the gape to the tip, 9 ; depth of the bill, $4\frac{3}{4}$; breadth, 4 ; wing, 27 ; tail, 12 ; tibiæ, 13 ; tarsi, 10 ; middle toe and nail, 7 ; external toe and nail, $6\frac{1}{2}$; internal toe and nail, $5\frac{1}{4}$; hind toe and nail, 4.

Hab. The upper part of the White Nile, in Eastern Africa.

Remark.—This is evidently the Grallatorial type of the *Pelecanidæ* ; at least such is the conclusion to which I am directed after a careful examination and comparison of it with *Pelecanus*, *Grus*, *Ardea*, and *Cancroma*, to none of which genera is it so nearly allied, except in general contour, as to *Pelecanus*. Perhaps the most singular feature connected with this form is the entire absence of interdigital membrane, a character so conspicuous in the Storks, Herons, and the Boat-bill, which latter bird is as nearly allied to *Nycticorax* as the present bird is to *Pelecanus*. Both *Cancroma* and *Nycticorax* have the nail of the centre toe strongly pectinated, which character is not found in *Pelecanus* nor in *Balæniceps*.

2. DESCRIPTIONS OF TWENTY SPECIES OF COLUMBELLÆ, AND ONE SPECIES OF CYPRÆA. BY J. S. GASKOIN.

1. *COLUMBELLA TENUIS*. *Testa pyramidalis, subventricosa, lævis, tenuis, albicans, maculis irregularibus fuscis magnis longitudinaliter dispositis; anfractibus octo, duobus anticis gibbosis; spirâ subelongatâ, acuminatâ; aperturâ latâ, anticè divergente, posticè acuminatâ, labio externo tenui, internoque edentulo, varice externo subelevato; striis tenuibus ab varice anticè continuis; canali brevi.*

Shell pyramidal, rather ventricose, smooth, thin, of a dull whitish colour, with large distant dark brown markings extending, irregularly, in width and form longitudinally over the volutions, which are eight in number, the two anterior being gibbous, the others proceed to form an acuminated apex ; the spire constitutes more than one-half the length of the shell * ; aperture wide, diverging anteriorly,

* In estimating the proportionate length of the spire of the shell, I take the measurement from the termination of the last volution at its junction to form the posterior point of the aperture ; and the width, at the largest diameter of the anterior whorl.

acuminated posteriorly; outer lip curved outwards, thin, without denticulations, as is also the inner lip, which is shining, and within of the same colour as the shell; a slightly elevated varix terminates the inner edge of the aperture, from which fine striæ pass obliquely forward over the dorsum to the anterior portion of the outer lip; channel short, slightly curved.

Length, $\frac{6.0}{1.00}$ of an inch; width, $\frac{2.7}{1.00}$ of an inch.

Hab. —? Cab. Gaskoin, specimen unicum.

2. *COLUMBELLA ALBINODULOSA.* *Testa oblongo-ovata, pallidissime luteo-fulva, fasciis angustis interruptis tribus brunneis; spirâ acuminatâ, anfractibus septem; nodulis latis prominentibus subdistantibus albi-coronatis; aperturâ oblongâ subquadratâ albâ; labio externo crasso, recto, submarginato, intus denticulato; dentibus posticis majoribus, labio interno dentibus irregularibus subvaricosis; canali recto latiusculo subelongato.*

Shell oblong-ovate, of a very light yellowish brown colour, with three interrupted or dotted dark brown narrow bands, the first extending from the anterior point of the outer lip to the centre of the aperture, the second from the anterior third of the margin of the outer lip to the posterior part of the aperture, and the third from the posterior third of the margin of the outer lip along the anterior portion of the volutions spirally to the apex; broad nodules or tubercles, moderately prominent and rather distant, exist from the posterior portion of the outer lip over the dorsum or shoulder, and continuously on the centres of the whorls, and as the whorls become narrow, occupy them longitudinally on to the point of the spire, each nodule being crowned with an opaque white blotch; opaque white irregular markings are also on the anterior volution; spire acuminated, constituting rather less than one half the length of the shell; seven volutions, rather convex; aperture straight, rather wide; outer lip sharp at its edge, straight, curving suddenly on forming the channel; just within the lip is a row of about eight rather prominent teeth, the posterior being the larger; inner lip slightly denticulated with about six irregular varices, with a slight sharp prominence at its margin, the large whorl ribbed with fine striæ, most prominent anteriorly; channel straight, rather wide, slightly elongated and recurved.

Length, $\frac{4.5}{1.00}$ of an inch; width, $\frac{2.0}{1.00}$ of an inch.

Hab. —? Cab. Gaskoin.

3. *COLUMBELLA INTERRUPTA.* *Testa oblongo-ovata, albicans, fasciis duabus interruptis latis rufescenti-brunneis; fasciâ anticâ pallidiore; spirâ acuminatâ, anfractibus septem vel octo; aperturâ latiusculâ præcipuè ad partem posticam; labio externo crasso margine acuto, intus denticulato, denticulis quatuor vel quinque; labio interno cum margine externo denticulato, aurantiaco; testâ extus cancellatâ striis spirâlibus validis, longitudinalibus tenuibus; peritremate pallide aurantiaco, posticè subobtusè angulari; canali breviusculo latiusculo.*

Shell oblong-ovate, of a dull greyish white colour, with two distinct,

strongly marked, interrupted, broad, dark reddish brown bands, the anterior being the less deeply coloured, the markings being rather crescentic, with the horns pointing towards the aperture becoming more arrow-shaped advancing onwards; the anterior band extends from the fore part of the outer lip to the middle of the inner side of the aperture, the second from the posterior part of the edge of the outer lip over the dorsum at the shoulder, and spirally on the centres of the volutions to the apex; at the superior portion on the aperture side of each marking is an opaque white colouring; spire acuminate, seven to eight whorls; at the suture, spirally on to the apex, is a fine whitish varix having interrupted brown markings along its entire course; aperture rather straight and broad, widening posteriorly; outer lip thick, sharp at its edge, orange-coloured at its inner border, where there are four or five slight denticulations; inner lip has a finely denticulated ridge at its outer edge of an orange colour, within it is an angular projection forming the commencement of the channel; the whole external shell is cancellated, the transverse striæ being much stronger than the longitudinal, and especially anteriorly; peritreme of a light orange colour, rather obtusely angular posteriorly; channel rather short and moderately wide.

Length $\frac{4}{100}$ of an inch; width, $\frac{2}{100}$ of an inch.

Hab. —? Cab. Gaskoin.

4. *COLUMBELLA LEUCOSTOMA.* *Testa ovata, albicans, nitens, posticè fasciâ latâ brunneâ spirali ornata; apice albicante dimidio antico anfractûs ultimi albido; spirâ acuminatâ, anfractibus septem; aperturâ gulâque albis latiusculis, illâ posticè subquadratâ, labio externo intus subdenticulato, dentibus sex posticis majoribus; canali brevi latiusculo.*

Shell ovate, shining, of a whitish colour, having a broad brown band occupying the posterior half of the anterior volution and the entire of the sixth, fifth and fourth, except at their posterior edge, which is white, the brown band terminating in an undefined line near the suture; the three apicine whorls are white, with very fine lightly coloured linear markings, and in like manner is the white anterior half of the last whorl finely but irregularly streaked; spire acuminate, seven volutions, which constitute the greater half of the length of the shell; aperture white, as is also the interior, rather broad, somewhat square posteriorly; outer lip gradually curved inwards, having within it about six slight denticulations, the posterior being the larger; inner lip smooth, spiral; a few fine striæ extend obliquely forwards over the dorsum of the channel from the slight varix at its outer edge; channel short, rather broad.

Length, $\frac{3.5}{100}$ of an inch; width, $\frac{1.7}{100}$ of an inch.

Hab. —? Cab. Gaskoin.

5. *COLUMBELLA PACIFICA.* *Testa oblongo-ovata, lacteo-opaca, maculis irregularibus distantibus rufescenti-brunneis ornata; intus alba; spirâ acuminatâ, anfractibus convexis septem vel octo posticè obtusissimè coronatis; aperturâ latâ rectiusculâ;*

labii externi margine tenui intus edentulo; labio interno lævi externè margine tenui; anfractu ultimo anticè valde striato, striis tenuioribus longitudinaliter decussantibus; canali brevi, lato, subrecurvo.

Shell oblong-ovate, of an opaque milk-white colour, distantly maculated with dark reddish brown irregular markings, internally white; spire acuminate, constituting the greater half of the length of the shell; volutions seven to eight, convex, their posterior margin generally very obtusely and distantly coronated; aperture wide, rather straight; outer lip thin at the edge, even, no denticulation within, marginated; inner lip even, having a very slight straight edge or varix externally, from which rather strong striations pass over the anterior of the dorsum to the outer lip, and very much finer striæ longitudinally pervade the same; channel short and wide, very slightly curved.

This shell differs from *Columbella Miser*, Sowerby, in the absence of denticulation, in the last volution being much more gibbous, the aperture much wider, the channel decided, the spire more pyramidal, and much less coloration and markings.

Length, $\frac{4.5}{100}$ of an inch; width, $\frac{2.5}{100}$ of an inch.

Hab. Sandwich Islands. *Cab.* Gaskoin.

6. *COLUMBELLA VARICOSA.* *Testa oblongo-ovata, nitens, crassa, albicans, colore nigricanti-brunneo irregulariter induta; marginibus posticis anfractuum albicantibus; spirâ acuminatâ, anfractibus septem vel octo subventricosis varicosis validis prominentibus subobliquis instructis; parte anticâ ultimi anfractûs lævigatâ, anticè supra canalem transversè striatâ; aperturâ oblongâ subquadratâ rectâ intus cærulescente, labio externo recto, marginato posticè incisurâ magnâ instructo, intus denticulato denticulis posticis validiusculis, labio interno lævi margine elevato tenui; canali brevi latiusculo.*

Shell oblong-ovate, shining, thick, strong, of a white colour, generally irregularly and greatly covered, more or less intensely, with an almost black-brown coloration, excepting the posterior edges of the whorls, where it remains nearly white; spire acuminate, constituting one half the length of the shell, has seven to eight volutions, rather convex, slightly diagonal; strong, prominent, somewhat distant varices exist on the posterior margin of the last whorl, the anterior portion of which have many striæ passing transversely and obliquely forwards from the columellar edge of the aperture; aperture oblong, rather square and straight, internally of a bluish white colour; outer lip straight, marginated, having a rather large notch at the junction with the body of the shell, and having anteriorly to this notch, within, about five or six slight denticulations, the posterior being the larger; inner lip smooth, without denticulation, edge slightly elevated and thin; channel short, rather broad.

Length, $\frac{8.0}{100}$ of an inch; width, $\frac{3.5}{100}$ of an inch.

Hab. Peyta, Peru. *Cab.* Cuming, Gaskoin.

7. *COLUMBELLA AUSTRALIS.* *Testa oblongo-ovata, albicans,*

maculis parvis irregularibus brunneis inæqualibus ornata, majoribus saturatoribusque apud marginem posticum anfractuum positis; spirá acuminatá, anfractibus octo subgibbosis, apice albicante; aperturá latiusculá intus cærulescente, labio externo recurvo ad canalem convergente, intus denticulis septem ad octo subprominentibus subdistantibus, labio interno lævi anticè angulifero; canali latiusculo brevi recurvo, anfractu ultimo anticè transversim striato; peritremate posticè angulari.

Shell oblong-ovate, of a whitish colour, greatly covered with small, irregular, dark brown, conjoined specklings, of unequal intensity in coloration, the larger and darker markings being at the edges of the whorls; three rather narrow interrupted bands traverse the last whorl, the posterior one proceeding along the anterior margin of the volutions; spire acuminated, being rather the greater half-length of the shell; volutions eight, slightly gibbous, the four apicine white; aperture rather broad, internally of a bright pinkish blue-white colour, slightly iridescent; outer lip a little curved, converging at the channel; within are seven or eight irregular, slight elevations or denticulations, rather distant, at the anterior portion of the edge are several fine denticulations; inner lip smooth, with a very slight thin varix at the anterior part; an obtuse angularity forms the commencement of the channel; channel rather wide, short, and a series of rather fine parallel striæ traverse the anterior part of the last whorl; peritreme angular posteriorly.

Length, $\frac{8}{100}$ of an inch; width, $\frac{2.5}{100}$ of an inch.

Hab. Sydney. Cab. Gaskoin, Cuming.

8. *COLUMBELLA CANCELLATA.* *Testa ovata, pallidè aurantiaco-brunnea; apice roseo, superficie omnino cancellatá, serie posticè granulorum majore; spirá acuminatá anfractibus septem; aperturá latiusculá brevique, labio externo subrecurvo convergente, intus denticulis quatuor vel quinque subprominentibus, labio interno lævi; canali latiusculo, brevi, peritremate posticè obtusè angulari.*

Shell ovate, of an uniform light orange-brown colour, except the apex, which is pink, deeply cancellated over its entire surface, having the posterior line of nodules larger than the others; spire acuminated, and forms rather more than half the length of the shell; volutions seven; aperture rather broad and short; outer lip slightly curved, converging towards the channel; within it are four or five rather prominent denticulations; inner lip smooth, very obtusely nodulated at its exterior slightly elevated edge; channel moderately broad, short, curved towards the columella; peritreme obtusely angular posteriorly.

Length, $\frac{3.5}{100}$ of an inch; width, $\frac{1.8}{100}$ of an inch.

Hab. West Indies. Cab. Gaskoin.

9. *COLUMBELLA PULLA.* *Testa oblongo-ovata, saturate brunnea; parte anticá ultimi anfractús, columelláque albicantibus; spirá acuminatá, anfractibus octo vel novem, convexiusculis,*

suturá lævi; aperturá latiusculá posticè acuminatá, labio externo tenui lævi, intus subdenticulato, saturate brunneo, labio interno lævigatè subdenticulato, anticè subalbido, margine interno varicem rectum efformante, parte anticá testæ transversim striatá; canali mediocri, recto.

Shell oblong-ovate, of an uniform dull, very dark brown colour, and also within, excepting the columella and edge of the outer lip, which are white; spire acuminated; volutions eight or nine, slightly convex, even at the suture; aperture rather acuminated posteriorly; outer lip thin, smooth, internally slightly denticulated; inner lip shining, with slightly elevated nodules or teeth, and its edge forms a fine straight varix, from which a few thin striæ pass over the dorsum of the channel; channel moderately wide and straight.

Length, $\frac{5.2}{100}$ of an inch; width, $\frac{2.0}{100}$ of an inch; length of spire, $\frac{3.0}{100}$ of an inch; length of last whorl, $\frac{2.2}{100}$ of an inch.

Hab. —? *Cab.* Gaskoin.

10. *COLUMBELLA INTEXTA.* *Testa oblonga, angusta, lævis, albicans, strigis punctulisque irregularibus saturate brunneis ornata; spirá acuminatá, anfractibus novem vel decem; marginibus posticis anfractuum brunneo maculatis, ultimo anfractu anticè similariter colorato; suturá elevatá; aperturá breviusculá angustáque, labio externo arcuato, ad marginem acutiusculo, extus crassiusculo, ad canalem convergente, labio interno ad marginem subvaricoso, lævi, edentulo; canali breviusculo, angustato, extus transversim striato.*

Shell elongated, narrow, smooth, of a dull whitish colour, having dark brown irregular dottings and streaks pervading the entire surface of the shell; irregular, rather large and distant, similarly coloured spots are on the posterior margin of the volutions to the apex, and a band, similarly indicated at the anterior part of the last whorl; spire acuminated, constituting about two-thirds of the length of the shell; volutions nine to ten, suture elevated; aperture rather short and narrow; outer lip arched, sharp at its edge, thickened externally, converging towards the channel; inner lip slightly ridged at its edge, smooth, without denticulations; channel rather short, somewhat narrow, externally transversely striated.

Length, $\frac{5.5}{100}$ of an inch; width, $\frac{2.0}{100}$ of an inch.

Hab. Australia. *Cab.* Cuming, Gaskoin.

11. *COLUMBELLA CONTAMINATA.* *Testa oblonga, lævis, saturate brunnea, intus subalbida, lined suturali albicante subinterruptá; spirá acuminatá dimidium testæ superante, anfractibus octo vel novem convexiusculis; aperturá posticè latá, anticè angustiore, margine externo lato, crasso, intus denticulis linearibus sex vel septem; margine interno tenui, albicante, intus denticulis prominentibus confertis albicantibus sex supra columellam continuis, columellá interstitiisque rufescenti-brunneis; canali prominente angusto subrecurvo, margine interno violaceo, parte externá transversim striatá.*

Shell oblong, smooth, of an uniform light brown colour, whitish within; a narrow interrupted white band proceeds from the middle of the margin of the outer lip and continues along the posterior edge of the volutions to the apex; a less defined band traverses the dorsum more anteriorly, and terminates at the middle of the inner side of the aperture; spire acuminate, comprising more than one half the length of the shell; volutions eight to nine, slightly convex, suture a little elevated; aperture rather wide, shining, broader posteriorly; outer lip whitish, and thick externally, edge sharp, violaceous for a little distance within, with six or seven linear denticulations; inner lip, a fine whitish varix extends from the curve of the aperture to the anterior point of the channel; within this varix, at its centre, are five or six denticulations, closely set, parallel, prominent, proceeding over the columella, whitish at their edges, the interstices and the portion exterior to them being of a reddish brown colour; channel projecting, narrow, slightly recurved, with a dark violaceous colour within; a number of rather strong striæ pass from the inner side of the aperture to the edge of the anterior half of the outer lip.

Length, $\frac{50}{100}$ of an inch; width, $\frac{20}{100}$ of an inch.

Hab. —? Cab. Gaskoin.

I have seen but one of this characteristic species: the aperture is allied in form to that of *Columbella Puella*, Sowerby. It may be convenient to readers to state, that the species *Col. Puella* is by accident, in the index of the 'Thesaurus Conchyl.' of Sowerby, jun., entered as *Col. Nympha*.

12. *COLUMBELLA MARQUESA*. *Testa oblongo-ovata, albicans; anfractibus sex vel septem; 4 vel 5 posticis roseis, longitudinaliter striatis, anfractibus tribus anticis lævibus spiraliter rufescenti-brunneo lineatis; spirâ acuminatâ, dimidium testæ æquante; aperturâ mediocri rectiusculâ; labii externi margine tenui posticè marginato, extus incrassato, edentulo, labio columellari lævi nitido, margine crassiusculo elevato; canali extus transversim striato, brevi.*

Varietas hujus testæ major differt pro colore.

Shell oblong-ovate, of a dull white colour; spire acuminate, forming about one-half the length of the shell; volutions six to seven, which, with the last volution, the columellar side of the shell forms an even convexity; the first four or five whorls are of a rose or bluish-pink colour, minutely longitudinally striated; the others are smooth, with somewhat distant fine brown lines, seven, eight, or so in number, passing spirally and continuously from just within the outer lip along the three last whorls, to the commencement of the pink striated volutions; aperture moderately wide and long, rather straight; outer lip sharp at its edge, forming a notch at its junction with its next whorl, thickened externally, without denticulation; inner lip also edentulate, smooth, shining, externally forming a rather thick, slightly elevated varix, which extends to the extremity of the channel, and from the whole length of this varix fine striæ pass over

the dorsum of the channel to the anterior portion of the outer lip ; channel short.

A variety of this species is rather larger in size, with the markings along the posterior edge of the three last whorls in somewhat distant, brown, square spots, from which rather distant undulating lines of a lighter colour pass longitudinally over the volutions, while in some specimens the colour is more *en masse* on the last whorl with small circular spots in it, showing the colour of the shell.

Length, $\frac{3.5}{100}$ of an inch ; width, $\frac{1.5}{100}$ of an inch.

Hab. Marquesas. Cab. Gaskoin, Gubba.

13. COLUMBELLA AUSTRINA. *Testa oblongo-ovata, lævis, nitens, albicans, punctulis distantibus pallidissime brunneis, fasciâque anticâ latâ brunneâ ornata ; spirâ acuminatâ, anfractibus septem vel octo, convexiusculis ; suturâ distinctâ ; aperturâ latiusculâ, labio externo posticè intus emarginato ; margine acutiusculo versus canalem incurvo, intus denticulis prominentibus octo vel novem ; labio columellari recto, nitido, denticulis septem anticè positis, margine externo subelevato ; peritremate albicante, aperturâ intus violaceo-brunneâ ; canali subprominente, latiusculo, dorso canalis transversim striato.*

Shell oblong-ovate, of a dull white colour, smooth and shining, with light brown coloration, or interrupted from the anterior side of the volutions of the spire, and extending, more or less faintly, over them ; a much darker broad band occupies three-fourths, at its centre, of the last whorl, the colour gradually softening into the whitish anterior, posterior, and outer portions of the whorl ; spire acuminated, constituting less than one half the length of the shell ; volutions seven to eight, rather convex, slightly ridged at the suture ; aperture rather long, and moderately wide and straight ; outer lip forms a broad notch at its juncture with the body of the shell, edge sharp, curving much towards the channel, externally thickened ; within are eight or nine rather prominent denticulations, diminishing in size from their commencement at the anterior edge of the notch ; inner lip straight, smooth and shining, with a row of about seven small, even, round teeth, which extend over the columella, and a very slightly raised sharp varix forms the outer edge of the aperture proceeding to the end of the channel ; from this varix fine striæ pass over the dorsum of the channel to the anterior part of the outer lip ; peritreme whitish, the interior of the shell of a rather violaceous colour ; channel slightly projecting, moderately wide.

Length, $\frac{5.0}{100}$ of an inch ; width, $\frac{2.2}{100}$ of an inch.

Hab. Australia. Cab. Cuming, Gaskoin.

14. COLUMBELLA BACCATA. *Testa oblongo-ovata, albicans, fasciis tribus interruptis saturate rufescenti-brunneis, punctulis opacis albicantibus rotundis per lineas obliquas vel longitudinales positis ; spirâ acuminatâ, anfractibus septem, quorum tribus anticis lævibus, posticis obtuse longitudinaliter striatis ; apice albicante ; aperturâ latiusculâ intus albicante fasciis*

brunneis tribus conspicuis; labio externo crassiusculo denticulis paucis intus prope centrum positis; labio interno recto, ad marginem externum varice prominente instructo; canali lato, obtuso.

Shell oblong-ovate, of a dull white colour, with three dark reddish brown interrupted bands traversing the last whorl, the anterior extending from the fore-part of the outer lip to that of the aperture, the second continuing along the anterior margin of the volutions to near the apex, and the third passing similarly on their posterior margin to the same extent; opaque, whitish, distinct, small round spots pervade the four anterior volutions, being in rows, obliquely or longitudinally placed; shell, within of a dull white colour, the three bands being conspicuous; spire acuminate; volutions seven, the three anterior smooth, the posterior obtusely striated longitudinally, apex whitish; aperture rather wide and straight; outer lip somewhat thick, having a few (one or two) rather prominent denticulations within the edge, about the centre; inner lip straight, with a rather strong varix at its outer edge; channel wide and obtuse; a few striæ pass obliquely over the anterior part of the columellar side of the dorsum.

Length, $\frac{25}{100}$ of an inch; width, $\frac{12}{100}$ of an inch.

Hab. —? Cab. Gaskoin.

15. *COLUMBELLA SAGITTA.* *Testa oblonga, subcylindræa, angustata, lævis, nitens, semipellucidula, pallidissime brunnea; fasciis duabus angustis interruptis albidio-pacis, ab postico margine anfractuum ad apicem continuis; spirâ acuminatâ, 3-5 longitudinis testæ; anfractibus octo; apertura brevi, latâ; labio externo crassiusculo extus margine albini-opaco, versus canalem incurvato, labio interno lævi nitido; dorso anticè transversim striato; canali longiusculo, latiusculo; peritremate subquadrangulo.*

Shell oblong, subcylindrical, narrow, smooth, shining, semitransparent, of an extremely pale brown colour, with a very narrow interrupted opaque white band arising from about the middle of the outer lip, and continuing along the anterior edge of the whorls to the apex; the markings forming this band are pointed, the points being toward the outer lip; large white opaque markings occupy the entire posterior margin of the volutions, conjoined at the suture by broad bases, and, diminishing pyramidally to a point, extend across the volutions, and between each pyramidal mark, fitting the interstices, are dark, reddish-brown, barb-shaped colorations; spire acuminate, constituting three-fifths the length of the shell; volutions eight, very slightly convex; aperture short, rather wide; outer lip moderately thick, much incurvated to form the channel, with a whitish opaque strong margin externally, edentulous; inner lip even, and shining, with a slight varix along its outer border, from which several rather prominent striæ traverse the anterior part of the dorsum to the fore part of the outer lip; the columella terminates angularly at the beginning of

the channel; channel rather long, moderately wide; peritreme subquadrangular.

Length, $\frac{3\frac{2}{100}}$ of an inch; width, $\frac{1\frac{2}{100}}$ of an inch.

Hab. Africa; West Indics. Cab. Metcalfe, Cuming, Gaskoin, &c.

16. COLUMBELLA CONSPERSA. *Testa oblongo-ovata, pyramidalis, pallide brunnea, maculis anticis, albi-opacis, irregularibus; fasciis tribus albi-opacis, brunneo interruptis, duabus posticis ab aperturâ ad apicem continuis; spirâ acuminatâ anfractibus novem vel decem convexiusculis; aperturâ rectâ, latiusculâ; labio externo ad marginem acuto, margine externo lato prominente, intus denticulis quatuor quinque vel sex parvis; labio interno lævi, nitido, intus varice parvo denticulato, extus varice subprominente ad laterem canalis extenso; striis tenuibus per anticam partem dorsi continuis; canali longiusculo, angusto, leviter recurvo; peritremate subquadrangulo, lilacino.*

Shell oblong-ovate, pyramidal, of a dull pale-brown colour, with opake white, irregular markings on the anterior half of the last whorl; three opake white bands; the two anterior, interrupted and edged posteriorly with dark brown coloration, traverse the last whorl; the second, arising from the middle of the outer lip in narrow streaks, continues along the *anterior* edge of the volutions close to the suture, on to the apex; the third arises at the posterior part of the outer lip, sometimes in conjoined nodules, edged anteriorly and interrupted by a dark brown colour, passes over the dorsum and continues in irregularly broad, even streaks on the *posterior* margin of the whorls on to the apex. [These characters are marked in fine specimens, but are sometimes rendered less conspicuous by irregularity in the opake white deposition.] Spire acuminated, constituting rather more than one-half the length of the shell; volutions nine to ten, slightly convex; aperture straight, moderately wide; outer lip sharp at the edge, converges abruptly to form the channel, a broad prominent margin externally, within are four, five, or six denticulations; inner lip smooth and shining, within is a little ridge forming about six nodules or teeth, and at the outer edge is a rather strong varix extending on to the side of the channel, and from the outer side of which varix fine striæ traverse the anterior portion of the dorsum; channel rather long and narrow, slightly recurved; peritreme rather quadrangular, and of a lilac colour.

Length, $\frac{5\frac{0}{100}}$ of an inch; width, $\frac{2\frac{2}{100}}$ of an inch.

Hab. —? Cab. Gaskoin.

17. COLUMBELLA FORMOSA. *Testa oblongo-ovata, lævis, nitida, colore flori-lacteo induta; fasciis duabus maculis albicantibus brunneisque interruptis; spirâ acuminatâ, ad dimidium longitudinis testæ æquali; anfractibus septem vel octo convexiusculis, suturâ subprominente; aperturâ latiusculâ et breviusculâ; labio externo lævi tenui, interno lævi; canali lato.*

Shell oblong-ovate, smooth and shining, of a light delicate cream colour, with two interrupted bands of opake white and brown mark-

ings mingled together, the first arising from the anterior point of the outer lip, and proceeding to the inner edge of the aperture; the second from the middle of the outer lip, and extending along the anterior margin of the volutions to the apex; spire acuminate, of half the length of the shell; volutions seven to eight, rather convex, suture slightly prominent; aperture somewhat wide and short; outer lip smooth and thin; inner lip even and also edentulous, no varix at its inner border; channel short and wide; a few striæ traverse the anterior part of the dorsum.

Length, $\frac{4.0}{10.0}$ of an inch; width, $\frac{2.0}{10.0}$ of an inch.

Hab. —? Cab. Gaskoin.

18. *COLUMBELLA HIRUNDO.* *Testa ovato-pyramidalis, lævis, nitens, pallida, strigis punctisque brunneis leviter maculata; spirâ mucronatâ, dimidium longitudinis testæ æquante; anfractibus novem vel decem planis; aperturâ latiusculâ; labio externo crasso albo semicirculari, dentibus duobus vel tribus latis posticis internis, margine externo crasso albo; labio interno lævi, subspirali, dente solitario majusculo ad posticam partem; canali longo, latiusculo, recurvo, rostris prominentibus, externo divergente quasi furcato ut in formâ caudæ hirundinis.*

Shell ovato-pyramidal, smooth and shining, pale in colour, lightly speckled with fine brown streaks and dottings, with intermissions of colour along the darker coloration of the posterior edge of the volutions; spire sharply mucronated, being about half the length of the shell; nine to ten flat volutions; aperture rather broad; outer lip thick, white, semicircular, with two or three broad denticulations within posteriorly, converges abruptly to form the channel; external margin strong and white; inner lip smooth, subspiral, with a single rather large node or tooth at the posterior part; channel long and moderately wide, recurved, beaks prominent, outer one diverging, giving a forked appearance, as in the tail of the swallow.

This species is of the stamp of *Col. bicanalifera* of Sowerby, Proc. Zool. Soc. part ii. page 113; Sowerby's Thesaurus, fig. 144.

Length, $\frac{6.0}{10.0}$ of an inch; width, $\frac{2.6}{10.0}$ of an inch.

Hab. Per the 'Samarang.' Cab. Gaskoin.

19. *COLUMBELLA CALIFORNIANA.* *Testa oblongo-ovata, subpyramidalis, lævis, nitens, brunnea, vel brunneo variabilis, aliquando lineis tenuibus, fortioribus, aut latiusculis irregularibus; spirâ acuminatâ dimidium testæ subæquante; anfractibus septem convexis; aperturâ latâ subquadrangulari; labio externo tenuiusculo intus denticulato, labio interno leviter denticulato; dorso anticè transversim striato; peritremate purpureo-nigricante; canali brevi.*

Shell oblong-ovate, smooth and shining, rather pyramidal, of a brown colour, varying much in intensity and markings, in being sometimes uniform, in others with one or two thin darker coloured cinctures, or with broad and continuous dark irregular markings

spirally passing on the whorls to be lost in the deeper colour of the apicine volutions; spire acuminate, about half the length of the shell; volutions seven, convex; aperture wide, subquadrangular; outer lip rather thin, denticulated within on its whole extent; inner lip slightly denticulated along its rather angular inner edge; fine striæ traverse the anterior part of the dorsum; peritreme of a dark purple-brown colour; channel very short.

Length, $\frac{4.0}{100}$ of an inch; width, $\frac{2.0}{100}$ of an inch.

Hab. Sandeago, California. *Cab.* Cuming, Gaskoin.

20. COLUMBELLA IODOSTOMA. *Testa oblongo-ovata, irregulariter brunnea; spirâ acuminatâ, apice cæruleo-brunneo; anfractibus septem vel octo raptim longitudinaliter decrescentibus; costellis prope aperturam minus prominentibus, costis ad posticum marginem in tuberculis posticè terminantibus; aperturâ posticè latiusculâ, anticè subacutâ; labio externo tenui, intus denticulato; labio interno intus denticulato, varice prominente marginato; dorso anticè extus striato; canali longiusculo; margine peritrematis purpureo-brunnescente.*

Shell oblong-ovate, of an irregular brown colour; spire acuminate, apex dark bluish brown colour; volutions seven to eight, greatly decreasing in circumference on to the apex, strongly ribbed longitudinally, less strongly towards the aperture, the ribs terminating in colourless nodules at the posterior edge of the volutions; aperture rather broad posteriorly, subacute anteriorly; outer lip thin, denticulated to its full extent within; inner lip denticulated within, bordered by a rather prominent varix, from the outside of which striæ pass over the dorsum of the channel; channel rather long and broad; edge of peritreme of a dark purplish brown colour.

Length, $\frac{5.0}{100}$ of an inch; width, $\frac{2.2}{100}$ of an inch.

Hab. Port Essington. *Cab.* (specimen unicum) Gaskoin.

CYPRÆA CLARA. *Testa subcylindraco-ovalis, rufescenti-cinerea, anticè et posticè supra extremitate maculâ brunneâ ornata; fasciis latis saturatioribus tribus; basi marginibusque albescentibus; aperturâ latiusculâ subspirali; labio externo crassiusculo, dentibus circa viginti-sex, regularibus, prominentibus; interno subspirali, dentibus circa viginti; sulco columellari profundo latoque, intus denticulato; marginibus rotundatis, incrassatis; extremitatibus obtusis, punctis minutissimis nigris notatis.*

Shell subcylindrical-ovate, of a lightish red-ash colour, with three broad bands placed about the anterior and posterior thirds and middle of the shell, the middle one being narrowest, the lighter colour of the shell being observed between them; a rather large reddish-brown marking over the anterior and posterior extremities, gradually fading along the margins; base whitish in a degree tinted with pink, round; the calcareous deposit forming the denticulations extends on to the sides of the shell; aperture moderately wide, subspiral; outer lip thick, with about twenty-six regular, even, rather prominent teeth occupying the entire thick edge of the lip but not extending on to

the base ; inner lip subspiral, about twenty projecting teeth terminating outwardly in an even line at the edge of the aperture ; columellar sulcus broad and deep, which about eight of the anterior teeth traverse and strongly serrate its inner border, no columellar groove ; the posterior teeth, proceeding but a little distance within the aperture, terminate on the columella ; the sulcus being so deep causes a rather angular prominence of the inner side of the channel ; margins thick and round ; extremities, the external posterior broad and obtuse, the internal edge-formed concave within ; the anterior project moderately and converge ; all are dotted with very minute black points which extend in a slight degree on to the margins ; channels, anterior rather narrow and short, posterior moderately wide, both inclining towards the columella.

Length, $1\frac{25}{100}$ inch ; width, $\frac{75}{100}$ of an inch.

Hab. — ? Cab. Cuming.

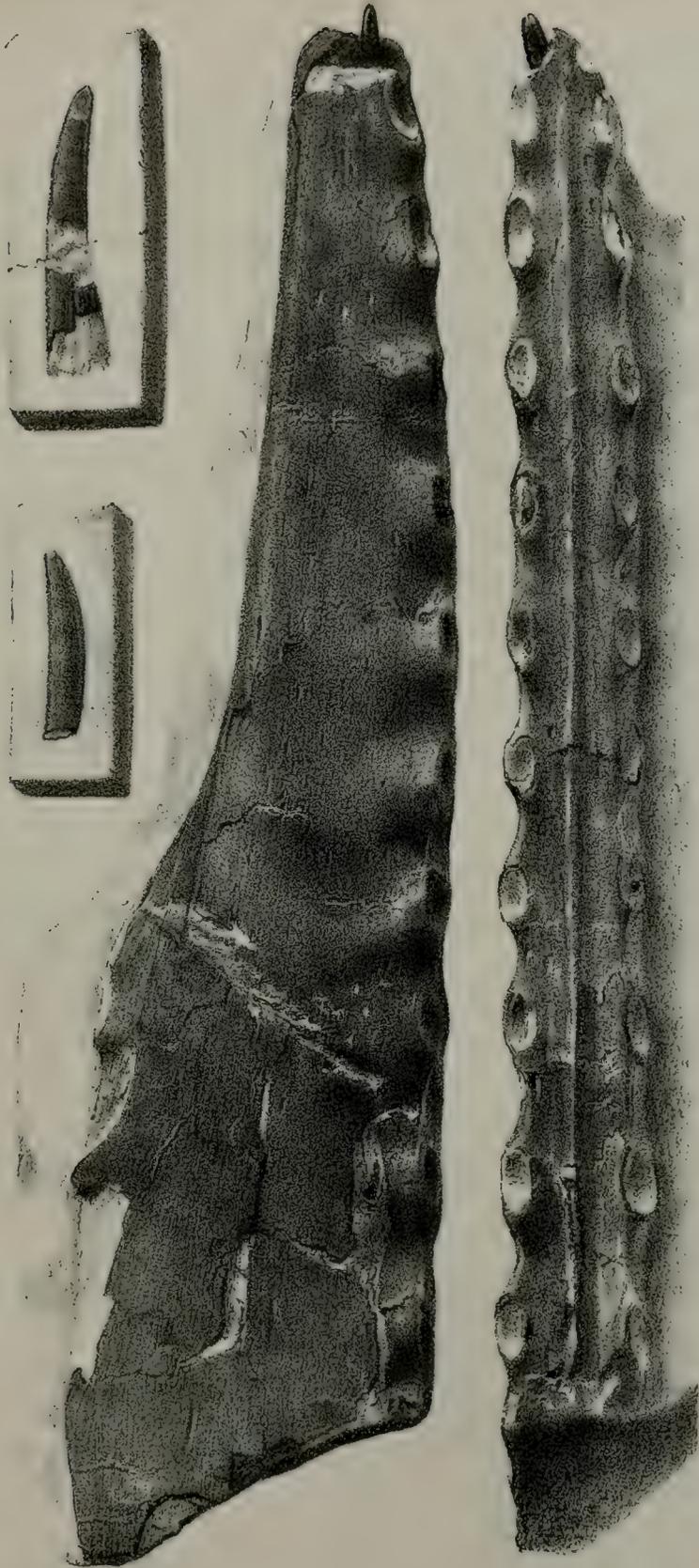
This species is of the stamp of *Cyp. Isabella*, Linn.

3. ON THE PTERODACTYLES OF THE CHALK FORMATION. BY J. S. BOWERBANK, ESQ., F.R.S. ETC.

(Reptilia, Pl. IV.)

On the 14th May 1845 I exhibited at the Meeting of the Geological Society the snout and under jaws, extending from the point to about the middle of the cavitas narium, of a new and gigantic species of *Pterodactylus*, with some other bones, a portion of which belonged to the same individual, and others which have every appearance of having belonged to another animal of the same species*, and I then stated my belief that the bone figured by Prof. Owen, in the 'Transactions of the Geological Society,' vol. v. pl. 39, 2nd Series, would probably ultimately prove to be that of a Pterodactyl. From the great size of the snout, and the gigantic proportions also indicated by the bones accompanying it, I was induced to give it the specific name of *giganteus*. On a subsequent occasion, June 9, 1847, I continued my remarks on these Reptile remains, in a paper entitled "Microscopical Observations on the Structure of the Bones of *Pterodactylus giganteus* and other fossil animals," in which I endeavoured to prove, by the strongly-marked peculiarities of the bone-cells in Mammals, Birds and Reptiles, that the whole of the bones described in my former paper, and those figured by Prof. Owen in the Trans. Geol. Soc., 2nd Series, vol. vi. pl. 39. figs. 1 & 2, were in truth of purely Reptilian character ; and I also figured a radius and ulna from the Cabinet of Mrs. Smith of Tunbridge Wells, of nearly the same gigantic proportions as the one formerly in the possession of the Earl of Enniskillen, but now in my collection (fig. 1. pl. 39, Geol. Trans.), and a bone from the Cabinet of Mr. Toulmin Smith, equivalent to that represented by Prof. Owen in the same plate, fig. 2, which bones presented the same structural evidence of their Reptilian nature, and

* Quart. Geol. Journ. vol. ii. p. 7. pl. 1. figs. 1-6.



which description of evidence has, I am happy to say, been more fully developed and firmly established by the talented coadjutor of Prof. Owen, Mr. Quekett of the Royal College of Surgeons, who has publicly taught it in the Theatre of that Institution without question or contradiction of its truth. This great radius and ulna in Mrs. Smith's Collection I referred to my previously established species, *P. giganteus*, believing at that time that they were probably the bones of a fully developed animal, while those previously described were the remains of animals not developed to the full extent of their capability.

Since the publication of these specimens it has been my good fortune to obtain the snout of another and still larger species of *Pterodactyl*, from the same pit at Burham in Kent, and which it is probable will ultimately prove to belong to the species to which the enormous pair of bones in the Cabinet of Mr. Charles of Maidstone belongs. Should this hereafter prove to be the case, it will then remain to be shown whether the beautiful specimen of radius and ulna in the Collection of Mrs. Smith of Tunbridge Wells, and the bone nearly corresponding in size with them, and which was in the possession of the Earl of Enniskillen, belong to the newly discovered species, which I purpose designating *Pterodactylus Cuvieri*, or to the previously named species, *P. giganteus*; or whether there be yet a third species existing in the chalk, to which these bones of an intermediate size may hereafter be referred*.

The snout of the new species, *P. Cuvieri*, differs materially in its form from the same part of *P. giganteus*: while the latter agrees as nearly as possible in that respect with *P. crassirostris* and *P. brevisrostris*, the former appears to approach very closely the proportions of *P. longirostris*. Thus, if we take the length of the snout from the distal end of the cavitas narium, as compared with its height, at the same point of *P. crassirostris*, *P. brevisrostris* and *P. giganteus*, we find the relative proportions to be,—of the first-named, 29 of height to 56 of length; of the second, 28 of height to 50 of length; and of the third, 28 of height to 58 of length; we may therefore reasonably conclude that, when perfect, the head of *P. giganteus* very closely resembled in its proportions that of *crassirostris*. The length of the fragment of the snout of *P. Cuvieri* at the upper portion of the head is 7·20 inches; at the palatal bones, 6·38 inches; and in this space there are sockets for twelve teeth on each side. The distance between each tooth is about $1\frac{1}{2}$ of the long diameter of the sockets, which are somewhat irregularly placed, but are nearly equidistant from each other. The pair of teeth at the distal end of the snout appear, both from the position of the sockets and the tooth remaining *in situ*, to have been projected more or less forward, in a line with the palatal bones. The head appears to have been exceedingly narrow throughout the whole of its length. At the third pair of teeth from the distal

* A third species, *C. compressirostris*, has since been described by Prof. Owen, page 95, Part III. of 'The Fossil Reptilia of the Cretaceous Formations,' published by the Palæontographical Society, and to which species the bones in question have been referred.

end of the snout it measures $\cdot 66$ inch, and at the eleventh pair of teeth, $\cdot 78$ inch wide. Opposite the seventh pair of teeth the skull curves upward suddenly and considerably, which is not the case at any part of the corresponding portion of the skull of *P. longirostris*; it is therefore probable, that although in the number and disposition of the teeth in the upper jaw, as far as our evidence goes, it strongly resembles *longirostris* in its structure, yet in the length of its skull it is probably shorter in proportion than that species, apparently in that respect being intermediate between *longirostris* and *crassirostris*; thus uniting the long-nosed with the short-nosed species of Pterodactyls.

There are no remains of the *cavitas narium* in the new species, but it is not to be expected that it should make its appearance so near to the termination of the snout, as in *longirostris* the distal portion of that cavity is situated as far backward from the last of the dental series of the upper jaw as that tooth is from the end of the snout. The number of teeth on each side of the upper jaw in *P. longirostris* is twelve, and the like number of sockets are apparent in our specimen; it is therefore probable that we have the whole of that portion of the head.

If we estimate the size of the head on the scale of *P. longirostris*, it would appear to be $25\cdot 52$ inches in length; but as we have observed that the skull curves upward considerably at the seventh pair of teeth, it is probable that its length may not be so much.

The length of the wing of *P. crassirostris* in proportion to the length of its head is $3\cdot 91$ times. The length of the wing of *P. longirostris* compared with the length of its head is $2\cdot 51$; if therefore we assume, from the peculiar form of the snout of *P. Cuvieri*, that the head as regards length is intermediate in its proportions between *P. crassirostris* and *P. longirostris*, it should be $3\cdot 21$ parts of the length of the wing.

The snout contracts in width gradually upwards from the sockets of the teeth, so that its upper portion forms a narrow ridge, and this is its form as far backward as it can be traced. The palatal bones are depressed, the suture forming a prominent ridge as far as it is visible, but not in so great a degree as in *P. giganteus*.

One of the first pair of teeth remains in its socket; the whole of the other large teeth are displaced, but there are two of them imbedded in the chalk, one within an inch and the other an inch and a half of the sockets, and in the fifth right and eighth left socket there is a rudimentary tooth *in situ*. The largest of the displaced teeth exceeds $1\cdot 32$ inch in length, and has been buried in the socket for nearly an inch; the second large tooth, which is imbedded near the third pair of sockets, does not exceed an inch in length; both teeth are slightly curved, smooth, and are hollow at the base.

The great diversity in the size of these remarkable Reptiles will render a short review of some of the known species interesting; and if we arrange them in order, as they increase in size, the following will be the series:—1. *P. brevirostris*, 2. *P. longirostris*, 3. *P. crassirostris*, 4. *P. Bucklandi*, 5. *P. grandis*, 6. *P. giganteus*, 7. *P. Cuvieri*; and to these may be added the bones in the possession of Mrs. Smith, the

Earl of Enniskillen, and Mr. Charles. Of these, *brevirostris*, *crassirostris* and *giganteus* are short-nosed species, *longirostris* and *Cuvieri* long-nosed. With regard to relative length and proportions of the other parts of the skeleton we have ample means to arrive at tolerably correct conclusions, in consequence of the nearly perfect condition of *brevirostris*, *crassirostris* and *longirostris*. In the former two we find the cervical vertebræ short and thick, the length being about equal to the height in the latter of the two, while in *longirostris* they vary in length from three to five times their own diameter at the middle. Very uncertain results therefore would arise from finding single bones of this portion of the skeleton, excepting that a long and attenuated cervical vertebra would seem to indicate a corresponding length of snout; but from the other bones of the animal, more especially those of the wing, much more satisfactory results may arise. Upon a careful measurement of the casts in the British Museum from the original specimens, I find the following to be the length of the bones of the wing of *P. longirostris*:—

	inch.	
Humerus	1·25	= 8·55 of length of wing.
Radius and ulna	1·90	= 5·57 ,,
Carpus	0·13	= 0·82 ,,
Metacarpus	1·34	= 7·97 ,,
1st Phalange	1·90	= 5·57 ,,
2nd ,, 	1·75	= 6·10 ,,
3rd ,, 	1·25	= 8·55 ,,
4th ,, 	1·17	= 9·13 ,,

10·69

	inches.
The length of the head	4·25
From the tip of the nose to the commencement of the cavitas narium	2·10
Height of the skull at the commencement of the cavitas narium	0·38
Length of the femur	1·34
Length of the tibia	1·90
Smallest diameter of the radius near the distal extremity	0·14

By these measurements it is apparent that the tibia, radius and ulna and 1st phalange are equal in length. The humerus and 3rd phalange are also equal to each other, and so likewise are the metacarpus and femur equal to each other. If we also compare the smallest diameter of the radius, 0·14 inch, with its length, 1·90 inch, we find that the bone is $13\frac{5}{4}$ diameters long, and in *P. Macronyx* (*Bucklandi*) it is $13\frac{9}{2}$. We may therefore be enabled, by keeping these comparative measurements in view, to predict with a tolerable degree of certainty the spread of wing of any Pterodactyl of which we may find one or more of the principal bones of the wing, and especially if

we take into consideration the comparative length of each bone with regard to its total extension, as exhibited in the table of the dimensions of *P. longirostris*. In the case of the great specimens of radius we may arrive at their length in many cases, although the bone may be imperfect at even both terminations. Thus the diameter of the smallest portion of the bone formerly in the possession of the Earl of Enniskillen and figured by Prof. Owen, is $\cdot81$ inch at the smallest portion of the shaft: this bone therefore, on the scale of $13\frac{1}{2}$ diameters to its length, should be $10\cdot93$ inches in length. The measurement of the smallest portion of the bone belonging to Mrs. Smith (Geol. Journ. vol. iv. pl. 2. fig. 1 a) is $\cdot77$ inch: we may therefore, by the same rule, conclude that its length was $10\cdot39$ inches when perfect. The length of the imperfect ulna beside it is $9\cdot25$ inches in the specimen. The diameter of the smallest portion of the bone (Geol. Journ. vol. ii. pl. 1. fig. 6) is $\cdot45$ inch, which, in the proportion of $13\frac{1}{2}$ diameters to its length, will give $6\cdot07$ inches for its length. The width of the corresponding bone in the possession of Mr. Charles of Maidstone is $1\cdot25$ inch at the smallest diameter: by the same rule, therefore, the approximate length should be $16\cdot87$. The remains of the bone alongside of it is, although imperfect at both ends, actually $12\cdot25$ inches in length.

Upon these grounds therefore, in every case derived as much as possible from direct measurements from the skeletons of the respective species, I have given the following table of the dimensions of a series of species of Pterodactyls, the most interesting either from the state of perfection in which their remains have been found, or from the gigantic proportions which they present; and thus have endeavoured to realize to the mind an idea, as nearly as possible correct, of the dimensions of the animals when alive.

Table of the relative proportions of known species of *Pterodactylus*, with the length of each of the wing-bones and half of the width of the body.

	Humerus,	Radius and Ulna.	Carpus,	Metacarpus,	1st Phalange.	2nd Phalange.	3rd Phalange.	4th Phalange.	Half width of body.	Total expansion from tip to tip of wing.
	in.	in.	in.	in.	in.	in.	in.	in.	ft. in.	ft. in.
<i>P. brevisrostris</i> ...	0·48	0·75	0·06	0·52	0·82	0·76	0·48	0·35	0·19	0 9
<i>P. longirostris</i> ...	1·25	1·90	0·13	1·34	1·90	1·75	1·25	1·17	0·47	1 10
<i>P. crassirostris</i> ...	2·08	4·42	0·34	1·32	2·83	2·53	2·08	2·32	1·10	3 2
<i>P. Bucklandi</i>	3·25	4·25	0·40	3·75	3·91	4·83	3·25	3·00	1·06	4 7
<i>P. grandis</i>	3·75	5·70	0·39	4·02	5·70	5·50	2·75	3·51	1·42	5 5
<i>P. giganteus</i>	4·43	6·74	0·46	4·75	6·74	6·21	4·43	4·14	1·68	6 7
<i>P. (Mrs. Smith's)</i>	6·76	10·39	0·70	7·26	10·39	9·49	6·76	6·33	2·59	10 2
<i>P. Cuvieri</i>	10·99	16·87	1·14	11·79	16·87	15·56	10·99	10·29	4·22	16 6

In the above table I have presumed that the largest bones should be associated with the snout described as the type of *P. Cuvieri*, but the truth of this assignment of the bones belonging to Mr. Charles

can alone be determined by the acquisition of more complete specimens of the animal than those at present known.

In the construction of this table I have taken the proportions of *P. longirostris* as the foundation, as it is the only species from which I could get the measurements of all the bones of the wing from the same animal; but it must not be supposed that the restorations effected in the table will be absolutely correct at all times in its application, for we see that in *P. longirostris* the radius and first phalange are equal, but in *crassirostris* and *Bucklandi* this is not the case: the greatest discrepancy rests with *crassirostris*, while *Bucklandi* and *brevirostris* accord much more nearly with the proportions of *longirostris*; and if we may judge by the comparative difference between those bones in *longirostris* on the one part, and *Bucklandi* and *crassirostris* on the other, it may perhaps be fairly surmised that the greater length of wing would be found to exist in the long-nosed species, and consequently that *Bucklandi* will prove to belong to the short-nosed ones; and this also would seem to be indicated by what remains of the cervical vertebræ in the original specimen in the British Museum.

Prof. Owen, in treating of these animals in my late friend Mr. Dixon's work 'On the Geology and Fossils of the Tertiary and Cretaceous Formations of Sussex,' has thought proper to re-name *P. giganteus*, and designate it *P. conirostris*, Owen. I certainly did not lend my specimens to my late friend Mr. Dixon for the illustration of his work, with a view of having the name which I had assigned to this new and gigantic species subverted, and without in the slightest degree being consulted on the subject. Nor can I concur with the reasons given by Prof. Owen for thus re-naming it, as the name *giganteus* was not given, as stated by the learned Professor, "because certain bones of another and larger animal, of a different species, have been erroneously referred to it;" but, in truth, from its being the largest distinct species at that time known, exceeding *P. Bucklandi* (or *Macronyx*) by two feet in the spread of its wings, and *P. grandis* of Cuvier by above a foot. The beautiful specimen of radius and ulna in the possession of Mrs. Smith, and subsequently figured in my second paper, was at that time unknown to me, and the bone then in the possession of the Earl of Enniskillen was claimed by the Professor as that of a bird. I had therefore no other material than that in my own possession on which to base my name of *giganteus*.

If the learned Professor's reason for the proposed change of name is to hold good, that of exclusive fitness in specific nomenclature, then the one he proposes is also inappropriate, as it might be with equal propriety given to either *crassirostris* or *brevirostris*; or if specific names, based on comparisons of size, are to be extinguished, and new names given on the discovery of new species, there would be no end of the confusion generated; thus, as *P. brevis* is thicker in its proportions than *crassirostris*, they would require to exchange names, or the latter at least to be re-named; *medius* would no longer be *medius*, with the addition of our new species, and *grandis* would no longer be grand in comparison. Into what an unenviable state of confusion

should we not plunge nomenclature if we were to adopt the *practice* of the learned Professor, instead of the precepts so judiciously laid down by himself and others of the Committee of Nomenclature of the British Association, and which I quote as a justification on my part for my refusal to adopt the learned Professor's exchange of my name for the one he has proposed!

In page 4 of the Report, under the head of "Law of Priority the only effectual and just one," we find the following passages:—"It being admitted on all hands that words are only the conventional signs of ideas, it is evident that language can only attain its end effectually by being permanently established and generally recognized. This consideration ought, it would seem, to have checked those who are continually attempting to subvert the established language by substituting terms of their own coinage." "Now in zoology no one person can subsequently claim an authority equal to that possessed by the person who is the first to define a new genus or describe a new species; and hence it is that the name originally given, even though it be inferior in point of elegance or expressiveness to those subsequently proposed, ought, as a general principle, to be permanently retained. To this consideration we ought to add the injustice of erasing the name originally selected by the person to whose labours we owe our first knowledge of the object." To these excellent principles the learned Professor has given the sanction of his signature. Prof. Owen, in the article on *Pterodactylus* in Mr. Dixon's work, has not quoted my observations on those Reptiles so fully as I could have wished; inasmuch as he has adverted to the strongly-marked peculiarities of the bone-cells, which are the principal characters in the question at issue, in so slight a manner, as almost to induce me to imagine that he must have forgotten them entirely. I shall simply content myself in challenging Prof. Owen to produce any such general structure and proportions of the bone-cells from the skeleton of any recent or extinct bird as those existing in the long bone described as *Cimoliornis*, or to produce any such radius and ulna of a bird containing similar bone-cells as those in the possession of Mrs. Smith, and figured by me in my paper in the 'Quarterly Journal of the Geological Society for February 1848,' vol. iv. pl. 2.

On the subject of the strictures with which Prof. Owen has favoured me at the conclusion of his observations in Mr. Dixon's work, and how far I have been "wanting in a due comprehension of the subject, and have been a hindrance instead of a furtherance of true knowledge," I am content to leave to the judgement of those who may feel a sufficient degree of interest to induce them to peruse what I have written in my former papers on the Pterodactyles of the Chalk.

January 28, 1851.

R. H. Solly, Esq., F.R.S., in the Chair.

The following papers were read :—

1. ON A NEW SPECIES OF PTERODACTYLE (*PTERODACTYLUS COMPRESSIROSTRIS*, OWEN) FROM THE CHALK; WITH SOME REMARKS ON THE NOMENCLATURE OF THE PREVIOUSLY DESCRIBED SPECIES. BY PROF. OWEN, F.R.S.

(Reptilia, Pl. V.)

The honour of having first made known the existence of remains of the Pterodactyle in the Chalk deposits belongs to James Scott Bowerbank, Esq., F.R.S. This indefatigable collector had the good fortune to receive in 1845, from the Kentish Chalk, the characteristic jaws and teeth, with part of the scapular arch and a few other bones, of a well-marked species of Pterodactyle, and the discovery was briefly recorded in the 'Quarterly Journal of the Geological Society of London,' and in the 'Proceedings' of the Society for May 14, 1845, with an illustrative plate (pl. 1).

Mr. Bowerbank concludes his notice by referring to a large fossil wing-bone from the chalk, previously described and figured by me in the 'Geological Transactions,' and remarks that, "if it should prove to belong to a Pterodactyle, the probable expansion of the wings would reach to at least eight or nine feet. Under these circumstances," he says, "I propose that the species described above shall be designated *Pterodactylus giganteus*." (*loc. cit.* p. 8.) Subsequent discoveries and observations have inclined the balance of probability in favour of the Pterodactylian nature of the fossils to which Mr. Bowerbank refers, but have shown them to belong to distinct species.

These fossils are not, indeed, amongst the characteristic parts of the flying reptile: one of them is the shaft of a long bone exhibiting those peculiarities of structure which are common to birds and pterodactyles; the other shows an articular extremity, which, in our present ignorance of those of the different bones of the Pterodactyle, has its nearest analogue in the distal trochlea of the bird's tibia. These two specimens, which are figured in the sixth volume of the Second Series of the 'Transactions of the Geological Society,' 1840, pl. 39. figs. 1 & 2, were transmitted to me by the Earl of Enniskillen and Dr. Buckland, as being "the bones of a bird" (p. 411), and my comparisons of them were limited to that class.

The idea of their possibly belonging to a Pterodactyle did occur to me, but it was dispelled by the following considerations. The act of flight—the most energetic mode of locomotion—demands a special modification of the Vertebrate organization, in that subkingdom, for its exertion. But in the class *Aves*, in which every system is more or less adapted and co-adjusted for this end, the laws of gravitation seem to forbid the successful exercise of the volant powers in species beyond a certain bulk; and when this exceeds that of the Condor or Albatros,

as, for example, in the Cassowary, the Emeu, or the Ostrich, although the organization is essentially that of the Vertebrate animal modified for flight, flight is impossible; and its immediate instruments, to the exercise of which all the rest of the system is more or less subordinated, are checked in their development; and, being unfitted for flight, they are not modified for any other use. There is not, perhaps, a more anomalous or suggestive phenomenon in nature than a bird which cannot fly! A small section of the Mammalia is modified for flight; but the plan of the organization of that warm-blooded class being less directly adapted for flight than that of birds, the weight and bulk of the body which may be raised and transported through the air are restricted to a lower range, and the largest frugivorous Bat (*Pteropus*) does not exceed the Raven in size. The Reptilian modification of the Vertebrate type would seem to be still less fitted for any special adjustment to aerial locomotion; and in the present day we know of no species of the class that can sustain itself in the air which equals a Sparrow in size. And the species in question—the little *Draco volans*—sails rather than flies, upborne by its outstretched costal parachute in its oblique leaps from bough to bough.

Of the remarkable reptiles now extinct, which, like the Bats, had their anterior members modified for plying a broad membranous wing, no species had been discovered prior to 1840 which surpassed the largest of the *Pteropi*, or Flying-Foxes, in the spread of those wings, and there was, *à priori*, a physiological improbability that the cold-blooded organization of a Reptile should by any secondary modification be made to effect more in the way of flight, or be able to raise a larger mass into the air, than could be done by the warm-blooded Mammal under an analogous special adaptation. When, therefore, the supposed bird's bone (Geol. Trans. 1840, pl. 39. fig. 1) was first submitted to me by Dr. Buckland, which on the Pterodactyle hypothesis could not be the humerus, but must have been one of the smaller bones of the wing, its size seemed decisive against its reference to an animal of flight having a cold-blooded organization. The subsequent discovery of the portion of the skull of the Pterodactyle, described by Mr. Bowerbank at the last meeting of the Society (Jan. 14), shows that the resources of Creative power in past time surpass the calculations that are founded upon actual nature.

It is only the practised Comparative Anatomist that can fully realize the difficulty of the attempt to resolve a palæontological problem from such data as the two fragments of long bones first submitted to me in 1840. He alone can adequately appreciate the amount of research involved in such a generalization as that "there is no bird now known, north of the equator, with which the fossils can be compared;" and when, after a wearying progress through an extensive class, the species is at length found to which the nearest resemblance is made by the fragmentary fossil, and the differences are conscientiously pointed out—as when, in reference to the humerus of the Albatros, I stated that "it differs therefrom in the more marked angles which bound the three sides"—the genuine worker and searcher after truth may conceive the feelings with which I find myself misrepresented as

having regarded the specimens "as belonging to an extinct species of Albatros." My reference of the bones even to the longipennate tribe of natatorial birds is stated hypothetically and with due caution : "On the supposition that this fragment of bone is the shaft of the humerus, its length and comparative straightness would prove it to have belonged to one of the longipennate natatorial birds equalling in size the Albatros." (*loc. cit.* p. 411.)

Since the discovery has been made of the manifestly characteristic parts of the genus *Pterodactylus* in the Burham chalk-pit, it has been objected that the bones first discovered there, and described by me as resembling birds of flight, "are so extremely *thin*, as to render it most improbable that they could ever have sustained such an instrument of flight as the powerful wing of the Albatros, or of any other bird : their tenuity is in fact such," says the *ex post facto* Objector, "as to point out their adaptation to support an expanded membrane, but not pinions *."

The reply to this assertion need only be a simple reference to nature : sections of the wing-bones of birds may be seen in the Museum of the Royal College of Surgeons, and have been exposed to view, since the discovery of their structure by the Founder of that Collection, in every Museum of Comparative Anatomy worthy to be so called.

To expose the gratuitous character of the objection above cited, I have placed on the table a section of the very bone that directly sustains the large quill-feathers in the Pelican ; its parietes are only half as thin as those of the antibrachial bone of the great Pterodactyle which is figured in my 'History of British Fossil Reptiles,' pl. 4, and is not thicker than those of the bone figured in the Geological Transactions, 1840, above cited.

HUNTER, who had obtained some of the long bones with thin walls and a wide cavity from the Stonesfield slate, has entered them in his MS. Catalogue of Fossils as the "Bones of Birds," and perhaps no practical anatomist had had greater experience in the degree of tenuity presented by the compact walls of the large air-cavities of the bones in that class. Of all the modifications of the dermal system for combining extent of surface with lightness of material, the expanded feather has been generally deemed the consummation. Well might the eloquent Paley exclaim, "Every feather is a mechanical wonder : their disposition all inclined backwards, the down about the stem, the overlapping of their tips, their different configuration in different parts, not to mention the variety of their colours, constitute a vestment for the body so beautiful and so appropriate to the life which the animal is to lead, as that, I think, we should have had no conception of anything equally perfect, if we had never seen it, or can imagine anything more so." It was reserved for the author of the 'Wonders of Geology' to prefer the leathern wing of the Bat and Pterodactyle as the lighter form, and to discover that such a structure as is displayed in the bone described and figured in the 'Geol. Trans.'

* Mantell, 'Wonders of Geology,' 1848, vol. i. p. 441.

vol. vi. pl. 39, was a most improbable one to have sustained a powerful wing of any bird! * Let me not be supposed, however, to be concerned in excusing my own mistake; I am only reducing the unamiable exaggeration of it. Above all things, in our attempt to gain a prospect of an unknown world by the difficult ascent of the fragmentary ruins of a former temple of life, we ought to note the successful efforts, as well as the occasional deviations from the right track, with an equal glance, and record them with a strict regard to truth. The existence of a species of Albatros, or of any other actual genus of bird during the period of the Middle Chalk, would be truly a wonder of Geology; not so the existence of a bird of the longipennate family.

I still think it for the interest of science, in the present limited extent of induction from microscopic observation, to offer a warning against a too hasty and implicit confidence in the forms and proportions of the Purkingean or radiated corpuscles of bone, as demonstrative of such minor groups of a class as that of the genus *Pterodactylus*. Such a statement as that "these cells in *Birds* have a breadth in proportion to their length of from one to four or five; while in *Reptiles* the length exceeds the breadth ten or twelve times," only betrays the limited experience of the assertor. In the dermal plates of the Tortoise, *e. g.*, the average breadth of the bone-cell to its length is as one to six, and single ones might be selected of greater breadth.

With the exception of one restricted family of Ruminants, every Mammal, the blood-discs of which have been submitted to examination, has been found to possess those particles of a circular form: in the *Camelidæ* they are elliptical, as in birds and reptiles. The bone-cells have already shown a greater range of variety in the Vertebrate series than the blood-discs. Is it then a too scrupulous reticence to require the evidence of microscopic structure of a bone to be corroborated by other testimony of a plainer kind, before hastening to an absolute determination of its nature, as has been done with regard to the Wealden bone, figured in the Geol. Trans., 2nd Series, vol. v. pl. 13. fig. 6†? As a matter of fact, the existence of Pterodactylian remains in the chalk was not surmised through any observation of the microscopic structure of bones that are liable to be mistaken for those of birds, but was first plainly proved by the characteristic portions of the Pterodactyle defined by Mr. Bowerbank, as follows, in his original communication of this discovery to the Geological Society of London, May 14, 1845:—

"I have recently obtained from the Upper Chalk † of Kent some

* Mantell, 'Wonders,' &c. ed. 1848, vol. i. p. 441.

† Compare, for example, two of the longest of the cells figured by Mr. Bowerbank in pl. 1. fig. 9, 'Quarterly Journal of the Geological Society,' vol. iv. as those of a bird, with two of the widest of the cells figured in fig. 1 of the same plate as those of the Pterodactyle; and contrast the want of parallelism in the bone-cells of the Wealden bone, fig. 9, with the parallelism of the long axes of the cells in that of the Albatros, fig. 3.

‡ Mr. Toulmin Smith, in an able paper "On the Formation of the Flints of the

remains of a large species of *Pterodactylus*. The bones consist of—

“1. The fore part of the head as far as about the middle of the *cavitas narium*, with a corresponding portion of the under jaws, many of the teeth remaining in their sockets.

“2. A fragment of the bone of the same animal, apparently a part of the coracoid.

“3. A portion of what appears to be one of the bones of the auricular digit, from a chalk-pit at Halling.

“4. A portion of a similar bone, from the same locality as No. 1.

“5. The head of a long bone, probably the tibia, belonging to the same animal as the head, No. 1.

“6. A more perfect bone of the same description, not from the same animal, but found at Halling.”

In a subsequent communication, dated December 1845, Mr. Bowerbank states with regard to the specimens Nos. 5 and 6, which he supposed to be parts of a tibia, that “on a more careful comparison with the figures of *Pterodactylus* by Goldfuss, I am inclined to believe they are more likely to be portions of the ulna.”

With respect to the long bone, No. 6 in the above list, comparing it with that figured in the *Geol. Trans.*, 2nd Series, vol. vi. pl. 39. fig. 1, and referred by me to *Cimoliornis diomedeus*, Mr. Bowerbank writes:—

“Although the two specimens differ greatly in size, there is so strong a resemblance between them in the form and regularity of the shaft, and in the comparative substance of the bony structure, as to render it exceedingly probable that they belong to the same class of animals;” and he concludes by remarking, that “If the part of the head in my possession (see fig. 1) be supposed similar in its proportions to that of *Pterodactylus crassirostris*,—and there appears but little difference in that respect,—it would indicate an animal of comparatively enormous size. The length of the head, from the tip of the nose to the basal extremity of the skull, of *Pt. crassirostris* is about $4\frac{5}{8}$ inches, while my specimen would be, as nearly as can be estimated, $9\frac{1}{8}$ inches. According to the restoration of the animal by Goldfuss, *Pt. crassirostris* would measure as nearly as possible three feet from tip to tip of the wings, and it is probable that the species now described would measure at least six feet from one extremity of the expanded wings to the other; but if it should hereafter prove that the bone described and figured by Prof. Owen belongs to a *Pterodactyle*, the probable expansion of the wings would reach to at least eight or nine feet. Under these circumstances I propose that the species described above shall be designated *Pterodactylus giganteus*.” (*Quarterly Geol. Journ.* vol. ii. p. 8.)

In a subsequent memoir, read June 9, 1847, and published in the ‘*Quarterly Journal of the Geological Society*,’ vol. iv. February 1848, Mr. Bowerbank gives figures of the ‘bone-cells’ from the jaw of a

Upper Chalk,” in the ‘*Annals of Natural History*,’ vol. xx. p. 295, affirms that no upper chalk exists in the localities whence the above-defined specimens came. They are from the “Middle Chalk.”

Pterodactyle (pl. 1. fig. 1), from the shaft of the bone in question (*ib.* fig. 2), and from the femur of a recent Albatros (*ib.* fig. 3), in corroboration of the required proof: and he adds, "Fortunately the two fine specimens from the rich collection of Mrs. Smith of Tonbridge Wells, represented by fig. 1. pl. 2, in a great measure justify this conclusion; and in the bone *a*, which is apparently the corresponding bone to the one represented by fig. 1 in Prof. Owen's paper, the head is very nearly in a perfect state of preservation." (*op. cit.* p. 5.) Mr. Bowerbank, in his explanation of plate 2, describes the two fine specimens above mentioned as "Fig. 1. Radius and ulna of *Pterodactylus giganteus*, in the cabinet of Mrs. Smith of Tonbridge Wells." (*tom. cit.* p. 10.) He proceeds to state, "There are two other similar bones, imbedded side by side, in the collection of Mr. Charles of Maidstone, of still greater dimensions than those from the cabinet of Mrs. Smith;" and he assigns his grounds for the conclusion, that "the animal to which such bones belonged could, therefore, have scarcely measured less than fifteen or sixteen feet from tip to tip of its expanded wings."

The Committee of the British Association for the Reform and Regulation of Zoological Nomenclature, amongst other excellent rules, have decided that, "A name which is glaringly false shall be changed" (Report, p. 113). I submit that this is the case when the name *giganteus* is proposed for a species less than half the size of others previously discovered. Now, although those remains of the truly gigantic Pterodactyles had not been demonstrated to be such, yet they were suspected so to be by Mr. Bowerbank when he proposed the name *giganteus*; and the name is in fact proposed, subject to the condition of that demonstration, and under the evident belief that they belonged to the same species as the obvious Pterodactyle remains he was describing. He says, "Under these circumstances I propose that the species shall be designated '*giganteus*';" and the circumstances referred to are the probable case that the bones, which from their large size I had supposed to belong to a bird, should prove to belong to a Pterodactyle.

The Committee for the Reform of Zoological Nomenclature next proceed to determine that, "Names not clearly defined may be changed. Unless a species or group is intelligibly defined when the name is given, it cannot be recognised by others, and the signification of the name is consequently lost. Two things are necessary before a zoological term can acquire any authority, viz. *definition* and *publication*. Definition properly implies a distinct exposition of essential characters, and in all cases we conceive this to be indispensable." (Report, pp. 113, 114.) Now with regard to the *Pterodactylus giganteus*, Mr. Bowerbank had unreservedly applied the term to the species to which the long wing-bone first described by me might appertain, under the circumstances of its being proved to belong to a Pterodactyle; inasmuch as he had figured two similar and equal-sized bones in the 'Quarterly Journal of the Geological Society,' vol. iv. pl. 2. fig. 1 (Proceedings of the Society for June 9, 1847), as the "radius and ulna

of *Pterodactylus giganteus*." So far as a species can be intelligibly defined by figures, that to which the term *giganteus* was in 1845 provisionally, and in 1847 absolutely applied, seemed to be clearly enough pointed out by the plate 2 in the work above cited. But, with the large bones appropriately designated by the term *giganteus*, some parts of a smaller Pterodactyle, including the portions of jaws first announcing the genus in the Chalk, had been associated under the same name. Supposing those bones to have belonged to a young individual of the *Pterodactylus giganteus*, no difficulty or confusion would arise. After instituting, however, a rigid comparison of these specimens, when drawing up my Descriptions for Mr. Dixon's work, I was compelled to arrive at the conclusion that the parts figured by Mr. Bowerbank in plate 2, figs. 1 & 2, of vol. ii. of the 'Quarterly Geological Journal,' and the parts figured in plate 2, figs. 1 *a* & *b*, of vol. iv. of the same Journal, both assigned by Mr. Bowerbank to the *Pterodactylus giganteus*, belonged to two distinct species. The portions of the scapula and coracoid of the Pterodactyle (pl. 1. fig. 2, *tom. cit.*) indicated by their complete anchylosis that they had not been part of a young individual of the species to which the large antibrachial bones (pl. 2. fig. 1 *a* & *b*, *tom. cit.*) belonged; although they might well appertain to the species to which the jaws (pl. 1. fig. 1) belonged. Two species of Pterodactyle were plainly indicated, as I have shown in the above-cited work, by my lamented friend Mr. Dixon, 'On the Tertiary and Cretaceous Deposits of Sussex,' 4to, p. 402. The same name could not be retained for both, and it was in obedience to this necessity, and not with any idea of detracting an iota from the merit of Mr. Bowerbank's original announcement of the existence of a Pterodactyle in the chalk, that I proposed the name of *conirostris* for the smaller species, then for the first time distinctly defined and distinguished from the larger remains to which the name *giganteus* had also been given by Mr. Bowerbank. I proposed the name, moreover, provisionally and with submission to the 'Committee for the Reform of Zoological Nomenclature,' according to whose rules I believed myself to be guided.

My conclusions as to the specific distinction of the remains of the smaller Pterodactyle (pl. 1, *tom. cit.* 1845) from those figured in plate 2. *tom. cit.* 1848, have received full confirmation by the valuable discovery of the portion of the cranium of the truly gigantic Pterodactyle, about to be described, to which they belonged; and it is certainly to be wished that, in determining to assign to Mrs. Smith's specimens the name of '*giganteus*,' Mr. Bowerbank should have conformed to the following equitable rule of the 'Committee of Nomenclature':—"The author who *first* describes and names a species, which forms the groundwork of later generalizations, possesses a higher claim to have his name recorded than he who afterwards defines a genus which is found to embrace that species. By giving the authority for the *specific* name in preference to all others, the inquirer is referred *directly* to the original description, habitat, &c. of the species, and is at the same time reminded of the date of its discovery." (Reports of the British Association, 1842, p. 120.)

Now the species which I originally described under the name of *Cimoliornis diomedæus* comes precisely under this category: it has formed the groundwork of later generalizations, which have led to its being embraced by another genus. In this case the Committee of Nomenclature, whilst determining that the specific name should be retained, recommend that the describer should "append to the original authority for the species, when not applying to the genus also, some distinctive mark, such as (*sp.*), implying an exclusive reference to the specific name." In conformity with the above recommendation, the gigantic species of Pterodactyle, of which parts have been described by Mr. Bowerbank, and parts previously by myself, would be entered into the Zoological Catalogues as follows:—

Pterodactylus diomedæus, Owen (*sp.*), Proceedings of the Zoological Society, January 1851.

Cimoliornis diomedæus, Ibid., British Fossil Mammals and Birds, p. 545, cuts 230, 231 (1843–1846).

Osteornis diomedæus, Gervais, Thèse sur les Oiseaux Fossiles, 8vo, p. 38 (1844).

Pterodactylus giganteus, Bowerbank, Quarterly Journal of the Geological Society, vol. iv. p. 10. pl. 2. figs. 1 & 4 (1848).

Leaving, however, the question of names, regarding which I have no personal feeling except that they should indicate their objects without ambiguity or obvious impropriety, I proceed to lay before the same Society to which Mr. Bowerbank has communicated his last interesting and important discovery, similar evidence of a third species of Pterodactyle from the chalk, intermediate in size between the species of which the jaws were figured as the *Pterodactylus giganteus* in 1845, and the truly gigantic species which he has named *Pterodactylus Cuvieri*.

The specimens, which consist of two portions of the upper jaw, form part of that gentleman's collection, and were in fact exhibited on the table, but unnoticed, at our last meeting, their true nature not having been recognised. The chief portion might well indeed be mistaken, at first sight, for a crushed portion of an ordinary long bone; and it was not until after a close comparison of several specimens of these rare and interesting remains of Pterodactyles, kindly confided to me by Mrs. Smith of Tonbridge Wells, Mr. Toulmin Smith of Highgate, Mr. Charles of Maidstone, and by Mr. Bowerbank himself, for description in my forthcoming 'Monograph on the Fossil Reptiles of the Chalk,' that I discovered them to be parts of a skull of an undescribed species of Pterodactyle.

In order to make this understood, it will be necessary to premise a few words on the Pterodactyles in general, and on some of the characters of the jaw of the *Pterodactylus Cuvieri* in particular.

The Order *Pterosauria* includes species of flying reptiles so modified in regard to the structure and proportions of the skull, the disposition of the teeth, and the development of the tail, as to be referable even according to the partial knowledge we now possess of this once extensive group, to different genera.

M. Von Meyer *e. g.* primarily divides the Order into—

A. *DIARTHRI*, with a two-jointed wing-finger.

Ex. *Pterodactylus (Ornithopterus) Lavateri*.

B. *TETRAARTHRI*, with a four-jointed wing-finger.

Ex. All the other known species of the order.

These again are subdivided into—

1. *Dentirostres*. Jaws armed with teeth to their ends; a bony sclerotic ring; scapula and coracoid not confluent with one another*; a short moveable tail.

Ex. *Pterodactylus* proper.

2. *Subulirostres*. Jaws with their ends produced into an edentulous point, probably sheathed with bone; no bony sclerotic; scapula and coracoid confluent; a long and stiff tail.

Ex. *Pterodactylus (Ramphorhynchus) Gemmingi* †.

The extremity of the upper jaw of the *Pterodactylus Cuvieri* is sufficiently perfect to demonstrate that it had a pair of approximated alveoli close to its termination, and we may therefore refer it to the Dentirostral division.

In this division, however, there are species which present such different proportions of the beak, accompanied by differences in the relative extent of the dental series, as would without doubt lead to their allocation in distinct genera, were they the living or recent subjects of the modern Erpetologist. In the *Pterodactylus longirostris*, the first species discovered and made known by Collini in 1784 ‡, the jaws are of extreme length and tenuity, and the alveoli of the upper jaw do not extend so far back as the nostril. In the *Pterodactylus crassirostris*, Goldfuss §, on the other hand, the jaws are short, thick, and obtusely terminated, and the alveoli of the upper jaw reach as far back as the middle of the vacuity which intervenes between the nostril and the orbit, and which Goldfuss terms the ‘cavitas intermedia.’

In the solid or imperforate part of the upper jaw anterior to the nostril, the *Pterodactylus longirostris* has twelve long, subcompressed teeth, followed by a few of smaller size: the same part of the jaw in the *Pt. crassirostris* has but six teeth, of which the first four are close together at the end of the jaw, and the first three shorter than the rest. The *cavitas intermedia* in *Pt. longirostris* is much smaller than the nostril; in the *Pt. crassirostris* it is larger than the nostril. Were these two species of dentirostral *Pterosauria* to be taken, as by the modern Erpetologist they assuredly would, to be types of two

* The condition of the scapular arch in the *Pt. giganteus*, Bow., *Pt. conirostris* mihi, demonstrates the fallacy of this character.

† Palæontographia, Heft 1, 4to. 1846, p. 19.

‡ Acta Academiæ Theodoro-Palatinae, V. p. 58, tab. 5.

§ Beiträge zur Kenntniss verschiedener Reptilien der Vorwelt, 4to. 1831, sec. I. tab. 7, 8, 9.

distinct genera, the name *Pterodactylus* should be retained for the longirostral species, as including the first-discovered specimen and type of the genus; and the crassirostral species should be grouped together under some other generic name.

The specimen of gigantic Pterodactyle described by Mr. Bowerbank at the last meeting of the Society consists of the solid anterior end, *i. e.* of the imperforate continuous bony walls, of a jaw, compressed and decreasing in depth, at first rapidly, then more gradually, to an obtusely-pointed extremity. As the symphysis of the lower jaw is long and the original joint obliterated, and its depth somewhat rapidly increases by the development of its lower and back part into a kind of ridge in some smaller Pterodactyles, the present specimen, so far as these characters go, might be referred to the lower jaw, and its relatively inferior depth to the upper jaw in the *Pt. conirostris* would seem to lead to that conclusion. But the present is plainly a species which has a longer and more slender snout in proportion to its size, and the convex curve formed by the alveolar border, slight as it is, decides it to be part of the upper jaw. The lower jaw, moreover, might be expected, by the analogy of the smaller Pterodactyles, to be flatter or less acute below the end of the symphysis.

The specimen of *Pt. Cuvieri* consists of the anterior extremity of the upper jaw, of seven inches in extent, without any trace of the nasal or any other natural perforation of its upper or lateral parietes, and corresponds with the parts marked *a, b*, in figs. 10 & 11. From the number of teeth contained in this part, the *Pt. Cuvieri* presents a much closer resemblance to the *Pt. longirostris* than to the *Pt. crassirostris*; and if the entire skull were restored according to the proportions of the *Pt. longirostris*, it would be twenty-eight inches in length.

But nature seems never to retain the same proportions in species that differ materially in bulk. The great *Diprotodon*, with the dental and cranial characters of a Kangaroo, does not retain the same length of hinder limbs as its living homologue; the laws of gravity forbid the saltatory mode of locomotion to a Herbivore of the bulk of a Rhinoceros; and accordingly, whilst the hind-legs are shortened the fore-limbs are lengthened, and both are made more robust in the *Diprotodon* than in the Kangaroo. The change of proportions of the limbs of the Sloths is equally striking in those extinct species which were too bulky to climb, *e. g.* the *Megatherium* and *Myiodon*. We may therefore infer, with a high degree of probability, when a longirostral Pterodactyle much surpassed in bulk the species so called 'par excellence,' that the same proportions were not maintained in the length of the jaws; and that the species to which the fine fragment belonged, far as it has exceeded our previous ideas of the bulk of a flying reptile, did not sustain and carry through the air a head of two feet four inches in length, or nearly double the size of that of the Pelican.

Although the fractured hinder part of the jaw of the *Pt. Cuvieri* shows no trace of the commencement of the wide nasal aperture, there is a plain indication that the jaws were less prolonged than in the *Pt.*

longirostris, in the more rapid increase of the vertical breadth of the jaw. Opposite the ninth tooth, *e. g.*, the depth of the jaw equals two-fifths of the length in advance of that tooth, whilst in the *Pt. longirostris* it is only two-sevenths. The contour of the upper border of the jaw in the *Pt. Cuvieri* differs from that in both the *Pt. longirostris*, *Pt. crassirostris*, and *Pt. Gemmingi*, in sinking more suddenly opposite the ninth, eighth and seventh teeth, than it does along the more advanced part of the jaw; a character which, while it affords a good specific distinction from any of those species, indicates the hinder parts of the head that are wanting in the present specimen to have been shorter and deeper than in the *Pt. longirostris*.

The first pair of alveoli almost meet at the anterior extremity of the jaw, and their outlet is directed obliquely forwards and downwards; the obtuse end of the premaxillary above these alveoli is about two lines across. The palate quickly expands to a width of three lines between the second alveoli, then to a width of four lines between the fourth alveoli, and more gradually, after the ninth alveoli, to a width of six lines between the eleventh alveoli: here the palate appears to have been slightly crushed; but in the rest of its extent it presents its natural form, being traversed longitudinally by a moderate median ridge, on each side of which it is slightly concave transversely. It is perforated by a few small irregular vascular foramina. There are no orifices on the inner side of the alveoli; the successional teeth emerge, as in the Crocodiles, from the old sockets, and not, as in certain Mammalia and Fishes, by foramina distinct from them. The second and third alveoli are the largest; the fourth, fifth and sixth the smallest, yet they are more than half the size of the foregoing, with which the rest are nearly equal. The outlets of the alveoli are elliptical, and they form prominences at the side of the jaw, or rather the jaw sinks gently in between the alveoli, and is continued into the bony palate without any ridge, the vertical wall bending round to form the horizontal plate. The greatest breadth of the under surface of the jaw, taken from the outside of the alveoli, varies only from seven lines across the third pair to nine lines across the eleventh pair of alveoli; and from the narrow base the sides of the jaw converge with a slight convexity outwards at the anterior half of the fragment, but are almost plane at the deeper posterior half, where they seem to have met at one acute superior ridge; indeed such a ridge is continued to within an inch of the fore part of the jaw, where the upper border becomes more obtuse.

The whole portion of the jaw appears to consist of one uninterrupted bone—the premaxillary; the delicate crust of osseous substance, as thin as paper, is traversed by many irregular cracks and fissures, but there is no recognizable suture marking off the limits of a maxillary or nasal bone. The bone offers to the naked eye a fine fibrous structure, so fine as to produce almost a silken aspect, the fibres or striæ being longitudinal, and impressed at intervals of from two to six lines by small vascular foramina.

Having premised so much with reference to the characters of the

Pt. Cuvieri, I proceed to the description of the distinct species, for which I propose the name of *Pterodactylus compressirostris*.

PTERODACTYLUS COMPRESSIROSTRIS, Owen.

(Reptilia, Pl. V. figs. 1, 2 & 3.)

This species is represented by two portions of the upper jaw, obtained from the Middle Chalk of Kent, the hinder and larger of which includes the beginning of the external nostril (figs. 1 & 2, *n*). The depth of the jaw at this part is fourteen lines, whence it gradually decreases to a depth of ten lines at a distance of three inches in advance of this, indicating a jaw as long and slender as in the *Pt. longirostris*, supposing the same degree of convergence of the straight outlines of the upper and alveolar borders of the jaw to have been preserved to its anterior end: that this was actually the case is rendered most probable by the proportions of the smaller anterior part of the jaw (figs. 1', 2', 3'), obtained from the same pit, if not from the same block of chalk, and which, with a vertical depth of seven lines at its hinder part, decreases to one of six lines in an extent of one inch and a half in advance of that part. The sides of the jaw as they rise from the alveolar border incline a little outwards before they converge to meet at the upper border. This gives a very narrow ovoid section at the fore part of the larger fragment (fig. 2), the greatest diameter at its lower half being four lines, and the sides meeting above at a slightly obtuse ridge. This very gradually widens as the jaw recedes backwards, where the entireness of the walls of the smoothly convex upper part of the jaw proves that the narrowness of that part is not due to accidental crushing. Had that been the case, the thin parietes arching above from one side to the other would have been cracked. The only evidence of the compression to which the deep sides of the jaw have been subject is seen in the bending in of the wall above the alveoli, close to the upper ridge at the fore part of the fragment.

In an extent of alveolar border of three and a half inches there are eleven sockets, the anterior one on the right side retaining the fractured base of a tooth: the alveoli are separated by intervals of about one and a half times their own diameter; their outlets are elliptical, and indicate the compressed form of the teeth: they are about two lines in long diameter at the fore part of this fragment, but diminish as they are placed more backwards, the last two being developed beneath the external nostril. The bony palate is extremely narrow, and presents in the larger portion (fig. 3) a median smooth convex rising between two longitudinal channels, which are bounded externally by the inner wall of the alveolar border. There is no trace of a median suture in the longitudinal convexity. The breadth of the palate at the back part of the fragment is eight lines; at the fore part it has gradually contracted to less than three lines, but it is somewhat crushed here. The naso-palatine aperture, *p*, commences about half a line in advance of the external nostril, three inches behind the fore part of the larger portion (fig. 3) of the upper jaw; which exemplifies the characteristic extent of the imperforate bony palate formed by the

long single premaxillary bone in the genus *Pterodactylus*. The fragment from the more advanced part of the jaw (fig. 3') contains five pairs of alveoli in an extent of two inches, these alveoli being rather larger and closer together than in the hinder part of the jaw. Owing to the compression which the present portion has undergone, the orifices of the alveoli are turned outwards, the bony palate being pressed down between the two rows, and showing, as the probable result of this pressure, a median groove between two longitudinal convex ridges; but the bone is entire and imperforate.

The form of the upper jaw in the present remarkable species differs widely from that of the two previously known species from the chalk, in its much greater elongation and its greater narrowness; and from the *Pt. Cuvieri*, in the straight course of the upper border of the jaw, as it gradually converges towards the straight lower border in advancing to the anterior end of the jaw. The alveoli, and consequently the teeth, are relatively smaller in proportion to the depth of the jaw than in the *Pt. Cuvieri*, and are more numerous than in the *Pt. giganteus*; they are probably also more numerous than in the *Pt. Cuvieri*; although, as the whole extent of the jaw anterior to the nostril is not yet known in that species, it would be premature to express a decided opinion on that point. As we may reasonably calculate from the fragments preserved (Pl. II. figs. 1, 2, 3), that the jaw of the *Pt. compressirostris* extended seven inches in front of the nostril, it could not have contained less than twenty pairs of alveoli, according to the number and arrangement of those in the two portions preserved.

The osseous walls in both portions present the characteristic compactness and extreme thinness of the bones of the skull of the genus: the fine longitudinal striæ of the outer surface are more continuous than in the *Pt. Cuvieri*, in which they seem to be produced by a succession of fine vascular orifices produced into grooves. The conspicuous vascular orifices are almost all confined to the vicinity of the alveoli in the *Pt. compressirostris*. This species belongs, more decidedly than the *Pt. Cuvieri*, to the 'longirostral' section of the *Pterosauria*: whether it had an edentulous prolongation of the fore part of the upper and lower jaw remains to be proved.

In attempting to form a conception of the total length of the head of the very remarkable species of Pterodactyle represented by the portions of jaw above described, we should be more justified by their form in adopting the proportions of that of the *Pt. longirostris* than in the case of the *Pt. Cuvieri*: but allowing that the external nostril may have been of somewhat less extent than in the *Pt. longirostris*, we may still assign a length of from fourteen to sixteen inches to the skull of the Pterodactyle in question.

It could not have been anticipated that the first three portions of Pterodactylian skull—almost the only portions that have yet been discovered in the cretaceous formations—should have presented such well-marked distinctive characters, one from the other, as are described and illustrated in Mr. Bowerbank's Memoirs and in the present communication. Such, nevertheless, are the facts: and, however improbable it may appear, on the doctrine of chances, to those not con-

versant with the fixed relations of osteological and dental characters, that the three corresponding parts of three Pterodactyles for the first time discovered, should be appropriated to three distinct species, I have no other alternative, in obedience to the indications of nature, than to adopt such determination*.

2. DESCRIPTION OF TWO NEW GENERA AND SOME NEW SPECIES OF SCUTELLIDÆ AND ECHINOLAMPIDÆ IN THE COLLECTION OF THE BRITISH MUSEUM. BY JOHN EDWARD GRAY, ESQ., F.R.S., P.B.S. ETC.

The collection of the British Museum is extremely rich in species of recent *Echinoids*, and fortunate in possessing long series of different ages of several of the species.

Having been recently occupied in arranging and forming a catalogue of these animals, I transmitted to the 'Annals of Natural History' for February a description of several genera and species of *Spatangidæ*.

MM. Agassiz and Desor having recently published, in the Monograph of Echini and other papers on these animals, all the species of these two families then known to them, and as they had every facility for examining the British Museum specimens, the species now to be described are but few in number.

Fam. 1. SCUTELLIDÆ.

Genus ECHINANTHUS.

Among the species which have the base concave, of which *E. rosaceus* may be considered the type, are to be added—

1. ECHINANTHUS AUSTRALASIE.

Vent beneath, at a little distance from the edge; back very convex

* The same criticism or objection may be offered to the conclusions in the text, as the following one, which was called forth by my determinations of the species of *Balenodon* found in the red crag. "The specimens exhibited by Prof. Henslow were only *eleven* in number; so that, without allowing anything for the circumstance of each whale having *two* tympanic bones, and the probability of some of the above being in *pairs*, we have the first twelve determinable cetaceous bones discovered in the red crag appropriated to no less than *five* species. I have no pretensions to call in question the decision of Prof. Owen upon osteological grounds, but I must own that I am disposed, upon the doctrine of chances, to consider it hardly probable that these determinations are accurate."—*Searles V. Wood*, Feb. 16, 1844, London Geol. Journal, p. 35. The *fifth* species is a gratuitous addition to the four described by me, the determinate characters of which have been confirmed by numerous additional discoveries. Mr. Wood should have remembered, before he attempted to discredit the determinations from anatomy, and to substitute the numerical test, that the second mammalian fossil from the oolite, although a lower jaw, like the first, was of a different species, and that of five subsequently discovered unequivocal mammalian remains from Stonesfield, *all* are parts of the lower jaw, whilst two of them demonstrate a *third* species. Very improbable this to him, on the doctrine of chances; but only showing, as Sir Charles Lyell has remarked, "the fragmentary manner in which the memorials of an ancient terrestrial fauna are handed down to us."

in the middle ; upper margin rather flattened, with a slight concavity at the end of the ambulacra ; under side flat near the margin, deeply concave in the middle ; spines of the under side near mouth very fine.

Hab. Australia ; N.S.W., Brisbane Water.

2. *ECHINANTHUS TESTUDINARIUS.*

Vent beneath a little within the edge, depressed ; back slightly raised, evenly convex ; under surface rather concave from the edge.

Hab. Indian Ocean ; Borneo.

3. *ECHINANTHUS OBLONGUS.*

Ovate-oblong, elongate, rounded at the end ; sides thick, rounded ; back depressed round the end of the ambulacra ; crown rather convex ; ambulacra ovate, lanceolate, broad, and closed at the end ; under side concave nearly to the edge ; ambulacral grooves indistinct ; vent near the margin.

Hab. Philippines ; Siquijor.

4. *ECHINANTHUS PRODUCTUS.*

Shell ovate, elongate, the hinder end produced and flattened, the edge rather thick, thinner behind ; the ambulacral petal broad, the bands not quite united at the end ; under side concave to the margin ; vent near the margin.

Hab. — ?

5. *ECHINANTHUS COLEÆ.*

Shell ovate, subpentagonal, depressed ; margin thick, rounded ; back depressed as far as the end of the ambulacra, and then rather convex in the middle, the under side concave nearly to the edge ; ambulacral petal ovate lanceolate, closed at the end ; vent near the margin.

Hab. Mauritius. Lady Mary Cole.

To those which have a flat base may be added—

6. *ECHINANTHUS EXPLANATUS.*

Depressed, much expanded, centre of the back rather convex ; ambulacra occupying rather more than half the space between the vertex and margin, the lines of pores of the anterior pair and posterior odd one far apart at the end ; cavity with thin concentric lines of short compressed columns near the margin ; jaws depressed.

Hab. Mauritius ?

Genus *ROTULA.*

The British Museum series induces me to believe that *Rotula digitata* of Agassiz is not distinct from *R. Rumphii*, as M. Agassiz first considered it to be.

Genus *ECHINODISCUS.*

I cannot find any permanent difference to distinguish *Lobophora bifissa* from *L. aurita* ; they are found together in the same habitat in the Red Sea.

Genus MELLITA.

The larger spines on the back of this, the former, and succeeding genus are short, equal in size, and furnished with a more or less spherical head.

The Museum series of specimens show a very gradual passage between the *Echini* which have been called *Mellita testudinaria* and *M. quinquefora* by Agassiz.

The species which have six slits on the disc are found on the coast of Tropical America, and others on the shores of the Red Sea; I believe they form two species, which appear to have been confounded under one name.

The American *Mellita hexapora* has only narrow linear bands of larger tubercles (bearing the larger spines) between the branched lines radiating from the mouth on the under surface, and these lines are very much branched.

Mellita similis and *M. lobata* of Agassiz, also from the West Indies; the first appears to be only a variety, and the latter a monstrosity of this species.

The Red Sea species I have named

MELLITA ERYTHRÆA.

Shell depressed, with five ambulacra and one posterior interambulacral slit; inferior oral grooves branched, branches very slightly divided; the larger spines and tubercles in a broad band, occupying nearly the whole interambulacral space between the inferior oral grooves.

Hab. Red Sea. Sir J. Gardiner Wilkinson.

There is a new genus which has the edge of the disk perforated and the vent near the mouth, as in *Echinoglyphus*, but differs in the oral grooves being more simple and only branched near the edge, in the lanceolate form of the ambulacra, and in the square form of the tesseræ of the ambulacral zones beyond the tip of the ambulacra.

Genus LEODIA.

Body depressed, with a posterior slit and five perforations between the end of the ambulacra and edge; the marginal ambulacral tesseræ squarish, like the interambulacral ones; ambulacra lanceolate, acute at the tip, the anterior one most narrow and longest; pores united by a groove; ovarian plate pentangular; ovarian pores three; oral grooves simple, slightly impressed, converging towards the margin in front of the ambulacral perforations; vent near the mouth, in front of the anal perforation, with a group of three or four larger spines between it and the mouth.

1. LEODIA RICHARDSONII.

Body suborbicular, slightly depressed, five-lobed, hinder edge transverse; ambulacra lanceolate, not reaching to the discal perforations;

discal perforations ovate, small, the anterior smaller, the hinder largest, with two pairs of rather large tesseræ between the ends of the ambulacra and the foramen, the upper pair subtrigonal; oral grooves simply forked near the edge.

Hab. West Indies.

The single specimen I have seen of this species was presented by Sir John Richardson. It is rather deformed and sinuous on the right side, the hinder lateral perforation being nearly obliterated on that side.

In *Echinoglyphus* the tesseræ of the ambulacral bands are broad and band-like between the ambulacra and the ambulacral slits.

Genus ECHINOGLYPHUS, Van Phelsum. The ENCOPE of Agassiz.

The large Brazilian species of this genus appear to be very variable. The young specimens have large notches on the edge of the shell, and as the animal increases in size, the marginal edges of these notches more or less approximate together, and sometimes even become united, so as to transform the notch into a perforation. M. Agassiz on these variations has formed several species; but the Museum series, from the Brazils and other parts of the east coast of Tropical America, show that they are all mere variations of the species which Van Phelsum called *Echinoglyphus frondosus*, and Lamarck *Scutella emarginata*. I am induced to believe that *Scutella quinqueloba* of Eschscholtz, *Encope Valenciennesii*, *Encope subclausa*, *Encope oblonga*, and *Encope Michelini*, are only varieties of this species: they are all remarkable for the large size and longly-rayed star-like form of the madreporiform plate.

Genus FIBULARIA.

The following species is peculiar as having an oblong, longitudinal vent.

1. FIBULARIA OBLONGA.

Shell ovate, elongate, ventricose; vent oblong, longitudinal, according to the axis of the shell.

Hab. N. Australia.

Fam. 2. ECHINOLAMPIDÆ.

Genus ECHINOLAMPAS.

The species of this genus may be divided into two sections, according to the form of the ambulacra.

Echinolampas oviformis and its allies have the porous bands of the anterior and other pair of ambulacra equal; the lower side of the shell flat; the mouth oblong, transverse, with (5) tubercles between the oral ambulacra.

The other species have the anterior porous band of the anterior pair of ambulacra shortest; under side rounded, convex; mouth oblong, transverse, large, marked with no tubercles, and only very rudimentary oral ambulacra.

1. ECHINOLAMPAS DEPRESSUS.

Ovate, depressed, subpentangular; back regularly convex.

Hab. —?

Genus MORTONIA.

Shell ovate, thin, rather produced in front, rounded behind, covered with small tubercles; vertex central, convex; internal cavity quite simple; ambulacra petaloid, narrow, open at the end; bands rather diverging; pores rather crowded, united by an oblong groove; beneath concave, especially near the mouth and vent; mouth rather large, roundish oblong, transverse, without any ambulacral star; vent large, transverse, oblong, in the middle of the space between the mouth and hinder edge; ovarial pores four; madreporiform plate small, central.

? *Echinocyamus*, sp., *Desmoulin*.

Mortonia, *Gray*, *Cat. Echinoida in Brit. Mus.*

This genus differs from *Echinocyamus* in the thinness of the shell, and especially in the ambulacra being larger, more perfect, and in the pores of the ambulacra being united in pairs by a cross groove. It differs from the fossil genus *Pygaulus* in the vent being inferior, intermediate between the mouth and edge, and transverse.

This genus is named after Dr. Morton, the historian of Northamptonshire, who first attempted to arrange the fossil *Echini* into generic groups.

MORTONIA AUSTRALIS.

Elliptical, depressed, rather acute in front, rounded behind, under side concave near the mouth and vent; vent large, oblong, transverse, in the centre between the mouth and hinder margin.

Fibularia australis, *Desm. Tab. Syn.* 240.

Echinocyamus australis, *Agassiz et Desor, l. c.* 140.

Hab. South Sea. Mallet.

February 11, 1851.

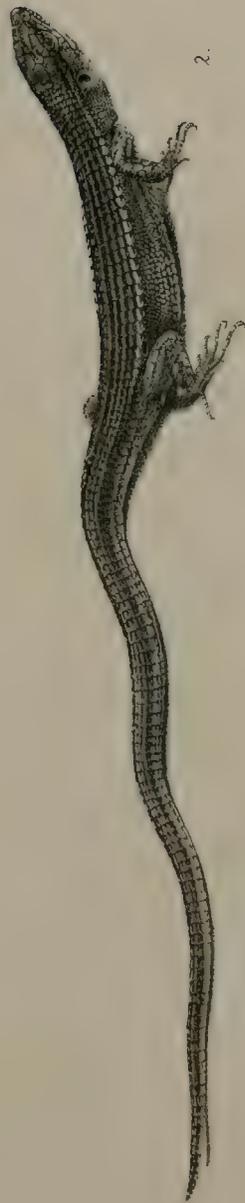
William Yarrell, Esq., Vice-President, in the Chair.

The following papers were read:—

1. DESCRIPTION OF A NEW GENUS AND FAMILY OF CYCLOSAURIAN LIZARDS, FROM PARA. BY J. E. GRAY, ESQ., F.R.S., P.B.S.

(Reptilia, Pl. VI.)

This interesting Lizard has lately been purchased by the Museum, from a collection of Saurians recently made by Messrs. Wallace and Bates, during their excursion within a circuit of about 300 miles of Para.



1. ANADIA OCELLATA. 2. EMMINIA OLIVACEA. 3. IPHISA ELEGANS



J. Wolf, lith.

M & N. Hanhart, Imp^t

SAUROPHAGUS DERBIANUS. *Kaup*

It is exceedingly interesting as presenting an entirely new form, different in many particulars from any before observed; so much so, that I am induced to form for it a new family, to be placed near *Anadiadæ* and *Cherviolidæ*, which may be thus characterized:—

1. IPHISADÆ.

Scales of the back, belly, nape and throat smooth, broad, six-sided, transverse, forming a single series on each side of the tail, narrow, lanceolate, elongate, regularly keeled, in rings alternating with each other; head shielded; chin shielded; ear open, circular; femoral pores distinct.

IPHISA.

Head depressed, shielded; anterior frontal single, broad, four-sided; posterior frontals two, small, subtrigonal; vertebral single, rather elongate; posterior vertebral two, small, five-sided; occipital three, larger, middle one narrow, longitudinal; superciliary shield 3-3, hinder smaller, anterior smallest; temple with small shields; labial shields moderate; rostral and mental broad; chin entirely shielded; anterior single, transverse, first pair very large, triangular, covering nearly the whole of the chin, second pair small, at the outer hinder angle of the former; nostrils lateral, in the lower edge of the nasal shield, between it and the labial shield; eyes large, lateral; eyelids scaly?; ears circular, open; nape, back, throat and belly covered with two series of broad, smooth scales; sides rounded, covered with three or four series of six-sided, smooth scales, placed in oblique series; chest with a collar of five scales, the central one elongate, triangular, the lateral ones four-sided, the outer pair very narrow; preanal shields three, the central one elongate, narrow, subtriangular; limbs short, weak, covered with broad smooth shields above, the hinder shield beneath; femoral pores 10-10, distinct, the series nearly united in front of the preanal plates; toes 5-5, unequal, the inner very short, the outer hinder separated from the other by a space like a thumb; tail elongate, cylindrical, tapering, covered above and below with whorls of narrow, elongate, regular, lanceolate, strongly keeled pointed scales, those of each series alternating with those that succeed and follow it.

1. IPHISA ELEGANS. (Reptilia, Pl. VI. fig. 3.)

Olive-brown black marbled; sides darker, white varied; chin and beneath yellowish white.

Hab. Para.

2. DESCRIPTIONS OF SOME NEW BIRDS IN THE MUSEUM OF THE EARL OF DERBY. BY DR. KAUP.

(Aves, Pl. XXXVI. XXXVII. XXXVIII.)

During my visit to London last year I had the honour to receive an invitation from the Earl of Derby, to visit his collection at Knowsley Hall, with permission to use the materials I might find there for

the monography of *Muscicapidæ* on which I was engaged. Of that collection I had already formed very high expectations; but I was agreeably surprised by finding them all surpassed, so great is the richness of this noble collection. It contains more than 14,000 specimens of stuffed birds, besides skins, which are not yet numbered. What adds still greater interest to this collection is, that it contains a large number of the original specimens described by Latham and other English authors, of whose writings these specimens are the only explanation. To the pleasure of working in so rich a collection must be added the command of a colossal library, to which not one work of importance is wanting. All this, with the aviaries of magnificent living birds, from every zone of the world, must have the greatest charm for the naturalist, and make Knowsley Hall for him a perfect Eden, which once seen shall never be forgotten.

The new birds described here include only one portion of my researches, because I could not finish so many genera. The materials of the very rich family of *Muscicapidæ* are too extensive, for a complete elucidation during the limited period of my visit from a foreign country; I wish my descriptions therefore to be considered only as fragments.

The object of my visit to England was to collect materials for a complete monography of the *Muscicapidæ*; but notwithstanding the many favours I received, and the extreme liberality with which my labours were facilitated in every English collection, I must confess with sorrow that I shall never be able to make a complete whole (perfectly free from objection), with materials collected in different museums. A perfect arrangement can only be achieved by the study of the materials present together, so that at every moment a comparison may be made between any two or any number of the species.

Were it my good fortune to assemble the whole materials of one family in my rooms at Darmstadt, one winter only would be necessary to finish each family in such a manner as to satisfy the requirements of modern science.

Were any one museum willing to accord me the whole materials in its possession, it is probable that all the supplementary species not contained in that collection would be readily furnished by other museums, as the absence of a few species for a short period would be of little or no importance.

That we can only climb to the summit of our science by means of well-made monographies, there can be no possible doubt; and I attach a higher value to a monography constructed on philosophical principles, than to the best fauna of any single part of the world: for only by a strict comparison of the birds of the five parts of the globe can we know what is a family, a subfamily, genus, species and subspecies. Only in this way—a difficult way no doubt—can we learn the true harmony of nature; and thus shall we be filled with admiration, when we see that every species, genus, family or order represents a certain type, and must receive its place in a scheme of classification according to fixed laws, which man must discover, but over which he has no control.

This charm can never belong to merely descriptive ornithology, because even the best descriptions are only like mosaic stones, which, when placed without rules, or arranged according to false principles, give us only a scattered mass of heterogeneous materials, or a picture destitute of truth.

These claims I have urged over and over again in my dissertations, but hitherto without effect. When shall the time arrive when a catholic spirit shall guide the destinies of science, and lead onward to that triumph of true knowledge, in which every director of a museum, and every student of the works of nature, may take his part?

At present it is impossible that a naturalist can without help arrange the whole materials of one class in his museum. Our museums are little more than great exhibitions for the people, who look too often only to colour, instead of being stores of nature's treasures, ready to be communicated to every naturalist who has proved himself worthy of the name. Every museum ought to accord freely and liberally the wished-for materials, for this is the cheapest way in which a family can be properly named and accurately classed. The common excuse that the lent materials might come to harm, is little more than an excuse. Time and destructive insects will do the harm, without the slightest advantage to science.

NISUS (seu ACCIPITER) CHIONOGASTER, Kaup.

Diagnosis.—Above dark blue grey, beneath pure white.

Description.—The male is less than the *Nis. fringillarius*. Above dark blue grey, the crown, lorum, and a stripe over the eye- and ear-cover feathers more approaching to black; ear-covering, cheek and crop with fine black quill lines; tail with three black bands and a broader band at the end, which is white bordered; the underside of the tail has the bands more silver-grey; the first tail-feather with five bands before the large end-band; the wings on the inner side with four bands before the large end-band. Before the emarginations the bands are grey, and after them whiter.

The larger female with a white eye-stripe, and broader black quill stripe on the crop; the cover feathers of the tibia with a fine rufous tint.

According to the ticket of M. de Lattre, the iris of the female is orange, and that of the male dark brown, like burnt sienna.

These two specimens were procured by M. de Lattre in Coban, in the year 1843.

<i>Dimensions in millimetres.</i> —	♂	♀
Head	40	45
Gape	16	19
Wings	173	206
Tail	140	160
Tibia	47	56
Middle toe without nail	32	37

We possess several species in the genus *Nisus*, Cuv., seu *Accipiter* of the English authors. Most of these are very near to the common Sparrow-Hawk; and I think some of them, like the North American

fuscus seu *velox*, the African *rufiventris*, the *madagascariensis*, and perhaps the *erythrocnemius* of G. Gray, are not true species, but that they are subspecies of the common European *Nisus fringillarius*, forming a group amongst themselves, and exhibiting by no means the decided differences apparent between *fringillarius* and *pileatus*, or *pileatus* and *tachiro*.

In the same near relation to the *chiquera* of Western Africa do I consider the true *chiquera*, Vaill. 30, from India; and this opinion I found on the following characteristics.

The West African *chiquera* has the body above darker cinereous, with very distinct narrow black lines, and the stripe beneath the eye, and the black stripe over the eye and ear-covers, are more distinct; the rufous head with darker fine stripes.

The Indian *chiquera* has the head without stripes; the body above lighter grey, with very few traces of black bands; and the black semi-circle round the eye is shorter and not so complete.

But these slight differences will not justify us in considering the West African *chiquera* as a true species distinct from the Indian true *chiquera*; it is only a subspecies of the latter true species. As such we must make a distinction, and as such it must be accorded a place in the system. I think the best way is to give a description of the oldest known subspecies, and arrange all the other subspecies with different names, distinguished by the letters of the alphabet, *a*, *b*, *c*, &c., amongst the true species. In this way it would only be necessary to give a very short description of the subspecies, consisting of the few marks by which it differs from the old known subspecies. Until we have discovered all the species contained in one and the same subgenus, we can never say with certainty whether a given specimen represents a true species, or only a subspecies; I must therefore confess that in the following descriptions of the family *Muscicapidae*, it is very probable that I have described as species some specimens which hereafter will be arranged as subspecies, when the whole species composing the subgenus are completely known.

One of the most interesting birds in the collection of Lord Derby is a little Falcon, belonging to the subfamily *Falconinae*, which enabled me to correct the characters of the genus *Harpagus*.

The characters must be changed as follows:—Bill large, with two teeth, slender and indistinct, or strong and distinct; wings short, and in the proportions of the quills very like *Nisus* seu *Accipiter*; toes short, and the inner and outer toes of the same length.

The genus *Harpagus* must be divided into two subgenera.

The older subgenus *Harpagus* must be distinguished by the following characters:—Two strong and distinct teeth; the nostrils placed near the end of a soft membrane covering a large cavity; tibia with scales not divided.

Two species, *diodon* and *bidentatus*.

The other subgenus, in which this new species must be placed, must be characterized:—Two slender indistinct teeth; the nostrils round, very small, and bored in the nasal bones; the first wing-

feathers with very distinct emarginations, the fourth the longest ; tibia with whole and divided scales (fig. 3).

I give this subgenus the name of *Spiziapteryx*, and the species I have named

HARPAGUS CIRCUMCINCTUS.

Diag.—Size of the Kestrel, with white stripe over the eye, which encircles the whole head and is connected with a white collar ; the tail-covers, above and beneath, white.

Descr.—Rufous ash-grey, beneath lighter, with dark brown shaft-stripes ; the white stripe over the eye, and the collar black margined ; tibia-covers white ; the arm and hand wings white at the roots, and like the stronger cover-feathers, with white spots and bands on the inner and outer webs ; the first wing-feather without spots on the exterior web, and with fine white spots on the interior web ; tail black-brown ; beneath with white roots and three small white bands and an end band ; the fifth without spots on the exterior web ; the fourth with only traces ; the third exhibits round white spots ; and the two exterior feathers are white-banded. From this very irregular distribution of spots, the tail, seen from above, exhibits a very irregular drawing. Cere, naked eye region and feet yellow ; nails dark brown.

I apprehend that this specimen, the only one in England, is not a very old bird. Lord Derby received this bird from Chili, by Mr. Bridges.

Dimen.—Head, 49 ; bill, from the cere, 16 ; from the gape, 22 ; height, 13 ; breadth, 20 ; over wing, 123 ; tip of the wing, 56 ; middle tail-feather, 148 ; outer tail-feather, 115 ; tarsus, 45 ; middle-toe, 26 ; nail, 11 ; outer-toe, $17\frac{1}{2}$; nail, 10 ; inner-toe, 16 ; nail, 12 ; after-toe, 13 ; nail, 13.

A new species of the subgenus SAUROPHAGUS, Swains.

In the little subgenus *Saurophagus*, Swains., we had, till now, only three species. These are, *licitor*, *sulphuratus*, and *flavus*. I received by Mr. Wollweber from Zacatecas in Mexico an only specimen of a fourth species ; but I found in the collection of Lord Derby, and in the British Museum, a great number of the same species.

To this species I have given the name of *Derbyanus*, as a mark of my respect for that distinguished patron of ornithological science, the Earl of Derby, President of the Zoological Society.

All the species of this little subgenus have the same general colouring, and are distinguished only by very few characters taken from the colouring of the wings and from the dimensions. The young ones have, like the young birds of *Scaphorhynchus*, the bill shorter and bigger, and the head is black, without the beautiful crest of the old birds. The old birds have a white front, connected with a white band over the eyes and over the black ear-covers, and surrounding the black head, which in the middle is ornamented with a yellow crest ; the chin and underpart of the neck white ; breast, belly,

under-wings and tail-covers yellow ; back olive-coloured ; wings and tail brown, with red margins.

SAUROPHAGUS LICTOR, Gray & Mitch. Genera of Birds, t. 62.

Lanius lictor, Licht.—*Saurophagus pusillus*, Swains.—*Swainsonii*, Gould.

Diag.—Only the margins of the outer webs of the wings rufous ; wings 86 mm. long. It shows the finest bill, a more graduated tail, and the smallest dimensions.

Hab. Brazil, Para.

SAUROPHAGUS SULPHURATUS.

Lanius, Gmel.—*Tyrannus*, Vieill. Enl. 296.

Diag.—Only the margins of the outer webs of the wings rufous ; wings 110–114 mm. long.

Hab. Amer. meridional.

SAUROPHAGUS FLAVUS, Gray.

Corvus, Gmel.

Diag.—Only the margins of the outer webs of the wings rufous ; wings 126–130 mm. long.

Hab. Brazil meridional. Bolivia.

SAUROPHAGUS DERBIANUS, Kaup. (Aves, Pl. XXXVI.)

Diag.—The wing-feathers from the second to the sixteenth have the whole outer webs on the greatest part of the length rufous ; wings 128 mm. long.

Hab. Zacatecas, in Mexico.

Comparison of the dimensions.—

	<i>Saur.</i> <i>lictor.</i>	<i>Saur.</i> <i>sulphuratus.</i>	<i>Saur.</i> <i>flavus.</i>	<i>Saur.</i> <i>Der-</i> <i>bianus.</i>
Head	41	53–58	60–62	60
Bill, from the forehead . . .	22	29–30	35	32
— from the gape	26	32–36	40–42	38
Wings	86	110–114	130	128
Tail	74	82–86	100	92
Tarsus	16	25–27	28	29
Middle-toe with the nail . .	—	21	30	26

In these dimensions *Saurophagus Derbianus* is very near to *Saur. flavus*.

In what relation with the subgenus *Scaphorhynchus*, Pr. Max., this little subgenus *Saurophagus* is to be placed, I shall determine in my next monography, *Muscicapidæ*.

Of the subgenus *Scaphorhynchus*, Ch. Bonaparte, in his very useful Conspectus, has given five species :—*pitangua*, *flaviceps*, *atriceps*, *audax*, and *chrysocephalus*.

The species *flaviceps* and *atriceps* must go down, because *flaviceps*, Sw., is a female, and *atriceps* a young bird of *pitangua* ; *audax* does

not belong to this subgenus, and is to be placed in the neighbourhood of *rufinus*, Spix, and *circumcinctus*, Sw., which have the same bill and similar covering.

We have only two species, *pitangua* and *chrysocephalus*, Tchudi, in the section of *Scaphorhynchus*.

Scaphorhynchus, with its broad bill, shorter and feebler tarsi and toes, represents more the Swallow type, and must be placed in the second rank of his genus.

Before I finish I may allow myself the observation, that, till now, the whole family of *Muscicapidæ* has been in a condition of the greatest confusion, and that the greatest number of genera must go down, or must be considered as subgenera of some larger genera. As an example of the way in which this is to be effected, I give for instance the genus *Psaris*, into which I transplant three genera of the new authors.

Some remarks on the genus PSARIS, Cuv.

The genus *Psaris*, which is synonymous with *Tityra*, Vieill., is a true genus, which cannot be considered as the only type of a subfamily, and which cannot be divided into several genera. It is an indivisible genus, which I have separated into some little subgenera only. I prefer, from well-known reasons, the name *Psaris*.

The characters of this genus are:—Thick, strong, slightly compressed bill, without strong bristle-feathers on the mouth gape; tarsi moderately high, with broad scales on the front; on the sides and behind with small scales. *The old males have the second hand wing-feather abnormally short and of an unusual formation.* The females and young birds have the wings regular.

The species of this large genus are limited to the southern parts of America.

a. Subgenus CHLOROPSARIS.

They have the bill and the feathered lorum of the *Pachyrhamphus*, but the wings are shorter and the tail more graduated. Size of a Sparrow, colouring more variegated and greenish on the back.

1. PSARIS CUVIERI, Swains. Spix, tab. 45. 2.
2. PS. ATRICAPILLUS. *Muscicapa*, Gmel. Enl. C. 871 ♂. 831 ♀.
3. PS. VERSICOLOR. *Vireo*, Hartlaub.

b. Subgenus PACHYRHAMPHUS, G. Gray.

The bill unicolor black, shorter than the head, not compressed on the sides; the bristle-feathers moderately long; the enormous hand-feather like *Chloropsaris*, with broader inner webs and emarginated only on the tip; tail unicolor, very little graduated. Size of a *Lanius colurio*. The colouring is dark and not so variegated.

We can give by the diagnosis the colouring of the enormous hand-feather of the males.

4. PS. VALIDUS. *Lanius validus*, Licht.

The second hand wing-feather with a long white spot on the inner web, which reaches to the third part of its length.

5. PS. NIGRESCENS. *Pach. nigrescens*, Cab.

The second hand wing-feather black, with white margin on the exterior web.

6. PS. PECTORALIS. *Pach. pectoralis*, Swains.

The second hand wing-feather black, with white spot near the root, and fine white exterior margin.

7. PS. AGLAIÆ. *Pach. Aglaia*, Lafr.

The second hand wing-feather with an oval white spot near the root, and without white exterior margin.

c. Subgenus PSARIS.

The red and black bill on the anterior part more compressed, and like *Cassicus*, with broad root, surrounded by the frontal feathers; lorum and eye region naked; the bristle-feathers over the gape very indistinct; the second hand wing-feather extremely narrow, formed like a sword, without an emargination on the tip. The colouring is silver-grey, like *Lanius excubitor*, with more or less black head, face, wings and tail. Size of *Lanius excubitor*.

8. PS. CAYANUS, Cuv.

The black colour covers the whole head, and extends to the tip of the ear-feathers; the bill two-thirds red-coloured; tail black, on the root only white or silver-grey; the wings 116-122, and the abnormal second hand-feather 40 mm. long.

9. PS. BRASILIENSIS, Swains.

The black of the ear-feathers extends further than the black of the head; the bill one-third red-coloured; the inner webs of the wings white-bordered; the wings 129, and the abnormal second hand-feather 41 mm. long.

This species is probably a subspecies of *cayanus*.

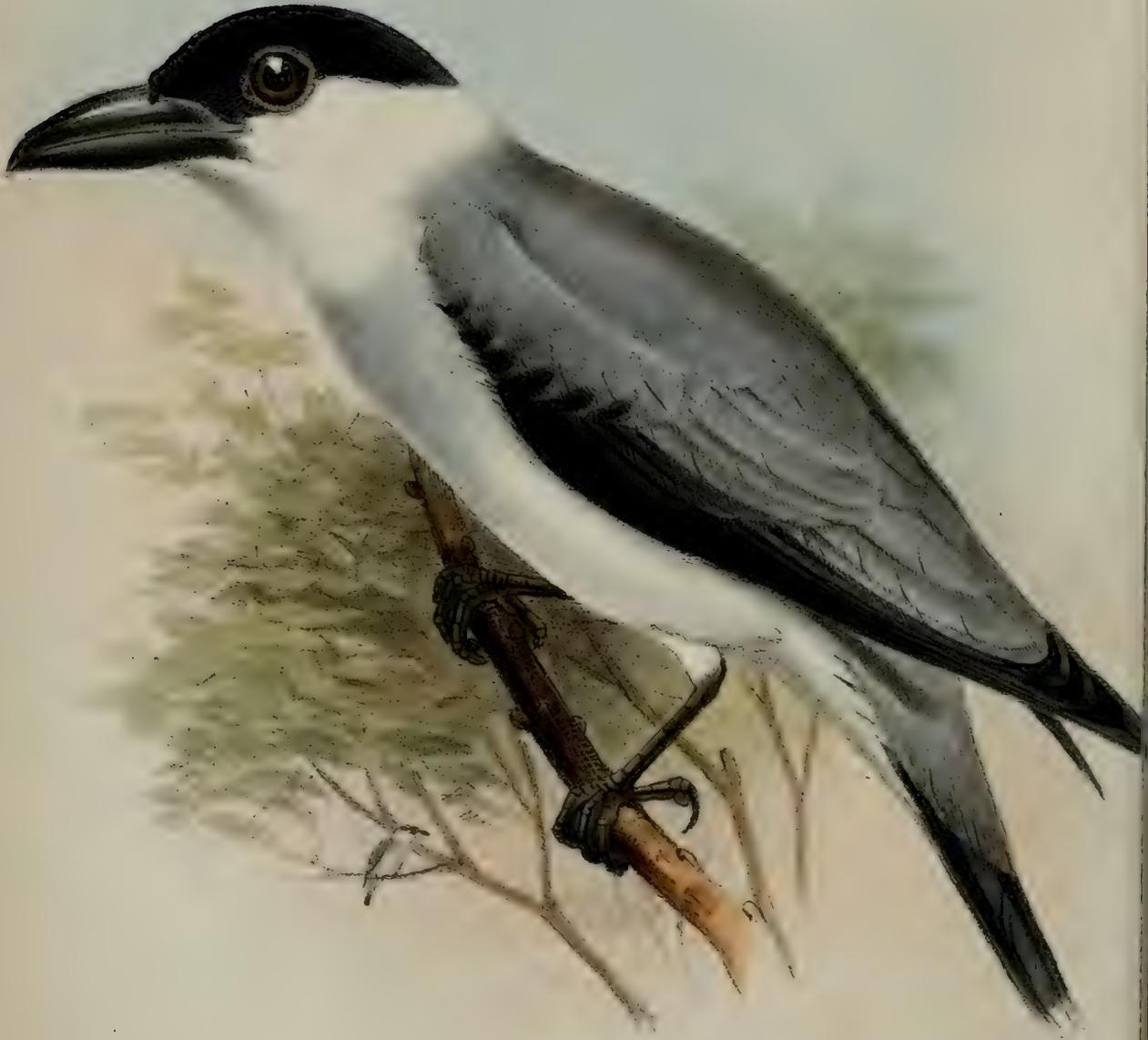
10. PS. SEMIFASCIATUS. *Pach. semifasciatus*, Spix, t. 442.

The black on the head covers only the front to the eye, and descends to the anterior ear-feathers round the eye to the chin; tail black, with a silver-grey or white band under the tail-coverts, and a white band on the tip; the wings 127-134, and the abnormal second hand-feather 46 mm. long; it is on the exterior web black, and on the interior white.

The female with dirty brown head and a greyish brown back, with a tinge of red.

11. PS. MAXIMUS, Kp.

In the collection of Lord Derby I found a young bird of very large



J. Wolf, lith

M & N. Hanhart, Imp

PSARIS FRASERII. *Kaup*. ♂.



J. Wolf lith.

M & N. Hanhart, Imp^t.

PSARIS FRASERII *Kaup*. ♀

dimensions, which does not belong to any of the preceding species. The bill is reddish on the root; the under parts are lighter than on the young *cayanus*; the stripes are more obsolete, and are reduced on the side as black shaft-stripes; shafts of the tail reddish brown; under tail and interior wing-covers white, without spots.

	<i>Ps. cayanus.</i>	<i>Ps. maximus.</i>
<i>Dimen.</i> —Head	52	56
Gape	35	35
Wing	129	129
Tail	70	73
Height of the bill	11	13
Breadth	12	13½

It would be very interesting to discover the old bird of this species.

d. Subgenus ERATOR.

It unites the size, colouring and formation of the second hand-feather of the true *Psaris* with the bill and feathered lorum and eye region of the other subgenera.

This little subgenus, with its mixed characters, gives the clearest proof that *Psaris*, *Pachyrhamphus* and *Bathmidurus* cannot be considered as true genera.

12. PS. INQUISITOR, Orb. *Lanius inquisitor*, Olf.

Diag.—Tail black.

Descr.—The male with black head and white ear-covers, connected with a white collar, which divides the black head from the silver-grey body; tail black, at the root white, which extends to the margins of the inner webs; end of the tail without white band; the second hand-feather on the inner web white.

The female (*Jardinii*, *erythrogenys*, *Selbyi*, and *Nattereri*, Sw.) with white front and rufous ear-covers.

13. PS. FRASERII, Kaup. (Aves, Pl. XXXVII. XXXVIII.)

Diag.—Tail two-thirds white, with black white-bordered end.

Descr.—The head to the ear-covers black; ear-covers and under the posterior part of the eye white; the second hand wing-feather light ash-grey, with white root.

The dimensions of these two species are nearly the same:—head, 52; gape, 32; height of the bill, 10; breadth, 14–15; wing, 105–113; tail, 63–70.

I give to this very distinct species the name of a very able zoologist, who is going a second time to Western Africa. From this journey we may anticipate the greatest benefit to our science, and we wish Mr. Fraser the best success. For all his kind assistance in the collection of Lord Derby I give him my best thanks.

e. Subgenus BATHMIDURUS, Cab.

They have the bill like *Chloropsaris*, *Pachyrhamphus* and *Eerator*, but the tail in most of the species is more graduated. The colouring

of it is black, with white or yellow end spots. Size of a Finch. The predominating colour of the males is black, white and grey.

In this little subgenus we have different type-species, about which the different subspecies arrange themselves. One of these is

Ps. MARGINATUS.

Head-feathers black, on the tip with steel-blue; wings black; shoulder-covers, wing-covers and arm-wings white margined; tail graduated, black with broad white tip.

The female has all the margins and the under parts rufous yellow, the back greenish, and the head darker coloured.

a. Ps. MARGINATUS MINOR.

Lorum and a small line on the front whitish; ear-covers, back part of the neck, lower part of the back light grey; upper part of the back black; all the under parts white with grey tint; the enormous second hand-feather white, on the exterior web on the root with a black spot, and from this spot till the end; along the shaft on the interior web a small long black stripe.

b. Ps. MARGINATUS MAJOR. *Bathmidurus major*, Cab.

Lorum and a small line on the front whitish; before the eye a black spot of bristle-feathers; the shoulder-covers all white; over-back black; the enormous second hand-feather longer, white, with a small stripe along the shafts on both sides.

c. Ps. MARGINATUS TRISTIS, Kp.

Without a small white line on the front; lorum and the whole head black; the feathers on this part are more massive on the tip, and have more lustre; the shoulder-covers only on the tip white; the whole neck and upper part of the back black; lower part of the back, ear-covers and all the under parts dark grey, mixed with black; the tail has not so much white on the tip; the under side of the wings with smaller white margins; the second enormous hand wing-feather on the inner web whitish with grey spots, on the outside black, with a grey margin on two-thirds of the upper part; the emargination on the tip very distinct.

Mus. Derb.

<i>Comparison.</i> —	<i>Ps. marg. minor.</i>	<i>Ps. marg. major.</i>	<i>Ps. marg. tristis.</i>
Head	35 ..	♀ 38 ♂ 36 ..	37
From the gape to the tip of the bill ..	18 ..	19 19 ..	20
Wing	65 ..	84 73 ..	75
Tail	50 ..	64 56 ..	62

A new species in the collection of Lord Derby and in the British Museum, forming a second type-species, I have called

Ps. PARINUS, Kaup.

Size of *Parus major*; head-feathers black, with a soft violet lustre, and not imitating the form of scales; lorum, ear-covers and all the

under parts dirty white; the whole back and shoulder-covers grey; the little plumage of the wings black or grey, with whitish margins; hand-wings black, arm-wings dark grey, marginated with whitish yellow; the inner webs of the wings broadly marginated with whitish yellow; tail-feathers grey, along the shafts black and on the margin narrowly bordered with yellowish white; the second enormous hand-feather with broader inner web black, with white margin from the emargination to the end, and with a large long white spot from the root to two-thirds of the feather.

The female rufous with darker head; wings black-brown, with predominating rufous yellow margins; belly and under tail-covers lighter-coloured.

This species comes from Para.

Very near to this species must be placed the *Psaris surinamus* (*Muscicapa*, Gmel.), which is characterized with the following diagnosis:—*Caudá rotundatá, apice albá; corpore nigro, subtus albo.*

I have not hitherto seen this species, nor *Ps. niger variegatus* and *melanoleucus*.

Dimensions of *Ps. parinus*:—head, 34; gape, 17; wing, 68; tail, 49.

GENUS SETOPHAGA, Swains.

This genus is one of the finest of the whole family of *Muscicapidæ*. It is found only in America. Only one species inhabits the northern part, namely the very distinct species, *Set. ruficilla*, with its yellow or red-banded wings and tail. The tail-feathers are pointed.

The greater part inhabit the southern parts. They form various little subgenera, distinguished by their very different colouring. One of these, and I think the most beautiful, is the little section to which the following species belong. They have much yellow on the head and under side; on the over parts dark cinereous.

SETOPHAGA RUFICORONATA, Kp.

Diag.—With red head-spot; the first tail-feather all white.

Descr.—The hind ear-feathers black; front, lorum and eye-region yellow; the first tail-feather all white; the second white, with black spot on the outer web, and black margin on the inner web; under tail-covers black-spotted.

Mus. Derbyanum.

Very near to this species is

SET. RUFICAPILLA, Cab.,

of which Bonaparte gives the diagnosis in the following manner:—*Fusco-plumbea, subtus omnino flava, lateribus fuscis; pileo castaneo, retricibus extimis apice albis.* Guiana.

SET. LEUCOMPHOMMA, Kp.

Diag.—Lorum, eye-region and chin white.

Descr.—Ear-covers black, the yellow colour reaching only to the after part of the eye; tail and under tail-covers like *ruficoronata*.

Hab. Bogota. Mus. Derb.

SET. ORNATA, Boss.

Diag.—The whole head beautiful yellow.

Descr.—The head-feathers longer (10 mm.); the face and chin white; the anterior ear-feathers on the tip black, the hind ear-feathers all white; the first tail-feather all white, the second only on the basal inner web black; under tail-covers black-spotted.

Hab. Andes. Mus. Derb.

SET. FLAVEOLA, Lafr.

Diag.—The hind ear-feathers with black stripes.

Descr.—The face orange; the anterior ear-feathers black, the hind ear-feathers yellow, black-striped; under tail-covers white; the first to the third tail-feather with white shaft and shaft-spot, which is enlarged on the tip.

Hab. Columbia. Mus. Derb.

A third type-species is **VULNERATA**, Wagl.

The species belonging to this type-species have the breast and belly beautiful red.

They are natives of Mexico.

SET. VULNERATA, Wagl.

Above cinereous, with black front, throat and rufous spot on the head; first to third tail-feather with white spots on the tip.

SET. PICTA, Swains. Zool. Ill. t. 3. *tricolor*, Licht.

Above, throat and sides of the lower parts black; margins of the first hand-wing and the three least arm-wings white, like the cover-feathers of the wings; the first and second tail-feather nearly all white, the third white, with broad black margin on the inner web.

SET. MULTICOLOR, Bonap.

Black; front, small band over the wing-covers, belly and the tips of the tail-feathers white.

A fourth type-species is

SET. VERTICALIS, Lafr.

Cinereous, head rufous; breast and belly yellow; the first tail-feather three-fourths, the second half, and the third only on the tip white.

Hab. Bogota. Mus. Derb.

SET. FLAMMEA, Kp.

Breast and belly orange; the first to the third tail-feathers only on the tips white.

Hab. Guatemala. Mus. Derb.

SET. MELANOCEPHALA, Tchudi, p. 192. t. 12. 1.

A small line of the front, lorum, eye-region, like all the lower parts, yellow; the four exterior tail-feathers white.

Hab. Peru. Mus. Derb.

Genus TYRANNULA, Swains.

The genus *Tyrannula*, as Prince Ch. Bonaparte has apprehended it, is too large, and the forty species must be divided into some natural genera and different subgenera.

The manner of arranging these species in geographical sections is very simple, but very often the wrongest way, although so very clear that it can be understood by everybody. It is true that some genera are limited to a certain part of the world; but there are also many genera which are composed of species from all parts of the world, or from different zones of the same part of the earth.

A very natural section is formed by the species which Bonaparte called "Ultimi Tyrannorum sive Tyrannularum primæ."

The bill of the length of the head; over the nostrils as high as broad; the back rounded off; the gape bristle-feathers of moderate length; the wings moderately long, reaching to the tail-cover feathers; the tip of the wing short; the first wing-feather as long as the eighth, third and fourth the longest; the long tail of the length of the body; the head unicolor, without yellow crest, but the feathers can be erected; above dirty olive, with darker-coloured head; gorge and over breast ash-grey; the belly yellowish; the margins of the wings and tail rufous.

1. TYR. COOPERI. *Muscicapa*, Nuttall.

With shorter wings than *mexicanus*, but with longer bill, like *crinita*; throat and over breast light grey, not so dark as *crinita*; the black stripe along the inner webs of the tail-feathers is broader, like *stolida*.

Hab. Northern America and Chili. Brit. Mus.

2. TYR. CRINITA. *Muscicapa*, Linn.; *irritabilis*, Vieill.

With longer wings; throat and over breast darker grey; all the wing-feathers, except the first, black-brown with rufous margins.

Hab. North America. In every museum.

3. TYR. GOSSII, Bonap.

With longer wings; the anterior part of the outer webs of the first and second hand-wing whole rufous; the head darker, and the ash-grey dark, like *crinita*.

Hab. Jamaica. Brit. Mus.

4. TYR. MEXICANA, Kaup.

With short wings; all the wing-feathers, except the first, with rufous margins; breast light ash-grey; above lighter.

Mr. Wollweber sent me this species, which I found also in the British Museum.

5. TYR. STOLIDA. *Myobius*, Gosse.

With short wings; the rufous margins on the wing-feathers very fine; the black stripe along the shafts of the inner webs of the tail-

feathers reaching only to the middle of the feathers; the inner webs of the exterior tail-feathers with extinguished bands.

Hab. Jamaica. Brit. Mus.

Comparison of the dimensions.—

	<i>Tyr.</i> <i>Cooperi.</i>	<i>Tyr.</i> <i>crinita.</i>	<i>Tyr.</i> <i>Gossii.</i>	<i>Tyr.</i> <i>mexicana.</i>	<i>Tyr.</i> <i>stolida.</i>
Head	46 ..	45 ..	48 ..	43 ..	43
Bill from the gape	28 ..	28 ..	31 ..	24 ..	24
Wing	94 ..	100-105 ..	104 ..	93 ..	86
Tail	88 ..	89-94 ..	95 ..	86-90 ..	82
Tarsus	22 ..	19 ..	24 ..	22 ..	19

It is possible that all these species are subspecies of one or two type-species. This point, however, can only be determined by future researches.

GENUS TODIRHAMPHUS.

I found in the collection of Lord Derby two new species belonging to this genus.

TOD. PECTORALIS.

Green, with a white spot before the eye; throat and chin dark ash-grey; next this with white on the crop; breast light ash-grey; the inner margins of the wing-feathers and the inner wing-covers yellow; outer margins of the wing-feathers and tail olive; belly and sides white.

Head, 28; gape, 14; wing, 45; tail, 42; tarsus, 15 mm. long.

Hab. ? Mexico.

TOD. RUFICEPS.

With red head and dark ash-grey occipital feathers; next this an ash-grey collar; over part of the wings black, with two light yellow bands; wing- and tail-feathers with olive margins, which on the arm-wings are more white; lorum black; ear-covers brownish; chin and throat white, with brownish tint, and divided from the yellow under parts with a black striped band; the tibial feathers black.

Head, 26; gape, 13; wing, 46; tail, 36; tarsus, 17 mm. long.

Hab. ? Mexico.

PHRYNORHAMPHUS, Kaup. *Smithornis*, Ch. Bonap.

The bill very broad, half as high as broad, with sharp culmen; the wings short; the first wing-feather long, nearly as long as the seventh, the second as long as the third and fourth; outer toe at the base connected with the middle toe.

I am strongly inclined to believe that this section does not possess the song-muscles.

PHRYNORHAMPHUS CAPENSIS. *Platyrhynchus capensis*, A. Sm.

Descr.—Upper mandible black, lower mandible yellow; front and lorum rufous yellow; head black; the bristle-feathers with white

roots; ear-covers ash-grey, with whitish shafts and shaft-spots; back olive-grey, with black spots; the roots of all the feathers on the back pure white; wing-covers with rufous yellow margins, which form two small bands; lower parts white, on the sides tinted with brownish rufous, and with broad black shaft-spots; the middle of the throat, belly and under tail-covers white; tail black-brown, with olive margins.

Head, 40; gape, 22; height of the bill, 7; breadth, 12; wing, 72; tail, 55; tarsus, 18; middle toe, 15 mm. long.

Lord Derby's collection. Brit. Mus.

A communication was received from Dr. G. R. Bonyan, of British Guiana, on the Raptorial Birds of that country, of which the following is an abstract:—

3. NOTES ON THE RAPTORIAL BIRDS OF BRITISH GUIANA. BY DR. G. R. BONYAN.

There are, I believe, only three species of Vulture in British Guiana. The first is the well-known

KING OF THE VULTURES.

Sarcorhamphus Papa of Dumeril.—*Irubicha*, Azara.—*Vultur Papa*, Linn.—*Le Roi des Vautours*, Cuv.—*Carrion Crow Governor* of negroes.

There is a very good drawing of this bird in Latham's 'General History of Birds.' It is by no means common in Demerara, but young birds are occasionally brought from the upper rivers, particularly the upper parts of the Mahaica and Mahaicony creeks, where they abound, to the town. They are easily tamed and eat any sort of meat, not showing a particular predilection to putrid meat. Although I have seen this bird in its wild state, I have never witnessed it alighting upon a carcase; the common Carrion Crows, it is said, cede place until the king has fed. Mr. Waterton witnessed this singular fact, and I have heard it corroborated by more than one person of veracity. I know nothing of its habits or nidification. The colours about the head and neck are remarkably beautiful and varied, and have a downy bloom as it were, which it is impossible to imitate by painting the preserved specimen.

THE COMMON CARRION CROW. *Cathartes iota*.

If this bird be the same as "*Vultur iota*" of Charles Bonaparte, it is imperfectly described by Cuvier as having only the head naked; whereas it has the head and the neck more than half way down, naked, warty and black; nor is its plumage of a shining black, but dull and inky. The Carrion Crow is seen over the whole surface of the country, either soaring on dry sunny days at an immense height in the air, or swooping down in wide gyrations towards the ground. If a carcase be thrown out on a dam, no Carrion Crow being within the range of vision, after a short time one will be seen in a distant

part of the horizon ; presently another will appear ; then another and another, until they will be observed coming from all quarters ; not, however, in a direct line towards the object, but in more or less extensive gyrations. There can be no doubt that the first Carrion Crow that sees the object, by an increased energetic quickness of its flight, gives notice to those which are within its sphere of vision that there is game in view, which accounts satisfactorily enough for the vast number of these birds which are collected from every quarter of the horizon in so short a time after a dead body is exposed. Indeed, to the eye of the common observer, the difference of motion of a *Vultur iota* on the look-out, and after it has sighted its quarry, is very remarkable. The former is a slow, steady and gentle soar, in small gyrations, at an equal height ; the head of the bird, if it be examined with a glass, being seen turning from side to side. The latter is a rapid and energetic advance, every hundred yards or so the speed being increased by several vigorous flaps of the wings. It appears to me to be quite unnecessary to enter into the discussion, as to whether this bird hunts by sight or scent, as it is quite sufficiently established that it is assisted by both senses. The instant a snake is killed, the Carrion Crow will, if in the neighbourhood, sight the object, and speedily descend and commence his attacks upon the dead animal. Or if a negro lets fall a calabash with eggs, and they are broken, the Carrion Crow will soon be seen feasting on the unwonted luxury. If, on the other hand, a body be imperfectly interred, this bird will, so soon as putrefaction has commenced, be seen in the neighbourhood perched upon a tree or tombstone, and apparently much puzzled to know where the piece of mortality can lie concealed which evolves the, to him, delicious fragranccy. If the body be that of a tough-skinned animal, such as an ox or horse, the Crows will wait, perched on trees in the neighbourhood, until putrefaction has softened it sufficiently for them to feed on it. Their bills and feet are remarkably weak. They build in very high trees nests of broken sticks. The eggs when broken have a semi-putrid odour. It is worthy of remark that the Carrion Crow is common about the streets of New Amsterdam, scarcely getting out of the way of the passengers ; while in Georgetown, not more than sixty miles distance, this bird is never seen in the streets. The former town is said to be much more cleanly and well-kept than the latter.

The YELLOW-NECKED CARRION CROW.

This bird is smaller and more slender than the common Carrion Crow. It is found principally about the creeks of Mahaica and Mahaicony. It is less numerous than the Black-headed Carrion Crow. It is not either so gregarious a feeder, and appears to search for smaller carcases, such as the putrid fish on the dried savannahs bordering the creeks. There is certainly, with the exception of the colour of the head and neck, the absence of warts, and the slender form of the body, but a very slight specific difference between this bird and the former. The colour is black, with blue and greenish iridescence.

The FISHING-HAWK. *Pandion*.

A very handsome little fishing Eagle. I do not think this is the same species as *Le Balbusard* of Cuvier. It livens very much the scene about the flat swampy lands of the sea-coast, when the trenches are full with the mixed tide and bush water. It hovers for a length of time in one spot at a considerable height, and then suddenly descends vertically on its finny prey, or it alters its position to another part of the trench. When it makes a capture it flies off to a neighbouring tree to devour it.

The LARGE BLUE HAWK OF THE CATARACTS.

This bird I shot with a single bullet while descending the long and swift rapid of Twansinki, lat. 5°, on the Essequibo. It is very rarely seen on the lower parts of the rivers. The manner of its death was as follows, as I find on referring to my journal of the trip:—10th November. An exciting day's journey in the descent of the rapids between Twansinki and Waraputa. Some of these we did not venture to *shoot*, as it is called, but had to let the boat down, by means of the tow-line, most ignominiously, stern foremost. We had, however, the satisfaction of being very nearly swamped in descending a long rapid in the lower Twansinki range, which made up somewhat for the slight we considered had been put upon our courage by our coxswain, Hermanus, refusing to shoot down those rapids he considered to be dangerous. Our indignation against the noble captain was considerably cooled. The great danger in the descent of these long rapids is from the boat being carried down by the rush of the torrent, and the bow being at the same time more or less submerged by the curling back of the water, when it meets the resistance of the rocks in its passage. Thus the descent, although very swift, is in a succession of violent plunges, at each of which the boat, if not built with a sufficient *spring* in the bow, which was unfortunately the case with us, takes in a large quantity of water, and is in great danger of being swamped before it reaches the foot of the rapid. Everything depends of course on the *way* the boat has on it, and our crew, on this occasion, urged by the frantic gestures and shouting of the steersman and bowman, pulled with amazing vigour and energy. In the very midst of the hurly-burly of this descent, a Large Blue Hawk flew rapidly across our bow and alighted on a high dry tree. My soul had long yearned after a "Blue Hawk" of the Cataracts. Before I could fairly cover it, the bird was eighty yards behind us. The report of the gun was scarcely audible in the tremendous noise, and the Hawk for a second remained immovable and apparently unhurt, when his head sunk, his body swung forward, and the powerful grasp of his talons relaxing in death, he fell plumb down.

There are three species of *Ibycter*, or "Carracarra Hawks," as they are called by the creoles. These are very numerous on the banks of the rivers and creeks, and appear to be continually on the alert, flying from tree to tree, alighting and scratching on the sands, and indeed being the only specimens of the bird kind on the higher

rivers which are always to be met with during the whole day. The first is

The LAUGHING HAWK.

A well-known bird, which has been described by Waterton, Schomburgk and others. It is remarkably noisy, and is generally seen in company with three or four others of the same species flying about and perching on the high trees on the borders of creeks, uttering almost constantly a discordant loud gabbling, from whence it has got the name of the "Laughing Hawk." This bird feeds on eggs, young birds, insects, and does not despise certain sorts of fruit. It is, in fact, omnivorous.

The YELLOW-HEADED CARRACARRA HAWK.

Smaller than the preceding. Three or four are generally seen together. They frequent chiefly in the months of September, October, and November, when the guana and river turtle lay their eggs, the extensive sand-banks on the river Essequibo, beyond the first rapids in latitude $6^{\circ} 10'$. I have seen them in companies of from three to five, assiduously scratching up the sand in which the guana or turtle had laid; and as these reptiles deposit their eggs at least eight inches beneath the surface, their rasorial powers are very considerable. The sands on this part of the Essequibo extend in every direction, lying on the beautiful bosom of the placid river, among finely wooded islands of all sizes, with most inviting sand beaches, enticing you to land at every turn. If you do land, you will probably see on the hard fine sand the scrambling track of a guana, which, if petrified, would set a palæontologist frantic with delight. Close by, the steadier and more decided footstep of the cayman, clearly showing that he is made of somewhat sterner stuff than his herbivorous friend, and still further off, a camoude has dragged his slow length along. There are tracks of turtle, ducks, snipes, lizards, and all sorts of *Copriæ*; in fact, a first-rate piece of interesting geology, only not baked or compressed yet. Edging the bank is the eternal forest.

The RED-HEADED CARRACARRA.

This bird is of the same size as the preceding, but its habits are somewhat different, as its food appears to be principally confined to insects and small reptiles. I found the stomach of one I dissected full of fragments of beetles. Mr. Swainson places these birds at the head of the Kites, where they are certainly more naturally situated than among the Eagles, where they are placed by Cuvier.

The next birds are the Awl-beaked Fish-Hawks. I only know two, and they are very near one another.

The LARGER AWL-BEAKED FISH-HAWK

Is remarkable for the great length of the curve of the upper mandible, and is somewhat larger than the next. Both are savannah birds, feeding on freshwater fish. They are often seen in large flocks, particularly on an extensive savannah, through a part of which is dug

the freshwater canal called the "Lamaha," which was intended to supply the city of Georgetown with water. They prey particularly on the Hassar (*Callichthys*, Schomb.). This curious fish, which builds a nest in or under which it lays its eggs, is found in abundance in the small pools and water-holes of the savannahs. It is a very domestic fish. The female, when the time for spawning arrives, collects a number of small pieces of stick, and places them together, across one another; it then, descending beneath this structure, which is about a foot in diameter, expumates a quantity of viscid matter, which, being mingled with air, causes the nest to float. In this viscid expumation the eggs are laid, and both the male and female remain near the nest, making furious strokes at any intruder; and as they are provided with a very sharp bony first ray to the dorsal fin, if a wound be inflicted it is generally a severe one. The form of the beak of the Fish-Hawk is admirably adapted for separating the plates of mail in which the Hassar is enveloped. It is when the water in the pools and water-holes is reduced in the first part of the dry season to soft mud, that flocks of these birds are seen on the savannahs, feasting on Hassar.

THE SMALLER AWL-BEAKED FISH-HAWK.

Habits the same as the former. From the habits of this group of birds of scouring the savannahs in search of prey, the length of their wings, and the strength of their claws, they approach near to the Harriers.

THE SCISSORS-TAILED KITE. *Nauclerus furcatus*.

This is a very graceful bird, and is generally seen soaring, with widely-forked tail, above the lower parts of creeks, or over rivers when the water is fresh. They are, when perched, generally in companies of from five to six. They strike at small birds, creepers and such like, when feeding. I do not think that they strike at birds on the wing, and I never saw the *Nauclerus* pounce on a fish, although they appear to prefer to soar over the broad parts of creeks and fresh rivers. In fact, they are scarcely ever seen elsewhere. The Camouni creek, a few hours' sail up the Demerary river, is a favourite haunt of the Scissors-tail. Here they may be seen by the now rare traveller in this once thickly populated and very beautiful creek, either soaring high up in the brilliant sunshine, with a gentle undulatory motion, moving the head from side to side, and alternately opening and shutting the fork of the tail, whence their name of "Scissors-tail"; or perched in a small company upon some high creek-side tree, attracted probably by a flock of creepers or manakins. In coming down the Camouni one morning with a pleasant company of sportsmen—we had bivouacked near the source of the river the night before—I was much struck with the remarkable gracefulness and beauty of the *Nauclerus*. A company of six had selected a high tree close to the water's edge, at a wide and graceful bend. The approach of our boat alarmed them, and they flew up and around the tree as if inclined to settle again after we had passed on; but on one of our party firing, the

birds, finding the danger impending, sought for safety in the higher regions of the atmosphere, and it was in their gyrations to obtain a suitable elevation that their gracefulness and beauty were particularly remarkable. I am not acquainted with any Hawk which soars to such a height as the *Nauclerus*. I have seen them over the river Pomeroon, at an elevation so great as to be scarcely visible.

The whole of the next group, nine in number, with the exception of three, are birds which frequent the extensive abandoned fields near the sea and the courida trees (*Avicenna nitida et tomentosa*), which form a narrow belt of vegetation along the coast, between the sea and the high roads. These fields, which were for the most part formerly in cotton, are often inundated, either from imperfect drainage of bush-water, or the incursion of the sea, which, since the British people commenced to make us pay the penalty of having had slaves, is fast resuming its ancient dominion, from whence it was dammed out by our Dutch predecessors. Over these fields may be seen hunting with indefatigable industry the first two of the group; viz.

The BROWN-BACKED HARRIER, and

The LONG AND SLENDER-LEGGED BUZZARD.

They search every bush, destroying old and young alike, snatch up the little grass-finches, and in fact are a most dreadful scourge to the feathered inhabitants of these woe-begone and miserable looking swamps, remembrances of our former glory and shame. The next is

The CHESTNUT HARRIER.

A very rare bird, which was shot while flying over the Mahaica creek. Nothing whatever is known of its habits, but from its structure they must be similar to those of the two former.

The LARGE SEA-FISHING HAWK.

The coasts of Demerara, it may not be unnecessary to inform the English reader, are bound by vast mud-flats, which at high tide are covered by the sea. At dead low tide the water-mark is, at many parts of the coast, not visible. It is on the courida trees which border the coast landward that the Large Sea-fisher may be seen waiting patiently for the influx of the tide, which brings with it his food. At about half-tide he begins to bestir himself, and as there is always an abundance of fish brought up by the water, he soon captures as much mullet and other such-like coast-fish as gratifies his hunger. The Sea-fisher fishes on the hover from a considerable height, pouncing down vertically on its prey. The next is

The BIRD HAWK,

With striated chestnut belly, which does not hunt on the wing, but sights its prey, small birds, from the perch, generally a courida tree. It builds a nest of dry sticks upon these trees. The next is

The PARROT-BEAKED BUZZARD.

A rare bird, and was shot in a cocoa-nut tree in the Mahaicony. It sights its prey, small birds, from the perch. Another species,

The LONG-LEGGED SNAKE-EATER,

Leads us back to the abandoned fields. This bird, a large, brown, dirty and ruffianly-looking animal, is very often seen, particularly on the east sea-coast, undergoing the punishment peculiarly appropriated to bullies, namely, being severely thrashed by fellows much smaller than himself. The Kiskadee, a tyrant shrike, is the little champion who thrashes the Snake-eater. Sometimes two or three of these birds will be seen, always keeping above it, pecking the Hawk most unmercifully, and they seldom fail in bringing it to the ground, when the sight of its powerful talons I presume, reminding them that the better part of valour is discretion, causes them to fly off to some neighbouring tree and set up a glorious "Io Pæan" of Kiskadee, Kis-kis-kiskadee over their victory. I have seen this Hawk capture snakes more than once and fly off to its perch to devour the prey. Another species,

The CRAB-EATER,

Frequents the courida trees, from whence it sights its prey on the mud-flat, namely crabs. It pounces upon any unwary crab that quits its hole, and, unlike the Snake-eater, consumes it on the spot where it takes it, and then returns to its look-out. They build a nest of sticks in the courida bush. Another species,

The INSECT-EATER,

Is the most ignoble of all our Hawks. Its feet and claws are singularly weak, and it feeds almost exclusively on beetles and other insects, which it captures on the courida bush, which it frequents. I have opened them and taken a large quantity of the fragments of insects out of the stomach.

The CRESTED AND BOOTED EAGLE.

A live specimen of this beautiful bird was brought to me as a present by an old servant who had left me a long time, and had been living far up the Demerary river. He unfortunately knew nothing of its habits, and told me that it was the only one he had seen. I have never seen one in the wild state. This bird lived for some days, but would not eat. Apparently, the beautiful semicircular crest of black feathers with a white central star was only elevated when the bird was excited. This however was almost constantly the case, from extreme wildness. The cry was a loud, plaintive, diminishing ha-ha-ha-ha-ha-ha. This bird certainly has most of the characters of a true Eagle. It is heavy and robust, with a beak somewhat straight at base; tarsi plumed to the toes; wings moderately long, with the fourth feather the longest; and the general air is that of an Eagle.

There are only three Falcons that I have seen here; the first two true Falcons, with the typical characters and habits marked, and the third with all the typical characters (excepting the two-toothed beak) and the habits wanting. The first two are little Falcons, namely,

The CHESTNUT-BELLIED FALCON, and

The WHITE MOTTLE-BELLIED FALCON.

They are both birds that strike their prey on the wing, and are capable of killing birds nearly as large as themselves. The yellow-bellied species may be seen very busy at dusk, hunting bats with amazing swiftness. I have never been able to find either of their nests.

The TWO-TOOTHED BARIDI.

A bird with precisely similar habits to the next three birds. Like them, the Baridi never strikes, but confines himself to pillaging nests and destroying young birds. He is a sneaking marauder and burglar, and not audacious enough to commit highway robbery and murder, like the true Falcons. His wings are very short, and the characteristic formula of the quill-feathers is wanting. Consequently, I have placed this bird at the head of the succeeding group.

The PLAID-CHESTED SHORT-WINGED HAWK.

The BROWN-BACKED SHORT-WINGED HAWK.

The YELLOW-CERED SHORT-WINGED HAWK.

They are characterized by the same habits as the Baridi, stealing eggs and murdering unfledged birds.

The two next Hawks are large and powerful. The first is a large Black Hawk. It is a very fierce and destructive bird. It will kill rats and other small quadrupeds, as the Adouri (*Cavia agouti*), &c., and will strike at and kill so large a bird as a Currycurry (*Ibis rubra*). My huntsman Benjamin tells me that some time ago he shot a Currycurry, and before the bird fell to the ground, a large Black Hawk seized it and bore it away. It is very destructive to hen-roosts. The next species is found far up the river Demerary, and is by no means common. Mr. John King, a very respectable bird-stuffer and an observant naturalist, tells me that in a period of many years, constantly occupied in procuring species of birds and animals, he has only seen a few specimens of this bird. I have ascertained from the same authority, that its habits are very similar to the Large Black Hawk of the coasts.

I only know of five Owls in this country; of four I have procured specimens. The first two, Booted Owls without ears, are common enough, and I have not been able to ascertain anything in their habits differing from the well-known and frequently described habits of their European congeners.

The SMALL-BOOTED BROWN OWL.

This is seen frequently at dusk in company with the Little Bat-falcon, hunting bats. The larger one, or Large-booted Black and White Owl, is strictly a night bird, and found principally in the forests. The next two are likewise strictly night birds.

The LARGE LONG-LEGGED STRIX, or JUMBI BIRD,

Inhabits hollow cabbage-trees or old and dilapidated houses, unfortunately that style of habitation in Georgetown, and over the whole country, being at this time the rule, and not the exception. They make a great noise at night, a sort of clack, clack, clack, &c., terminating with a harsh, disagreeable and ominous scream. They are held here, as elsewhere, to be birds of ill omen, portending death, wherefore they are called "Jumbi," or Ghost Birds, by the negroes.

The LITTLE LONG-LEGGED STRIX

Is a very handsome little mouse-coloured Owl, which preys upon moths and other night insects as well as small bats. They are mostly seen on the savannahs and in the courida bushes, and are strictly nocturnal.

It will be perceived that I have not described the *Harpya destructor*. This is in consequence of my not having had an opportunity of examining a dead specimen; a living specimen which I have access to, in the possession of Governor Barkly, being altogether too fierce to take liberties with. It has a very owlish appearance, both in its facial disk and soft plumage. I have seen another imperfect skin of a very large Eagle feathered to the toes, with tremendous talons; both this and the Harpy I hope to be able to describe in a subsequent communication.

February 25, 1851.

R. H. Solly, Esq., F.R.S., in the Chair.

Mr. Gould directed the attention of the Meeting to two Hybrid Birds, concerning which he read the following letter, which had been addressed to Mr. B. Leadbeater, F.Z.S.

"Cottimore, Walton-on-Thames, December 17, 1850.

"SIR,—With reference to the bird which you now have of mine to preserve, I will tell you all which I have ascertained concerning it. It was shot at Henley Park, in the county of Surrey, by the keeper of H. Halsey, Esq., on a part of his property called the Peat Moor, and not far from the Frimley ridges; a wild tract of country, with a good many black-game upon it. The keeper was shooting pheasants for the supply of the house, and this bird rose on the opposite side

of the hedge to that on which he was, on the outside of a large covert : he did not see it distinctly ; but as in rising it made the sort of cry or crowing which a cock-pheasant is apt to do when disturbed, he shot it. I found it hung up in the larder, but was just in time to rescue it from the cook, and Mr. Halsey allowed me to take possession of it to be preserved. There is no doubt of its being a hybrid between the black-cock and hen-pheasant, as it appears that a black-cock has for the last two years frequented this particular covert and fed with the pheasants. The keeper, after feeding his pheasants, has frequently hid himself, to count his stock of those beautiful birds, and always saw this black-cock come to feed with them ; and so it lasted for two years or more. I have no doubt that this bird is the produce of his intimacy with a hen-pheasant. The old black-cock used to play like a cock-turkey, the keeper tells me, dragging his wings, and could drive all the cock-pheasants, being completely master over them ; which I wonder at, as the pheasant has spurs and he has none. The hybrid was shot on the 26th of October, and had he lived another month, would have been a beautiful bird. You will observe that he crowed on rising as a cock-pheasant does, which I believe a black-cock does not do. As far as I can ascertain in the number of instances of hybrids mentioned in Yarrell's 'British Birds,' they seem all to be the produce of cock-pheasants and grey-hens, whereas there is no doubt this is the reverse.

"I may mention while on this subject, that in another wood on Mr. Halsey's property two Hybrids were produced between the cock-pheasant and hen golden pheasant ; this took place about thirteen years ago. A hen golden pheasant had escaped from confinement, and it was known that she was alive in the coverts ; and in one particular wood it was remarked that the pheasants were always disturbed and driven out of it, and it was not known for some time by what ; till at last, by watching at the feeding-places, it was discovered that this golden hen-pheasant and two other curious-looking birds were so pugnacious, that they drove every thing from the place. They were all three shot, when the other two proved to be cock-birds, and there is no doubt whatever of their parentage, both from their shape and plumage. They are small birds and not handsome, partaking of the plumage of both sorts of pheasants, without any of the beauty of either. I believe this to be the first instance on record of their ever breeding in a wild state ; and you must remember that they were not in a Norfolk covert, full of half-tame pheasants, but in one of the wildest parts of England, as the presence of black-game will tell you. They were shot in the month of November, and therefore had probably got as good plumage as they ever would have. They are now in my possession through the kindness of Mr. Halsey.

"I think it a very curious circumstance that these birds should have been produced in a wild state, as I find in the 'Gardens and Menagerie of the Zoological Society,' vol. ii. Birds, under the head of Golden Pheasant, that in China, where the two sorts are wild, they have never been known to produce a mixed breed, and that in confinement it is sometimes obtained, but with the greatest difficulty. Also,

in the 'Natural History of Ireland,' vol. ii. Birds, by W. Thompson, it is stated, as a reason for the Golden Pheasant not doing well in a wild state in this country if introduced where the common pheasant is now abundant, that they are such a shy, timid bird, and would be easily driven off by the other species. This fear is evidently groundless, as not only the half-bred birds, but the golden hen drove all the other pheasants, as was seen frequently by the keeper; and they were so cunning, and so well able to take care of themselves, that after it was known they were there, and the mischief they did, the covert was beat in the usual way for pheasants, in the hopes of being able to destroy these birds, but without meeting with them, and the keeper was obliged to watch for them and shoot them at feed.

"I remain, your obedient servant,

"JOHN W. G. SPICER."

The following papers were also read :—

1. ON THE ANATOMY OF THE WART-HOG (*PHACOCHÆRUS PALLASII*,
VAN DER HOEVEN).
BY PROF. OWEN, F.R.S., F.Z.S. ETC.

The female *Phacochoerus* died, without previous symptoms of ailment, on Wednesday, February 5th, having lived in the Menagerie of the Society ten months, during which it thrived, like the male, and grew rapidly; its weight at the time of its death was 195 lbs.

The length of the body from the extremity of the jaws to the root of the tail was 3 feet 6 inches; the length of the head 1 foot; that of the tail 1 foot: this part is naked, very slender, tapering towards the end, which is subcompressed, a little dilated, and ornamented with a tuft of long and slender black bristles, growing chiefly from the opposite margins, as in the Elephant. A layer of lard or fat adhered to the under surface of the corium, as in the Common Hog, preventing the movement of the skin by a panniculus carnosus.

The hair is of one kind, coarse, scanty, and moderately long; the bulb of each is imbedded in a flattened whitish body, about 3 lines broad. The cuticle is impressed by curved lines, giving it the appearance of being composed of imbricated scales from 3 to 4 lines in breadth. There is a strong callosity in front of each carpus, formed by, or connected with, the frequent habit of this animal of walking on its fore-knees. The suborbital wart-like appendage, situated $1\frac{1}{2}$ inch below the eye, is composed of a mass of fibrous and adipose tissue. A double row of strong cilia project from the upper eyelid; but there are none on the lower lid. There is a broad 'membrana nictitans.' An arch of long black hairs forms an eyebrow. The upper lip is bent upwards, or folded over the base of the upper tusk, and many short hairs grow from the thickened margin of this fold. There is a slightly curved callous ridge of the integument, 5 inches in length, parallel with the middle of the lower border of the lower jaw. There are but four nipples, one pair abdominal, about an inch behind the umbilicus; the other pair inguinal.

The anus is situated about an inch below the base of the tail, is a transverse crescentic aperture, with a thick upper border. The vulva is situated about 10 lines below the anus; it is a little peaked below, and the clitoris, like a small caruncle, projects 4 lines within the margin.

There was no appearance of incisors in either jaw; but in the substance of the alveolar border of the lower jaw were four rudimental incisors, 9 lines long by 2 lines wide, which probably were never destined to come through, and are smaller than those in the Caffrarian *Phacochære*, called 'Harruja,' in the British Museum. The present specimen also differed from that species in having no incisor in the upper jaw; not even the rudiment of one could be found in the substance of the premaxillary. Hence I conclude the species to be that which Van der Hoeven has characterized by the absence of incisors in both jaws, and has called *Phacochærus Pallasii*. The exerted crown of the canine tusks was $2\frac{1}{2}$ inches long in the upper, and 2 inches long in the lower jaw. Five molars were apparent on each side the upper jaw, and four molars on each side the lower jaw. The first in each jaw was a small, obtusely rounded premolar, with three long diverging fangs above and two below, answering to *p* 3; the second molar in the upper jaw was a much-worn milk-tooth, *m* 4; the third grinder above and the second below were the first true molar, *m* 1, with the crown worn down nearly to the roots. The fourth grinder above and the third below were the second true molar, *m* 2, with a body or crown $1\frac{1}{3}$ of an inch in length before the giving off of the short bent fangs. The last tooth in both jaws was the anterior point of the third true molar just beginning to cut the gum*.

The absence of any incisors above the gum in this young animal, and the presence of four rudimental ones hidden in the lower jaw, just where they are occasionally found in old individuals of the *Phacochærus Pallasii*, show that this hidden condition and small size are not due to age, but are specific characters.

The roof of the mouth presented about twenty-two pairs of transverse, arched, palatal ridges, with their convexities turned forwards; gradually decreasing as they were placed more backwards, and terminating opposite the end of the molar series; beyond this part the membrane of the palate was smooth and soft. The tongue is long and narrow, with small, obtuse, well-defined papillæ below its margins, with a smooth dorsum, beset with very fine gustatory papillæ for two-thirds of its extent. At the base of the tongue, 6 inches from the tip, are two large fossulate papillæ, on the same transverse line, and behind these the dorsum of the tongue is beset with numerous soft, moderately large, pointed and retroverted papillæ.

* The grinding surface of the teeth in place closely corresponded with those of the *Phacochærus Pallasii* figured in my Memoir on the Teeth of the Wart-Hogs (Philosophical Transactions, 1840, pl. 34. fig. 8, *m* 1, *m* 2 and *m* 3). The present specimen shows a stage anterior to the one there figured, the last milk-tooth intervening between the first molar and the small premolar in the upper jaw. There was no trace of the germ of a *p* 4 above the crown of *d* 4 in place, whence it may be concluded that, at corresponding phases of dentition, the *Phac. Pallasii* has fewer grinders than the *Phac. Eliani*.

Two mucous sacculi, about 1 inch in diameter and $1\frac{1}{2}$ inch in depth, are produced from the upper and back part of the pharynx into the pterygoid fossæ, on each side the basisphenoid. Between the mouths of these sacculi there projects from the back part of the pharynx a glandular prominence or caruncle, about 7 lines long by 5 lines broad. At the lower and back part of the pharynx a third median sacculus is developed, just below the '*constrictores pharyngis*'; in this remarkable structure the Wart-Hog resembles the Babyrussa*. The œsophagus commences between this sacculus behind and two large post-arytenoid sacculi in front, and is divided from both by a transverse membranous ridge or wall. The long ligamentous crura of the epiglottis are continued from the sides and back part of the post-arytenoid sacculi to that cartilage, which is unusually distant from the larynx. The convex border of the broad epiglottis projects into the posterior nostril. The œsophagus descends behind the trachea to the thorax, and in the posterior mediastinum it is suspended by a fold of the pleura, about $1\frac{1}{2}$ inch broad, which attaches the tube to the descending aorta, after it has passed through the arch.

The stomach is of small size and simple shape; its length in a straight line is 9 inches; following its greater curvature 1 foot 7 inches; the lesser curvature, or the distance from the cardia to the pylorus, being only 3 inches. The left end extends about $3\frac{1}{2}$ inches beyond the cardia, and the right end projects about 2 inches to the right of the pylorus. It presents the usual form of the simple stomach, but the cardiac blind end is marked off by a slight constriction, hardly, however, to the same degree as in the Common Hog; and far from presenting the complexity of the stomach in the Babyrussa. The great omentum is continued from behind the great curvature, and was folded or crumpled up behind and beneath the stomach, enclosing the spleen, which was to the left and a little behind the great end of the stomach. No part of the omentum was visible when the abdominal cavity was exposed, and but little of the stomach could be seen. Almost the only viscera that presented themselves were the large spiral coils of the colon, closely united together by mesocolic bands laden with fat, about an inch in breadth. The cæcum was in the left lumbar region. The stomach extended from the left hypochondrium across the epigastric to the right hypochondriac regions. The liver extended from the right hypochondrium to the left, but did not cover all the great end of the stomach. The small intestines lay concealed behind the colon.

The œsophagus, which is 2 inches in circumference at its termination in the stomach, opens nearer the posterior than the anterior surface of the lesser curvature, $3\frac{1}{2}$ inches from the left end, which forms a prominence above the concavity leading to it from the gullet.

The œsophageal epithelium is continued a little way on the inner surface of the stomach, forming a thin, narrow, oval patch, extending $1\frac{1}{2}$ inch to the left of the cardia, $\frac{2}{3}$ rds of an inch to the right and

* See Prof. Vrolik's excellent memoir on that animal, '*Recherches d'Anatomie comparée sur le Babyrussa*,' 4to, p. 30, pl. 3.

back part of the cardia, and $\frac{1}{3}$ rd of an inch to the front of the cardia. The rest of the stomach is lined by the usual gastric vascular membrane, which in the distended state shows one or two short and very narrow, straight rugæ, and is smooth in the rest of its extent, except near the commencement of the short and narrow canal leading to the pylorus, where a number of longitudinal rugæ converge. The muscular coat of the stomach is 2 lines in thickness at the cardia, where its texture is unusually firm; it diminishes in thickness to 1 line after a course of 2 inches from the cardia, and is less than half a line thick over the great dilated portion of the stomach. It resumes its thickness of 2 lines at the narrow pyloric portion. A few longitudinal rugæ radiate from the cardia a little way upon the epithelial part, but there is no valvular apparatus there.

The form of the pylorus is crescentic, bounded below by an arched protuberance, receiving in its concavity a single longitudinal protuberance from the upper side.

The bile-tube (*ductus choledochus*) opens on a mammillary eminence half an inch from the pylorus.

The duodenum, which is about 1 inch in diameter at its commencement, where it receives the ductus choledochus and pancreatic duct, contracts to a diameter of $\frac{2}{3}$ rds of an inch as it bends down in front of the right kidney, suspended by a narrow mesentery; it then crosses the first lumbar vertebra, and becomes attached to the back of the ascending colon; there it ascends a little way, bending obliquely round the colon, and becomes suspended, as jejunum, upon the proper mesentery. The jejunum and ilium lie in close coils suspended by the narrow mesentery, which is loaded with fat, terminating next the intestine in lobes which project as a free border on each side the junction of the mesentery to the gut. The mesenteric vessels pass straight through this fat, without forming anastomotic arches. The mesenteric glands are arranged in a semicircle about the root of the mesentery. The small intestines preserve a pretty uniform diameter until near the end of the ilium, which gradually contracts to a diameter of about half an inch. The length of the small intestine is from 18 to 20 feet, or about five times the length of the body; which is proportionally one-half the length of the small intestines of the domestic Hog. The ilium passes near its termination from the right to the left lumbar region, and ascends to terminate in the cæcum, to which it is attached by a duplicature of the peritoneum. The cæcum was situated in the advanced part of the left lumbar region. It was $3\frac{1}{2}$ inches in length, and about $2\frac{1}{2}$ in diameter, with an obtuse rounded end; its parietes were slightly puckered or sacculated on two longitudinal bands, about 4 lines in breadth, a third band commencing near the entry of the ilium; its circumference is 7 inches. It is divided by a constricted neck, $3\frac{1}{2}$ inches in circumference and $1\frac{1}{2}$ inch in length, from the colon, and this contracted part was sacculated only on one side, the other side being smooth, with a strong coat of longitudinal fibres external to the circular ones. At this part the ilium, cæcum and beginning of the colon are attached by a strong mesentery to the spine: the colon ascends

in front of the left kidney to the great curvature of the stomach, and bends over to the right side in front of the epiploon, and descending describes a large spiral curve, then a second, third and fourth, progressively diminishing in extent; the last and innermost is folded upon itself, and repeats two spiral coils in the opposite direction, the extent of these increasing; and the gut, quitting the mass of closely connected coils, passes backwards, and bends round the root of the mesentery, adhering to that part and to the pancreas above, then descends in front of the duodenum, much diminished in size, and getting to the back of the lumbar region becomes the rectum, and is continued, tightly bound to the sacrum, behind the genital organs and bladder to the vent. The coils of the colon, which are the first viscera that present themselves, and conceal almost all the others in the abdomen, are attached to one another by bands of mesocolon of about an inch in breadth; and these were laden with lobes of fat. There were many small, dark-coloured glands at the root of the mesocolon, from which straight blood-vessels radiated in groups of from four to eight or ten. The colon, where it forms the first series of coils, is 10 inches in circumference, and is slightly sacculated on two longitudinal bands. The sacculi subside with a slight diminution of diameter in the returning coils.

The length of the 'large intestines' was 13 feet 6 inches, or nearly four times the length of the entire animal.

The mucous membrane of the small intestines is produced in the duodenum into four or five narrow longitudinal folds, which in the jejunum are six or seven in number, and are here or there connected together by oblique folds. Towards the middle of the jejunum these folds disappear, and then reappear at intervals progressively increasing; and in the ilium the mucous lining is even and simply villous. In the partial or interrupted extents of the plicated structure, the rugæ are more reticulate in their arrangement. The lining membrane of the colon was smooth and even, but gorged with blood, and varied in many parts from a deep vinous to an almost black colour. The lining membrane of the rectum was disposed in numerous fine longitudinal rugæ. The small intestines contained only mucus; the large intestines a dark fluid matter of the usual fæcal odour, with one or two masses of hard fæces, about the size and shape of a pullet's egg.

The liver weighed 2 lbs. 4 oz. It consisted of three principal lobes, viz. a right, middle and left; the right is the largest, and is partially subdivided at its free extremity, which is closely connected with the right supra-renal body and the summit of the right kidney. The middle lobe is bifid, a gall-bladder 4 inches long by $1\frac{1}{2}$ inch broad being lodged in the cleft; a small 'lobulus Spigelii' projects near the neck of the gall-bladder. The left lobe of the liver terminates on the left side, about 3 inches from the cardiac end of the stomach. The hepatic duct joins the cystic after a course of an inch; the 'ductus communis' is about the same length, and has a width of 3 lines at its termination, which is at the upper part of the beginning of the duodenum.

The pancreas is a long flattened band, from an inch to an inch

and a half in breadth, extending in two directions from the beginning of the duodenum, where its duct terminates. One portion follows the first part of the curvature of the duodenum to the extent of 6 inches; the other and chief part of the gland passes from the pylorus behind the stomach to the spleen, and is 7 inches in length.

The spleen is a long, flattened, ellipsoid body, about 11 inches in length and $2\frac{1}{2}$ inches across its broadest part at the middle. It weighed 3 oz.

The kidneys together weighed $6\frac{1}{2}$ oz.; they are not cleft or lobulated, and are situated symmetrically at the back of the hypochondria. The supra-renal bodies are of an elongate, subcylindrical shape.

The heart is a somewhat flattened cone, with a produced pointed apex formed by the left ventricle. The pericardium adheres to the sternum; it was covered with much fat. There is a large pleural sac between the pericardium and the diaphragm, which contains the azygous lobe of the lung, the long intra-thoracic inferior cava, the œsophagus and descending aorta.

The right lung is divided into three lobes and the 'lobulus azygos'; the left lung into two lobes, the upper and smaller lobe being slightly subdivided. The tracheal rings overlap each other behind. The thymus gland extended from the fore-part of the pericardium into the neck. The thyroid gland consists of one elongate, narrow lobe, concave where it is applied to the fore-part of the trachea, convex where it is covered by the 'sterno-thyroidei'; it is about 2 inches in length and 8 lines wide. The thyroid cartilage is of unusual length, shaped like the side or section of a vase, convex outwards at its lower half, and concave above, by the bending outwards of its broad upper margin; its length is $2\frac{1}{2}$ inches, its breadth $1\frac{1}{2}$ inch. The arytenoid cartilages are still more unusual in their conformation; they are very long, curved backwards, and confluent at their apices; on each side of this prolonged confluent point they are deeply cleft, so as to form two lateral pointed processes or appendages. A fold of membrane is continued from each lateral appendix outwards to the ligamentous crura of the epiglottis; these folds form the outer walls of two large post-arytenoid sacculi, which intervene between the larynx and pharynx. A median fold of membrane is continued backwards from the middle line and confluent apices of the arytenoids, and forms the septum between the post-arytenoid sacculi. The mucous membrane of the larynx is continued from the anterior and upper border of the thyroid forwards and upwards into the concavity of the basihyal, forming a wide but not very deep anterior sacculus.

The brain weighed $3\frac{1}{2}$ oz.

Female Organs.—The ovarium, 9 lines long, 6 broad and 4 thick, is kidney-shaped, and is suspended by the middle of the concave border by a short, thick peduncle, to which is attached the commencement of the ostium abdominale of the oviduct; this orifice is not fimbriated, but has some delicate wrinkled processes on its inner surface. The peritoneal fold continued from this part to the end of the cornu uteri, and which approximates it thereto, forms one side of the opening of a wide ovarian pouch, upon the outer and fore-part of which

the oviduct describes its convolutions in its course towards the uterus. The stroma ovarii contained at its periphery a few advancing ovisacs about a line in diameter.

Each cornu uteri is about 1 foot 4 inches in length, and of a nearly uniform circumference of 2 inches. It is beset with narrow, wrinkled, oblique, irregular rugæ, forming longitudinal elevations as they approach the body of the uterus, and again becoming oblique—patches of the rugous surfaces alternating with smooth patches.

The common uterus presents large, longitudinal, wrinkled rugæ for the first inch of its extent, and then a spiral valve begins to be formed, about 2 lines in thickness, which describes thirteen close coils before subsiding in the common vagina; the length of the spiral portion, which may be compared to the 'cervix uteri,' is $3\frac{1}{2}$ inches; the length of the vagina is 4 inches. The rugæ of the vagina are longitudinal, and longer at its beginning and end, where they terminate on a well-defined circular fold, dividing the vagina from the urogenital canal, and constricting the orifice; the free borders of the spiral valve are beset by free, fine, longitudinal folds of the lining membrane of the uterus.

The urethra is about 3 inches in length, and becomes closely connected with the vagina 2 inches before it terminates. Its orifice is defended by two longitudinal folds.

In comparison with the Common Hog, the Wart-Hog, as regards its internal anatomy, differs in the more simple form of the stomach, the relatively shorter small intestines, and the relatively longer large ones; but, like the Common Hog, the cæcum is small, and the colon disposed in spiral coils, in both which characters they resemble the Ruminants; the cæcum is broader in proportion to its length than in the Common Hog. In both the Common Hog and Wart-Hog the intestinal canal is more tied down by the fat-laden processes of peritoneum, and appears to have less motion allowed it, than in other quadrupeds. The liver and gall-bladder, the kidneys and the thoracic viscera, much resemble those of the Common Hog. The inner surface of the jejunum shows a reticulate disposition of rugæ in the Common Hog, but not the regular longitudinal folds in the duodenum and beginning of the jejunum, as in the Wart-Hog.

The epiglottis passes into the posterior nares in both the Wart-Hog and Common Hog, and has the hyo-epiglottidei muscles; but the pharynx in the Common Hog does not present the superadded sacculi, nor the larynx those peculiarities which distinguish the Wart-Hogs. These resemble the Babyrussa in the sacculated structure of the pharynx, but differ in the more simple stomach. The Wart-Hog differs from the Common Hog in the smaller size and more simple form of the ovaria, and the fewer mammæ. The most marked difference from all other *Suidæ*, and that which best justifies the generic separation, is presented by the dentition of the *Phacochoerus*; the modifications of the alimentary canal are not of the same degree.

2. AN ENUMERATION OF SPECIES OF RECENT SHELLS, RECEIVED BY W. J. HAMILTON, ESQ., FROM BORNEO, IN NOVEMBER 1850, WITH DESCRIPTIONS OF THE NEW SPECIES. BY W. METCALFE.

1. *HELIX BROOKEI*, Adams and Reeve, Zoology of the Voyage of the Samarang, Mollusca, p. 60. pl. 15. fig. 4 *a, b*.
2. *HELIX VITTATA*, Adams and Reeve, Zool. of the Samarang, Mollusca, p. 60. pl. 15. fig. 7 *a, b, c*.

This species, having been previously described by Mr. Benson, in the 'Magazine of Natural History,' under the name of *H. reglis*, ought to retain that name.

In addition to the variety figured in the Mollusca of the Samarang, Mr. Hamilton received two other varieties, in which the pale green bands are wanting, the brown colour more or less predominating, with bands of yellowish brown, and a brown circle surrounding the umbilicus.

3. *HELIX SCHUMACHERIANA*, Pfeiffer.

4. *HELIX RESPLENDENS*, Philippi in Zeitschr. f. Malak. 1846, p. 192.

5. *HELIX NASUTA*, nobis. *H. testá subdiscoideá, sinistrorsá, carinatá, angustè perforatá, tenuissimá, lineis incrementi et spiralibus confertis subtilissimè decussatá, pellucidá, hyaliná; lineá angustá pallidè brunneá ad carinam ornatá; spirá subconicá; anfractibus 5½ planulatis, ultimo acutissimè carinato, subtus nitescente; aperturá subrhomboidéá, ad angulum exteriorem valdè productá et coarctatá; peristomate simplici, tenui, margine superiore vix reflexo, basali anticè reflexiore, umbilicum subtegente.*

Long. $1\frac{4}{10}$; lat. $1\frac{1}{10}$; alt. $\frac{5}{10}$ unc.

This elegant species is covered with a thin epidermis, of a pale straw colour, under which the shell is milky white. It bears some analogy to *H. Tayloriana* (Adams and Reeve, Zool. of the Samarang, Mollusca, pl. 15. fig. 2 *a, b*), but the projection at the extremity of the aperture is much more acute, and the shell is of a more gelatinous texture: it differs also in being sinistral.

6. *HELIX GLUTINOSA*, nobis. *H. testá orbiculato-convexá, angustè perforatá, tenui, nitidissimá, diaphaná, pallidè brunneá, carinatá; supra carinam fuscá, infraque lineá angustá flavescente, ornatá; spirá conoideá, obtusá; anfractibus 5 parum convexis; ad carinam supra infraque lineá impressá circulari, striisque numerosissimis transversis notatá; peristomate simplici, acuto, margine columellari vix reflexo.*

Long. $1\frac{1}{10}$; lat. 1; alt. $\frac{6}{10}$ unc.

A bright shell, resembling a thin film of glue, with a keel of a darker shade; slightly indented above and below the keel, the in-

dentation elegantly crossed with slight striæ, the effect of which, as well as the darker line, is partially visible throughout the sutures.

7. *HELIX CONICOIDES*, nobis. *H. testâ imperforatâ, trochiformi, acutè carinatâ, tenui, pellucidâ, luteo-corneâ; spiraliter leviter striatâ, striis ad suturam majoribus, confertioribus; apice mamillari; anfractibus 7, superioribus subconvexis, duobus ultimis planulatis, ultimo subtus convexo, nitido, ad carinam et in medio depresso; aperturâ trapeziformi, subtus arcuatâ; peristomate simplici, acuto, subtus flexuoso, marginibus callo tenui junctis.*

Long. $\frac{7}{10}$; lat. $\frac{6}{10}$; alt. $\frac{4}{10}$ unc.

8. *BULIMUS CITRINUS*, Bruguière; Reeve, Conch. Icon. Bul. pl. 31. fig. 187 a.

9. *BULIMUS CHLORIS*, Reeve, Conch. Icon. Bul. pl. 37. fig. 223.

10. *CYCLOSTOMA BORNEENSIS*, nobis. *C. testâ suborbiculari, depresso-conoideâ, acuminatâ, albidâ, fusco-variegatâ, maculis ad suturam, cinguloque infra medium fusco ornatâ; striis obliquis minutis, aliisque circularibus minutissimis impressâ; anfractibus quinque planiusculis, carinatis; ultimo magno, margine acutè carinato, circa umbilicum obtusè angulato; aperturâ subcirculari; peritremate albo, reflexo; supra productione, subtus reflexo, ad columellam subsinuato; umbilico magno, profundo; operculo corneo, tenui.*

Long. $1\frac{6}{10}$; lat. $1\frac{3}{10}$; alt. $\frac{9}{10}$ unc.

Varietas minor, magnitudine solum diversa.

Shell bearing some characters in common with both *C. aquilum*, Sow., and *C. acutimarginatum*, Sow.; but having a more depressed spire, and flatter whorls than either of those species.

11. *CYCLOSTOMA*, apparently *C. parvum*, Sow. Thes. Conch. Cycl. fig. 254, 255.

12. *CYCLOSTOMA UNDATUM*, nobis. *C. testâ globoso-pyramidalis, tenui, pellucidâ, albâ, lineis hyalinis undatis decurrentibus ornatâ, tenuiter striatâ; anfractibus 6, parum rotundatis, primis conicis regulariter crescentibus; ultimo magno, obtusè carinato; aperturâ circulari, supernè angulatâ; peritremate lato, expanso, vix nisi ad columellam reflexo; suturis mediocribus; umbilico parvo.*

Long. $\frac{6}{10}$; lat. $\frac{5}{10}$; alt. $\frac{6}{10}$ unc.

This species belongs to the division of the genus of which *C. læve*, Gray, may be considered the type.

13. *CYCLOSTOMA TENUILABIATUM*, nobis. *C. testâ discoideâ, spirâ depressâ, planâ, colore pallido, supernè castaneo-maculatâ et undulatâ; epidermide luteo-castaneâ, indutâ; anfractibus 5 rotundatis, 4 primis lævibus, ultimo lineis impressis irregularibus ruguloso; suturâ impressâ; aperturâ circulari; peritremate duplici; interno simplici, supernè emarginato; ex-*

terno tenui, lato, planiusculo, supra ascendente, fornicato, dein compresso; umbilico patulo; anfractibus intus distinctis.

Long. $1\frac{1}{10}$; lat. $\frac{8}{10}$; alt. $\frac{3}{10}$ unc.

Belonging to the genus *Pterocyclos* of Benson.

14. *CYCLOSTOMA BICILIATUM*. *Pterocyclos biciliatum*, Mousson, Land- und Süss. Moll. von Java, p. 49. t. 20. fig. 9.

Several individuals of this species having been received, its locality is thus fixed. It is observable that the complete shell, which was not known to Mousson, exhibits a tubular spiracle near the aperture, similar to that apparent in *C. spiraculum*, Sow.; also, that the aperture is circular, depressed, with the peritreme white, expanded, slightly reflected, and at the upper part faintly undulated.

15. *SCARABUS PLICATUS*, Fer. var. *major*.

This variety, in place of the usual purple colour of the shell, exhibits a deep yellow ground, with four broad bands of dark brown colour.

16. *SCARABUS BORNEENSIS*, A. Adams.

17. *AURICULA SUBNODOSA*, nobis. *A. testá ovato-oblongá, crassá, albá, epidermide castaneo-fuscá, infra suturas decussatim granosá, medio lævi, ad basim striis decussatá; anfractibus convexiusculis, suturis distinctis, subrenulatis; anfractu ultimo supernè longitudinaliter plicato-subnodoso; aperturá medio paululum angustatá; columellá buplicatá.*

Long. $2\frac{4}{10}$; lat. $1\frac{3}{10}$ unc.

A species distinguishable from *A. Midæ* by the convexity of the upper whorls and the smoothness of their lower halves, the depth of the sutures, and the longitudinal nodulous folds which surround the upper part of the final whorl: the aperture is also proportionally wider than in *A. Midæ*. In the single specimen received, the columellar lip has an interior protuberance above the upper fold.

18. *AURICULA POLITA*, nobis. *A. testá ovato-oblongá, basi angustiore, spirá brevi; epidermide castaneo-fuscá, nitidá; striis numerosis minutissimè granulosis circumdatá, granis superius distinctioribus; aperturá medio coarctatá; columellá triplikatá, plicá infimá lineari.*

Long. $1\frac{6}{10}$; lat. $\frac{8}{10}$ unc.

Although the characters of the aperture resemble those of *A. Judæ*, the form of the shell differs entirely in its greater breadth, and in the shortness of the spire.

19. *AURICULA FELIS*, Lam.

20. *AURICULA MUSTELINA*, Desh.

21. *NERITINA CREPIDULARIA*, Lam. Conch. Ill. fig. 25.

22. *NERITINA BECKII*, Reclus, Thes. Conch. fig. 13.

23. *NERITINA PIPERINA*, Chemn. Thes. Conch. fig. 166, 167.

24. NERITINA DUBIA, Chemn. Thes. Conch. fig. 81-88.

25. MELANIA CIRCUMSTRIATA, nobis. *M. testá elongatá, turritá, solidá, fusco-viridí; anfractibus convexiusculis, infra suturam paululum constrictis; superioribus striis 6 transversis elevatis, plicisque 8 majoribus longitudinalibus ornatis; ultimo striis 13; aperturá ovali-oblongá, basi dilatatá, superius acutè angulatá, et ferè rimatá, intus albidá; peritremate sinuato, columellá callosá.*

Long. $2\frac{6}{10}$; lat. $\frac{8}{10}$ unc.

26. MELANIA SUBSUTURALIS, nobis. *M. testá turritá, fusco-viridí, lineis castaneis longitudinalibus obliquis variegatá; anfractibus ferè planis, quorum superiores striis elevatis perpau- cis validis, inferiores pluribus minoribus inæqualibus ornati; ultimo ad basim crebristriato; suturá distinctá, excavatá; aperturá ovali, supernè angulatá, intus albido-cærulescente; peritremate acuto, sinuato, extus effuso.*

Long. $1\frac{4}{10}$; lat. $\frac{5}{10}$ unc.

27. PALUDINA HAMILTONI, nobis. *P. testá ovato-conicá, tenui, perforatá, viridí, concolore; striis transversis undulatis, aliis- que longitudinalibus tenuissimè decussatá; anfractibus 5 rotundatis, superioribus ætate erosis; suturá impressá; aperturá ovali, supra angulatá, intus cærulescente, margine paululum incrassato, albido; peristomate acuto, lineá tenui nigrá circumdato.*

Long. $\frac{9}{10}$; lat. $\frac{6}{10}$ unc.

The Bornean specimens being scarcely adult, the description is drawn up from individuals in my cabinet, which have long been there without any locality assigned.—W. M.

28. LITTORINA SCABRA. *Helix sc.*, Linn.

29. LITTORINA MELANOSTOMA, Gray, Zool. of Beechey's Voy.

30. LITTORINA ALBICANS, nobis. *L. testá ovato-oblongá, acuminatá, tenui, albidá, apice lævi, nitente; anfractibus 7 vel 8, quorum 5 ultimi striis numerosis paulatim crescentibus ornati; ultimus rotundatus, ætate varicosus, striá unicá majore, quasi carinatus, striis ad basim minoribus circumdatus; aperturá rotundato-lunari, lacteá; peristomate subreflexo.*

Long. $\frac{7}{10}$; lat. $\frac{4}{10}$ unc.

A delicate species, of a milk-white hue, the older specimens having many varices produced by the previous reflexions of the outer lip.

31. CERITHIUM OBTUSUM, Lam.; Zool. of the Samarang, Moll. pl. 13. fig. 3.

32. CERITHIUM UNICARINATUM, nobis. *C. testá turritá, tenui, apice truncato, hinc inde varicosá, cinereá, longitudinaliter plicatá, interstitiis longitudinaliter striato-rugosis; suturá parum impressá; anfractibus vix rotundatis, regulariter crescentibus; ultimo acutè carinato, infra carinam crebristriato; aperturá*

mediocri subfuscá; columellá rectá; peritremate modicè reflexo, albescente.

Long. $1\frac{6}{10}$; lat. $\frac{5}{10}$ unc.

33. AMPULLARIA, probably *A. Celebensis*, Quoy, Voy. de l'Astr. pl. 57. fig. 1-4.

34. NATICA MACULOSA, Lam. *pellis-tigrina*, Chem.

35. NOVACULINA OLIVACEA, nobis. *N. testá oblongá, valdè inæquilaterali, epidermide olivaceá, ad extremitates fuscescente, indutá; natibus erosis; antèrius rotundatá, posterius angulato-rotundatá; margine superiore ferè recto, posticè paululum descendente, ventrali medio subcompresso; intus albá, dentibus lamellatis duobus recurvatis in utrâque valvâ, posteriore bifido.*

Long. $\frac{9}{10}$; lat. $3\frac{3}{10}$ unc.

A large example of this species, in the Collection of H. Cuming, Esq., exhibits a character which will probably be found generic; namely, a shelly protuberance in each valve, attached to the interior ligament at nearly its hinder extremity. These shelly substances have not, that I am aware, hitherto been noticed. It is probable that they become detached in most specimens by the removal of the animal.

36. CYRENA TRIANGULARIS, nobis. *C. testá trigoná, solidiusculá, epidermide fusco-virescente, transversim striatá, striis marginalibus lateralibusque eminentioribus, sulco ab umbone ad marginem posteriorem leviter impressá; margine antico descendente, vix excavato, angulo anteriore rotundato; margine superiore subrotundato, posticè ferè biangulato, propter sulcum dorsalem subsinuato; intus lacteá, margine continuo nitentiore; dentibus cardinalibus in utrâque valvâ tribus, duobus bifidis; dentibus lateralibus brevibus, tenuissimè rugosis, haud striatis.*

Long. 3; lat. $3\frac{1}{10}$; alt. $1\frac{8}{10}$ unc.

The characters of this shell bear some resemblance to *C. Sumatrensis*, Sow. Gen.; but on comparison with the type of that species, now in the Cabinet of Sylvanus Hanley, Esq., the present is found to differ materially, in its triangular outline, as well as in the characteristic furrow from the umbo to the posterior margin, affecting the curvature of the posterior angle, and producing a slight sinuosity in the margin.

37. UNIO.

38. UNIO.

I am unwilling to describe as new these two species of the genus *Unio*, from want of acquaintance with the great American collections of the genus.

Although no letter accompanied this box of shells, Mr. Hamilton presumes that they have been sent to him by his friend Sir J. Brooke, Rajah of Sarawak. The remittance is undoubtedly from Borneo.

March 11, 1851.

J. E. Gray, Esq., F.R.S., in the Chair.

The following papers were read :—

1. A FEW WORDS ON THE SYNONYMY OF DISTICHOCERA, A GENUS OF LONGICORN COLEOPTERA FROM NEW HOLLAND, WITH CHARACTERS OF THREE SPECIES SUPPOSED TO BE UNDESCRIBED. BY EDWARD NEWMAN, F.L.S. ETC.

(Annulosa, Pl. XX.)

Among the invaluable labours of the late Mr. Kirby, none are more useful to the general entomologist than his lucid and masterly descriptions of new and remarkable forms of exotic Coleoptera; and of these, none afford to myself so much instruction and pleasure as that entitled "A Description of several New Insects collected in New Holland by Robert Brown, Esq.," and published in the twelfth volume of the 'Linnean Transactions.' In this admirable paper is the first description I can find of the extraordinary genus *Distichocera*, although, as Mr. Kirby himself informs us, it was known long previously under the same name, and although he himself gives it as "*Distichocera* of MacLeay," a name which I am inclined to conclude existed in manuscript only. Concerning the genus in question I lay no claim to any additional knowledge of the structure, habits or affinities of the insect described by Mr. Kirby; but the labours of collectors, amid the seemingly inexhaustible riches of our Australian colonies, have placed within my reach a greater number and greater variety of specimens. Mr. Kirby has only made us acquainted with a single species, and a single sex of that species. Mr. MacLeay has added a second, which has also been described by Guérin, Boisduval and myself under a variety of names. Three other forms of the genus have occurred to me, making the number five in all. Of these, three are certainly females, and two as certainly males. The object of this communication is to express my views as to associating the sexes, and to make known two supposed species which were previously uncharacterized.

Genus DISTICHOCERA, MacLeay (MSS.?).

Distichocera, Kirby, Trans. Linn. Soc. xii. 471.

"Labrum transversum, tetragonum. Labium membranaceum apice bilobum: lobis divaricatis. Mandibulæ trigonæ, edentulæ apice incurvæ acutæ. Maxillæ basi trigonæ, apertæ. Palpi filiformes. Mentum transversum, trapeziforme. Antennæ sensim crassiores, disticho-ramosæ."—*Kirby, l. c.*

1. DISTICHOCERA MACULICOLLIS.

Mas. *Distichocera maculicollis*, Kirby, l. c.

Distichocera maculicollis, Audinet Serville, Ann. Ent. Soc. Fr. iii. 59.

Distichocera maculicollis, Boisduval, Faune de l'Océanie.

"Corpus fere cuneiforme, subtus pilis argenteis nitidum, supra nigrum, obscurum. Caput subcordatum, pilosum, canaliculatum utrinque ante antennis carinatum. Oculi brunnei. Antennæ breviores, nigrae: articulis omnibus apice biramosis (duobus primis brevissime); ramis oppositis compressis vertice rotundatis sinistris paulo longioribus, articulo extimo simplici clavato. Thorax subcylindricus: maculis quatuor dorsalibus quadratim ordinatis. Elytra cuneiformia: lineis tribus longitudinalibus elevatis: striga apud scutellum et alia majori in medio apud suturam piloso-argenteis, apice truncata. Femora brunnea. Tibiæ bicalcaratæ. Alæ elytris longiores."—*Kirby, l. c.*

Fem. *Distichocera rubripennis*, MacLeay, App. King's Voyage.

"Rufo-testacea subtomentosa, capitis lateribus oreque nigris, vertice canaliculato, antennis nigris, articulis vix biramosis, ramis sinistris brevissimis; thorace atro, vittâ utrinque rufo-testaceâ, scutello nigro, elytris rufo-testaceis tomentosis apice obtusis dehiscentibus; corpore cuneiformi subtus villo argenteo micante, abdomine utrinque nigro maculato, pedibus nigris."—*MacLeay, l. c.*

Distichocera ferruginea, Guérin, Voyage de la Coquille.

Distichocera ferruginea, Boisduval, Faune de l'Océanie, 467.

"Nigra; capite maculâ frontali, thorace vittis duabus elytrisque dense villosis-fulvis."—*Boisduval, l. c.*

Distichocera fulvipennis, Newman, Ent. Mag. v. 492.

"Antennæ nigrae; caput nigrum, fronte fulvo: prothorax niger, lineis 2 dorsalibus, longitudinalibus, latis, fulvis: scutellum nigrum: elytra fulva: abdomen piceum, lanugine argentea vestitum: pedes picei. (Corp. long. 9 unc.; lat. 3 unc.)"—*Newman, l. c.*

I have cited entire the original specific characters in every instance, in order to save the reader the trouble of making the references. I will now proceed to give more detailed characters.

Male.—Head somewhat cordate, black, velvety, having a slight epicranial sulcus, which is prolonged anteriorly between the bases of the antennæ: face slightly inclined, rather long: eyes arcuate, reniform, pitchy brown, large, approaching on the epicranium, somewhat dilated on the cheeks: antennæ as long as the body, 12-jointed, black; the first joint short, stout, somewhat obconical; the second very short; the following, to the eleventh inclusive, moderately short, still much longer than the second, somewhat cyathiform as regards the shaft, and emitting from its apex two long branches; these increase in length from the first pair, and those on one side of each antenna are uniformly longer than those on the other; this discrepancy is particularly observable in the third (or first branched) joint; the twelfth joint is club-shaped and undivided; it is longer than either of the others, yet scarcely exceeds in length the branches of the eleventh. Prothorax subquadrate, its anterior and posterior margins nearly equal, its lateral margins somewhat uneven, but not produced into a central

tooth; pronotum somewhat uneven, black, with four greyish spots, which are due to a grey velvety pilosity; the two smaller of these touch the anterior, the two larger the posterior margin, and appear as though forming parts of two vittæ, each of which is interrupted in the middle; prosternum produced between the procoxæ and there deeply notched, pitchy red, and clothed with a grey pilosity. Scutellum rounded, black, and glabrous. Elytra black, broad at the base, gradually tapering to the apex, where they are slightly divaricate, truncate, and furnished with a small obtuse and obscure tooth in the middle as well as at each angle of the truncature: each elytron has three carinæ; the first is prominent, originates near the base, and curves towards the suture but without reaching it, terminating in the apical area; the second originates on the disk considerably below the humeral angle, and running parallel with the first, unites therewith in the apical area; the third is nearly obsolete; it is situate on the apical half of the elytron, between the second carina and the costal margin; the costal margin is pitchy red, and clothed with a grey pubescence: the wings are fuliginous, slightly longer than the elytra, and unfolded: the legs are rather long; the metatibiæ slightly incurved, and furnished with two apical spines: the under surface of the thoracic and abdominal segments is of a pitchy red colour, clothed with a sparse grey pubescence; the legs are of a similar colour, but the pubescence is scarcely observable.

Fem.—Head somewhat cordate, black, velvety, with a large fulvous spot occupying the face and extending to the epicranium between the eyes, but not reaching the anterior margin of the prothorax; a deep longitudinal epicranial sulcus extends forwards to between the bases of the antennæ: eyes arcuate, reniform, pitchy black: antennæ more than half the length of the body, 11-jointed; the first joint rather short, somewhat obconical; the second very short; the third the longest, but still not disproportionately so, dilated at the apex; the fourth and fifth of the same form, but shorter; the remainder, to the eleventh, slender at the base, but dilated and somewhat cupshaped at the apex, receiving into the cup the base of the next succeeding joint, and being produced into a strong obtuse lobe, tooth, or serrature on one side; this is very conspicuous, and gives the antenna a subserrated appearance; on the opposite side is a very slight, scarcely perceptible indication of a like lobe; the eleventh joint is sesquialterous. Prothorax nearly equal in length and breadth, the anterior narrower than the posterior margin, the lateral margins uneven and slightly lobed in the middle; pronotum uneven, with a slightly impressed anterior and posterior submarginal transverse sulcus, velvety black, with two broad irregular longitudinal vittæ of a bright fulvous orange colour; prosternum produced between the procoxæ, and the process notched. Scutellum short, rounded, black, shining. Elytra at the base much wider than the prothorax, gradually narrowing to the apex, where they are slightly dehiscent, truncated, and the truncature produced in the middle into an obtuse, scarcely perceptible tooth; each elytron has three carinæ; the first is prominent, originating near the base, and curves very gradually to

wards the suture without reaching it, terminating in the apical area ; the second is indistinct, originates near the humeral angle, and running parallel with the first, ceases in the apical area ; the third is still less distinct, and its limits are obscure ; at both extremities a junction between the first and second carinæ may be made out, but is not very manifest : the wings are fuliginous, slightly longer than the elytra, but scarcely so long as the abdomen ; the entire under-surface is pitchy red clothed with a silvery grey pubescence, but there is an ovoid denuded space on each side of each abdominal segment. Legs pitchy red ; tarsi pitchy black ; metatibiæ with two apical spines.

Obs.—I believe that no author has hinted at the union of these very dissimilar insects under one specific name, but I think such a proceeding will be borne out by the evidence. In the first place I would observe that both forms are equally abundant ; that they occur in the same situations and at the same season ; that collectors have several times reported them as only sexually different ; and finally, that all the individuals of *maculicollis* are males, and all the individuals of *fulvipennis* females. Then, as regards structure, the cibarian organs of the two forms closely approximate ; so also does the direction and general figure of the head ; the antennæ indeed are remarkably different, but this discrepancy obtains equally in several genera of longicornes and in many other groups of Coleoptera, the males invariably possessing in such instances the longer, more compound and more ornate antennæ. The discrepancy in the prothorax, which at first is very striking, will be found more in appearance than in fact, and more in colour than in figure ; and even in colour an analogy exists that would be likely to escape the superficial observer ; the two fulvous vittæ so conspicuous in *fulvipennis* appear divided, paler, and semi-obsolete in *maculicollis*, and the difference in the figure of this part is in simple accordance with the more robust habit in the supposed female : the discrepancy in the elytra again is considerable as regards width, and particularly striking as regards colour ; but their structure is normally the same ; the number, direction and comparative length of the carinæ being identical : the legs are precisely alike in the two forms in structure, proportions, size and colouring. So that the reasons for uniting the forms under one specific name are stronger than any that can be urged for keeping them distinct ; and their not having been united by Kirby, MacLeay, Guérin, or Boisduval, merely implies that the idea did not occur to those distinguished entomologists : there is no evidence that they maturely weighed and then rejected the conclusion.

2. *DISTICHOCERA* PAR. *Sexuum amborum color par : testaceo-fusca, maris capite prothoracisque disco saturatioribus ; omnino pilis cinereis obsita.*

Maris long. corp. .525 unc. ; elytrorum lat. max. .2 unc.

Feminæ long. corp. .7 unc. ; elytrorum lat. max. .225 unc.

Male.—Antennæ, anterior margin of prothorax, elytra, legs, and entire under-surface testaceous brown, the head and disk of the prothorax being darker ; a longitudinal, narrow, silvery spot, due to the



W. Wieg. del.

H. v. West. imp.

DISTICHOCERA KIRBIL. Newman: 3

presence of a velvety pilosity, is observable in the centre of each elytron; every part of the body is more or less thickly beset with a grey pilosity.

Female.—Almost exactly resembling the male, but the prothoracic disk is not darker than the elytra, and there is no silvery mark in their centre.

In both sexes the carination of the elytra follows that of *D. maculicollis*, but is less pronounced.

Compared with *D. maculicollis* both sexes of this species are of smaller size, and the discrepancy in breadth is rather more obvious than in length; the antennæ of the males are very similar, but the apical joint is more clavate in *par*; their colour is decidedly different, in *maculicollis* being black, in *par* testaceous, with the apices of the ramuli slightly darker; the prothorax is more rounded at the sides in *par* than in the older species; but the plainness and purity of colour in *par* are sufficient at once to distinguish it.

Male and female in the cabinet of Mr. Scott, to whom I am indebted for the opportunity of describing it.

3. DISTICHOCERA KIRBYI.

Mas. Caput nigrum, longitudinaliter sulcatum, antennæ dimidio corporis longiores, 11-articulatæ, articulis 3-10 biramosis, 11o sesquialtero: prothorax niger vittis 2 latis fulvis, dorso inæqualis lateribus medio 1-dentatus: scutellum nigrum: elytra fulva, 5-carinata, apice dehiscentia, singulo truncato, truncaturâ bisinuatâ: pedes nigri.

Corp. long. 1·15 unc.; elytrorum lat. max. ·3 unc.

Fem. Caput nigrum, longitudinaliter sulcatum, antennæ dimidio corporis vix longiores, 11-articulatæ articulis 4-8 apice emarginatis: prothorax niger vittis 2 latis fulvis, lateribus medio 1-dentatus: scutellum nigrum lateribus fulvum: elytra fulva 5-carinata apice dehiscentia, singulo truncato, truncaturâ bisinuatâ, pedes nigri.

Corp. long. 1·25 unc.; elytrorum lat. max. ·375 unc.

Male.—Head black, with the exception of a scarcely perceptible fulvescent tinge on the short velvety down of the epicranium; a deep epicranial longitudinal sulcus extends forwards between the antennæ: eyes arcuate, reniform, pitchy black, large, approaching on the epicranium, dilated and gibbose on the cheeks: antennæ more than half the length of the body, 11-jointed; the first joint rather short, stout, somewhat in the common shape of a reversed cone; the second joint very short; the following, to the tenth inclusive, short, somewhat cup-shaped towards the base, and emitting at the apex two long branches, which are slightly incrassated externally; the eleventh joint is much longer than either, slender towards the base, somewhat club-shaped and very decidedly sesquialterous: prothorax uneven on the back, somewhat restricted just behind the anterior margin; lateral margins produced in the middle into a decided strong but obtuse tooth; the posterior half of each lateral margin concave, yet the anterior and posterior margins are straight and nearly equal in breadth; the colour

of the prothorax is black, with the exception of two broad fulvous irregular vittæ extending from the anterior to the posterior margin: prosternum black, shining, projecting between the anterior coxæ, and the projection deeply emarginate: scutellum rather long, blunt at the apex, perfectly black: elytra fulvous, slightly divaricating, conspicuously carinated, truncate at the apex, and the truncature sinuate carinated; the carinæ five discoidal, one costal and one sutural; the first discoidal originates at the base, and nearly runs into the sutural at about one-third of its length; the second unites with the first at the base and runs into the apical area of the wing; the third originates at the base and runs into the apical area; the fourth originates in the humeral angle, dividing at one-third of its length, and the two branches counting as two carinæ, there uniting with the two previously described in a confused manner in the apical area: the wings are fuliginous, slightly longer than the elytra, and scarcely folded at the tip: the abdomen and legs are black, the latter of moderate size and proportion: the metatibiæ are armed with two spurs.

Fem.—Head black, with the exception of a fulvescent tinge on the short velvety down of the epicranium: eyes reniform, or almost arcuate, ferruginous (probably by accident): antennæ rather more than half as long as the body and moderately stout, 11-jointed; the first joint moderately long; the second very short; the third about equal in length to the first, and together with the fourth, fifth, sixth, seventh and eighth inclusive, deeply notched at the apex, and receiving the base of the next preceding joint in the notch: prothorax uneven on the back, somewhat curved anteriorly, and the anterior half of each lateral margin uniting therewith in producing a somewhat semicircular outline; the posterior half of each lateral margin is concave, and a strong but obtuse central tooth is produced on each side at the point of union of the convex and concave portions of the margin; the posterior margin is nearly straight; the colour is velvety black, with two broad fulvous vittæ, extending from the anterior to the posterior margin: prosternum black, thickly sprinkled with a grey pilosity, projecting somewhat between the procoxæ, and the projection emarginate: scutellum rather long, rounded at the apex, velvety black with fulvous margins: elytra bright fulvous, conspicuously carinated, slightly divaricating, truncate at the apex, and the truncatures sinuate: the carinæ on each elytron are five in number, and are thus disposed; the first is near the suture and parallel therewith for rather more than a third of its length; it unites with the second at the base, and this runs into the apical area and there joins the third; the third originates at the base, exceeds the second slightly in length, and joins the fourth in the apical area; the fourth originates near the humeral angle and divides at about a third of its length; both branches proceed to the apical area, and there unite with the second and third: wings fuliginous, exceeding the elytra in length, and scarcely folded at the tip: legs black.

Hab. Australia. I have seen but a single specimen of the male, which is in the Cabinet of the Zoological Society, and one of the female, in the Cabinet of the British Museum.

4. *DISTICHOCERA MACLEAYII*.

Fem. Caput nigrum, fronte ferrugineá, longitudinaliter sulcatum: antennæ desunt: prothorax ferrugineo-lanuginosus, lateribus bituberculatus, haud dentatus: scutellum ferrugineo-lanuginosum lateribus nigrum, glabrum: elytra ferruginea 5-carinata apice vix dehiscentia vix truncata: pedes nigri.

Corp. long. 1.35 unc.; elytrorum lat. max. 5 unc.

Fem.—Head, including the eyes, black; the face clothed with ferruginous down; epicranium impressed with a longitudinal sulcus, which is very deep between the eyes; the eyes are moderately large and reniform, the lower or cheek lobe being the largest; the face has a large and deep depression occupying the basal or upper portion of the clypeus; the first and second joints of the antennæ alone are present: prothorax black, clothed with ferruginous down, without any trace of that central black velvety vitta which obtains in the females of other described species; the anterior portion of the prothorax is smooth and somewhat ring-like; the rest of the dorsal surface uneven and tuberculated on each side; it has two obtuse tubercles: prosternum produced between the procoxæ into two short incurved, backward-directed processes which approximate at their apices, leaving an aperture through which the point of a needle may be passed: scutellum semicircular, clothed with ferruginous, with the exception of the margin, which is glabrous: elytra ferruginous and clothed with ferruginous down, wide at the base, narrowing to the apex and then truncate, the angles of the truncature being obtuse; the elytra are carinated, each having five carinæ; the first is very short and nearly obtuse; it commences near the scutellum and ceases before it has reached a third of the length of the elytron; the second and third commence near the base of the wing and unite in the apical area; the third and fourth commence almost together just below the humeral angle, and unite in the apical area; the two pairs are also united, and below their union several other raised anastomosing lines form a kind of network: the abdomen and legs are black, with a short hairy pubescence; metatibiæ with two distinct apical spines.

Hab. Australia. A single specimen of the female, taken by Mr. Ince, R.N., in that gentleman's cabinet.

Perhaps I may be permitted to avail myself of the opportunity of stating that I am assiduously engaged in the preparation of a descriptive list of the longicorn Coleoptera of our Australian colonies, and that I shall feel deeply indebted to any members of the Zoological Society who would kindly assist me by the communication of specimens. As the extent and value of her colonies have always been a distinguishing character of Great Britain, so I think should the industry of her sons take precedence of other nations in making known to the world the abundant riches of those colonies in the field of Natural History.

2. A CATALOGUE OF THE SPECIES OF EMARGINULA, A GENUS OF GASTEROPODOUS MOLLUSCA, BELONGING TO THE FAMILY FISSURELLIDÆ; IN THE COLLECTION OF H. CUMING, ESQ. BY ARTHUR ADAMS, R.N., F.L.S. ETC.

Genus EMARGINULA, Lamarck.

Head proboscidiform; tentacles subulate, with the eyes on tubercles at their external bases; foot with a range of cirrhi round the sides; mantle-margin simple; branchial plumes two; anal siphon with its angulated membranous sides projecting from the edges of the fissure; tongue with a central laminar subquadrate tooth and numerous lateral teeth.

Shell conical, with an elevated slightly recurved entire vertex turned towards the posterior end; surface cancellated; aperture emarginated in front by a slit, which runs for some distance up the shell; interior without a partition; muscular impression crescentic, interrupted in front.

Emarginulus, Montf.—*Patella*, sp. Linn.

1. EMARGINULA FISSURA, Linn.

Patella fissura, Linn. Syst. Nat. ed. 12. p. 1261.—*Emarg. fissura*, Flem.—*Emarg. lævis*, Recluz.—*Emarg. curvirostris*, Macgil.

Hab. British Islands. Mus. Cuming.

2. EMARGINULA RETICULATA, Chemn.

Emarg. reticulata, Chemn.; Sowerby, Genera (Emarg.), f. 5.

Hab. Malta, on stones. Mus. Cuming.

3. EMARGINULA CANCELLATA, Philippi.

Emarg. cancellata, Phil. En. Moll. Sicil. pl. 7. fig. 15.—? *Patella crystallina*, Wood.

Hab. Sicily, and island of Paros. Mus. Cuming.

4. EMARGINULA FISSURATA, Chemn.

Patella fissurata, Chemn. 11. 1929–30; Sowerby, Genera (Emarg.), fig. 3.—*Emarg. rubra*, Lam. Hist.

Hab. Seas of Europe. Mus. Cuming.

5. EMARGINULA CURVIROSTRIS, Deshayes.

Emarg. conica, Blainville, Man. pl. 48. fig. 4.

Hab. —?

6. EMARGINULA ROSEA, Bell.

Emarg. rosea, Bell, Zool. Journ. vol. i. 1824.—*Emarg. pileolus*, Michaud.—*Emarg. capuliformis*, Philippi.

Hab. British Islands. Mus. Cuming.

7. EMARGINULA CRASSA, J. Sowerby.

Emarg. crassa, J. Sowerby, Min. Conch. pl. 33; Forbes and Hanley, Brit. Moll. pl. 63. fig. 2.

Hab. Norwegian Seas. Mus. Cuming.

8. EMARGINULA HUZARDII, Payrandeau.

Emarg. Huzardii, Payr.*Hab.* — ?

9. EMARGINULA SOLIDULA, Costa.

Emarg. solidula, Costa.*Hab.* Catania. Mus. Cuming.

10. EMARGINULA ELONGATA, Philippi.

Emarg. elongata, Phil. En. Moll. Sicil. pl. 110. fig. 2.*Hab.* Mediterranean. Mus. Cuming.

11. EMARGINULA VANICORENSIS, Quoy et Gaimard.

Emarg. Vancorensis, Quoy et Gaimard, Voy. de l'Astrol. pl. 68. fig. 19, 20.*Hab.* Vanicoro. Mus. Cuming.

12. EMARGINULA STRIATULA, Quoy et Gaimard.

Emarg. striatula, Quoy et Gaimard, Voy. de l'Astrol. pl. 68. fig. 21, 22.*Hab.* — ? Mus. Cuming.

13. EMARGINULA CUVIERI, Savigny.

Emarg. Cuvieri, Savigny, Egypt, tab. 3. fig. 2.*Hab.* Egypt. Mus. Cuming.14. EMARGINULA CLYPEUS, A. Adams. *E. testá elongato-ellipticá, valdè depressá, testaceá, maculá luteolá in medio dorsi, vertice subcentrali, posticè inclinató; costis confertis, æqualibus, radiantibus, imbricato-asperis, ornata; basi arcuato; apertura margine crenulato, anticè valdè fissurato; fissurá magná; apertura intus bimaculosá.**Hab.* Isle of Burias, Philippines, on dead shells, 7 fathoms, sandy mud. Mus. Cuming.15. EMARGINULA SCABRIUSCULA, A. Adams. *E. testá elongato-ellipticá, depresso-conicá, testaceá, vertice subpostico, retrorsum inclinató; costis inæqualibus, radiantibus, imbricato-subaculeatis, asperis, et lineis elevatis, concentricis, cancellatá; apertura anticè angustatá, basi arcuatá, margine creno-denticulato.**Hab.* — ? Mus. Cuming.16. EMARGINULA OBOVATA, A. Adams. *E. testá elongatá, obovatá, depresso-conicá, testaced, vertice subcentrali, retrorsum inclinató, costellis radiantibus, imbricato-asperis, et liris elevatis, concentricis, cancellatá; apertura posticè rotundatá, anticè angustatá, margine creno-denticulato, anticè profundè inciso.**Hab.* Catbalonga, isle of Samaar, on stones, 4 fathoms. Mus. Cuming.

17. *EMARGINULA INCISURA*, A. Adams. *E. testá elongato-ovali, planulatá, pallide fulvá, vertice antico retrorsum inclinato, costellis inæqualibus, radiantibus, longitudinalibus, imbricato-asperis, et lineis elevatis, concentricis, decussatá, basi arcuato, aperturæ margine crenulato, anticè declinato, valdè fissurato, incisurá magná, longá, haud usque ad verticem productá, marginibus intus callosis.*
Hab. —? Mus. Cuming.
18. *EMARGINULA MICANS*, A. Adams. *E. testá elongato-ovali, pallide fuscá, nitidá, vertice posticè declinato, costellis radiantibus et lineis elevatis transversis, regulariter cancellatá, cancelli quadrati; aperturæ margine denticulato, incisurá magná et longá.*
Hab. Rains Island, North Australia (*Lieut. Ince*). Mus. Cuming.
19. *EMARGINULA PUNCTATA*, A. Adams. *E. testá ovato-conicá, albido-grisá, pulcherrimè viridi punctatá, vertice subcentrali, posticè inclinato; costis longitudinalibus (majoribus cum minoribus alternatis) concinnè granulatis; aperturæ margine crenulato, excurvato, anticè valdè fissurato.*
Hab. San Nicholas, island of Zebu, under stones, low water.
 Mus. Cuming.
20. *EMARGINULA VARIEGATA*, A. Adams. *E. testá ovato-conicá, albá, rufo-fusco variegatá, vertice acuto, subcentrali, posticè inclinato, costellis radiantibus, æqualibus, imbricato-asperis, ornatá; aperturæ margine denticulato, anticè fissurato, fissurá brevi subquadratá.*
Hab. Isle of Camaguan, Philippines, on exposed rocks, low water.
 Mus. Cuming.
21. *EMARGINULA PUNCTICULATA*, A. Adams. *E. testá elevato-conicá, capuliformi, albá, fusco punctulatá, costellis planulatis, crebris, longitudinalibus, radiantibus, ornatá; aperturá ovali, margine crenulato, anticè profundè fissurato; fissurá magná et longá.*
Hab. Calapan, island of Mindoro, Philippines, on stones, 12 fathoms. Mus. Cuming.
22. *EMARGINULA FULIGINEA*, A. Adams. *E. testá ellipticá, valdè depressá, fuliginéa, apice subcentrali, posticè inclinato, costellis æqualibus, radiantibus, granulosis, confertis, et lineis incrementi concentricis, ornatá; aperturá ovali, intus viridi, margine crenulato, anticè fissurato, incisurá intus in canalem productá.*
Hab. —? Mus. Cuming.
23. *EMARGINULA GALERICULATA*, A. Adams. *E. testá obliquè conicá, capuliformi, vertice valdè curvato, ultra marginem posteriorem decumbente, costellis angustis, crenulatis, radiantibus, interstitiis lineis elevatis, transversis, concinnè clathratis;*

costâ anticâ, supra incisuram, granulato-punctatâ; aperturæ margine crenulato, anticè profundè inciso.

Hab. Calapan, isle of Mindoro, on stones, 12 fathoms. Mus. Cuming.

24. *EMARGINULA PULCHRA*, A. Adams. *E. testâ depresso-conicâ, viridi, albo pulcherrimè radiatim pictâ, vertice subcentrali, posticè inclinato, costis radiantibus, inæqualibus, aculeato-asperis, interstitiis lineis elevatis transversis clathratis; aperturæ margine denticulato, anticè inciso, fissurâ brevi subquadratâ.*

Hab. Isle of Camaguan, Philippines, on exposed rocks, low water. Mus. Cuming.

25. *EMARGINULA CONCINNA*, A. Adams. *E. testâ ovato-depressâ, albida, vertice postico, ad marginem declinato, costis sulcosis, distantibus, radiantibus (circa 12), interstitiis lineis longitudinalibus, et transversis, concinnè decussatis; aperturæ margine dentato, anticè profundè inciso.*

Hab. —? Mus. Cuming.

26. *EMARGINULA VIMINEA*, A. Adams. *E. testâ ovato-conicâ, albida, vertice centrali, retrorsum inclinato, costellis radiantibus, nodulosis, subæqualibus, et lineis crassis, transversis, regulariter cancellatâ; cancelli profundi, punctiformes; aperturæ margine crenato, anticè profundè inciso.*

Hab. Philippine Islands. Mus. Cuming.

27. *EMARGINULA EXCURVATA*, A. Adams. *E. testâ elongato-ellipticâ, depresso-conicâ, testacè, apice acuto, subpostico, retrorsum inclinato, costis radiantibus, et liris concentricis, elevatis, cancellatâ, liris ad costas nodulosis, basi arcuato; aperturæ margine excurvato, crenulato, anticè profundè inciso.*

Hab. —? Mus. Cuming.

28. *EMARGINULA DILECTA*, A. Adams. *E. testâ elongato-ovali, subquadrangulari, albâ, valdè depressâ, vertice subpostico, retrorsum declinato, costis subdistantibus, radiantibus, asperulatis, et liris elevatis, concentricis, pulcherrimè cancellatâ; basi arcuatâ; aperturæ margine denticulato, anticè valdè fissurato.*

Hab. King George's Sound, South Australia. Mus. Cuming.

29. *EMARGINULA SCABRICOSTATA*, A. Adams. *E. testâ ovali, valdè depressâ, albida, fasciis tribus, lutescentibus, radiantibus, anticè ornatâ; vertice subcentrali, posticè inclinato, costis radiantibus, distantibus, corrugatis, interstitiis valdè clathratis et corrugatis; aperturæ margine dentato et denticulato, anticè valdè inciso.*

Hab. Isle of Corrigidor, Bay of Manila, on dead shells, sandy mud, 12 fathoms. Mus. Cuming.

30. *EMARGINULA CANDIDA*, A. Adams. *E. testâ ellipticâ, depresso-conicâ, obliquâ, albâ, vertice subpostico, retrorsum decli-*

nato, costis radiantibus, imbricato-asperis (majoribus cum minoribus alternatis), interstitiis clathratis; aperturæ margine denticulato, anticè profundè inciso.

Hab. Port Adelaide, Australia, on the sands. Mus. Cuming.

31. *EMARGINULA BELLULA*, A. Adams. *E. testá elongato-ellipticá, subdepressá, albidá, vertice subpostico, declinato, costis distantibus prominentibus, lineisque transversis concinnè sculptis; cariná, supra incisuram, puncturatá; aperturæ margine denticulato, intus sulcato, anticè profundè inciso.*

Hab. Catanuan, province of Toyabos, island of Luzon, on dead shells, 10 fathoms. Mus. Cuming.

32. *EMARGINULA RETECOSA*, A. Adams. *E. testá elevato-conicá, ellipticá, albidá, vertice subcentrali, posticè inclinato, costis radiantibus, æqualibus, subnodosis, ornata; interstitiis regulariter cancellatis, cancelli in serie unico dispositi; aperturæ margine crenulato, incisurá profundá.*

Hab. Bolinao, province of Tambalas, island of Luzon, sandy mud, 10 fathoms. Mus. Cuming.

33. *EMARGINULA EXIMIA*, A. Adams. *E. testá elongato-ovali, valdè depressá, albá, subpellucidá, vertice postico retrorsum inclinato, costis radiantibus, distantibus, prominentibus, imbricato-nodosis, interstitiis liris transversis et longitudinalibus latè cancellatá; totá superficie lineolis radiantibus et concentricis pulcherrimè decussatá; aperturæ margine denticulato, anticè profundè inciso.*

Hab. San Nicholas, island of Zebu, under stones, low water. Mus. Cuming.

34. *EMARGINULA PLANULATA*, A. Adams. *E. testá elongato-ovali, complanatá, vertice subcentrali, posticè inclinato, albidá, costellis radiantibus, æqualibus, imbricato-asperis, lineisque concentricis incrementi decussatá, basi arcuato; aperturæ margine anticè valdè inciso; incisurá latá et profundá.*

Hab. Singapore, coarse sand and shells, 7 fathoms. Mus. Cuming.

35. *EMARGINULA CUCULLATA*, A. Adams. *E. testá obovali, obliquè conicá, albá, vertice producto, subpostico, intorto; costis prominentibus, nodulosis, radiantibus, interstitiis cancellatis; aperturæ lateribus anticè angustatis, margine denticulato, posticè rotundato, anticè profundè fissurato, incisurá longá et latá.*

Hab. Singapore, on shells, 7 fathoms. Mus. Cuming.

36. *EMARGINULA ACULEATA*, A. Adams. *E. testá elongato-ovali, depressá, rufescente, vertice subpostico, retrorsum inclinato; costis radiantibus, aculeato-asperis, prominentibus, interstitiis valdè clathratis; aperturæ margine denticulato, anticè fissurato, fissurá profundá.*

Hab. —? Mus. Cuming.

37. *EMARGINULA LÆVICOSTATA*, A. Adams. *E. testá parvá, ellipticá, valde depressá, apice subpostico, retrorsum inclinato, costis lævibus, radiantibus (circa 14), interstitiis costellis longitudinalibus, et lineis transversis latè clathratis; aperturæ margine denticulato, lateribus anticè angustatis, anticè valde inciso.*

Hab. —? Mus. Cuming.

Subgenus CLYPIDINA, Gray.

Shell ovate, conical, surface with radiated ribs; vertex acute, central, not recurved; aperture with the margin crenulated; muscular impression fungiform, anal groove and emargination inclining towards the right anterior margin (in the natural position of shell).

1. *CLYPIDINA NOTATA*, Linn.

Patella notata, Linn. Chemn. Conch. vol. x. p. 321. Vign. 25. fig. C. D.

Hab. West Indies. Mus. Cuming.

2. *CLYPIDINA RUGOSA*, Quoy and Gaimard.

Emarginula rugosa, Quoy and Gaim. Voy. de l'Astr. p. fig. .
Emarg. conoida, Reeve, Conch. Syst. pl. 160. fig. 7.

Hab. Australia. Mus. Cuming.

3. *CLYPIDINA ASPERA*, Gould.

Emarginula aspera, Gould, Expedition, Shells, p. 12.

Hab. Sydney, New South Wales. Mus. Cuming.

4. *CLYPIDINA FUNGINA*, Gould.

Emarginula fungina, Gould, Expedition, Shells, p. 12.

Hab. Upolu. Mus. Cuming.

5. *CLYPIDINA SULCIFERA*, A. Adams. *C. testá ovali, depresso-conicá, viridescenti, vertice obtuso, ad partem posteriorem posito; costellis radiantibus, interstitiis haud æquantibus, et striis incrementi ornatis; basi arcuatá; aperturæ margine crenulato, incisurá haud profundá, sublaterali, intus in canalem productá.*

Hab. —? Mus. Cuming.

6. *CLYPIDINA RUDIS*, A. Adams. *C. testá crassá, rudi, albidá, depresso-conicá, costis octo angulatis radiantibus, interstitiis costellis longitudinalibus et lineis concentricis decussatis; apice subcentrali; basi arcuato; aperturæ margine crenato, anticè sinuato, sinu intus in canalem producto.*

Hab. —? Mus. Cuming.

7. *CLYPIDINA STELLATA*, A. Adams. *C. testá solidulá, albidá, ellipticá, depresso-conicá, apice subcentrali, costis elevatis, sub-spinulosis, radiantibus; interstitiis costellis et striis crebris decussantibus, exasperatis; aperturæ margine dentato, sinu sublaterali, intus in canalem apicem versus producto.*

Hab. Australia. Mus. Cuming.

8. *CLYPIDINA SCABRICULA*, A. Adams. *C. testá elongato-ovali, obliquè conicá, costis radiantibus, elevatis, distantibus, asperulatis, interstitiis costellis longitudinalibus et lineis scabriusculis valdè cancellatá; vertice subcentrali, posticè inclinato; aperturæ margine dentato-crenulato; incisurá profundá, intus in canalem productá.*

Hab. Australia. Mus. Cuming.

9. *CLYPIDINA ANNULATA*, A. Adams. *C. testá crassá, ellipticá, albidá, annulo luteo-fusco circumcinctá; costis elevatis asperis radiantibus distantibus, interstitiis costellis longitudinalibus et lineis transversis elevatis concinnè clathratis; aperturæ margine duplicato, incrassato, pulcherrimè fimbriato, sinu quadrato intus in canalem producto; aperturá intus annulá albidá.*

Hab. Australia. Mus. Cuming.

10. *CLYPIDINA ACUMINATA*, A. Adams. *C. testá elevato-conicá, albidá, viridi annulatá, costis longitudinalibus radiantibus, imbricato-asperis, interstitiis tricoatulatis, costellis imbricato-asperis; sulcis transversis concentricis, distantibus, impressá; vertice acuminato, acuto, subcentrali; aperturæ margine valdè crenulato, sinu subquadrato, intus in canalem producto.*

Hab. Australia. Mus. Cuming.

11. *CLYPIDINA CANDIDA*, A. Adams. *C. testá ellipticá, solidulá, conicá, candidá, costellis asperulatis inæqualibus, radiantibus, et striis elevatis transversis, concentricis, decussatá; vertice subcentrali; aperturæ margine crenulato, sinu brevi, intus in canalem producto.*

Hab. Port Adelaide, Australia. Mus. Cuming.

Subgenus TUGALI, Gray.

Shell oblong, narrow anteriorly, back elevated, cancellated; apex posterior and recurved; aperture with the margin crenulated, and deeply sinuated anteriorly.

1. *TUGALI ELEGANS*, Gray.

Tugali elegans, Gray, Cat. Moll. New Zealand.

Hab. New Zealand. Mus. Cuming.

2. *TUGALI INTERMEDIA*, Reeve.

Parmophorus intermedius, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 139. fig. 5, 6.

Hab. —? Mus. Cuming.

3. *TUGALI OSSEA*, Gould.

Emarginula ossea, Gould, Expedition, Shells, p. 13.

Hab. Feejee Islands. Mus. Cuming.

4. *TUGALI CINEREA*, Gould.

Emarginula cinerea, Gould, Expedition, Shells, p. 13.

Hab. —? Mus. Cuming.

5. TUGALI PARMOPHOROIDEA, Quoy et Gaimard.

Emarginula parmophoroidea, Quoy et Gaim. Voy. de l'Astrol. pl. 68. fig. 15, 16.

Hab. Eastern Seas.

6. TUGALI CARINATA, A. Adams. *T. testá elongato-ovali, dorso carinatá, costis longitudinalibus, radiantibus, confertis, et striis transversis, concentricis, decussatá; apice posticè declinato; basi arcuatá; aperturæ margine crenulato, extremitate anteriori sinuato, sinu intus in canalem producto.*

Hab. Philippines. Mus. Cuming.

7. TUGALI CICATRICOSA, A. Adams. *T. testá elongato-ovali, albá, dorso valdè depressá, costellis radiantibus et lineis concentricis elevatis decussatá, vertice subpostico depresso excavato quasi cicatricoso, subpellucido; basi arcuato; aperturæ margine crenulato, extremitate anteriori sinuato, sinu intus in canalem producto.*

Hab. Philippines. Mus. Cuming.

8. TUGALI SCUTELLARIS, A. Adams. *T. testá elongato-ovali, virido-fuscá, tenui, dorso planulatá, vertice postico, acuto, vix elevato, costellis radiantibus subdistantibus, et striis concentricis incrementi, decussatá; extremitate anteriori vix sinuato; aperturá intus fuscá, margine subcrenulato.*

Hab. Bais, Philippines. Mus. Cuming.

9. TUGALI RADIATA, A. Adams. *T. testá elongato-ovali, luteolá, valdè depressá, costis radiantibus, rotundatis, elevatiusculis, distantibus, et striis concentricis, ad incrementum ornatá; aperturá intus albidá, margine crenulato, extremitate anteriori vix sinuato.*

Hab. Catanuan, Philippines. Mus. Cuming.

10. TUGALI DECUSSATA, A. Adams. *T. testá elongato-ovali, albidá, planulatá, dorso carinatá, costellis longitudinalibus, radiantibus, et lineis elevatis concentricis eleganter clathratá; vertice acuto, postico; aperturæ margine crenulato, anticè sinuato, sinu intus in canalem producto.*

Hab. Philippine Islands. Mus. Cuming.

Subgenus SUBEMARGINULA, Blainville.

Shell conical, compressed, vertex inclined towards the posterior margin; aperture with the anterior margin folded in the form of a gutter or channel; surface cancellated.

Hemitoma, Swainson.

1. SUBEMARGINULA EMARGINATA, Blainv.

Emarginula emarginata, Blainv. Man. de Malac. pl. 48 bis. fig. 2.

Hab. Honduras. Mus. Cuming.

2. SUBEMARGINULA OCTORADIATA, Gmel.

Patella octoradiata, Gmel.; Lister, 532.11.—*Emarg. Listeri*, Ant.
Hab. —? Mus. Cuming.

3. SUBEMARGINULA DEPRESSA, Blainv.

Emarginula depressa, Blainv. Man. de Malac. pl. 48 bis. fig. 3.
Hab. Honduras. Mus. Cuming.

4. SUBEMARGINULA CLATHRATA, Adams and Reeve.

Emarginula clathrata, Adams and Reeve, Moll. Zool. Voy. Samarang, pl. 11. fig. 6.
Hab. Mindoro Sea. Mus. Cuming.

5. SUBEMARGINULA PANIHENSIS, Quoy et Gaimard.

Emarginula Panihensis, Quoy et Gaim. Voy. de l'Astrol. pl. 67. fig. 7, 8.
Hab. Island of Panhi. Mus. Cuming.

6. SUBEMARGINULA TRICOSTATA, Chemn.

Patella tricostata, Chemn.; Sowerby, Gen. of Shells, No. 34. fig. 6.
Hab. —?

7. SUBEMARGINULA AUSTRALIS, Quoy et Gaimard.

Emarginula australis, Quoy et Gaim. Voy. de l'Astrol. pl. 68. fig. 11, 12.
Hab. Australia. Mus. Cuming.

8. SUBEMARGINULA ELARGIE, Quoy et Gaimard.

Emarginula elargie, Quoy et Gaim. Voy. de l'Astrol. pl. 68. fig. 9, 10.
Hab. Philippines. Mus. Cuming.

9. SUBEMARGINULA GALEATA, A. Adams. *S. testá griseo-rufescente, elevato-conicá, tenui, vertice subcentrali, posticè inclinato, costis tuberculosi, radiantibus, albidis, et lineis transversis, elevatis, subclathratis, costá anticá prominenti; aperturæ margine dentato, anticè valdè sinuato, sinu intus in canalem producto.*

Hab. Philippine Archipelago. Mus. Cuming.

10. SUBEMARGINULA ARABICA, A. Adams. *S. testá albidá, crassá, depresso-conicá, vertice obtuso subcentrali, posticè inclinato; costis radiantibus tuberculosi et liris elevatis transversis clathratá; aperturæ margine incrassato, crenato, anticè sinuato, sinu intus in canalem producto.*

Hab. Red Sea. Mus. Cuming.

11. SUBEMARGINULA ALVEOLATA, A. Adams. *S. testá tenui, albá, subpellucidá, depresso-conicá, vertice subcentrali, posticè inclinato; costis radiantibus lirisque transversis irregulariter alveolatá; costis ad liras nodulosi; alveolis pellucidis; aperturæ margine dentato, anticè sinuato, sinu intus in canalem producto.*

Hab. Honduras. Mus. Cuming.

12. SUBEMARGINULA IMBRICATA, A. Adams. *S. testá ovato-oblongá, subquadrangulari, cinereo-albidá, vertice parvo, centrali, posticè inclinato; costis radiantibus imbricato-asperis, inæqualibus, et lineis crassis irregularibus incrementi decussatá; aperturæ margine dentato, anticè valdè sinuato, sinu subquadrato, intus in canalem producto.*

Hab. Mouth of Victoria River, north-east coast of Australia, under stones, low water. Mus. Cuming.

13. SUBEMARGINULA PUMILA, A. Adams. *S. testá orbiculato-ovali, valdè depressá, apice subcentrali, posticè inclinato; costis radiantibus, nodosis, inæqualibus, et lineis elevatis concentricis incrementi, decussatá; aperturæ margine denticulato-crenato, anticè profundè sinuato; sinu subquadrato, intus in canalem producto.*

Hab. —? Mus. Cuming.

14. SUBEMARGINULA CATILLUS, A. Adams. *S. testá elongato-ovali, valdè depressá, vertice vix elevato, posticè inclinato; costis radiantibus nodulosis, crassis, et lineis incrementi transversis, ornatá; aperturæ margine irregulari, crenulato, intus calloso, anticè valdè sinuato.*

Hab. —? Mus. Cuming.

15. SUBEMARGINULA DENTICULATA, A. Adams. *S. testá elongato-ovali, albá, novem-radiatá, vertice acuto posticè inclinato, costis novem, crassis, rugulosis, radiantibus; intervallis costellatis, costellis longitudinalibus, asperulatis; aperturæ margine dentato, et denticulato, anticè emarginato, incisuræ lateribus incrassatis, anticè in dentes duos productis.*

Hab. Mexico. Mus. Cuming.

16. SUBEMARGINULA POLYGONALIS, A. Adams. *S. testá elongato-ovali, depresso-conicá, albá, octoradiatá, vertice subcentrali, posticè inclinato, costis radiantibus subnodulosis, longitudinalibus (octo majoribus), lineis concentricis incrementi asperá; aperturá octagonali, margine crenulato, anticè valdè sinuato, sinu intus in canalem producto.*

Hab. Catanuan, Philippines. Mus. Cuming.

17. SUBEMARGINULA CRASSILABRUM, A. Adams. *S. testá ellipticá, crassá, rudi, albá, depresso-conicá, vertice subcentrali, eroso, costis radiantibus distantibus, inæqualibus, subaculeatis, ornatá; aperturæ margine crenato-denticulato, posticè recto, anticè rotundato, sinuato, sinu intus in canalem producto.*

Hab. —? Mus. Cuming.

18. SUBEMARGINULA NODULOSA, A. Adams. *S. testá ovatá, obliquè conicá, albido-rufescenti, vertice subcentrali, posticè declinato; costis longitudinalibus nodosis, radiantibus, duabus latere anterioribus permagnis, liris irregularibus transversis,*

decussatá; aperturæ margine irregulari, posticè acuminato, anticè truncato, sinuato, sinu intus in canalem producto.

Hab. Sibonga, island of Zebu, on small stones, 10 fathoms. Mus. Cuming.

19. SUBEMARGINULA CRATITIA, A. Adams. *S. testá ovatá, conicá, albidá, vertice obtuso, centrali, posticè haud inclinato, costis radiantibus distantibus, nodulosis; interstitiis costellis duabus longitudinalibus, et lineis elevatis, transversis, eleganter cancellatis; aperturæ margine crenulato, anticè sinuato, sinu quadrato, intus in canalem producto.*

Hab. —? Mus. Cuming.

20. SUBEMARGINULA SCULPTILIS, A. Adams. *S. testá ovali, obliquè conicá, albidá, viridi radiatim maculatá; vertice subcentrali, posticè valdè declinato; costis radiantibus, longitudinalibus, corrugatis; interstitiis pulcherrimè punctato-clathratis; costá anticá prominenti, crenulatá; aperturæ margine undulato et crenulato, posticè rotundato, anticè truncato et sinuato, sinu intus in canalem producto.*

Hab. Calapan, island of Mindoro, on small stones, 12 fathoms. Mus. Cuming.

3. DESCRIPTION OF A NEW SPECIES OF BULIMUS FROM CALLAO,
COLLECTED BY ERNESTE DENICKE.
COMMUNICATED BY J. E. GRAY, ESQ., V.P.Z.S.

Mr. Erneste Denicke, a sailor on board a Hamburg vessel trading with Chili, called at the British Museum, and informed me that he had a new species of *Bulimus*, which he had discovered on the Whitesand Hill at Chala, near Callao. He further stated that he had collected the Chilian shells, and had studied shells in general, and that he was convinced that it was a new species. Having compared the shell with the species in the English collections and the descriptions in Pfeiffer, and being satisfied that M. Denicke was correct in his idea, I propose that it should be named after that conchologist.

It was pleasing to see the intimate knowledge which he had acquired of the genera and species of shells, and the interest which he took in the study, when we consider the laborious nature of his occupation, and the very little time that he had at his command. The only holidays he had while his ship was in London were spent at the British Museum, at Mr. Cuming's collection, and in the gardens of the Zoological Society.

BULIMUS DENICKEI.

Shell conical, trochiform, white, the upper whorls small, forming a rather produced tip, the others rapidly enlarging, slightly convex, forming a conical spire, the last angularly keeled; axis perforated; mouth rhombic; outer lip slightly reflexed, acute; throat deep rose-coloured.

Hab. Chala, near Callao, on the Whitesand Hills.

To the preceding communication by Mr. Gray, the following details were added by Mr. Lovell Reeve:—

BULIMUS DENICKEI. *Bul. testá pyramidali-conicá, subampliter umbilicatá, apice papillari, anfractibus supernè convexo-declivibus, medio acutangulis, carinatis, undique peculiariter corrugatis et malleatis, opaco-albis, immaculatis, aperturá sub-oblongo-ovatá, labro tenui, simplici, effuso, aperturæ fauce intensè purpureo-rosed.*

Hab. Found imbedded in sand at the top of a lofty hill near the Port of Chala, Peru, by Mr. Erneste Denicke.

This interesting species of *Bulimus* is of about the same size and form, and belongs to the same type, as *B. lemniscatus*, inhabiting Ilo, Peru. Specifically it is very distinct, the entire surface of the shell being peculiarly indented and shrivelled, and of an opaque spotted white. The interior of the aperture is of a deep purple-rose colour.

4. ON A NEW SPECIES OF MUSOPHAGA.

By JOHN GOULD, F.R.S.

Mr. Gould exhibited to the meeting a drawing by Lieut. J. R. Stack, of a new and beautiful species of *Musophaga*, of which a living example had been for the last ten years in the possession of Lady Ross, at St. Helena. Mr. Gould also exhibited some feathers shed from the wings and tail of the bird, an examination of which, and of the drawing, satisfied him that the bird was quite distinct from all previously described members of the genus.

Lady Ross, who is at present in England, had informed Mr. Gould that the bird was about the size of a hen-pheasant, and that it had been brought to St. Helena from the western coast of Africa, but the precise locality in which it had been procured was unknown to her.

For this interesting addition to the *Musophagæ* Mr. Gould proposed the specific appellation of *Rossæ*, in honour of its amiable owner, who has promised that in the event of her not returning to St. Helena, she will have the bird brought to England, where its arrival will be hailed with pleasure by every lover of ornithological science.

MUSOPHAGA ROSSÆ.

Body, wings and tail rich deep blue; primaries and secondaries arterial blood-red, narrowly margined and more broadly tipped with purplish brown, as in the other species of the genus; crown surmounted with a high rounded crest of hair-like blood-red feathers; bill and denuded orbits yellow; irides brown.

March 25, 1851.

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

The following papers were read :—

1. CATALOGUE OF THE SPECIES OF NASSA, A GENUS OF GASTEROPODOUS MOLLUSCA BELONGING TO THE FAMILY BUCCINIDÆ, IN THE COLLECTION OF HUGH CUMING, ESQ., WITH THE DESCRIPTION OF SOME NEW SPECIES. BY ARTHUR ADAMS, F.L.S. ETC.

Subgenus NASSA.

Shell cassiform; spire short; inner lip with the callus greatly developed.

A. Shell ribbed or nodulous.

1. NASSA ARCLARIA, Linn.
Bucc. arcularia, Linn.; List. Conch. pl. 970. f. 24; Kien. Bucc. pl. 28. f. 115.
Hab. Mauritius; Philippines, on the reefs (*H. C.*).
2. NASSA PULLUS, Linn.
Bucc. pullus, Linn.; Gualtieri, Test. pl. 44. fig. R; Kien. Mon. Bucc. pl. 28. f. 114.
Hab. ———?
3. NASSA CORONATA, Brug.
Bucc. coronatum, Brug.; Gualtieri, Test. pl. 44. fig. C, D; Kien. pl. 28. f. 112.
Hab. Philippines, on the reefs (*H. C.*).
4. NASSA MUTABILIS, Linn.
Bucc. mutabile, Linn.; List. Conch. t. 975. f. 30; Kien. pl. 24. f. 30.
Hab. Red Sea; Philippines, coarse sand, 6 fathoms (*H. C.*).
5. NASSA MARGINULATA, Lam.
Bucc. marginulatum, Lam.; Gualtieri, pl. 44. fig. *n*; Kien. Mon. Bucc. pl. 29. f. 117.
Hab. Cagayan, Philippines (*H. C.*).
6. NASSA TIARULA, Kien.
Bucc. tiarula, Kien. Mon. Bucc. pl. 30. f. 4.
Hab. Isle of Ticao, Philippines, under stones (*H. C.*).
7. NASSA POLYGONATA, Lam.
Bucc. polygonatum, Lam. Voy. de l' Astrol. pl. 32. f. 28, 29.
Hab. Port Jackson, New Holland.

8. *NASSA LUTEOSTOMA*, Kien.
Bucc. luteostoma, Kien. Mon. Bucc. pl. 30. f. 1.
Hab. Coast of Senegal.
9. *NASSA PAUPERATA*, Lam.
Bucc. pauperatum, Lam.; Gualtieri, pl. 44. fig. *m*.
Hab. Signet Bay, North Australia (*Mr. Dring*).
10. *NASSA LIVESCENS*, Phil.
Bucc. livescens, Phil. Zeit. f. Malac. 1848, p. 135.
Hab. Philippines (*H. C.*).
11. *NASSA CANDENS*, Hinds.
Nassa candens, Hinds, Voy. Sulph. Zool. Moll. pl. f.
Hab. Marquesas Islands.
12. *NASSA GEMMULATA*, Lam.
Bucc. gemmulatum, Lam.; Petiver, Amb. pl. 64. f. 7; Kien. Mon.
 Bucc. pl. 22. f. 84.
Hab. Indian Seas.
13. *NASSA ANTILLARUM*, Phil.
Bucc. antillarum, Phil. Zeit. f. Malac. 1848, p. 139.
Hab. West Indies.
14. *NASSA STURMII*, Phil.
Bucc. Sturmii, Phil. Zeit. f. Malac. 1848, p. 135.
Hab. Philippines (*H. C.*).
15. *NASSA NODIFERA*, Phil.
Bucc. nodiferum, Phil. Zeit. f. Malac. 1848, p. 136.
Hab. Island of Ticao, Philippines (*H. C.*).
16. *NASSA MÆSTA*, Hinds.
Nassa mæsta, Hinds, Moll. Zool. Sulph. pl. f.
Hab. Central America.
17. *NASSA LYRILLA*, Beck.
Nassa Lyrilla, Beck.
Hab. East Indies.
18. *NASSA ISABELLEI*, d'Orb.
Bucc. Isabellei, d'Orb. Voy. Amér. Mérid. t. 61. f. 19.
Hab. Central America.
19. *NASSA CREMATA*, Hinds.
Nassa cremata, Hinds, Zool. Voy. Sulph. pl. 9. f. 8, 9.
Hab. Philippines.
20. *NASSA VENUSTA*, Dunker.
Bucc. venustum, Dunker; Phil. Abild. t. 2. f. 1.
Hab. Corrigidor Island, 6 fathoms, coarse sand (*H. C.*). Mus. Cum.

21. *NASSA GRUNERI*, Dunker.
Bucc. Gruneri, Dunker; Phil. Abild. (Buccinum) t. 2. f. 2.
Hab. Island of Ticao. Mus. Cuming.
22. *NASSA CRASSA*, Koch; Phil. Abild. (Buccinum) t. 2. f. 4.
Bucc. crassum, Koch.
Hab. Swan River; Philippines. Mus. Cuming.
23. *NASSA MARGARITIFERA*, Dunker.
Bucc. margaritiferum, Dunker; Phil. Abild. (Buccinum) t. 2. f. 12.
Hab. —?
24. *NASSA CAPERATA*, Philippi.
Bucc. caperatum, Phil. Abild. t. 2. f. 18.
Hab. Philippines.
25. *NASSA JONASI*, Dunker.
Bucc. Jonasi, Dunker; Phil. Abild. (Buccinum) t. 2. f. 10.
Hab. —?
26. *NASSA GEMMA*, Philippi.
Bucc. gemma, Phil. Abild. (Buccinum) t. 1. f. 5.
Hab. Island of Ticao, under stones, low water. Mus. Cuming.
27. *NASSA SEMIGRANOSA*, Dunker.
Bucc. semigranosum, Dunker; Phil. Abild. t. 1. f. 9 (Buccinum).
Hab. —?
28. *NASSA ALBESCENS*, Dunker.
Bucc. albescens, Dunker; Phil. Abild. (Buccinum) t. 2. f. 15
Hab. —?
29. *NASSA SPLENDIDULA*, Dunker.
Bucc. splendidulum, Dunker; Phil. Abild. t. 3. f. 13.
Hab. —?
30. *NASSA CORONULA*, A. Adams. *N. testá ovato-conicá, cinerescente, fasciá supra albídá, infra fusco ornata; spirá brevi; anfractibus ad suturas angulatis, longitudinaliter costatis, costis distantibus rotundis supra nodulosis; labio callo crasso oblecto; columellá rugosá; labro extus marginato, intus lirato.*
Hab. Corrigidor, Bay of Manila, under stones, low water (H. C.).
Mus. Cuming.
31. *NASSA DISPAR*, A. Adams. *N. testá ovato-conicá, ventricosá, lævi, lutescente, rufo cinereoque varie pictá; anfractibus supernè gibbosis; labio callo albo mediocri tecto; columellá transversim corrugatá; labro anticè dentato, intus lirato.*
Hab. Philippines, sandy mud (H. C.). Mus. Cuming.
32. *NASSA STIGMARIA*, A. Adams. *N. testá ovato-ventricosá, rufescente, albo fuscoque variegatá et punctatá; liris granosis*

transversis ornatá, granis planis quadratis; labio lævi, callo albo nitido oblecto, labro margine dentato.

Hab. Island of Siquijor, Philippines, under stones (*H. C.*). Mus. Cuming.

33. *NASSA SQUIJORENSIS*, A. Adams. *N. testá ovatá, subturritá, rufescente, fasciá pallidá cinctá, longitudinaliter costellatá; suturá tuberculis moniliformibus ornatá, costellis permultis confertis, interstitiis transversim striatis; columellá corrugatá, labro anticè valdè dentato.*

Hab. Island of Siquijor, Philippines (*H. C.*). Mus. Cuming.

34. *NASSA RETECOSA*, A. Adams. *N. testá ovatá, acuminatá; spirá acutá, rufescente, suturá canaliculatá, cingulis albis transversim et longitudinaliter cancellatá; labro crenato, anticè dilatato et sinuato; labio callo, subexpanso, anticè recto.*

Hab. Albay, Luzon, coarse sand, 6 fathoms (*H. C.*). Mus. Cum.

35. *NASSA VERRUCOSA*, A. Adams. *N. testá ovato-acuminatá, spirá productá; suturá canaliculatá, rufescente, fusco sparsim punctatá, liris transversis granosis ornatá, granis rotundis verruciformibus in seriebus obliquis longitudinalibus dispositis; labio valdè calloso, tuberculato, albo; labro margine serrato.*

Hab. Eastern Seas.

36. *NASSA VARIEGATA*, A. Adams. *N. testá ovato-ventricosá, albido-griseá, fuscoque variegatá, longitudinaliter striatá, liris transversis granosis subdistantibus ornatá, granis rotundis in seriebus obliquis longitudinalibus dispositis; labio tuberculato callo tenui expanso tecto, labro margine crenato.*

Hab. Dalmaguete, island of Negros, Philippines (*H. C.*). Mus. Cuming.

37. *NASSA CÆLATA*, A. Adams. *N. testá ovatá, acuminatá, subturritá, albídá, fasciá rufá cinctá, suturá tuberculis moniliformibus ornatá, longitudinaliter costellatá; costellis simplicibus, interstitiis concinnè clathratis, labio callo tenui oblecto, labro margine crenulato.*

Hab. Cagayan, Mindanao, sandy mud, 25 fathoms (*H. C.*). Mus. Cuming.

38. *NASSA RANIDA*, A. Adams. *N. testá ovatá, acuminatá, subturritá, rufescente, cingulis transversis granosis sculptá, granis elongatis subquadratis in seriebus obliquis longitudinalibus dispositis; columellá rugosá; labio non calloso, labro valdè dentato.*

Hab. Burias, 6 fathoms, coral sand (*H. C.*). Mus. Cuming.

39. *NASSA SORDIDA*, A. Adams. *N. testá ovatá, albídá, fusco fasciatá; suturá tuberculis moniliformibus ornatá; longitudinaliter costatá, transversim valdè lirátá; labio callo albo crasso tecto; columellá corrugatá; labro margine calloso reflexo.*

Hab. Siquijor, on the reefs.

40. *NASSA CUMINGII*, A. Adams. *N. testá ovatá, ventricosá albidá, rufo nebulosá; suturá canaliculatá, liris transversis granosis sculptá, granis quadratis in seriebus longitudinalibus dispositis; aperturá ringente; labio corrugato, tuberculifero; labro intus valde sulcato.*
Hab. China. Mus. Cuming. Unique specimen.
41. *NASSA CRENELLIFERA*, A. Adams. *N. testá ovatá, acuminatá, subturritá, albidá, fasciá pallidá rufá cinctá; suturá canaliculatá, margine crenellifero, transversim striatá, longitudinaliter tenuissimè costatá; columellá sublævi; labro integro.*
Hab. — ? Mus. Cuming.
42. *NASSA SULCIFERA*, A. Adams. *N. testá ovato-ventricosá; spirá productá, cinerescente, luteo-fusco variegatá, longitudinaliter subplicatá, transversim liratá; anfractu ultimo infra suturam sulco impresso; labii callo crasso mediocri; collumellá anticè biplicatá; labro intus lirato.*
Hab. Algoa Bay.
43. *NASSA CORTICATA*, A. Adams. *N. testá ovato-conicá, spirá productá, epidermide viridi-fusco obtectá; anfractibus supernè nodosis; anfractu ultimo anticè cingulá subnodosá ornato, posticè nodulis coronato; labio vix calloso; columellá anticè biplicatá; labro extus marginato, intus lirato.*
Hab. New Zealand.
44. *NASSA LABECULA*, A. Adams. *N. testá ovato-conicá, obliquá; spirá subacuminatá, pallidè fuscá; anfractu ultimo fasciá fuscá obsoletá cincto; anfractibus planulatis supremis costatis, ultimo supernè costato, infernè plano; labii callo expanso, tenui, nitidá labeculá fuscá ornato; labro posticè incrassato, intus dentato.*
Hab. Burias, 6 fathoms, coral sand (H. C.). Mus. Cuming.
45. *NASSA MULTICOSTATA*, A. Adams. *N. testá ovatá, acuminatá, albo rufoque variegatá, longitudinaliter costatá; costis planis obliquis confertis permultis; labio cum callo parvo tecto; columellá lævi, anticè biplicatá; labro intus sulcato, margine acuto integro.*
Hab. Batangas, island of Luzon, 4 fathoms, coarse sand (H. C.). Mus. Cuming.
46. *NASSA COSTATA*, A. Adams. *N. testá ovato-conicá, spirá acutá, productá, pallidá, anfractu ultimo maculá rufo-fuscá ornata; anfractibus convexiusculis, longitudinaliter costatis, interstitiis planis; anfractu ultimo anticè transversim striato; labio cum callo circumscripto tecto; columellá transversim rugosá; labro anticè dentato, intus lirato.*
Hab. Island of Burias, sandy mud, 6 fathoms (H. C.). Mus. Cuming.
47. *NASSA CALLOSA*, A. Adams. *N. testá parvâ, ovatâ, spirâ acutâ, albâ fusco-maculatâ, longitudinaliter costatâ, transversim sulcatâ; labio cum callo magno albo nitido expanso tecto; columellâ*

anticè triplicatá; labro margine incrassato calloso, intus dentato-lirato.

Hab. Bais, island of Negros, 7 fathoms, sandy mud (*H. C.*). Mus. Cuming.

48. *NASSA GEMMULIFERA*, A. Adams. *N. testá ovato-conicá, spirá acutá, productá, cinerescente rufo variegatá, longitudinaliter plicatá, transversim cingulatá, cingulis ad plicas noduliferis; labio cum callo expanso albo tecto; columellá transversim corrugatá; labro intus lirato.*

Hab. Burias, 6 fathoms, coarse sand (*H. C.*). Mus. Cuming.

49. *NASSA FISSILABRIS*, A. Adams. *N. testá ovato-conicá, obliquá, cinerescente, pallidè fasciatá, longitudinaliter costatá, anfractu ultimo anticè transversim sulcato; labio cum callo expanso obtecto; columellá anticè tuberculis duobus transversis; labro anticè sinuato, posticè valde inciso.*

Hab. Cagayan, Prov. Misamis, island of Mindanao, 25 fathoms, sandy mud (*H. C.*). Mus. Cuming.

50. *NASSA NODICOSTATA*, A. Adams. *N. testá ovato-conicá, albá, fasciá pallidá fulvá cinctá; anfractibus planulatis, longitudinaliter costatis, transversim evanide liratis; costis nodis distantibus instructis, supernè nodosis; labio cum callo circumscripto tecto; columellá rugosá, anticè acutá, productá; labro extus limbato, anticè valde sinuato.*

Hab. Island of Corrigidor, 6 fathoms, coarse sand (*H. C.*). Mus. Cuming.

51. *NASSA DELICATA*, A. Adams. *N. testá ovato-conicá, subpelucidá, albídá, fasciá angustá, fuscá, maculisque fuscis ornatá, longitudinaliter costatá, costis planulatis supernè nodosis, interstitiis lineis elevatis transversis clathratis; labio calloso; columellá anticè plicis quatuor; labro margine acuto, intus longitudinaliter sulcato, transversim lirato.*

Hab. Sorsogon, Albay, Luzon, coarse sand, 6 fathoms (*H. C.*). Mus. Cuming.

52. *NASSA CANCELLATA*, A. Adams. *N. testá ovato-conicá, spirá acutá, fulvescenti, fusco variegatá, longitudinaliter costatá, costis planis rotundatis, interstitiis concinnè cancellatis; labio callo magno expanso crasso obtecto; columellá lævi, simplici; labro margine calloso incrassato, anticè subsinuato.*

Hab. Masbate, under stones (*H. C.*). Mus. Cuming.

53. *NASSA CLATHRATULA*, A. Adams. *N. testá ovatá, spirá acutá, anfractibus convexis, nived, longitudinaliter costatá; costis nodulosis, interstitiis valde clathratis; labio cum callo mediocri obtecto; columellá anticè biplicatá; labro extus varicoso, intus lirato.*

Hab. Island of Siquijor, deep water, sandy mud (*H. C.*). Mus. Cuming.

54. *NASSA CRENOLIRATA*, A. Adams. *N. testá parvá, ovatá, pallidá, lineis angustis transversis fuscis ornatá, longitudinaliter costatá, costis nodulosis, supernè nodosis; aperturá angustatá; labio cum callo oblecto; columellá plicis quatuor transversis instructo; labro extus marginato, intus valde dentato-lirato.*

Hab. —? Mus. Cuming.

55. *NASSA SINUSIGERA*, A. Adams. *N. testá ovato-conicá, obliquá; spirá acuminatá, pallidá, fusco variegatá, longitudinaliter costatá, costis supernè nodulosis, transversim sulcatá; labio cum callo mediocri tecto; columellá transversim corrugato-plicatá; labro anticè valde sinuato.*

Hab. Catbalonga, island of Samaar, 8 fathoms, coarse sand (*H. C.*). Mus. Cuming.

56. *NASSA GENICULATA*, A. Adams. *N. testá parvá, ovato-conicá, fulvá, albo variegatá; fasciá latá, transversá, cinereo-fuscá cinctá, transversim striatá, longitudinaliter costatá; costis geniculatis; labio subcalloso, anticè bituberculato; labro extus incrassato, intus dentato-lirato.*

Hab. Island of Ticao, 4 fathoms, sand (*H. C.*). Mus. Cuming.

57. *NASSA SPECIOSA*, A. Adams. *N. testá ovato-conicá, acuminatá, lutescente, albo variegatá, transversim lirátá, liris confertis granulosis, longitudinaliter plicatá; plicis distantibus obliquis, supernè nodosis, nodulis albis; aperturá albá, anticè rufo-fusco maculatá; columellá lævi, callo subexpanso tectá; labro intus evanidè lirato, margine anticè maculá fuscá.*

Hab. —? Mus. Cuming.

58. *NASSA OBTUSATA*, A. Adams. *N. testá ovato-conicá, spirá obtusá, pallidá, rufo-fusco variegatá, transversim lirátá, longitudinaliter costatá, costis distantibus supernè nodosis; labio callo crasso albo oblecto; labro intus incrassato, sulcato et transversim lirato.*

Hab. Island of Ticao, coral sand, 7 fathoms (*H. C.*). Mus. Cuming.

59. *NASSA ABYSSICOLA*, A. Adams. *N. testá parvá, ovato-conicá, sordidè albá; costellis confertis longitudinalibus permultis, interstitiis concinnè clathratis ornatá; labio arcuato, mediocriter calloso; labro intus dentato-lirato, extus incrassato.*

Hab. Loay, island of Bohol, clayey ground, 60 fathoms (*H. C.*). Mus. Cuming.

60. *NASSA PUSIO*, A. Adams. *N. testá parvá, ovato-conicá, fulvá, fusco variegatá et maculosá; costellis planis, longitudinalibus confertis ornatá; anfractu ultimo anticè sulcato, labio cum callo nitido subexpanso tecto; labro intus sulcato, margine subreflexo.*

Hab. Sorsogon, Albay, isle of Luzon, 6 fathoms, coarse sand (*H. C.*). Mus. Cuming.

B. Shell spinulose ; inner lip with the callus moderate, defined.

61. *NASSA SUBSPINOSA*, Lam.

Bucc. subspinosum, Lam. ; Kien. Mon. Bucc. pl. 26. f. 103.

Hab. Gindulman, island of Bohol, Philippines, low water (*H. C.*).

62. *NASSA MURICATA*, Quoy et Gaim.

Bucc. muricatum, Quoy et Gaim. Voy. de l'Astr. pl. 32. f. 32, 33.

Hab. Puerto Galero, island of Mindoro (*H. C.*).

63. *NASSA VIBEX*, Say.

Bucc. vibex, Say.

Hab. West Indies, Philippines.

64. *NASSA AMBIGUA*, Montag.

Bucc. ambiguum, Mont. ; Kien. Bucc. Mon. pl. 21. f. 81.

Hab. British Islands.

65. *NASSA HORRIDA*, Dunker.

Bucc. horridum, Dunker ; Phil. Abild. t. 2. f. 8.—*Bucc. scabrum*, Dunker, olim.

Hab. Eastern Seas.

66. *NASSA HISPIDA*, A. Adams. *N. testâ ovato-acutâ, albido-cinereâ, rufo-fusco punctatâ, nodispinosâ, longitudinaliter plicatâ ; plicis cum seriebus novem tuberculorum spiniformium armatis.*

Hab. Loon, island of Bohol, on the reefs, low water (*H. C.*).
Mus. Cuming.

Plicated, the rows of tubercles rather close together, the upper row distinct from the rest.

67. *NASSA ECHINATA*, A. Adams. *N. testâ elongato-ovata, albidâ, nodispinosâ, longitudinaliter plicatâ, plicis quinque, seriebus tuberculorum spiniformium armatis.*

Hab. Galeo, island of Mindoro, 3 fathoms, sandy mud (*H. C.*).

Plicated, with the upper row of tubercles larger and distinct from the others.

Subgenus *EIONE*, Risso.

Shell with the back gibbous ; inner lip with the callus greatly developed, surrounding the circumference of the shell.

1. *EIONE GIBBOSULA*, Linn.

Bucc. gibbosulum, Linn. ; List. Conch. t. 973. f. 28 ; Kien. Mon. Bucc. pl. 28. f. 116.

Hab. — ?

2. *EIONE CLATHRATA*, Kien.

Bucc. clathratum, Kien. Mon. Bucc. pl. 27. f. 108.

Hab. — ?

3. *EIONE GRANIFERA*, Kien.

Bucc. graniferum, Kien. Mon. Bucc. pl. 27. f. 111.

Hab. — ?

4. EIONE THERSITES, Brug.

Bucc. Thersites, Brug.; List. Conch. t. 971. f. 26; Kien. Mon. Bucc. pl. 28. f. 113.

Hab. —?

5. NASSA CIRCUMCINCTA, A. Adams. *N. testá ovatá, cineréá, nitidá, dorso gibbosá; spirá brevi, acutá, suturá fuscá; labio cum callo crasso albo nitido tecto, marginibus usque ad spiram decurrentibus fusco marginatis; columellá lævi, anticè uniplicatá; labro calloso marginato, intus lævi.*

Hab. Red Sea. Mus. Cuming.

6. NASSA DORSUOSA, A. Adams. *N. testá ovatá, depressá; spirá acutá, dorso in medio notatá, olivacéá, lævi, longitudinaliter subplicatá; labio cum callo magno crasso lutescente tecto, marginibus incrassatis usque ad spiram decurrentibus; columellá lævi, labro margine calloso incrassato, intus sublirato.*

Hab. Masbate, on the mud-banks at low water (H. C.). Mus. Cuming.

7. NASSA ORBICULATA, A. Adams. *N. testá semiorbiculari, convexo-depressá, lævi, olivacéá, apud dorsum gibbá; spirá brevi, labio cum callo expanso crasso tecto, marginibus usque ad spiram decurrentibus, columellá lævi, labro extus calloso incrassato.*

Hab. —? Mus. Cuming.

8. NASSA CALLOSPIRA, A. Adams. *N. testá ovatá, pallidá, fasciá transversá cineréá ornatá; spirá acutá, transversim liratá, plicis nodosis longitudinalibus instructá; labio cum callo magno albo extenso tecto, marginibus usque ad spiram decurrentibus; columellá anticè biplicatá; labro crasso calloso, marginato, intus valde lirato.*

Hab. Island of Burias, 6 fathoms, coral sand (H. C.). Mus. Cuming.

9. NASSA NANA, A. Adams. *N. testá ovatá, spirá acutá; anfractibus rotundatis, rufescente, fasciá pallidá luteá ornatá, longitudinaliter plicatá, transversim semistriatá; labio cum callo expanso tenui tecto; columellá rugosulá; labro marginato, intus sulcato.*

Hab. Dumaguete, island of Negros, coarse black sand, 11 fathoms (H. C.). Mus. Cuming.

10. NASSA BELLULA, A. Adams. *N. testá ovatá, spirá acuminatá, acutá; anfractibus angulatis, pallidulá, fasciá luteolá ornatá, longitudinaliter plicatá, transversim liratá; interstitiis concinnè longitudinaliter striatis, labio callo magno tecto; columellá rugosá; labri margine rugoso calloso, intus crenulato.*

Hab. Catbalonga, island of Samaar, under stones, low water. Mus. Cuming.

11. NASSA BIMACULOSA, A. Adams. *N. testá suborbiculari, apud dorsum valde convexá, nodosá; spirá acutá, longitudinaliter sub-*

plicatâ, anticè transversim sulcatâ, olivaceâ, fuscâ pallidâ transversâ cinctâ, labio cum callo crasso albo magno suborbiculari cincto; columellâ lævi, anticè uniplicatâ; labro valde incrassato marginato, anticè sinuato, intus lirato, extus maculis duabus rufis ornato.

Hab. Island of Siquijor, on mud-banks (*H. C.*). Mus. Cuming.

12. *NASSA LEPTOSPIRA*, A. Adams. *N. testâ ovatâ, apud dorsum convexâ, nodosâ; spirâ productâ, acutâ, lutescente longitudinaliter plicatâ, anticè transversim striatâ, labio cum callo luteo crasso tecto; columellâ corrugatâ, labro intus lirato.*

Hab. Ilo Ilo, island of Panay, on mud-banks, low water (*H. C.*). Mus. Cuming.

Subgenus ALECTRION, Montfort.

Shell bucciniform; spire elevated; inner lip with the callus moderately developed; outer lip dentate, or serrate at the margin.

A. Shell papillose; inner lip spread.

1. *NASSA PAPILLOSA*, Linn.

Bucc. papillosum, Linn.; List. Conch. t. 969. f. 23.

Hab. Island of Capul, on the reefs (*H. C.*).

2. *NASSA NASSOIDES*, Reeve.

Bucc. nassoides, Reeve, Conch. Icon. Mon. Buccinum, pl. f.

Hab. —?

3. *NASSA NODIFERA*, Powis.

Nassa nodifera, Powis.

Hab. Philippines.

4. *NASSA MONILIS*, Kien.

Bucc. monile, Kien. Mon. Bucc. pl. 11. f. 40.

Hab. New Guinéa.

5. *NASSA CRENULATA*, Brug.

Bucc. crenulatum, Brug.; Petiver, Gaz. t. 64. f. 8; Kien. Mon. pl. 23. f. 90, pl. 14. f. 49.

Hab. Indian Seas.

6. *NASSA HIRTA*, Kiener.

Bucc. hirtum, Kien. Mon. Bucc. pl. 19. f. 72.

Hab. New Holland.

7. *NASSA JACKSONIANA*, Kiener.

Bucc. Jacksonianum, Kien. Mon. Bucc. pl. 19. f. 73.

Hab. Port Jackson, New Holland.

8. *NASSA VARIABILIS*, Phil.

Bucc. variabile, Phil. En. Moll. Sicil. vol. i. p. 221.—*B. subdiaphanum*, Bivon.—*B. stolatum*, Gmel.—*B. zonale*, Brug.—*B. costu-*

latum, Brocc.—*B. angulatum*, Brocc.—*B. Cuvieri*, Payr.—*B. Ferussacii*, Payr.—*B. corrugatum*, Brocc.

Hab. Mediterranean.

9. *NASSA COMPLANATA*, Powis.

Nassa complanata, Powis.

Hab. Atacamas, West Columbia.

10. *NASSA SEMINODOSA*, A. Adams. *N. testâ ovato-conicâ, acuminatâ, lævi, nitidâ, fulvo-fuscescente; suturâ tuberculis moniliformibus ornatâ; longitudinaliter plicatâ, plicis supernè subnodulosis; anfractu ultimo anticè transversim sulcato, labio lævi, cum callo tenui expanso oblecto, labro anticè dentato intus lirato.*

Hab. Island of Annaa, South Seas, on the reefs (*H. C.*). Mus. Cuming.

B. Shell smooth, polished.

1. *NASSA GLANS*, Linn.

Bucc. glans, Linn.; List. Conch. t. 981. f. 40; Kien. Mon. pl. 15. f. 52.

Hab. Island of Ticao, Philippines, on the reefs (*H. C.*).

2. *NASSA SUTURALIS*, Lam.

Bucc. suturale, Lam. Chem. pl. 125. f. 1199, 1200; Kien. Mon. pl. 24. f. 96.

Hab. Swan River.

3. *NASSA ELEGANS*, Kien.

Bucc. elegans, Kien. Mon. Bucc. pl. 24. f. 97.

Hab. Indian Ocean.

4. *NASSA RUFULA*, Kien.

Bucc. rufulum, Kien. Mon. Bucc. pl. 24. f. 95.

Hab. Swan River.

5. *NASSA LÆTA*, Philippi.

Bucc. lætum, Phil. Zeit. f. Mal. 1848, p. 141.

Hab. —?

6. *NASSA BRONNII*, Philippi.

Bucc. Bronnii, Phil. Zeit. f. Malac. 1848, p. 137.

Hab. Corrigidor, 6 fathoms, coarse sand (*H. C.*).

7. *NASSA GAUDIOSA*, Hinds.

Nassa gaudiosa, Hinds, Moll. Voy. Sulph. pl. . f. .

Hab. Straits of Malacca.

8. *NASSA PICTA*, Dunker.

Buccinum pictum, Dunker, Phil. Abild. (Buccinum), t. 2. f. 6.

Hab. Philippines. Mus. Cuming.

9. *NASSA REEVIANA*, Dunker.

Buccinum Reevidum, Dunker, Phil. Abild. (Buccinum), t. 2. f. 3.

Nassa filosa, Gray MSS.

Hab. Philippines. Mus. Cuming.

10. *NASSA MUCRONATA*, A. Adams. *N. testá ovato-conicá, sublævi, nitidá, longitudinaliter plicatá, lutescenti fusco variegatá; anfractibus rotundatis, ultimo gibboso; spirá acutá, mucronatá; labio lævi; labro intus lirato.*

Hab. Dumaguete, isle of Negros, 11 fathoms, black sand (*H. C.*).
Mus. Cuming.

11. *NASSA OBLIQUATA*, A. Adams. *N. testá ovato-conicá, obliquá, lævissimá, nitidá; lineis fuscis transversis, fuscá pallidá ornatá, cinerescente, albo variegatá; labio lævi, simplici; labro intus lirato.*

Hab. Cagayan, province of Misamis, island of Mindanao, sandy mud, 25 fathoms (*H. C.*). Mus. Cuming.

12. *NASSA PUNCTATA*, A. Adams. *N. testá ovato-conicá; spirá acuminatá, lævi, cinereá, albido punctatá, lineolis fuscis transversis ornatá; labio callo tenui expanso tecto; columellá rugosá; labro extus incrassato, intus lirato.*

Hab. Puerto Galero, province of Albay, isle of Luzon, coarse sand, 6 fathoms (*H. C.*). Mus. Cuming.

13. *NASSA LENTIGINOSA*, A. Adams. *N. testá ovato-conicá; spirá acuminatá, lævi, nitidá, lutescente aut cinerescente, lineis undulatis confertis pictá, lineolis fuscis transversis ornatá; labio cum callo tenui tecto; columellá anticè rugosá; labro margine incrassato, intus valde lirato.*

Hab. Masbate, 7 fathoms, sandy mud (*H. C.*). Mus. Cuming.

14. *NASSA LUCTUOSA*, A. Adams. *N. testá ovatá, elongatá, acuminatá, subnitidá, transversim sulcatá, nigricante nonnunquam fasciis albo-articulatis ornatá; anfractibus planulatis; labio callo nitido obtecto; columellá anticè biplicatá et tuberculis tribus instructá; labro extus incrassato, intus valde lirato.*

Hab. Cagayan, province of Misamis, isle of Mindanao, under stones on the reefs (*H. C.*). Mus. Cuming.

15. *NASSA STOLIDA*, A. Adams. *N. testá ovato-conicá; spirá acuminatá, solidá, cinereá, fusco maculatá, longitudinaliter plicatá; aperturá anticè effusá; labio reflexo, lævi, valde calloso; labro intus lævi, fusco alboque fasciato.*

Hab. —? Mus. Cuming.

16. *NASSA DISTORTA*, A. Adams. *N. testá ovato-conicá, nitidá; spirá acuminatá, distortá, pallidá, cinereo variegatá, lineis fuscis transversis ornatá; aperturá anticè valde effusá; labio lævi, anticè biplicato; labro anticè producto, intus lirato.*

Hab. —? Mus. Cuming.

17. *NASSA MARMOREA*, A. Adams. *N. testá ovato-conicá, lævi, nitidá; spirá subacuminatá, albidá, fusco marmoratá, fasciis duabus pallidis ornatá; anfractibus planiusculis; labio corrugato; labro extus varicoso, intus lirato.*
Hab. Cagayan, Mindanao, 25 fathoms, sandy mud (H. C.). Mus. Cuming.

18. *NASSA SPIRATA*, A. Adams. *N. testá ovato-conicá, acuminatá, lævi, nitidá, albidá, luteo-fusco nebulosá; anfractibus convexiusculis, prope suturas angulatis; labio lævi; labro intus lirato, extus incrassato, anticè margine simplici non dentato.*
Hab. Swan River. Mus. Cuming.

C. Shell smooth or ribbed. Inner lip defined.

1. *NASSA OLIVACEA*, Brug.
Bucc. olivaceum, Brug. Favanne Conch. pl. 33. f. 2; Kien. Mon. Bucc. pl. 15. f. 53.
Hab. Philippines.

2. *NASSA CANALICULATA*, Lamarck.
Bucc. canaliculatum, Lam. Chem. Conch. pl. 125. f. 1194-95; Kien. Mon. Bucc. pl. 23. f. 89.
Hab. Philippines.

3. *NASSA UNICOLOR*, Kiener.
Bucc. unicolor, Kien. Mon. Bucc. pl. 19. f. 69.
Hab. Australia.

4. *NASSA ORNATA*, Kiener.
Bucc. ornatum, Kiener, Mon. Bucc. pl. 124. f. 168.
Hab. Tranquebar, Ceylon, Indian Seas.

5. *NASSA EXILIS*, Powis.
Nassa exilis, Powis.
Hab. — ?

6. *NASSA RUFOCINCTA*, A. Adams. *N. testá ovato-conicá, sub-turritá, albidá, fasciá transversá rufá ornatá, longitudinaliter plicatá, transversim striatá; anfractibus subrotundatis; labio callo albo circumscripto tecto; labro extus marginato, intus sulcato.*
Hab. Honduras (Dyson). Mus. Cuming.

7. *NASSA MICANS*, A. Adams. *N. testá ovato-fusiforimi, albidá, lævi, nitidissimá; anfractibus convexiusculis supremis costellatis; labio callo tenui tecto; labro anticè crenulato, intus lirato.*
Hab. Cagayan, Misamis, Mindanao, 25 fathoms, sandy mud (H. C.). Mus. Cuming.

8. *NASSA PALLIDULA*, A. Adams. *N. testá ovatá, subacuminatá, pallidá, lævi, anfractu ultimo anticè transversim sulcato; suturá*

canaliculatá; labio cum callo circumscripto tecto; columellá simplici; labro extus marginato, intus lirato.

Hab. Malacca, coarse sand, 10 fathoms (*H. C.*).

9. *NASSA COMPTA*, A. Adams. *N. testá ovato-conicá, subturritá, lævi, nitidá, rufescente pallidè variegatá; anfractibus convexiusculis, supremis costellatis; labio cum callo circumscripto tecto; columellá anticè corrugatá; labro margine incrassato, albo, sub-reflexo.*

Hab. Cape St. Antonio, Africa.

10. *NASSA SUCCINCTA*, A. Adams. *N. testá ovatá, subturritá, lævi, cinerescente; fasciá pallidá, cinctá, anfractibus planulatis, supremis costellatis; suturá subcanaliculatá; labio cum callo incrassato circumscripto tecto; columellá dentato-rugosá; labro posticè inflexo, anticè valde sinuato et dentato, extus limbato, intus lirato.*

Hab. Masbate. Mus. Cuming.

11. *NASSA ZONALIS*, A. Adams. *N. testá ovato-acuminatá, lævi, nitidá, longitudinaliter striatá; anfractu ultimo transversim sulcato; lutescente, fasciis tribus transversis rufo-fuscis cinctá; labio cum callo tenui expanso tecto; columellá lævi; labro extus incrassato, intus lirato.*

Hab. Isle of Ticao, on the reefs (*H. C.*). Mus. Cuming.

12. *NASSA SERTULA*, A. Adams. *N. testá ovatá, acuminatá, lævi, nitidá, fulvá, albo nebulosá; anfractibus convexiusculis, supremis costellatis; labio cum callo circumscripto tecto; columellá transversim corrugatá; labro extus incrassato, intus lirato.*

Hab. Masbate, on the reefs (*H. C.*). Mus. Cuming.

13. *NASSA SEMPLICATA*, A. Adams. *N. testá ovato-conicá, cinerea, fasciá pallidá transversá ornatá, nitidá, sublævi, longitudinaliter plicatá, plicis in anfractu ultimo sæpè evanidis, interstitiis transversim striatis; labio callo circumscripto; columellá transversim corrugato-plicatá; labro extus albo marginato, intus lirato.*

Hab. Chusan (*Benson*). Mus. Cuming.

14. *NASSA CINNAMOMEA*, A. Adams. *N. testá ovato-acuminatá, cinnamomèd, lævi, nitidá, lævigatá, sempellucidá, anfractibus convexis; labio simplici; labro extus marginato, intus sublirato.*

Hab. Dumaguete, isle of Negros, under stones, low water (*H. C.*). Mus. Cuming.

15. *NASSA BADIA*, A. Adams. *N. testá ovato-acuminatá, lævi, nitidá, castaneá; anfractibus planis, supremis longitudinaliter plicatis, anfractu ultimo transversim striato; labio simplici vix calloso; labro extus marginato, intus plicato.*

Hab. Sinaat, province of North Ilocos, island of Luzon, on the reefs (*H. C.*). Mus. Cuming.

16. *NASSA MITRALIS*, A. Adams. *N. testá ovato-conicá, acuminatá, fuscá, sublevi, longitudinaliter semiplicatá; anfractibus planiusculis, ultimo anticè transversim sulcato; labio subcorrugato; labro extus marginato, intus valde lirato.*
Hab. Isimimalan, isle of Negros, on the mud-banks (*H. C.*). Mus. Cuming.
17. *NASSA SEROTINA*, A. Adams. *N. testá turritá, acuminatá, serotiná, anfractu ultimo anticè cingulis duabus elevatis articulatis ornato; transversim substriatá, longitudinaliter plicatá, plicis rotundis subdistantibus; aperturá albá; columellá lævi, subcallosá; labro extus incrassato, intus lirato.*
Hab. Australia.
18. *NASSA PULCHELLA*, A. Adams. *N. testá turritá, acuminatá, nitidá, albidá, luteo variegatá, fasciá fuscá transversá ornatá; longitudinaliter plicatá, plicis subdistantibus rotundatis tuberculis albis transversis instructis; labio calloso nitido; labro extus marginato, intus lirato.*
Hab. Cape of Good Hope. Mus. Cuming.
19. *NASSA TERETIUSCULA*, A. Adams. *N. testá subturritá, acuminatá, lutescente aut plumbeá, fasciá angustá fuscá transversá ornatá; lævi, nitidá, longitudinaliter valde plicatá; labio cum callo mediocri tecto; columellá anticè tortuosá, plicatá; labro extus limbato, intus lirato.*
Hab. Eastern Seas. Mus. Cuming.
20. *NASSA VARICIFERA*, A. Adams. *N. testá turritá; spirá acuminatá, pallidá, fasciis fuscis duabus transversis ornatá; anfractibus subplanulatis, varicibus albis, spiraliter instructis; suturá canaliculatá; columellá anticè plicis tribus transversis; labro extus marginato, posticè angulato, intus valde lirato.*
Hab. Eastern Seas.
21. *NASSA SCALARIS*, A. Adams. *N. testá ovato-conicá, subturritá, pallidá, rufo-fusco fasciatá; longitudinaliter costatá, transversim liratá; anfractibus rotundatis, tuberculis moniliformibus apud suturam; suturá subcanaliculatá; labio cum callo subexpanso tenui tecto; columellá corrugatá, anticè buplicatá; labro anticè crenulato, intus lirato.*
Hab. Island of Corrigidor, 7 fathoms, coarse sand (*H. C.*). Mus. Cuming.
22. *NASSA PLANOCOSTATA*, A. Adams. *N. testá ovato-conicá, cinerescente, fasciá rufo-fuscá transversim cinctá; costellis planis confertis longitudinalibus, interstitiis concinnè clathratis ornatá; labio cum callo circumscripto tecto; columellá transversim plicatodentatá; labio anticè denticulato, intus valde lirato.*
Hab. Payta, Peru, under stones, low water (*H. C.*). Mus. Cuming.

D. Shell scalariform, cancellated.

1. *NASSA SCALARIFORMIS*, Valenc.
Buccinum scalariforme, Val. ; Kiener, Monograph Bucc. pl. 21.
 f. 80.
Hab. New Guinea.
2. *NASSA ROISSYI*, Deshayes.
Bucc. Roissyi, Belang. Voy. aux Ind. Or. pl. 3. f. 3, 4 ; Kiener,
 Mon. Bucc. pl. 21. f. 82.
Hab. Indian Ocean.
3. *NASSA REEVEI*, A. Adams.
Bucc. elegans, Reeve.
Hab. — ?
4. *NASSA NUCLEOLUS*, Philippi.
Bucc. nucleolus, Philippi.
Hab. — ?
5. *NASSA NODATA*, Hinds.
Nassa nodata, Hinds, Moll. Voy. Sulphur, pl. . . f. . .
Hab. Malacca.
6. *NASSA PERPINGUIS*, Hinds.
Nassa perpinguis, Hinds, Moll. Voy. Sulphur, pl. . . f. . .
Hab. Bay of Magdalena, California. Mus. Cuming.
7. *NASSA MIGA*, Adanson.
Bucc. miga, Adanson, Voy. au Senegal, pl. 8. f. 10 ; Kiener, Mon.
 Bucc. pl. 22. f. 87.
Hab. Senegal. Mus. Cuming.
8. *NASSA MYRISTICATA*, Hinds.
Nassa myristicata, Hinds, Moll. Voy. Sulphur, pl. 9. f. 10, 11.
Hab. Cape of Good Hope.
9. *NASSA PALLIDA*, Powis.
Nassa pallida, Powis.
Hab. Panama, sandy mud, 6 fathoms. Mus. Cuming.
10. *NASSA NODULIFERA*, Philippi.
Buccinum noduliferum, Phil. Abild. (Bucc.) t. 1. f. 3.
11. *NASSA ANGULIFERA*, A. Adams. *N. testâ ovato-conicâ, sub-*
turrîtâ, pallidè fulvâ ; fasciâ fuscâ cinctâ, transversim sulcatâ,
longitudinaliter plicatâ, plicis distantibus, posticè apud suturas
angulatis ; labio cum callo albo nitido tecto ; labro margine sub-
reflexo, intus crenulato.
Hab. Galapagos Islands, 10 fathoms (*H. C.*). Mus. Cuming.

12. *NASSA NODICINCTA*, A. Adams. *N. testá ovato-turritá; spirá acuminatá, pallidá, lineis rufis transversis cinctá, transversim sulcatá; plicis distantibus longitudinalibus, apud suturas noduliferis ornatá; labio cum callo albo lævi nitido tecto; labro extus varicoso, intus lirato.*

Hab. Galapagos Islands, 7 fathoms (*H. C.*). Mus. Cuming.

13. *NASSA SANCTÆ HELENÆ*, A. Adams. *N. testá ovato-conicá, subturritá; spirá productá; anfractibus rotundatis, albidd rufovariegatá, longitudinaliter costatá, costis distantibus subnodosis; anfractu ultimo anticè transversim sulcato; labio lævi, calloso; columellá anticè uniplicatá; labro intus lirato.*

Hab. St. Helena, sandy mud, 20 fathoms (*H. C.*). Mus. Cuming.

14. *NASSA CINCTELLA*, A. Adams. *N. testá ovato-conicá, albidd, lineis fuscis transversis cinctá, longitudinaliter valde plicatá, plicis distantibus, liris transversis albis, interstitiis fuscis ornatá; labio corrugato, vix calloso; labro extus varicoso, intus valde lirato.*

Hab. St. Helena, 20 fathoms, sandy mud.

15. *NASSA CORRUGATA*, A. Adams. *N. testá elongatá, subturritá, fulvescente, rufo nebulosá; transversim liratá, longitudinaliter plicatá; plicis nodulosis; anfractibus convexiusculis; labio simplici, non calloso; labro intus lirato, margine crenulato; columellá tortuosá, anticè productá.*

Hab. Eastern Seas. Mus. Cuming.

16. *NASSA TURRITA*, A. Adams. *N. testá elongatá, subturritá, pallidè fulvá; anfractibus rotundatis; suturá subcanaliculatá, longitudinaliter plicatá, transversim liratá, liris subnodulosis; labio cum callo tenui tecto; columellá anticè abruptè truncatá; labro intus valde lirato.*

Hab. —? Mus. Cuming.

17. *NASSA JAPONICA*, A. Adams. *N. testá turritá, pallidè fulvá, fasciá rufo-fuscá cinctá; longitudinaliter plicatá, cingulis transversis ad plicas nodulosis ornatá, interstitiis longitudinaliter striatis; labio subrugoso; columellá anticè productá; labro intus lirato.*

Hab. Japan (*Dr. Siebold*). Mus. Cuming.

18. *NASSA DENTICULATA*, A. Adams. *N. testá ovato-conicá, fulvescente rufo maculosá; anfractibus convexiusculis, longitudinaliter plicatá, transversim liratá, liris planis, interstitiis tenuissimè longitudinaliter striatis; labio cum callo albo nitido tecto, anticè producto, libero; labro intus lirato, margine denticulato.*

Hab. —? Mus. Cuming.

19. *NASSA NIVEA*, A. Adams. *N. testá ovato-conicá, candidá, nitidá; anfractibus planulatis plicis longitudinalibus distantibus, transversim sulcatá; labio cum callo mediocri tecto, margine acuto*

producto; labro margine subcrenulato, intus lirato; columellâ anticè triplicatâ.

Hab. Batangas, island of Luzon, 21 fathoms, coarse sand (*H. C.*).
Mus. Cuming.

20. *NASSA PlicateLLA*, A. Adams. *N. testâ ovato-conicâ, fulvâ; labro albido; anfractibus subrotundatis longitudinaliter plicatis transversim liris, liris ad plicas nodulosis; labio cum callo mediocri; columellâ anticè uniplicatâ; labro margine acuto, intus lirato.*

Hab. Wallwich Bay, Africa. Mus. Cuming.

Subgenus TRITONELLA, Adams; *Tritonia*, Fleming.

Shell turrited, cancellated; aperture rounded, not produced into an anterior canal; outer lip not dentate, with a marginal varix.

1. *NASSA DECUSSATA*, Kiener.

Bucc. decussatum, Kien. Mon. Bucc. pl. 30. f. 3.

Hab. Brisbane Water, East Australia (*Mr. R. Strange*).

2. *NASSA TRITONIFORMIS*, Kien.

Bucc. tritoniformis, Kien. Mon. Bucc. pl. 30. f. 2.

Hab. Senegal.

3. *NASSA ASCANIAS*, Brug.

Bucc. ascanias, Brug. Dict. no. 42.—*B. asperulum*, Brocc.—*B. macula*, Montag.—*N. rudis*, Gualt.—*B. Lacepedii*, Payr.—*Tritonia varicosa*, Fleming.—*B. coccinella*, Lam.—*B. incrassatum*, Müll.—*B. minutum*, Penn.

Hab. Mediterranean.

4. *NASSA FASCIATA*, Lamk.

Bucc. fasciatum, Lam.; Gualtieri, pl. 43. fig. *m*; Kien. Mon. Bucc. pl. 22. f. 86.

Hab. New Holland.

5. *NASSA DENTIFERA*, Powis.

Nassa dentifera, Powis; Kien. Mon. Bucc. pl. f. .

Hab. South America.

6. *NASSA FESTIVA*, Powis.

Nassa festiva, Powis.

Hab. —?

7. *NASSA ANOMALA*, Reeve.

Triton anomalus, Hinds, Moll. Voy. Sulph. pl. 4. f. 13, 14.

Hab. Island of Quibo, Veragua.

8. *NASSA SCABRIUSCULA*, Powis.

Nassa scabriuscula, Powis.

Hab. —?

9. *NASSA MULTIGRANA*, Dunker.*Bucc. multigranum*, Dunker; Phil. Abild. t. 2. f. 13.*Hab.* —?10. *NASSA SIGNATA*, Dunker.*Bucc. signatum*, Dunker; Phil. Abild. t. 2. f. 17.*Hab.* —?11. *NASSA OBLIQUEPLICATA*, Dunker.*Bucc. obliqueplicatum*, Dunker; Phil. Abild. (Buccinum) t.1. f. 13.*Hab.* —?12. *NASSA FUSCATA*, A. Adams. *N. testá ovatá, spirá acuminatá, anfractibus convexiusculis, fuscá, longitudinaliter plicatá, transversim liratá, plicis ad liras tuberculatis, interstitiis transversim striatis; columellá rugosá; labro posticè sinuato, intus dentato-lirato.**Hab.* —? Mus. Cuming.Subgenus *TRITIA*, Risso.

Shell turritid; inner lip spreading; outer lip not dentate, without a marginal varix.

1. *NASSA RETICULATA*, Linn.*Bucc. reticulatum*, Linn.; List. Conch. t. 966. f. 21 a; Kien. Mon. Bucc. pl. 23. f. 91 & pl. 19. f. 71.*Hab.* Mediterranean.2. *NASSA GAYII*, Kiener.*Bucc. Gayii*, Kien. Mon. Bucc. pl. 21. f. 79.*Hab.* St. Helena, sandy mud.3. *NASSA SULCATA*, Kien.*Bucc. sulcatum*, Kien. Mon. Bucc. pl. f. .*Hab.* —?4. *NASSA CONCINNA*, Powis.*Nassa concinna*, Powis.*Hab.* Philippines.5. *NASSA TRIVITTATA*, Say.*Bucc. trivittatum*, Say.*Hab.* New York.6. *NASSA DEALBATA*, A. Adams. *N. testá ovato-conicá, acuminatá, subturritá, albidá, fasciá pallidá luteá cinctá; anfractibus planulatis longitudinaliter plicatis, plicis nodulosis, transversim liratis; columellá tuberculato-dentatá; labro extus incrassato, intus dentato-lirato.**Hab.* Dumaguete, isle of Negros, 11 fathoms, black coarse sand (H. C.). Mus. Cuming.

7. *NASSA COSTELLIFERA*, A. Adams. *N. testá ovato-conicá, acuminatá, albidá, fusco-variegatá, fasciá fuscá in ultimo anfractu longitudinaliter costulatá, transversim liratá; costellis nodulosis; anfractibus planiusculis; labio transversim corrugato-plicato; labro intus lirato.*

Hab. Curimas. Mus. Cuming.

8. *NASSA TRIFASCIATA*, A. Adams. *N. testá ovato-acuminatá; spirá acutá, productá, pallidè cærulescente aut albidá, fasciis tribus transversis rufis ornatá, longitudinaliter subplicatá, transversim sulcatá; columellá lævi, callo cum nitido expanso tecto; labro margine acuto, intus lirato.*

Hab. Vigo Bay (M^r Andrew). Mus. Cuming.

Subgenus DESMOULEA, Gray.

Shell subglobose, covered with a downy epidermis; spire short; apex papillary.

1. *NASSA ABBREVIATA*, Wood.

Bucc. abbreviatum, Wood, Chem. Conch. pl. 153. f. 1463; Kien. Mon. Buccinum, pl. 26. f. 105.

Hab. Indian Ocean.

2. *NASSA RETUSA*, Lam.

Bucc. retusum, Lam., Chem. Conch. t. 153. f. 1465; Kien. pl. 24. f. 94.

Hab. —?

3. *DESMOULEA PINGUIS*, A. Adams. *D. testá ovatá, abbreviatá, ventricosá; spirá brevi, apice mucronato; anfractibus gibbosis, lutescente albo variegatá; epidermide fusco villosa tectá, transversim striatá; labio calloso; columellá lævi, anticè tuberculo unico, uniplicatá; labro intus lirato.*

Hab. Senegal. Mus. Cuming.

4. *DESMOULEA PYRAMIDALIS*, A. Adams. *D. testá ovato-conicá; spirá acuminatá, apice obtuso, violascente, longitudinaliter evanidè plicatá, transversim sulcatá; labio fusco subcalloso simplici; labro extus marginato, intus lirato.*

Hab. —? Mus. Cuming.

5. *DESMOULEA CRASSA*, A. Adams. *D. testá ovato-conicá, abbreviatá, solidá, lævi; spirá obtusá, apice violaceo; anfractibus supernè gibbosis, rufescente albo variegatá, transversim sulcatá; labio cum callo crasso tecto; columellá transversim liratá, anticè uniplicatá, tuberculis duobus instructá; labro intus lirato.*

Hab. Japan. Mus. Cuming.

6. *DESMOULEA JAPONICA*, A. Adams. *D. testá ovatá, lævi, nitidá, anticè transversim sulcatá, fulvescente, maculis lineisque transversis fuscis ornatá, albo variegatá; labio anticè calloso; columellá anticè tuberculis tribus instructá; labro extus incrasato, intus lirato.*

Hab. Japan (Siebold). Mus. Cuming.

Subgenus ACICULINA, A. Adams.

Shell turritid; inner lip with a circumscribed callus free anteriorly; outer lip with the margin thickened and flexuose.

1. ACICULINA COSTATA, A. Adams. *A. testá turritá, acuminatá, serotiná, nitidá, longitudinaliter costatá, transversim sulcatá; labio calloso, anticè fusco, producto; labri margine subrecto, intus lirato.*

Hab. —? Mus. Cuming.

2. ACICULINA STRIATA, A. Adams. *A. testá ovato-turritá, fuscá, fasciá pallidá transversá ornatá, anfractu penultimo gibboso ad suturas longitudinaliter plicatá, transversim valde striatá; labio calloso; labri margine vix incrassato, intus lirato.*

Hab. San Nicholas, isle of Zebu, 5 fathoms, sandy mud (H. C.). Mus. Cuming.

3. ACICULINA LABIATA, A. Adams. *A. testá turritá, acuminatá, nitidá, cinerescente, fasciá pallidá transversá ornatá, longitudinaliter costatá, costis ad suturam nodulosis, transversim sulcatá; labio fusco, calloso; labro margine incrassato, fusco, valde flexuoso, posticè sinuato, in medio producto.*

Hab. Malacca, coarse sand, 10 fathoms (H. C.). Mus. Cuming.

4. ACICULINA GLABRATA, A. Adams. *A. testá turritá, acuminatá, lævi, nitidá, longitudinaliter substriatá, albidá, fasciis cinerescens maculisque fuscis ornatá; labio calloso, anticè uniplicato; labri margine incrassato, flexuoso, in medio producto.*

Hab. Philippines. Mus. Cuming.

5. ACICULINA MACULATA, A. Adams. *A. testá turritá, lævi, nitidá, albá, maculis luteo-fuscis longitudinalibus ornatá, transversim sulcatá, sulcis distantibus; labio calloso, anticè producto; columellá uniplicatá; labro extus marginato, intus lirato.*

Hab. Banang, Sargassinan, isle of Luzon, muddy sand, low water (H. C.). Mus. Cuming.

6. ACICULINA VITATA, A. Adams. *A. testá turritá, albidá, nitidá, fasciá transversá fuscá interruptá ornatá, transversim sulcatá, longitudinaliter costatá; labio calloso; columellá bituberculatá, et anticè valde uniplicatá; labro extus varicoso, intus dentato-lirato.*

Hab. Ticao, coral sand, 6 fathoms (H. C.). Mus. Cuming.

2. ON A NEW SPECIES OF THE GENUS MONTIFRINGILLA.

By JOHN GOULD, F.R.S.

For a knowledge of this species we are indebted to Lord Gifford, by whom several examples were killed in Thibet. It is intimately allied to *Montifringilla Gebleri*, but differs in being of a larger size,

in the darker colouring of the head and face, and in the deeper tint of the back and rump; the latter part is moreover ornamented with a patch of blood-red, which has suggested the specific name of *hæmatopygia* as an appropriate appellation; it also differs from *M. Gebleri* in being destitute of the orange-red mark on the shoulders.

MONTIFRINGILLA HÆMATOPYGIA.

Face and forehead brownish black, gradually blending into the light greyish brown of the upper surface; rump stained with blood-red; upper tail-coverts brown, tipped with dull white; tail dark brown, each feather margined externally with white; wing-coverts hoary; wings dark brown, the first four primaries narrowly edged with white, the next five primaries with a broad streak of white along the basal portion of their external webs, terminating in a line with the extremities of the secondaries, which are externally fringed with hoary; spurious wing dark brown, margined at the base with whitish; under surface very light brown, gradually becoming paler, until on the under tail-coverts the hue is buffy white; bill and feet bluish black.

Total length, $6\frac{1}{2}$ inches; bill, $\frac{1}{2}$; wing, $4\frac{1}{4}$; tail, $2\frac{1}{2}$; tarsi, 1.

3. ON SOME NEW SPECIES OF TROCHILIDÆ.

BY JOHN GOULD, F.R.S.

Mr. Gould exhibited some remarkably fine examples of the *Trochilus Jardini* of Bourcier, and then characterized the following species:—

TROCHILUS (— ?) AMABILIS.

Crown of the head shining metallic green; chin black; breast beautiful shining blue, with a line of lustrous green commencing at the angle of the bill, passing down the sides of the neck and surrounding the base; upper surface bronzy green; tail-coverts and central tail-feathers greenish bronze; lateral tail-feathers brownish black; wings purplish brown; under surface like the upper, but less brilliant; centre of abdomen and under tail-coverts grey, the centre of the latter bronzy green.

Total length, $3\frac{5}{8}$ inches; bill, $\frac{3}{4}$; wing, $2\frac{1}{8}$; tail, $1\frac{1}{4}$.

Hab. New Grenada.

Remark.—About the size of *T. albirostris*.

PHAËTHORNIS GRISEOGULARIS.

Head, upper surface and wing-coverts bronzy brown; upper tail-coverts rufous; ear-coverts blackish brown; wings purple brown; base of the tail dark brown, the apical third of the two central feathers dark grey, tipped with white, the apical third of the next feather on each side grey on the inner web, buff on the outer web, and tipped with white; the three lateral feathers on each side tipped with buff; under surface sandy buff, with a wash of dull grey down the chin and a crescent of black across the breast; upper mandible black; basal

two-thirds of the under mandible yellow, apical third blackish brown ; feet yellow.

Total length, $3\frac{3}{4}$ inches ; bill, 1 ; wing, $1\frac{1}{2}$; tail, $1\frac{5}{8}$.

Hab. Columbia.

Remark.—Nearly allied to *P. Eremita* and *P. pygmæa*, but differing from them in being of a larger size, in the total absence of any crescentic black mark on the chest, in having the throat clouded with dark grey instead of buff, and the two central tail-feathers tipped with grey and their shafts black.

4. NOTE ON THE SUBORBITAL GLAND OF THE NYLGHAU.

BY H. N. TURNER, ESQ., JUN.

Among the cranial characters of the genus *Portax* I have adduced the want of a suborbital depression, and the existence of a smooth line running along the surface of the bone ; and as I had observed appearances of a suborbital sinus in the living animal, which I could not detect in the dried specimens, I felt much interested in the examination of the parts in one that recently died in the Gardens, and which Mr. Mitchell kindly forwarded to me for dissection.

Externally there is a slight pit immediately in front of the orbit, and anteriorly to it a small longitudinal fold of the skin, in the middle of which is a little round pore, through which exudes a yellowish secretion, furnished by a gland placed just underneath. The gland itself is slightly larger than a hazel-nut, and is laid upon the surface of the bone without any fossa to receive it, but is firmly attached to the smooth line before observed. The *tendo oculi*, and a few fibres of the *orbicularis palpebrarum* are attached to it.

The small pit immediately in front of the orbit is merely the space below the *tendo oculi*, between the gland and the rim of the orbit. In the Nylghau, the existence of a "lacrymal sinus" has usually been acknowledged ; but it affords a good example of the incertitude with which we can ever deny that it exists in a species of which fresh specimens have not been examined with a view to this character, and in which no traces of the organ are discernible, either in the dry skin, or in the existence of a fossa in the skull.

Pimlico, March 1851.

5. LETTER ON THE DEAL-FISH, FROM DR. DUGUID TO DR. BARKER. COMMUNICATED BY MR. YARRELL.

"Kirkwall, 5 March 1851.

"In April 1829, I received from Mr. Strang, Sanday, a specimen of a fish which had been found on the shores of that island, with a request that I should give him some information about it. He mentioned that he had met with many specimens during a series of years,—that it was well known to the natives of the island, by whom it was called the *Deal*-fish, and that they often found it thrown ashore, and even occasionally used it as food. I easily ascertained, from the works to which I had access, that it was a fish unknown to

the British *Fauna*, but could not determine what it really was. The specimen being a good deal mutilated about the head and abdomen, and in a state of partial decomposition, I did not attempt to preserve it, but drew up as correct a description of it as its condition admitted of, which I sent to Dr. Fleming, along with all the information about it which I could obtain from Mr. Strang, and also a somewhat rough drawing. Dr. Fleming wrote, of date 8th May, 1829, at once determining the fish to be the *Gymnogaster arcticus* of Brunnich, or *Vaagmaer*, as described by Cuvier in his 'Règne Animal,' ii. 246, a native of the seas of Iceland;—at the same time mentioning some slight discrepancies, which more perfect specimens, since procured, have completely removed. With my consent, he drew up a notice of it, which was inserted in the 4th volume of 'Loudon's Magazine of Nat. Hist.,' along with a plate from the drawing sent. This article I have not met with, having merely seen Yarrell's quotations from it. Since 1829 I have met with seven or eight specimens, some of which were mutilated by birds, and some quite entire, and from the latter I have ascertained the existence of ventral fins, which are exceedingly minute and rudimental, and easily overlooked, more especially if the specimen be not quite fresh and perfect. I am now therefore enabled to say with certainty that there can be no doubt of the identity of the fish occurring in these islands with the *Vaagmaer*, as described and figured in Yarrell's Supplement to the 1st edition of his 'British Fishes,' from information supplied by Professor Reinhardt of Copenhagen, and there named *Trachypterus vogmarus*. In the first figure, given at page 14, the ventral fins are much too long and conspicuous, but they are quite correctly represented in the vignette at page 18. The late Dr. John Reid, of St. Andrews, published an article in the *Annals of Nat. Hist.*, June 1849, describing a specimen of the *Trachypterus Bogmarus* thrown ashore on the coast of Fifeshire, in which he says, 'No unquestionably genuine specimen of this rare fish has, as far as I am aware, been hitherto found in the British seas; for the description and figure of the fishes thrown ashore in Orkney, supposed to be specimens of the Deal-fish or *Vaagmaer*, given by Dr. Fleming on the authority of Dr. Duguid, differ in so many important points from the *Vaagmaer* as must excite doubts as to their identity.' Now Dr. Reid has not stated what the important points of difference are between my description and that of Prof. Reinhardt. It is true there is one important point—important as determining the proper classification of the fish—the existence or non-existence of ventral fins. These I did not detect; but it is not surprising, considering their minuteness, and the mutilated condition of the only specimen I had then seen. We have at this moment three dried ones in the Orkney Museum, not so perfect as could be desired, but sufficiently so to determine this point, as well as the identity of the fish with the Icelandic *Vaagmaer*. It is strange also that Dr. Reid never mentions the existence of ventral fins in his specimen at all, and that also, while he denies that the fishes thrown ashore in Orkney are the *Deal-fish* or *Vaagmaer*, he should forget that the popular name *Deal-fish* is strictly of Orcadian origin."

6. ON AN UNDESCRIBED SPECIES OF MEGAPODIUS.
 BY L. LLEWELLYN DILLWYN, ESQ., F.G.S., F.Z.S. ETC.

(Aves, Pl. XXXIX.)

My friend Mr. James Motley, who is now conducting the operations of the Eastern Archipelago Company in Labuan, has lately sent me home a box of zoological specimens which he has collected in that island, and among the birds was the pair of the Megapodius, one of which I now produce; it is, I believe, identical with the species in the British Museum sent home by Mr. Cuming from the Philippine Islands. In the catalogue accompanying the specimens, and in several letters which I have received from him, he has described some of the habits of these curious birds, and deeming that original observations, however scanty, on the habits of almost any animal from that remote region might not be uninteresting to the Society, I have abstracted from his communications to me the following notice respecting them:—

These birds are said to be principally confined to small islands, and to such more especially as have sandy beaches; they are not uncommon in Labuan, but are, however, very rarely to be seen, as they are very shy, and frequent dense flat parts of the jungle, where the ratans grow and where the luxuriance of the vegetation renders concealment easy.

The Malays snare them by forming long thick fences in unfrequented parts of the jungle; in these they leave openings at intervals in which they place traps; the birds, running through the cover in search of food, meeting the obstruction caused by the fence, run along it till they come to one of the openings, through which they push their way and are trapped.

Their food principally consists of seeds and insects.

In walking they lift their feet very high from the ground, and set up their backs something like guinea fowls; they frequently make a loud noise, like the very loud screech of a chicken when caught.

They are very pugnacious, and fight with great fury by jumping upon one another's backs and scratching with their long strong claws.

The eggs are of a fine dark cream-colour, and of very large size, three of them weighing nearly as much as a full-grown bird. According to the general account given to Mr. Motley by the Malays, each bird lays about eight or ten at each time of breeding; the place they select for depositing them is always situated near the beach, and close within the edge of the jungle, and here they bury them in the sandy soil to the depth of about eighteen inches; over the place where they are thus buried the bird collects a large heap of shells and rubbish, so that a person who has seen their nest has no difficulty in finding it again; the eggs thus deposited are left to be hatched by the heat of the sun, and this the natives assert requires between three and four months to complete. Mr. Motley himself found upon breaking an egg which had been thus situated for nearly six weeks, that it contained merely the embryo of a chick, about as much advanced as that of a hen's egg at four days. Some other eggs which



M x N Hammar: Imp^r

MEGAPODIUS CUMINGII, *Dillwyn.*

were brought him, but which he had no means of ascertaining how long they had been laid, he buried in a box of sand about 3 feet deep and exposed to the weather. At the end of about three weeks a young bird came up, not downy, but covered with little shafts or pens ready to form feathers. One of the Malays employed by Mr. Motley saw it emerge, and said that it just shook off the sand and ran away so fast that it was with difficulty caught. On the next day, when Mr. Motley first saw it, it appeared to him to be about half-grown. From the first it fed itself without hesitation, scratching and turning up the earth like an old bird. Two more afterwards emerged in the same state. According to Mr. Motley, the sexes are alike, except that the naked skin about the head is redder in the male than in the female.

In his investigations respecting the nidification of these birds, Mr. Motley was much assisted by Mr. Low, who is resident in the island.

As the Philippine specimens brought home by Mr. Cuming have not yet been characterized, I propose to name this species

MEGAPODIUS CUMINGII.

Sp. Char. Olivaceous brown above; blackish slate colour with a slight olivaceous tinge below; the feathers on the throat and nape are thinly dispersed, so as to leave that part nearly bare; on the hind head the feathers are somewhat lengthened, forming a kind of crest; bill black at the base, yellowish towards the tip; legs, feet and claws black; the bare skin about the head is redder in the male than in the female.

	in.	lin.
Length from the tip of the bill to the end of the tail, about	14	0
——— of bill from gape	1	1
——— of bill from front	0	10
——— of wings	8	6
——— of tail, not quite	3	0
——— of tarsus	2	1
——— of middle toe	1	11
——— of hallux	1	5

The front toes are nearly equal, the middle toe being rather the longest, and the inner one shortest.

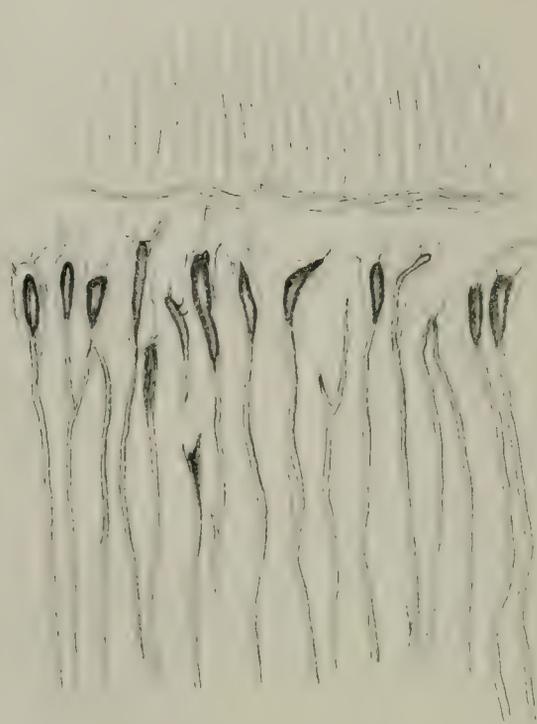
To the foregoing account some additional details of considerable interest may be subjoined. These details, although dated Labuan, July 1850, were not received until after Mr. Dillwyn's communication:—

EXTRACT FROM A LETTER FROM MR. HUGH LOW, DATED LABUAN, 4TH OF JULY, 1850.

“I have been using great exertions to procure for the Earl of Derby a very remarkable Gallinaceous bird, the existence of which I ascertained only three months back; having no books I am unable to refer to its genus, but it is nearer a Guinea fowl than anything else. I heard from the natives that such a bird existed, and that its eggs

were occasionally to be procured. I offered a dollar each for all they would bring me; and first one was brought, afterwards five, but I could not succeed in hatching either of these under fowls. The first, after having been set upon for a month, was picked to pieces by its foster-parent, and the chick had apparently but just begun to form. The five eggs were addled. Having learned that the birds abounded on a small island, about a hundred miles along the coast, I hired a boat and five men, and sent them, about fourteen days since, with snares, &c., to endeavour to catch some of the old birds and to seek for the nests, this being the laying season, and to gather plants of *Phalcinopsis*, which grows on the same island (Pulo Tigu and Pulo Guya). They returned yesterday, bringing with them 102 eggs and only two birds, both of which had their legs injured by the snares. The sight of the eggs and birds have perfectly astonished me, the body of the former being no larger than that of a bantam, while the egg is as long, though not so broad, as that of a Chinese goose. The men say that on the different islands they visited they found a good many nests, which are placed at a little distance from the sea-shore, in the jungle of small islands, the spot being invariably marked by a large collection of sticks and branches. The eggs are found about three feet deep in the sand, and the men assure me that the bird has no communication with them except by rasping away the sand. The man I employed has lived all his life on small islands, hunting for tortoise-shell, and well knows the habits of the bird; he says the eggs are hatched entirely by the sun's heat, or rather the heat in the sand. One of the birds he brought died this morning, and I shall put its skin together with some of the eggs in a box, that you may send them to Earl Derby. I do not like to take the liberty of writing to his lordship myself, but if I can succeed in getting a lot of young birds, I shall not fail to send them to him by the very first opportunity. I have placed some of the eggs under fowls, and some in sand out of doors; some also in sand in a warm house, where I can regulate the temperature; and I have hopes of rearing, or at least of hatching, some of the chicks, if the eggs are still good: but I think that by sending the men again in three months' time with snares I might catch a lot of the young ones hatched naturally, and be able to rear them. The bird is said not to be found on the mainland: the eggs are reported excellent eating.

"Aug. 12. Of the eggs I wrote to you so much about last mail, one only has hatched: the chick came up full-fledged from under three feet of sand, and immediately ran about with the most surprising activity. It eats rice, ants' eggs, &c. with the greatest avidity, and as it is now three weeks old, I have every hope of preserving it. More of the eggs appear to have chickens in them, and I hope will hatch. The bird, as I have ascertained, is an undescribed species of *Megapodius*."



C H Ford Lith

Eric West Ing

Molar tooth of the American Tapir:
section through the crown

April 8, 1851.

Professor Thomas Bell, Sec. R.S., in the Chair.

The following papers were read:—

1. ON THE STRUCTURE OF THE TEETH OF THE AMERICAN AND INDIAN TAPIRS. BY JOHN TOMES, F.R.S.

(Mammalia, Pl. XXIX.)

It is now upwards of fifteen years since the attention of physiologists and comparative anatomists was drawn to the structure of the tissues which enter into the composition of the dental organs. In 1678 Leeuwenhoek communicated a paper to the Royal Society, on the Structure of the Teeth and other Bones, in which he described the dentinal tubes. His researches, however, were not confirmed by subsequent observers, and indeed were almost entirely overlooked until the period to which I have referred. Purkinjé, in 1835, confirmed the correctness of Leeuwenhoek's observations, at the time unconscious that the tubular structure of the dentine had been previously recognised. He also described the structure of the cementum.

Prof. Retzius was in the same year engaged in examining the structure of the dental tissues, and published the results in 1836. In 1837 Prof. Retzius published a work on the subject, the substance of which was in 1839 printed in our own language by Mr. Nasmyth.

In the latter part of 1837 I was engaged in examining the dental tissues, at that time unconscious that the subject had occupied the attention of the German or Swedish anatomists. In June 1838 the results of my examination were read before the Royal Society. In September of the same year, Prof. Owen read a paper on the Structure of the Teeth, before the British Association. In 1840 the publication of Prof. Owen's 'Odontography' was commenced, and completed in 1845. In this work will be found descriptions of the structure of the teeth of animals belonging to each division of Vertebrata.

In these various essays the authors agreed generally in the main facts of dental structure, and in each successive publication new facts were related. Judging from the amount which had been published, it might have been concluded that the subject was well nigh exhausted. Such however was not the case: many blunders, in the hurry which is incident to a new subject, had been committed and required correction, while many important facts had failed to be recognised. Prof. Owen pointed out that in the Order Edentata the teeth are destitute of enamel, while it is present in the other mammalian orders, with the exception of a few isolated cases.

Having neglected the subject of dental structure for some years, in consequence of more urgent pursuits, in 1847 I again entered on the inquiry, which to me possessed great attractions, not only on account of various modifications which are to be found in the arrange-

ment of the components of the tissues in different animals, but also in minor modifications in the teeth of the same animal.

My inquiries were first directed to human teeth; the results, both as regards structure and development, were published in my 'Lectures on Dental Physiology and Surgery,' 1838. The teeth of marsupial animals next occupied my attention. In this order it was found that the dentinal tubes are continued into and form a considerable portion of the enamel, excepting only in the Wombat. The results of these investigations will be found in the Second Part of the 'Philosophical Transactions' for 1849.

By the help of this Society I have been enabled to make an extensive series of investigations in the teeth of the Order Rodentia, with results which have far exceeded my expectations. Each family, as arranged by Mr. Waterhouse, has its peculiar structure of enamel, an account of which, with illustrations, is published in Part 2 of the 'Philosophical Transactions,' 1850.

Having, by way of preface, given a very cursory and imperfect indication of what has been done in dental structure, or rather of what has been recognised as peculiar to certain groups of mammalian animals, in order to show that the subject is not without importance, I shall proceed to lay before the Society certain peculiarities which I find exist in the teeth of the two Tapirs, and which are, to the best of my belief, confined to those creatures. It should however be understood, that similar conditions may be found in the teeth of other animals, but at present I believe they have not been seen. I have myself examined numerous examples from each of the mammalian orders, and from the great majority of the genera, and have failed to find a condition of dentine similar to that of the Tapir's tooth. Under these circumstances, it may, I think, be fairly assumed to be characteristic of those animals, and hence has a degree of importance which it otherwise would not possess. With this impression, I have thought it desirable that the facts should be recorded.

The dentine of the molar teeth, when exposed by making a longitudinal section through the centre of the crown and fangs, and reducing it sufficiently thin to be viewed by transmitted light, is seen to be composed of tubes which pursue a uniform course. Those which are destined to reach the highest parts of cusps or ridges pursue a straight course, subject to slight undulations, while others, which pass to the sides of the cusps, are turned in the latter part of their course away from the central line of the cusps or ridges; others again, which pass to the lowest points of the depressions on the masticating surface of the tooth, follow a tolerably straight course. The dentine which forms the sides of the tooth is occupied by tubes which in the outer third of their course describe a bold curve outwards, the convexity of which is directed towards the crown of the tooth, but on approaching the enamel turns a little upwards. In the fangs of the teeth, the dentinal tubes, in addition to describing a double curve, are subject to strongly-marked secondary undulations. The dentinal tubes, as they leave the pulp-cavity for the crown of the tooth, have

a diameter of about the 7500th of an inch, which is gradually diminished to the 15,000th. When within a short distance of the enamel, they suddenly dilate into a more or less oval cell, from which a few very minute tubes pass off towards the line of junction of the enamel and dentine. The bulbous terminations of the tubes are more constant and larger about the prominences of the cusps, and diminish in size and frequency on the sides of the tooth, where the enamel becomes thin, at the termination of which they altogether cease. The bulbs have an average diameter of about 3450, and are in length about the 1000th of an inch. In addition to the terminal dilatations, the coronal tubes are subject to occasional dilatations in their course. It is by no means uncommon to find instances where a peripheral layer of cells lies underneath the enamel, into which the dentinal tubes pass, and through which an anastomosis is effected; but in no other teeth save those of the Tapir do the coronal tubes terminate in well-marked and uniform cell-like dilatations having distinct parietes. I have pointed out several examples, in my paper on the teeth of Rodentia, in which these peripheral cells are found, but they are irregular in shape, have not distinct parietes, and are entered by the ultimate branches of the dentinal tubes; whereas in the Tapir the cells are formed by the expansion of the tubes, which previous to the expansion give off few if any branches. Some however subdivide once or twice in their course; in which case the smaller of the divisions do not commonly dilate into terminal cells, but form anastomoses with other tubes similarly circumstanced.

In the fangs the dentinal tubes leave the pulp-cavity with a diameter of the 7500th of an inch, and speedily dilate to the 6000th. During the greater part of their course they give off very minute, hair-like, short branches; but when near their termination they increase in size, turn a little upwards towards the crown of the tooth, and send out numerous branches, the majority of which pass from the lower sides of the tubes. The ultimate branches pass into the granular tissue, which, interspersed with irregular cells, forms the outer part of the dentine of the fangs. Near the neck of the tooth the granular dentine exists as a thin layer, which becomes thickened and more opaque from the greater number of cells in the lower part of the fang.

Partially obliterated vascular canals enter from the surface of the fang, and proceed in straight lines through the dentine to the pulp-cavity. In the Indian species similar vascular canals proceed from the pulp-cavity towards the ridges of the masticating surface, and appear to terminate in loops. They have a diameter of about the 1000th of an inch. In a molar tooth of the American Tapir, for which I am indebted to the Society, vascular canals do not exist in the crown. This difference will, if found to be constant, serve to distinguish the molars of the two species. Near the extremities of the fangs the dentine graduates insensibly into the granular condition, and this again into the cementum, without offering any generic peculiarities.

The cementum is in no part of the fang very abundant, as compared with the amount which is found in the teeth of many other animals. Near the neck of the tooth it is arranged in minute rods or columns, similar to that which I have described as existing in the teeth of many Rodents. In this situation it is destitute of lacunæ; but in tracing it downwards towards the root of the tooth, where it is increased in quantity, lacunæ possessing the usual characters are found. In addition to the lacunæ the cementum is traversed in parts by ill-defined canaliculi, which proceed from the surface of the fang in tolerably straight lines.

In tracing a longitudinal section of a molar tooth downwards from the crown to the end of the fang, it will be seen that at places the dentine has been removed and the space filled up with cementum. Here and in other parts the cementum is abundantly supplied with vascular canals.

The enamel does not differ in any material points from that of the teeth of Ruminants. The fibres have a minutely granular appearance and have a diameter of about the 5000th of an inch. On the sides of the tooth they pursue an outward course, and make one bold curve, the convexity of which is directed towards the masticating surface, while on the crown of the tooth their course is waved and irregular; an arrangement which no doubt adds much to the strength of the tissue in that part where the greatest strength is required.

In the incisor teeth similar peculiarities may be observed, but they are much less strongly marked than in the molar teeth. Vascular canals are, too, of less frequent occurrence in the incisor teeth.

I hope on a future occasion to be enabled to lay before the Society a statement of the peculiarities which pertain to and are characteristic of other groups of animals.

2. DESCRIPTION OF A NEW GENUS OF GORGONIADÆ.

By J. E. GRAY, ESQ., F.R.S., P.B.S. ETC.

(Radiata, Pl. III.)

The Coral here described was sent to me by Sir John Richardson.

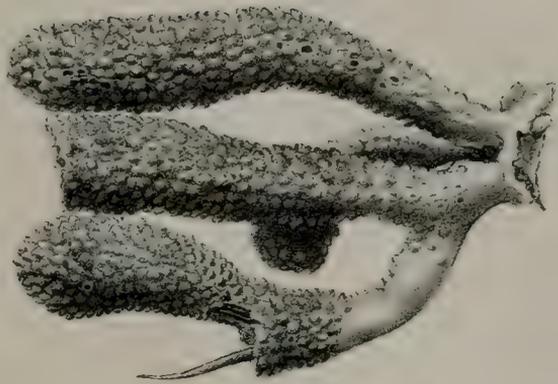
It is nearly allied to *Gorgonia*, but the branches are erect, clavate, and very rarely subdivided. The bark is very thick, formed of numerous close diverging cells radiating round a very thin, small, black compressed axis, each of the cells ending in a conical prominent tubercle closely covered externally with red calcareous spicula. The expanded base and the base of the stem and the interspaces between the cells are covered with smaller red calcareous granules.

This genus may be named and characterized thus:—

GONIGORIA.

Coral clavate, slightly branched; the root dilated; axis horns black, compressed, thin; bark thick, calcareous, covered with conical tubercles, each covered externally with numerous close red spicula.

1



2



1. *Comigorgia clavata*. Gray. 2. *Nidalia occidentalis*. Gray.

GONIGORIA CLAVATA. (Radiata, Pl. III. fig. 1.)

Coral clavate, rounded at the end, simple, or rarely forked.

Hab. —?

The coral is almost two inches high, and the thickest part is about one-third of an inch in diameter.

I take this opportunity of presenting a figure of another Coral, which, although described by me several years since, has not yet been engraved.

NIDALIA OCCIDENTALIS, Gray, Proc. Zool. Soc. 1835, p. 60. (Radiata, Pl. III. fig. 2.)

Hab. West Indies, Montserrat.

3. DESCRIPTION OF A NEW GENUS OF BIVALVE SHELLS, AND A SEA EGG, FROM NEW ZEALAND.

By J. E. GRAY, ESQ., F.R.S., P.B.S. ETC.

Mr. Richard Taylor, of Wanganui, New Zealand, has kindly sent to the British Museum a series of marine and freshwater shells, collected by him in 1847. Among many other interesting specimens is one which combines the form and internal appearance of a *Solen* with the hinge-characters of a *Maetra*, and evidently forming the type of a genus not hitherto observed. It may be thus named and characterized:—

VANGANELLA.

Shell equivalve, oblong, transverse, thin, compressed, rounded behind, rather produced and tapering in front, covered with a thin, hard, polished periostraca; the inner surface of each valve straight, with two diverging, thickened ribs just within the stars of the adductor muscles, which are large and far apart, and the upper front edge of the valve double; siphonal inflection short, broad; hinge-tooth of left valve folded together, moderate; of right valve small, separate; lateral teeth short, small, close to hinge-tooth of left valve double; the ligament small, just within the cardinal edge, not separated by any shell plate from the cartilage, and partly hidden from view by the upper edge of the hinge-margin; the cartilage very large, inclosed in a large, elongate, shallow, triangular pit on the upper part of the hinder internal rib.

The position of the cartilage-pit and the internal ribs at once separate this genus from *Spisula*.

VANGANELLA TAYLORII.

Shell rather compressed, white, smooth, covered with a pale brownish-white polish; periostraca darker coloured on the upper part of the front edge; the upper hinder slope irregularly wrinkled with periostraca.

Hab. New Zealand.

ARACHNOIDES ANTIPODARUM.

Body rather convex, with five broad sunken grooves, rather more than one-third the width of the sections of the body, and forming inflexed spaces on the edge of the circumference; ambulacra nearly straight, and regularly diverging, without any isolated pores between the end of the ambulacra and the circumference of the body.

Hab. New Zealand. Coast of Wanganui.

This species is easily known from the *A. placenta* of the North Sea (Agassiz, Monog. t. 21. fig. 25-42) by its being rather larger and considerably more convex, and in the grooves edged above by the ambulacra being broader compared to the sections of the shell. It differs also in having the ambulacra nearly straight and without any isolated pores between them, as in the edge of the shell figured by Agassiz, t. 21. f. 39.

The specimen was unfortunately broken in the carriage from New Zealand, and the part of the shell containing the ovarian pores was destroyed.

The upper and lower part of the shell is supported by compressed perpendicular columns, about one-third the width of the disk; near the oral disk there are placed five pairs of short processes for the support of the jaws; the jaws are triangular; they agree, as does the disposition of the spire, tubercle, and all the other external characters, with the northern species as figured by Agassiz from the specimen in the Museum collection.

4. REMARKS ON THE GENUS HAPALOTIS.

BY JOHN GOULD, F.R.S.

With the view of correcting some errors respecting the members of the genus *Hapalotis*, and of describing two new species, Mr. Gould exhibited an extensive series of specimens, including several species of this curious form of Rodent, from his own collection: viz.—

1. HAPALOTIS ALBIPES, Licht.

2. HAPALOTIS APICALIS, Gould, n. s.

This new species is about the size of, and similar in colour to, *H. albipes*, but it has larger ears, and its feet, which are perfectly white, as in that animal, are much more delicately formed, and the tail is nearly destitute of the long brushy hairs towards the tip; the eye is also much smaller.

Face and sides of the neck blue-grey; upper part of the head, space between the ears, the ears and upper parts of the body, pale brown interspersed with numerous fine black hairs; under surface white; flanks mingled grey and buffy white; fore feet white, with an oblique mark of dark brown separating the white from the greyish brown of the upper surface; hinder tarsi and feet white; basal three-fourths of the tail brown, apical fourth thinly clothed with white hairs.

	inches.
Length from the tip of the nose to the base of the tail	8
——— of the tail	$8\frac{1}{2}$
——— of the tarsus and toes	$1\frac{3}{4}$
——— from the tip of the nose to the base of the ears	$1\frac{3}{4}$
——— of the ears	$1\frac{1}{8}$

3. HAPALOTIS HIRSUTUS, Gould.

Mus hirsutus, Gould in Proc. Zool. Soc. part x. 1842, p. 12.

Since this singular species was brought from Port Essington by Mr. Gilbert, at the close of 1841, a second and more perfect individual, also from the northern coast of Australia, has been deposited in the British Museum.

This is the largest species of the genus.

4. HAPALOTIS CONDITOR, Gould in Sturt's Narr. of Exp. to Central Australia, vol. i. pl. in p. 120; vol. ii. App. p. 7.

5. HAPALOTIS LONGICAUDATUS, Gould, Proc. Zool. Soc. part xii. p. 104.

6. HAPALOTIS GOULDII, Gray, App. to Grey's Trav. in Australia, vol. ii. pp. 404, 413; List of Mamm. in Brit. Mus. Coll. p. 116.

H. Richardsonii, Gray, on specimens in Brit. Mus.

H. macrotis, Gray, on specimens in Brit. Mus.

H. Mitchellii, Gould, Mamm. of Australia, part i. pl. 15.

Hab. Western and Southern Australia.

7. HAPALOTIS MURINUS, Gould, Proc. Zool. Soc. part xiii. 1845, p. 78.

Hab. South Australia and the Liverpool Plains in New South Wales.

8. HAPALOTIS CERVINUS, Gould, n. s.

The whole of the head, upper surface and sides of the body, of the most delicate fawn colour, interspersed with numerous fine black hairs on the head and back; whiskers greyish black; nose and under surface white; tail pale brown, lighter beneath; ears very large, somewhat pointed, and nearly destitute of hairs.

	inches.
Length from the tip of the nose to the base of the tail	$4\frac{1}{2}$
——— of the tail	$5\frac{1}{2}$
——— of the tarsus and toes	$1\frac{1}{4}$
——— from the tip of the nose to the base of the ears	$1\frac{1}{8}$
——— of the ears	$1\frac{1}{8}$

This beautiful species was brought from the interior of South Australia by Captain Sturt. It is one of the smallest members of the genus, and is remarkable for the delicacy of its colouring and for the large size of its tail in comparison with that of its body.

5. NOTE ON A NEW SPECIES OF FRANCOLIN.
 BY DR. NICHOLSON, H.E.I.C. MEDICAL SERVICE.

(Aves, Pl. XL.)

While in Arabia in February 1836, I proceeded into the interior as far as the town of Moosa, about twenty miles to the eastward of Mocha in Yemen, accompanied by Captain Bull of the Indian Navy, in quest of plants and other objects of natural history, as well as with the view of seeing the country. Having delivered our introduction to the chief of that district, he assigned us quarters in his palace and appointed an Arab huntsman to attend us—as well to show us game, as to be a guardian to our persons. We started at daylight, mounted on asses, and pursued our course to the eastward for about six miles, when at the foot of a range of hills, in a jungle of *Acacia arabica*, we came on several large coveys of guinea-fowl. We soon found that it was of no use to attempt to get a shot by walking after them, as they soon left us; so we followed, and whenever they entered a thick piece of jungle we ran up in time to get a shot at them, being pressed to take wing. In this way we made a very good bag, to which we afterwards added a bustard (differing from the Indian) and several small hares, which were very abundant. At the first shot I brought down, as I supposed, a couple of guinea-fowl, right and left, but on picking them up found that one of them was a fine species of Francolin, coloured as in the accompanying sketch.

Bill and legs coral-red, the latter with blunt knobs for spurs; the top of the head, a line under the eye from the angle of the mouth, and a patch below it, black; round the eye and some way down the neck, buff; breast and side covered with large patches of black, buff, and light blue or french-grey; all the back and other parts french-grey; the quills are light buff.

This magnificent bird we found afterwards in pairs, betraying the same habits as the two species of Francolin in India, the male often standing and crowing on some small eminence. These birds are fully as large as the gallina, which is not quite so large as the domesticated species, but as large as a good-sized fowl.

I propose for this bird the name of *Francolinus yemensis*.



J. Wolf, Lith.

M & N. Hanhart, Imp'

FRANCOLINUS YEMENSIS *Nicholson.*

May 13, 1851.

John Edward Gray, Esq., F.R.S., in the Chair.

The following papers were read :—

1. OBSERVATIONS ON THE EYE OF THE MOLE, IN A LETTER
 ADDRESSED TO W. SPENCE, ESQ., F.R.S.
 BY JOHN DAVY, M.D., F.R.S.

In a letter with which you favoured me some weeks ago, you made mention of Schiödte's 'Faunæ Subterraneæ Specimen,' and of the interesting discoveries described in it of several species of eyeless animals, the inhabitants of caves into which the sun's rays never penetrate, and where, in utter darkness, visual organs would consequently be useless.

Reflecting on the subject, I thought it worth while to examine with some care the eyes of the common Mole, an animal that spends the greater portion of its time beneath the surface of the earth, and seems in its general organization specially adapted for a subterraneous life.

I shall chiefly notice what, in the dissections I have made, appears to be peculiar.

The first peculiarity that arrests attention is, that the eyes of the Mole are not contained in bony sockets, but lie unprotected by any bony prominences in the cellular tissue, beneath the common integuments; and, in consequence, were this animal an extinct one, and its skeleton found in a fossil state, there being no orbit, the palæontologist might be led to infer that it is a species destitute of eyes.

The next peculiarity I would mention is in regard to eye-lashes. These too it seems to be destitute of. The hair in which the eyes are buried, and by which they are defended, seems to be the common fur of the head. I could detect in that immediately surrounding them no hairs of larger dimensions, or in any respect different from those of which its fine fur is composed.

The apertures for the admission of light constitute another peculiarity. When the fur is removed from the skin surrounding the eyes, a minute aperture appears over each, about $\frac{1}{2}$ th of an inch in length when closed, and, in this state, linear and straight, but circular when fully expanded. The extreme margins of these openings in the integuments being covered with fur, there is no well-marked appearance of eyelids,—indeed, it may be a question, whether the Mole, in strictness, can be said to possess these appendages. From the observations I have made, I am disposed however to infer that it does possess them, but imperfect;—imperfect, not having been able to detect beneath the marginal cutis any vestige of ciliary cartilages, and yet having found in the surrounding subcutaneous cellular tissue muscular fibres so arranged as if designed for closure, resembling an orbicular muscle, and probably designed for and performing the part of such a muscle.

As to the other muscles of the eye, one only, an abductor, was distinguishable from adjoining muscles. It is of large size comparatively, and it may be inferred powerful: by acting on it, seizing it with a forceps, and drawing it upwards, the ball of the eye was retracted, thus denoting its office. I sought in vain for other muscles. That they were not discovered, supposing them to exist, is not surprising, considering the smallness of the organ and its peculiar un-insulated position, most unfavourable for discriminating the subordinate parts pertaining to it, such as the muscles.

Relative to the constituent parts of the organs themselves, excepting their delicacy and minuteness, I am not aware of any peculiarity. The eye-ball is about $\frac{1}{25}$ th of an inch in diameter; the iris dark brown; the pupil circular; the lens about $\frac{1}{163}$ rd of an inch in diameter. Traces of a vitreous humour, and also of an aqueous, were observable; the former in the appearance of a cellular texture, as seen under the microscope with a high power; the latter as an exudation of moisture, a just perceptible quantity of fluid, when the ball was ruptured. From the situation of the eyes low down in the face, the optic nerves are necessarily of unusual length.

The dissections, of which I have thus briefly given the results, I need hardly remark were made chiefly under water, and with the aid of the microscope.

To return to the subject which led to the inquiry, viz. the subterranean eyeless Fauna brought to light by the Danish naturalist, you in your letter briefly advert to the speculations which this curious discovery gives rise to, as, "whether these animals originally had eyes, and have lost them from want of use by inhabiting for ages dark caves; or, whether they were originally created without eyes, for those abodes where they have no occasion for them," &c. Allow me to ask—fully appreciating the difficulty of solving such problems—whether the preceding observations on the eyes of the Mole are not rather in favour of the latter than of the former solution? It is easy to imagine how the optic nerve and the more important parts of the organ of vision might diminish in size from little use; but it is difficult to suppose that the same circumstance could have any material effect in obliterating a cavity in bone—the eye's orbit—and, if the Mole's eyes were thus originally designed, why may not the eyeless animals have been formed in the first instance without eyes? Do not we see throughout Nature the most perfect harmony between the organic structure and the modes of life and habits of the living beings, so that the one is the true index of the other,—and that in the most minute details? Excuse my touching on these speculative questions, which, probably, from their nature, always must be speculative,—unless indeed the eyeless species are found otherwise identical with species possessing eyes, and there be found also a gradation in them, as to power and size in accordance with the degrees of light to which the individuals have been habituated, as in advancing from the open air and the entrance of the dark abodes to their deepest recesses. Also, excuse me if the matter of this letter should not be new to you.

Lesketh How, Ambleside, April 28, 1851.





P.S.—It may be deserving of mention, that notwithstanding the small size of the eye of the Mole, its appearance in fœtal development is early: thus, in a fœtus which I have recently examined, the length of which was about three-quarters of an inch, the eyes were distinct; they were visible—conspicuous in the naked face, even without the aid of a magnifying glass, and indeed were not much smaller than those of the adult, and but little different in appearance: the diameter of each was about $\frac{1}{160}$ th of an inch.

2. NOTICE OF TWO VIVERRIDÆ FROM CEYLON, LATELY LIVING IN THE GARDENS. BY J. E. GRAY, ESQ., F.R.S. ETC.

(Mammalia, Pl. XXX., XXXI.)

The specimens here noticed were brought from Ceylon by Alex. Grace, Esq., and lived some time in the Gardens of the Society.

The first is the species which I described some years ago under the name of *Herpestes Smithii* (Mag. Nat. Hist. 1837, ii.), from a specimen which was living in the Surrey Zoological Gardens, now preserved in the Collection of the British Museum: that specimen was said to have been sent from the Cape of Good Hope, but this must have been a mistake, as it is quite unknown to Dr. Burchell, Dr. A. Smith, Mr. Smut, Dr. Wahlberg, or other zoologists who have written on the animals of South Africa.

Mr. Grace informs me that it is an inhabitant of the interior part of Ceylon. It is by far the most beautiful species of the genus, as will be seen from the accompanying illustration (Mamm., Pl. XXX.).

The second is a new species of CYNICTIS, which I propose to call

CYNICTIS MACCARTHLÆ. (Mammalia, Pl. XXXI.)

Teeth normal. Red brown; hair elongate, flaccid, pale brown, with a broad, black subterminal band, and a long whitish brown tip; of hands and feet shorter. Feet blackish brown, hair white tipped. Claws elongate, slender, compressed, especially of the two middle toes of the fore feet. Tail redder; hair elongate, one-coloured, red. Ears rounded, hairy.

Hab. Ceylon; Jaffna, North of Ceylon (*A. Grace, Esq.*).

This species somewhat resembles *Cynictis melanura* in general colour, but the hairs are much longer, not so adpressed, and, when the individual colour of the hair is examined, most distinct.

I have proposed to name this interesting animal after Mrs. MacCarthy, the wife of the Treasurer of the Colony and the daughter of Mr. Hawes, the Assistant Secretary to the Colonies, who is much interested in the study of natural history, and has kindly sent me several very interesting natural productions from Ceylon.

The skull differs from all the other *Herpestes* that I have examined, in the back of the nape being deeply and sharply notched instead of transversely truncated, the notch in the living animal being filled up with a cartilaginous septum.

3. DESCRIPTIONS OF FIFTY-TWO NEW SPECIES OF THE GENUS
MITRA, FROM THE CUMINGIAN COLLECTION.
BY ARTHUR ADAMS, F.L.S. ETC.

1. MITRA SEROTINA, A. Adams. *M. testá oblongo-fusifor-
mi, acuminatá, serotiná; spirá productá, longitudinaliter plicatá, pli-
cis confertis, undulatis; transversim sulcatá, sulcis subdistantibus;
aperturá anticè dilatá; columellá quadriplicatá, basi contortá et
recurvá; labro intus lirato, margine recto, anticè subangulato.*

Hab. Marquesas.

A light orange species, with a produced spire, and the outer lip pro-
duced and rather angulated anteriorly.

2. MITRA CRATITIA, A. Adams. *M. testá oblongo-fusifor-
mi, albidá, nitidá, liris elevatis transversis, acutis, et lineis elevatis,
longitudinalibus, decussatim ornatá; interstitiis subtilissimè lon-
gitudinaliter striatis; aperturá intus aurantiacá; columellá plicis
quinque instructá.*

Hab. South Africa.

The shell from which the description is taken is worn, and not in
good condition, but it appears to be distinct from any species already
described.

3. MITRA STRAMINEA, A. Adams. *M. testá oblongo-fusifor-
mi, stramineá; anfractibus planulatis, liris transversis rugulosis, in-
terstitiis cancellatis, suturá subcanaliculatá; aperturá oblongá,
anticè subproductá; columellá plicis quatuor, basi subrecurvatá;
labro intus lævi.*

Hab. —?

An oblong, transversely-ridged species, rather faintly cancellated
between the interstices.

4. MITRA INSIGNIS, A. Adams. *M. testá ovato-acuminatá; spirá
acutá, lævi, nitidá, albidá; anfractibus planis, fasciá angustá albo
fuscoque articulatá, ornatá; anfractu ultimo anticè transversim
striato; columellá sinuatá, biplicatá, anticè incurvatá.*

Hab. Rains Island (*Mr. Ince*).

This is a very peculiar form, reminding one almost of the genus
Pusionella of Gray.

5. MITRA LÆVIS, A. Adams. *M. testá oblongo-fusifor-
mi, apice acuto, lævi, nitidá, albidá; anfractibus planis, supremis cancel-
latis, ultimo fasciá latá transversá, rufescenti ornato; columellá
plicis quatuor, supremis magnis imbricatis.*

Hab. Zanzibar.

A smooth *Oliva*-shaped species, with a polished surface, and a red-
brown band blending into the white of the last whorl; the plates of
the columella are imbricate.

6. MITRA TIGRINA, A. Adams. *M. testá oblongo-ovatá; spirá
crassiusculá, apice mucronato, rufo, albo strigosá; anfractibus*

planiusculis, transversim subsulcatis; columellâ plicis quinque; labro intus rufo.

Hab. Philippines.

Several specimens of this species, all agreeing in form, were collected by Mr. Cuming; but one only retained the natural colour of the surface.

7. MITRA TIARELLA, A. Adams. *M. testâ oblongo-ovatâ, fuscâ, nodulis albis, ad suturas coronatâ, longitudinaliter subplicatâ, transversim lirâtâ, interstitiis valdè punctatis; columellâ plicis quatuor; labro margine crenulato.*

Hab. Island of Ticao, sandy mud, 6 fathoms.

This small, brown-coloured species is beautifully crowned, in adult specimens, with a diadem of white nodules at the suture of the whorls.

8. MITRA PIGRA, A. Adams. *M. testâ oblongo-fusififormi, obscuro-fuscâ, lineis pallidulis transversis prope suturas, albidâ, maculis rufis, ornatâ; lævi; spirâ acuminatâ; anfractibus septem, planulatis; aperturâ subdilatatâ, intus albâ; columellâ plicis quatuor, albis, obliquis, instructâ, anticè subintortâ.*

Hab. Australia.

This species partakes somewhat of the character of *M. sacerdotalis*.

9. MITRA LUCTUOSA, A. Adams. *M. testâ oblongo-fusififormi, obscuro-fuscâ, fasciâ unicâ pallidâ transversâ ornatâ; spirâ acutâ, anfractibus planulatis, transversim lirâtâ; interstitiis valdè clathrato-punctatis; aperturâ oblongo-ovatâ; spirâ breviori; labio crassiusculo; columellâ plicis quatuor salientibus.*

Hab. China Seas.

This species was obtained during the voyage of H.M.S. Samarang.

10. MITRA INSCULPTA, A. Adams. *M. testâ ovato-fusififormi; spirâ brevi, acutâ; aperturâ breviori; anfractibus planulatis, pallidè fuscâ, maculis rufis, longitudinalibus, variegatâ; cingillis integris, acutis, prominentibus, æquidistantibus; liris intermediis submoniliformibus; interstitiis longitudinaliter valdè sulcatis; aperturâ elongatâ; columellâ plicis tribus; labro acuto margine crenulato.*

Hab. Ceylon (Dr. Gardner).

This species also belongs to the same group as *M. cingulata*.

11. MITRA EXARATA, A. Adams. *M. testâ ovato-fusififormi; spirâ aperturam æquante; anfractibus subrotundis; suturâ subcanaliculatâ, olivacè, fasciis duabus pallidis transversis, longitudinaliter costatâ; costellis æqualibus, subdistantibus; interstitiis lineis insculptis, profundis, transversis; columellâ plicis tribus, validis, instructâ.*

Hab. Bais, island of Negros, coarse sand, 7 fathoms.

The most characteristic feature of this species is the sculpture between the ribs, consisting of deep, engraved, transverse lines.

12. MITRA RUFOCINCTA, A. Adams. *M. testá ovato-fusiform spirá aperturam æquante; anfractibus rotundis, sordidè albá, fasciá transversá latá rufo-fusca; longitudinaliter costatá, costis obtusis, rotundis, distantibus; interstitiis lineis impressis transversis; aperturá subdilatatá; columellá plicis quatuor instructá; labro tenui anticè dilatato.*

Hab. —?

A small, slightly-worn specimen serves for this description, but it is of peculiar form and sculpture.

13. MITRA NITIDA, A. Adams. *M. testá ovato-fusiformi; spirá aperturá breviori; anfractibus subrotundis, lævi, nitidá, badiá, anfractu ultimo anticè et posticè sulcis nonnullis transversis instructo; aperturá oblongá, anticè subdilatatá; columellá plicis quatuor; labro simplici.*

Hab. —?

A small, brown, shining species, with only a few transverse spiral lines for sculpture.

14. MITRA COMPTA, A. Adams. *M. testá ovato-fusiformi; spirá aperturá longiore; anfractibus subrotundis, supernè angulatis, sordidè albá, longitudinaliter plicatá; transversim lirátá, liris apud plicas nodulosis; interstitiis valdè et regulariter clathratis; anfractu ultimo anticè angustato et reflexo; columellá plicis quinque instructá; labro internè sulcato, margine crenulato.*

Hab. China Seas.

This species, remarkable for the strong cancellations between the longitudinal plicæ, was brought home in H.M.S. Samarang.

15. MITRA LIGATA, A. Adams. *M. testá ovato-fusiformi; spirá aperturá longiore, anfractibus planis; castaneo-fusca, lined unica pallidá, transversá in medio anfractuum, longitudinaliter plicatá, transversim subliratá; columellá plicis quatuor; labro simplici, margine acuto.*

Hab. Pasacao, province of South Camarinas; isle of Luzon, on the sands.

The colouring of this species is very different from the allied species, and the sculpture is peculiar to many species belonging to the subgenus *Turris* of Schumacher.

16. MITRA VIBEX, A. Adams. *M. testá ovato-fusiformi; spirá aperturam æquante; anfractibus rotundis; fusca, prope suturas pallidulá, zonulá albá angustá transversá in medio anfractuum; longitudinaliter corrugato-plicatá, transversim lirátá, liris apud plicas nodulosis; interstitiis longitudinaliter striatis; anfractu ultimo angustato et anticè subreflexo; columellá plicis quatuor instructá; labro acuto.*

Hab. —?

This species somewhat resembles *armillata* of Reeve, but the corrugated nature of the plicæ distinguishes it.

17. MITRA INTERRUPTA, A. Adams. *M. testá ovato-fusiformi; spirá acuminatá; aperturá breviori; anfractibus planis, propè suturas angulatis; albidd, rufo-fusco variegatá; cingulá transversá fuscá moniliformi in medio anfractuum; longitudinaliter plicatá, plicis æqualibus, obliquis, obtusis, distantibus; transversim corrugato-liratá; interstitiis punctatis; anfractu ultimo anticè recurvato; columellá supernè excavatá, plicis tribus instructá; labro simplici.*

Hab. North Australia.

The peculiar interrupted, dark, transverse band distinguishes this elegant species.

18. MITRA EXIMIA, A. Adams. *M. testá ovatá; spirá brevi, obtusá; nitidá, aurantiacá, maculis triangularibus albis, cingillis lævibus, latis, transversis; interstitiis valdè longitudinaliter clathratis; aperturá lineari-oblongá; columellá plicis quatuor; labro intus lævi, margine crenulato.*

Hab. — ?

This pretty little species belongs to the same group as *M. læta*, but the sculpture and markings are quite different, although the colour is nearly similar.

19. MITRA MULTILIRATA, A. Adams. *M. fusiformis, spirá acuminatá, aperturam æquante; anfractibus rotundatis, ad suturas angulatis; pallidè rufo-fuscá, cingillis lævibus transversis, æquidistantibus, obtusis, ornatá; interstitiis lineis longitudinalibus, elevatis, subconfertis, instructis; anfractu ultimo anticè producto et subreflexo; columellá anticè truncatá, plicis quatuor instructá; labro intus sulcato, margine crenulato.*

Hab. China Seas.

This species was obtained during the voyage of H.M.S. Samarang.

20. MITRA LÆTA, A. Adams. *M. testá ovatá, crassiusculá, aurantiacá, punctis albis ornatá; longitudinaliter plicatá; anfractibus planiusculis, transversim nodoso-liratá; interstitiis simplicibus; columellá plicis quinque instructá; labro crenulato.*

Hab. Ticao, under stones, low water.

An oblong-ovate, shining, orange species, with scattered round white granules and regular nodulose liræ; the spire is obtuse; the whorls are flattened and longitudinally plicate.

21. MITRA ORNATA, A. Adams. *M. testá oblongo-fusiformi, acuminatá; spirá acutá; anfractibus novem, ad suturas angulatis; suturá subcanaliculatá; albá, fasciis transversis rufo-fuscis ornatá; longitudinaliter costatá; costis regularibus, obliquis, subcrenatis; interstitiis transversim valdè clathratis; anfractu ultimo anticè subumbilicato et recurvo; columellá plicis quatuor; labro posticè subangulato.*

Hab. — ?

This species is peculiar for its regular form and exactness of sculpture, as well as for its beauty of colouring.

22. MITRA NODILIRATA, A. Adams. *M. testá oblongo-fusiforimi, pallidè fulvá, fasciá latá rufá transversá ornatá; spirá acuminatá, turrítá; anfractibus octo planis, infra suturas angulatis; nitidá, longitudinaliter plicatá; plicis distantibus, prominentibus, obliquis, prope suturas valdè nodulosis; interstitiis lineis impressis transversis ornatis; columellá plicis quatuor; labro acuto.*

Hab. —?

An elegant form, with the pliciform ribs strongly nodulose at their hind part.

23. MITRA PURA, A. Adams. *M. testá fusiformi; spirá aperturá longiori; anfractibus subplanulatis; albá; cingulis transversis angustis, subelevatis, crenulatis, rufo subarticulatis; liris tribus intermediis; interstitiis valdè punctatis, ornatá; aperturá oblongá, anticè dilatátá; columellá plicis quinque; labro intus sulcato, margine crenato.*

Hab. —?

An elegantly formed species, with the last whorl somewhat recurved.

24. MITRA CINGULATA, A. Adams. *M. testá ovato-fusiforimi; spirá acutá, aperturam æquante; anfractibus planulatis; sordidè albá; cingillis prominentibus subcrenulatis, acutis, transversis; interstitiis longitudinaliter valdè clathratis, ornatá; anfractu ultimo anticè producto et recurvato; columellá plicis tribus.*

Hab. —?

This species belongs to that group in which the whorls are encircled with transverse ridges.

25. MITRA RETICULATA, A. Adams. *M. testá ovato-fusiforimi; spirá aperturá breviori; anfractibus subrotundis; albá; cingulis transversis, æquidistantibus, acutis, crenulatis, sulcis obliquis longitudinalibus decussatis, ornatá; columellá plicis quatuor; labro intus sulcato.*

Hab. Port Essington, 7 fathoms, sandy mud (Jukes).

Remarkable for the acute, crenated, transverse ridges which give the surface a reticulated appearance.

26. MITRA ASPERULATA, A. Adams. *M. testá oblongo-fusiforimi, pallidè rufo-fuscá, ad suturas albidá, longitudinaliter sulcatá, transversim lirátá, liris nodulis, subacutis, asperulatis; spirá productá; anfractibus sex, subrotundis; aperturá spiræ dimidium æquante, anticè abruptè truncatá; columellá plicis tribus; labro acuto.*

Hab. Australia.

The transverse ridges are set with subacute nodules, which give a rough appearance to the surface.

27. MITRA MIRABILIS, A. Adams. *M. testá fusiformi; spirá acuminatá, aperturá longiori; anfractibus novem, planulatis, superne angulatis; albá, maculis rufis triangularibus, et punctis transverso-elongatis, rufescentibus, ornatá; longitudinaliter plicatá,*

plicis obtusis, regularibus, distantibus, nodosis; nodis posticè prominentibus; cingulis transversis nodulosis, obtusis, elevatis, instructâ; anfractu ultimo in medio angustato; anticè productâ et subreflexâ; aperturâ elongatâ; columellâ plicis quatuor; labro posticè angulato, in medio inflexo, intus sulcato, margine crenulato.

Hab. Socotra.

28. MITRA ALBINA, A. Adams. *M. testâ oblongo-fusiforimi, albâ; spirâ conicâ, longitudinaliter plicatâ; anfractibus subrotundatis, liris transversis ornatis; anfractu ultimo lævi, posticè subplicato, anticè sulcis transversis punctatis ornato; columellâ plicis quinque; aperturâ oblongo-lineari; labio subcalloso; labro acuto.*

Hab. Batangas, Isle of Luzon, on the reefs.

This *Mitra* is perfectly white, and of a very peculiar form; Mr. Cuming possesses but a single specimen.

29. MITRA AMÆNA, A. Adams. *M. testâ oblongo-fusiforimi, albâ, maculis rufis variegatâ; spirâ acuminatâ; anfractibus octo, subrotundis, carinulis transversis, lævis, elevatis, rufo-fusco articulatis, lirâ intermediâ crenulatâ, interstitiis eleganter longitudinaliter clathratis; aperturâ angustâ; columellâ plicis quinque; labro tenui, acuto.*

Hab. Red Sea.

This elegant species belongs to the annulated group.

30. MITRA RUTILA, A. Adams. *M. testâ oblongo-fusiforimi, acuminatâ, aurantiacâ, maculis albis sparsis ornatâ, fasciis pallidis transversis prope suturas, suturis maculis aurantiacis maculatis; spirâ productâ, acutâ; anfractibus septem, transversim liratâ; anfractu ultimo liris anticè distinctioribus; aperturâ dilatâ; columellâ plicis quatuor; labro acuto, anticè crenato.*

Hab. — ?

31. MITRA DELICATA, A. Adams. *M. testâ ovato-fusiforimi; spirâ aperturâ longiore; anfractibus planis; suturâ subcanaliculatâ, sordidè albâ, fasciis transversis duabus pallidis; longitudinaliter plicatâ, plicis angustis, acutis, crenulatis, interstitiis transversim clathratis, anfractu ultimo anticè angustato et recurvato; columellâ plicis quatuor; labro margine acuto, crenulato.*

Hab. Cape York, 8 fathoms (*Jukes*).

A species of great delicacy, both of colour and sculpture.

32. MITRA RUFESCENS, A. Adams. *M. testâ ovato-fusiforimi; spirâ acuminatâ, sordidè albâ, rufo variegatâ, cingillis transversis, acutis, subdistantibus, liris duabus intermediis, interstitiis longitudinaliter valdè sulcatis, sulcis subdistantibus; columellâ anticè tortuosâ, plicis quatuor obliquis instructâ; labro internè sulcato, margine crenato.*

Hab. China Seas.

This species, obtained during the voyage of H.M.S. Samarang, partakes of the same kind of sculpture as *M. annulata* and others, for which Swainson has formed a subgenus.

33. MITRA FORMOSA, A. Adams. *M. testá oblongo-fusiforimi, albo rufoque eleganter variegatá; spirá acutá; anfractibus 8, rotundis, ad suturas subangulatis, cingillis transversis nodulosis ornatá, nodulis subquadratis, in seriebus regularibus; aperturá spirá brevioré; columellá plicis quatuor; labro acuto, margine crenato.*

Hab. Marquesas (Rohr).

A very handsome species, entirely covered with close-set granules arranged in transverse rows.

34. MITRA SACERDOTALIS, A. Adams. *M. testá oblongo-fusiforimi; spirá acuminatá; anfractibus novem, subplanulatis; fulvá, lineis fuscis transversis ornatá, prope suturas albidá, rufo maculosa; lævi, sulcis distantibus, transversis insculptá; anfractu ultimo basi recurvatá; aperturá spiræ dimidium æquante, recurvatá et anticè truncatá; columellá plicis quatuor, obliquis; labro albo, acuto, anticè rotundato.*

Hab. Australia.

A fine species of a peculiar character, both as regards form, colour and sculpture.

35. MITRA MACROSPIRA, A. Adams. *M. testá pyramidali-turritá; spirá valdè productá, albidá, maculis rufis irregularibus ornatá; anfractibus planis, longitudinaliter costellatá, costellis lævibus subconfertis, interstitiis clathrato-punctatis; anfractu ultimo anticè angustato, basi subrecurvo; columellá plicis quinque; labro intus lirato, margine acuto, anticè producto subangulato.*

Hab. — ?

A whitish species with a produced acuminate spire, and the short aperture with the base narrowed; the outer lip dilated anteriorly.

36. MITRA BELLULA, A. Adams. *M. testá oblongo-fusiforimi, albá, nitidá, maculis rufis moniliformibus ad suturas ornatá; transversim sulcatá; anfractibus planis, supremis cancellatis; aperturá angustá, anticè productá, contortá, et recurvá; columellá plicis quatuor instructá.*

Hab. Isle of Capul, on the reefs, low water.

A small, transversely grooved, polished species, with a necklace-like row of reddish spots near the sutures.

37. MITRA ECHINATA, A. Adams. *M. testá fusiformi-turritá; spirá acuminatá, albido-carneolá, ad apicem rufescente, ad basin fasciá latá transversá rufescenti ornatá; anfractibus planis, longitudinaliter costatá, costis prominentibus, prope suturas echinato-nodulosis, et infernè subnodosis, interstitiis sulcato-clathratis; labro intus lirato; columellá plicis quatuor instructá.*

Hab. — ?

38. MITRA SCITULA, A. Adams. *M. testá fusiformi-turritá; spirá acuminatá, anfractibus planiusculis, carneolá; punctis rufescentibus sparsim pictá; longitudinaliter costatá, costis undulatis, lævibus, subdistantibus; interstitiis valdè clathratis; aperturá*

anticè angustata, basi subrecurva; columellâ plicis quatuor instructâ.

Hab. China Seas.

A small, turreted, light-coloured species, with undulating ribs and clathrated interstices.

39. MITRA MARMOREA, A. Adams. *M. testâ fusiformi-turritâ; spirâ acuminatâ; anfractibus planiusculis; olivacea, rufo-fusca marmoratâ, longitudinaliter costatâ, costis laevibus, crassis, supernè subnodosis; interstitiis transversim exaratis; columellâ plicis quinque; basi subcontortâ et recurvâ.*

Hab. Tambay, Isle of Negros, coarse sand, 10 fathoms.

Greenish, marbled with fuscous; ribs flat and broad; interstices with transverse engraved lines.

40. MITRA TURRICULA, A. Adams. *M. testâ fusiformi-turritâ, albâ, carneo sparsim pictâ, anfractibus supernè angulatis; longitudinaliter costatâ, costis crassis, laevibus, distantibus, supra nodosis, interstitiis sulcato-clathratis; aperturâ spiram æquante; columellâ plicis quatuor, supremis duabus duplicatis; basi vix recurvâ.*

Hab. —?

A small, elegant, turreted species, with smooth, thick ribs, and the interstices punctate-clathrate.

41. MITRA PALLIDA, A. Adams. *M. testâ turrito-fusiformi; spirâ productâ, acuminatâ; anfractibus convexiusculis; albâ, sparsim rufo-fusco pictâ, longitudinaliter costatâ, costis nodulosis, interstitiis clathrato-punctatis; aperturâ brevi, anticè angustâ, basi productâ, tortuosa et recurvâ; columellâ quadriplicatâ.*

Hab. Marquesas.

A delicate, small, pale species, with scattered red-brown blotches, and with the interstices between the ribs clathrate-punctate.

42. MITRA JUKESII, A. Adams. *M. testâ ovato-fusiformi; spirâ acutâ, aperturâ dimidium æquante; anfractibus planis, prope suturas angulatis; albâ, fasciis castaneis transversis ornatâ; transversim sulcatâ, sulcis, prope suturas, profundioribus; longitudinaliter plicatâ, plicis obtusis, distantibus, prope suturas nodulosis; columellâ plicis quatuor instructâ; labro intus lævi.*

Hab. North Australia (Jukes).

This species is intermediate between *M. corrugata* and *M. vulpula*, but is distinct from both.

43. MITRA CRENICPLICATA, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ; anfractibus planulatis; brunnea, longitudinaliter plicatâ, plicis crenatis tenuibus; transversim liratâ, liris æqualibus, confertis, nodulosis ad plicas; aperturâ spiram æquante; labio posticè calloso, anticè dilatato; columellâ plicis quatuor instructâ; labro intus dentato-lirato, margine incrassato.*

Hab. —?

This species belongs to the group named by Mr. Gray *Zierliana*.

44. MITRA CRENILABRIS, A. Adams. *M. testá fusiformi; spirá aperturam æquante; anfractibus planis; fulvá, longitudinaliter substriatá, transversim sulcatá; aperturá oblongá, anticè dilatá; columellá plicis quatuor, anticè incurvatá; labro, in medio, recto, margine crenato et incrassato.*

Hab. — ?

This *Mitra* resembles in many particulars *M. fulva*, Reeve, but in all the specimens I have seen the outer lip is thin and smooth in that species.

45. MITRA CASTANEA, A. Adams. *M. testá ovato-fusiformi; spirá productá; anfractibus rotundatis; castaneá, nitidá, transversim punctato-striatá; aperturá quàm spira brevior, anticè dilatá; columellá plicis quinque.*

Hab. — ?

This species most closely resembles *M. badia*, Reeve, but the whorls are rounded, and it differs in other particulars.

46. MITRA DICHROMA, A. Adams. *M. testá ovato-fusiformi; spirá acuminatá; anfractibus planis; suturá canaliculatá, anticè castaneo-fuscá, posticè albíd; longitudinaliter substriatá, transversim sulcatá, sulcis anticè profundis, aperturá anticè dilatá; columellá plicis quinque instructá, anticè productá; labro intus lirato, margine crenulato.*

Hab. — ?

47. MITRA DEALBATA, A. Adams. *M. testá ovato-fusiformi; spirá apice cancellato; anfractibus planulatis; suturá profundá, albá, transversim sulcatá, sulcis distantibus; aperturá oblongá, anticè dilatá; columellá posticè excavatá; plicis sex; labro anticè dilatato, intus lirato.*

Hab. — ?

This species somewhat resembles *M. crenilabris* in form, but it is much more slender, and the sculpture is different.

48. MITRA NODULIFERA, A. Adams. *M. testá turritá, fusiformi; spirá quàm apertura longiore; anfractibus, prope suturas, angulatis; albíd, longitudinaliter plicatá, plicis, ad suturas, nodulosis, prominentibus, distantibus; transversim liratá, interstitiis longitudinaliter striatis; aperturá intus fulvá, posticè angulatá; columellá plicis quatuor; labro margine flexuoso.*

Hab. — ?

A small species, somewhat resembling *M. cymelium*, Reeve, but without the transverse black lines.

49. MITRA MARIE, A. Adams. *M. testá ovato-conicá; spirá acuminatá; anfractibus planis, cingulis tribus, transversis, acutis, elevatis, interstitiis longitudinaliter profundè sulcatis, instructis; posticè albá, anticè hepaticá, reticulationibus albis punctisque rufofuscis, ornatá; anfractu ultimo, sulcis transversis, interstitiis*

simplicibus; columellâ plicis quinque instructâ; labro intus sulcato, margine crenulato.

Hab. Eastern Seas.

Somewhat like *M. incisa*, but of very different form and colour.

50. MITRA PUSILLA, A. Adams. *M. testâ ovato-fusifor-
mi; spirâ turritâ, elongatâ; anfractibus subrotundatis; albâ, fasciâ latâ
transversâ, carneolâ, anticè ornatâ; longitudinaliter costatâ, costis
regularibus, æqualibus, subconfertis, interstitiis transversim valdè
sulcatis; aperturâ brevi; columellâ plicis quatuor.*

Hab. — ?

A small species, with a single, transverse, faint pink band at the fore part of the last whorl.

51. MITRA COLUMBELLINA, A. Adams. *M. testâ ovato-fusifor-
mi; spirâ brevi, acutâ; anfractibus subrotundatis, albo castaneoque
concinne pictâ, transversim evanidè sulcatâ; aperturâ ovato-ob-
longâ, anticè dilatatâ; columellâ plicis quatuor; labro intus lævi.*

Hab. — ?

This species is very prettily painted with white and dark chestnut-brown, and in form somewhat resembles a *Columbella*.

52. MITRA PHILIPPINARUM, A. Adams. *M. testâ ovato-fusi-
formi; spirâ brevi, acuminatâ; anfractibus planulatis, cinereâ,
flamulis rufo-fuscis, longitudinalibus, variegatâ; transversim
sulcatâ, sulcis regularibus, subdistantibus, profundis; aperturâ
lineari-oblongâ, intus fuscâ; columellâ plicis sex; labro margine
albo, crenato.*

Hab. Philippines.

This species is figured in Mr. Reeve's Monograph as *M. flammea* of Quoy, the original type of which, however, Mr. Cuming possesses, and it is entirely different.

May 27, 1851.

W. Yarrell, Esq., V.P.L.S., in the Chair.

The following communications were received and read:—

1. NOTICE OF THE BIRDS OF MADEIRA, IN A LETTER
ADDRESSED TO THE SECRETARY.
BY EDWARD VERNON HARCOURT, ESQ.

SIR,—According to your request, I send you a short account of the birds that breed in Madeira, together with a list of those that visit the island.

The birds of Madeira are less numerous than might be expected in so genial a climate, and most of them are merely varieties, where they differ from European species.

The birds that breed in Madeira are these :—

<i>Latin Name.</i>	<i>English Name.</i>	<i>Portuguese Name.</i>
1. <i>Falco Tinnunculus, Linn.</i>	Kestrel.	Francelho.
2. — <i>Buteo, Linn.</i>	Buzzard.	Manta.
3. <i>Strix flammea, Linn.</i>	Barn Owl.	Coruja.
4. <i>Turdus Merula, Linn.</i>	Blackbird.	Mérlo-preto.
5. <i>Sylvia Rubecula, Lath.</i>	Redbreast.	Papinho.
6. — <i>atricapilla, Lath.</i>	Black-cap Warbler.	Tinto-Negro.
(<i>Curruca Heinekeni, Jard.</i>)	Variety of the former.	Tinto-Negro de Capello.
7. <i>Curruca conspicillata, Gould.</i>	Spectacle Warbler.	None.
8. <i>Regulus</i> — ?	— ?	Abibe.
9. <i>Motacilla boarula, Linn.</i>	Grey Wagtail.	Lavandeira amarrella.
10. <i>Anthus pratensis, Bechst.</i>	Meadow Pipit.	Corre de Caminho.
11. <i>Fringilla butyracea, Linn.</i>	Green or Wild Canary.	Canario.
12. — <i>Carduelis, Linn.</i>	Goldfinch.	Pinta Silva.
13. — <i>Petronia, Linn.</i>	Ring Sparrow.	Pardao.
14. — <i>Tintillon, Webb & Berthelot.</i>	Buff-breasted Chaffinch.	Tentilhao.
15. — <i>cannabina, Linn.</i>	Greater Redpole or Linnet.	Tinto roxo.
16. <i>Cypselus unicolor, Jard.</i>	Lesser Swift.	Andorinha da Serra.
17. — <i>murarius, Temm.</i>	Common Swift.	— do Mar.
18. <i>Columba Trocaz, Hein.</i>	Long-toed Wood-pigeon.	Trocaz.
19. — <i>Palumbus, Linn.</i>	Ring-dove.	Pombo.
20. — <i>Livia, Briss.</i>	Rock-pigeon.	Pombinho.
21. <i>Perdix rubra, Briss.</i>	Red-legged Partridge.	Perdix.
22. — <i>Coturnix, Lath.</i>	Quail.	Cordonez.
23. <i>Scolopax Rusticola, Linn.</i>	Woodcock.	Gallinhola.
24. <i>Sterna Hirundo, Linn.</i>	Tern.	Garajao.
25. <i>Larus argentatus, Brunn.</i>	Herring Gull.	Gaio, Guivata (after 3rd aut. moult).
26. <i>Procellaria Puffinus, Linn.</i>	Cinereous Shearwater.	Cagarra.
27. — <i>Anglorum, Temm.</i>	Manks Shearwater.	Boeiro.
28. — <i>obscura, Gmel.</i>	Dusky Petrel.	Pintainho.
29. { — <i>anginho, Hein.</i>	Angel Petrel. }	Anginho.
{ — <i>Bulwerii, Jard.</i>	Bulwer's Petrel. }	
30. — ?	— ?	Roque de Castro.

The Kestrels are very numerous and very tame, perching on the roofs of houses, from whence they dart frequently at canary-birds hanging in their reed cages outside the windows, and they generally succeed in securing their prey ; they live principally on lizards, grasshoppers, and mice.

The Buzzard is seldom seen about the town, but confines his flights to the highest mountains, feeding on small birds, insects, and reptiles.

The Barn Owl inhabits the ravines in small numbers ; it is a little darker than the British Owl. It may be remarked that all the birds of Madeira are darker than their European brethren.

The Redbreast is very common ; it is frequently caged, and seems to flourish in captivity.

The Blackbird, which in some parts is very plentiful, does not differ from the English bird.

The Black-cap Warbler, which is here the most domestic songster, has been sometimes called the Madeira Nightingale; there is a fullness in its warble which in a degree justifies such praise. A Madeiran variety of this bird has been described by Sir William Jardine* as a new species, under the name of *Curruca Heinekeni*; Dr. Heineken, however, in his paper on the subject in the 'Zoological Journal,' No. xvii. Art. xvii., disproves the supposition of its being a distinct species, and I am able to confirm the view that Dr. Heineken takes of it. The popular belief amongst the natives is, that where the nest of a "Tinto Negro" contains five eggs, the fifth always turns out a "Tinto Negro de Capello." The variety is much prized; for where you could buy a common "Tinto Negro" for sixpence or a shilling, you would be asked eight or ten shillings for a "Tinto Negro de Capello." The size of the two birds is precisely the same in all particulars; the chief difference consists in the black cap in the variety being extended to the shoulders, and I have sometimes seen the black extended over all the under parts: the under parts are generally much the same as those of the common female Black-cap, and the upper parts as those of the common male.

The Wren is one of the prettiest feathered inhabitants of Madeira; it lives amongst the laurel forests, in the less frequented parts of the island. It seems intermediate between the Gold and Fire-crested Wrens of Britain, and is a little larger and brighter than either.

The Spectacle Warbler is very locally distributed; it is found in brakes and bushes in some of the unfrequented parts.

The Grey Wagtail is very common, frequenting the cisterns attached to houses, as well as the streams; where, from its familiar habits amongst the washerwomen, it has been admitted in Madeiran phraseology into the ranks of the sisterhood, under the title of "Lavandeira."

The Meadow Pipit is plentifully found on the cliffs and fields near the sea, and on the serras.

The Green Canary is the original stock of the bird so well known to us as the Yellow Canary; it flies about in large flocks, with linnets and other birds, and is easily distinguished by its song, which is the same as that of the captive variety. The price of a good singing canary, either in Madeira or the Canary islands, varies from five to nine shillings, so that in fact it may be bought much cheaper in London. This bird has been admirably described by Dr. Heineken, in the 'Zoological Journal,' No. xvii. Art. xvii.

The Goldfinch is very common, and differs in no respect from our own.

The Ring Sparrow here takes the place, in a way, of our House Sparrow: it is universal; on the bleak serras, near houses, on the rocks by the sea; there is no place that it does not frequent. It differs thus in habits, though in nothing else, from the Ring Sparrow of Europe.

* Edinb. Journ. of Nat. and Geog. Science, Jan. 1830, vol. i. p. 243.

The Chaffinch of Madeira is nearly identical with the bird figured, under the name of "*Fringilla Tintillon*," in Webb and Berthelot's work on the Canary islands.

The Greater Redpole is very abundantly met with; it differs from the English Linnet in retaining its carmine colouring through the year.

The Lesser Swift is mentioned in Brewster's 'Journal,' by Dr. Heineken, under the title of "Black-chinned Swift." This property is however by no means general amongst the species: I have several in my possession with the chin fully as white as that of the common Swift. One of the chief differences is in size, the '*unicolor*' being much the smallest. The tail is forked about an inch and a half, and the plumage is rather darker than that of the common Swift.

The common Swift is not quite so plentiful as the Lesser Swift. Both species remain in the island throughout the year; their nests are built in the cliffs; their habits vary from those of Swifts in England; here they seem to take the place of the Swallow, hunting and skimming along the ground in a manner that would appear very degrading to their northern brethren.

The Ring-dove appears to be rather larger than the English bird; in other respects it is similar. It lives in the forests on the north side of the island.

The Long-toed Wood Pigeon has been described by Dr. Heineken, in 'Brewster's Journal,' under the name of "*Columba Trocaz*;" it is about an inch longer than the Madeiran Ring-dove; one of its chief peculiarities, and which seems to have escaped observation, is the great length of its centre toe, being more than an inch longer than that of the Ring-dove; it has a silvery ring all round its neck; it is darker in its general plumage than the Ring-dove, and is excellent eating. It inhabits the forests on the north side of the island, feeding upon grasses and the acorns of the laurel-trees.

The Rock Pigeon inhabits the sea cliffs, and rocks in the ravines all over the island. There is a variety here which is darker in its plumage and in the colour of its feet than the common Rock Pigeon.

The Red-legged Partridge is shot on the serras.

The Quail is more plentiful than the Partridge, and approaches nearer to the habitations of man; it pairs, laying about sixteen eggs, and has three or four broods in the season.

The Woodcock is found chiefly in the west, and on the Paul da Serra, sometimes plentifully. It is a large bird, but I think of inferior flavour; it breeds in the island, and is met with throughout the year.

The Tern appears chiefly at the Dezerta islands and at Point São Lourenço.

The Herring Gull is common everywhere; Dr. Renton says it is quicker by some months in obtaining its mature plumage than with us.

The Cinereous Shearwater breeds plentifully on the Dezerta islands; its cry, whether on the wing or on shore, is very remarkable; the natives salt it and consider it eatable.

The Manks Shearwater is also very plentiful at the Dezertas; it is

easily distinguished from the Dusky Petrel, which is another inhabitant of the Dezertas, by its superior size, and by the colour of its feet. In the Dusky Petrel the feet are bluish ash-colour, and in the Manks Shearwater flesh-colour; in the Dusky Petrel all the secretions are green, and in the Manks Shearwater yellow. The Dusky Petrel is a very tame bird, and will live upon almost anything; it runs along the ground on its belly, and uses its curious-shaped bill in climbing up the rocks.

The Angel Petrel of Heineken has the tail slightly forked, and differs from the other smaller Petrels in having no white about the rump or flanks; it is entirely uniform black; it is very common on the Dezerta islands; when approached it emits a highly offensive matter.

The Bulwer's Petrel, as described by Sir Wm. Jardine †, I never saw at Madeira, nor have I ever met with any one that has seen it there. Sir Wm. Jardine says, "it is easily distinguished from any other, by having the two centre tail-feathers elongated, as in the genus *Lestris*, and not even or forked, like the other Petrels." It is probably identical with the Angel Petrel.

There is another Petrel, called by the natives "Roque de Castro," pronounced "Roque de Crasto," which differs from any I have ever seen described; it approaches perhaps nearer to Leach's Petrel than any other, though the shape of the bill alone is sufficient to separate it from that species. It is common on the Dezerta islands, where it breeds, though it is by no means so abundant as the Angel Petrel.

The following is a list of the stragglers found in Madeira:—

<i>Latin Name.</i>	<i>English Name.</i>	<i>Authority ‡.</i>
31. <i>Cathartes percnopterus</i> , <i>Temm.</i>	Egyptian Vulture.	* * *
32. <i>Falco nisus</i> , <i>Linn.</i>	Sparrow Hawk.	* * *
33. <i>Corvus corax</i> , <i>Linn.</i>	Raven.	* * *
34. — <i>corone</i> , <i>Linn.</i>	Carrion Crow.	Mr. Lowe.
35. <i>Oriolus galbula</i> , <i>Linn.</i>	Golden Oriole.	* * *
36. <i>Sturnus vulgaris</i> , <i>Linn.</i>	Common Starling.	* * *
37. <i>Turdus iliacus</i> , <i>Linn.</i>	Redwing.	Mr. Lowe.
38. — <i>musicus</i> , <i>Linn.</i>	Common Thrush.	Mr. Penfold.
39. <i>Sylvia hortensis</i> , <i>Lath.</i>	Greater Petty-chaps.	Mr. Penfold.
40. <i>Troglodytes europæus</i> , <i>Selb.</i>	Common Wren.	Mr. Lowe.
41. <i>Motacilla alba</i> , <i>Linn.</i>	Pied Wagtail.	* * *
42. <i>Alauda arvensis</i> , <i>Linn.</i>	Skylark.	Mr. Lowe.
43. <i>Fringilla chloris</i> , <i>Linn.</i>	Green Grosbeak.	* * *
44. — <i>domestica</i> , <i>Linn.</i>	Common Sparrow.	Mr. Penfold.
45. <i>Cuculus canorus</i> , <i>Linn.</i>	Cuckoo.	* * *
46. <i>Musophaga africana</i> , <i>Temm.</i>	African Bee-eater.	Mr. Lowe.
47. <i>Upupa epops</i> , <i>Linn.</i>	Hoopoe.	* * *
48. <i>Merops apiaster</i> , <i>Linn.</i>	Bee-eater.	Mr. Lowe.
49. <i>Alcedo ispida</i> , <i>Linn.</i>	King-fisher.	Mr. Lowe.

† Sir W. Jardine on the Birds of Madeira, 'Edinb. Journ. of Nat. and Geog. Science,' Jan. 1830, p. 245, and 'Illustrations of Ornithology,' by Jardine and Selby.

‡ Where there are stars it is on my own authority.

<i>Latin Name.</i>	<i>English Name.</i>	<i>Authority</i> †.
50. <i>Hirundo urbica</i> , Linn.	House Martin.	* * *
51. — <i>rustica</i> , Linn.	Chimney Swallow.	* * *
52. — <i>riparia</i> , Linn.	Bank Martin.	Doubtful.
53. <i>Caprimulgus europæus</i> , Linn.	European Goatsucker.	Mr. Hinton.
54. <i>Columba œnas</i> , Linn.	Stock-dove.	Mr. Lowe.
55. — <i>Turtur</i> , Linn.	Turtle-dove.	* * *
56. <i>Œdinemus crepitans</i> , Temm.	Thick-knee.	Mr. Lowe.
57. <i>Calidris arenaria</i> , Ill.	Sanderling.	Mr. Lowe.
58. <i>Vanellus cristatus</i> , Meyer.	Crested Lapwing.	* * *
59. <i>Charadrius hiaticula</i> , Linn.	Ringed Plover.	Mr. Lowe.
60. — <i>pluvialis</i> .	Golden Plover.	Mr. Hewitt.
61. <i>Streptilas interpres</i> , Leach.	Turnstone.	Mr. Lowe.
62. <i>Ciconia nigra</i> , Temm.	Black Stork.	Mr. Lowe.
63. ? <i>Ardea cinerea</i> .	Common Heron.	* * *
64. <i>Ardea russata</i> , Wagler.	Buff-backed Heron.	* * *
65. — <i>purpurea</i> , Linn.	Purple Heron.	* * *
66. — <i>minuta</i> , Linn.	Little Bittern.	* * *
67. — <i>stellaris</i> , Linn.	Common Bittern.	Mr. Lowe.
68. — <i>nycticorax</i> , Linn.	Night Heron.	* * *
69. <i>Limosa melanura</i> , Leisler.	Black-tailed Godwit.	* * *
70. <i>Numenius arquata</i> , Lath.	Common Curlew.	Mr. Hinton.
71. — <i>phæopus</i> , Temm.	Whimbrel.	Mr. Lowe.
72. <i>Tringa pugnax</i> , Linn.	Ruff.	* * *
73. — <i>subarquata</i> , Temm.	Pigmy Curlew.	Mr. Lowe.
74. — <i>variabilis</i> , Meyer.	Dunlin.	* * *
75. — <i>cinerea</i> , Temm.	Knot.	Mr. Lowe.
76. <i>Totanus hypoleucos</i> .	Sandpiper.	* * *
77. — <i>glottis</i> , Bechst.	Greenshank.	* * *
78. <i>Scolopax gallinago</i> , Linn.	Common Snipe.	Mr. Hinton.
79. — <i>major</i> , Temm.	Great Snipe.	* * *
80. <i>Crex Baillonii</i> , Temm.	Baillon's Crake.	* * *
81. <i>Gallinula chloropus</i> , Lath.	Gallinule.	* * *
82. <i>Ortygometra crex</i> , Temm.	Land-rail.	Mr. Lowe.
83. <i>Fulica atra</i> , Linn.	Coot.	* * *
84. <i>Anser segetum</i> , Steph.	Bean Goose.	* * *
85. <i>Mareca penelope</i> , Selb.	Wigeon.	Mr. Penfold.
86. <i>Anas crecca</i> , Linn.	Teal.	* * *
87. — <i>boschas</i> , Linn.	Mallard.	Mr. Penfold.
88. <i>Sterna nigra</i> , Linn.	Black Tern.	Mr. Lowe.
89. — <i>Dougallii</i> , Mont.	Roseate Tern.	Sir W. Jardine.
90. <i>Larus tridactylus</i> , Lath.	Kittiwake.	* * *
91. <i>Lestris cataractes</i> , Temm.	Skua.	* * *
92. <i>Colymbus glacialis</i> , Linn.	Northern Diver.	* * *
93. <i>Sula alba</i> , Temm.	Gannet.	Mr. Lowe.
94. <i>Procellaria Leachii</i> , Temm.	Leach's Petrel.	Sir W. Jardine.
95. — <i>pelagica</i> , Linn.	Stormy Petrel.	Doubtful.

I have the honour to remain, Sir,

Yours, &c.,

EDWARD VERNON HARCOURT.

† Where there are stars it is on my own authority.

2. DESCRIPTION OF NEW LAND SHELLS FROM THE COLLECTION OF H. CUMING, ESQ. BY DR. L. PFEIFFER.

1. *HELIX AUDEBARDI*, Pfr. *H. testá imperforatá, conoideo-globosá, solidulá, nitidá, castaneo-fulvá, strigis saturatoribus confertis ornatá; spirá conoideá, apice obtusiusculá, albidá; anfractibus 5½ convexis, summis granulatis, ultimis irregulariter rugoso-striatis, ultimo inflato, anticè deflexo; columellá perdeclivi, subarcuatá, latá, pland, albá; aperturá perobliquá, truncato-ovali, intus cæruleá, nitidá; peristomate incrassato, subreflexo, albo.*

Diam. maj. 48; min. 39, alt. 35 mill.

Hab. St. Domingo (Sallé).

2. *HELIX ALBERSIANA*, Pfr. *H. testá umbilicatá, subturbinato-depressá, tenui, acutè et confertim costatá, diaphand, rufo-corneá; spirá subturbinatá, apice acutá; anfractibus 4½ convexis, celeriter accrescentibus, ultimo anticè deflexo, basi juxta umbilicum angustè constricto; aperturá perobliquá, lunato-ovali; peristomate tenui, marginibus subconniventibus, dextro breviter expanso, columellari dilatato, reflexo, intus plicá obliquá, dentiformi munito.*

Diam. maj. 14½, min. 12, alt. 8½ mill.

Hab. St. Domingo (Sallé).

3. *HELIX PUBESCENS*, Pfr. *H. testá angustissimè umbilicatá, depressá, tenui, pilis mollibus, brevibus, confertis pubescente, diaphand, lutescente; spirá vix convexá, obtusá; anfractibus 5, convexiusculis, ultimo subrotundato, altiore quam lato, non descendente; aperturá vix obliquá, rotundato-lunari; peristomate simplice, recto, margine columellari supernè breviter reflexo.*

Diam. maj. 11, min. 10, alt. 6 mill.

Hab. St. Domingo (Sallé).

4. *HELIX LEUCORHAPHE*, Pfr. *H. testá angustè umbilicatá, depresso-turbinatá, subtilissimè striatulá, diaphand, luteo-corneá, fasciá angustá, cretaceá, ad suturam ornatá; spirá subturbinatá, apice obtusiusculá; anfractibus 6 planiusculis, ultimo convexiore, non descendente, basi subplanato; aperturá vix obliquá, lunari; peristomate simplice, recto, margine columellari reflexiusculo.*

Diam. maj. 10, min. 9, alt. 6 mill.

Hab. St. Domingo (Sallé).

5. *SUCCINEA DOMINICENSIS*, Pfr. *S. testá ovali, solidulá, substriatá, corneo-albidá, punctis corneis irregulariter aspersá; spirá conicá, acutá; anfractibus 3½ convexis, summis corneis, ultimo ⅔ longitudinis æquante; columellá subcallosá, vix recedente; aperturá parùm obliquá, ovali, subregulari, supernè vix angulatá.*

Long. 11½, diam. 7, alt. fere 6 mill. Apert. 7½ mill. longa, medio 4½ lata.

Hab. St. Domingo (Sallé).

6. *BULIMUS MOUSSONI*, Pfr. *B. testá perforatá, oblongo-conicá, sublævigatá (lineis impressis spiralibus obsoletis notatá), nitidulá,*

alba, fasciis sub 5, roseis ornatá; spirá conicá, apice acutá, rubrá; anfractibus 6, subplanis, ultimo spirá paulò brevioré; columellá arcuatá, supernè subtortá; aperturá oblongo-ovalí, intus concolore; peristomate simplice, recto, margine columellari fornicatim reflexo.
 Long. 26, diam. 12 mill. Apert. 12 mill. longa, 7 lata.

Hab. St. Domingo (Sallé).

Next allied to *B. Hondurasanus*, Pfr.

7. *ACHATINA DUNKERI*, Pfr. *A. testá turritá, tenuiusculá, levigatá, pellucidá, nitidá, fulvescente; spirá elongatá, apice obtusá; suturá impressá, marginatá, obsolete crenulatá; anfractibus 9, vix convexiusculis, ultimo $\frac{1}{3}$ longitudinis non attingente; columellá arcuatá, altè et subverticaliter truncatá; aperturá subtriangulari-semiovali; peristomate simplice, margine dextro antrorsum arcuato.*

Long. 28, diam. $7\frac{1}{2}$ mill. Apert. 9 mill. longa, medio 4 lata.

Hab. St. Domingo (Sallé).

8. *ACHATINA IMPRESSA*, Pfr. *A. testá oblongo-turritá, tenui, levigatá, lineis impressis longitudinalibus irregulariter notatá, fulvidá; spirá turritá, apice acutiusculá; suturá impressá, submarginatá; anfractibus $6\frac{1}{2}$ planis, ultimo $\frac{2}{5}$ longitudinis subaquante; columellá arcuatá, basi abruptè truncatá; aperturá obliquá, sinuato-ovalí; peristomate simplice, margine dextro basi recedente.*

Long. $8\frac{1}{2}$, diam. $2\frac{2}{3}$ mill. Apert. 3 mill. longa, medio $1\frac{1}{2}$ lata.

Hab. St. Domingo (Sallé).

9. *BALEA DOMINICENSIS*, Pfr. *B. testá subperforatá, sinistrorsá, turritá, sublavigatá, nitidá, olivaceo-corneá; spirá regulariter attenuatá, apice acutá; anfractibus 12, convexis, ultimo infra medium subangulato; aperturá verticali, subovalí; peristomate simplice, recto, margine columellari verticali, breviter reflexo.*

Long. $11\frac{1}{2}$, diam. 3 mill. Apert. $2\frac{1}{2}$ mill. longa, $1\frac{3}{4}$ lata. (An adult.?)

Hab. St. Domingo (Sallé).

10. *CYLINDRELLA MONILIFERA*, Pfr. *C. testá subrimatá, oblongá, solidulá, truncatá, confertissimè et arcuatim costulato-striatá; opacá, sordidè albidá; suturá impressá, nodulis albidis subdistantibus notatá; anfractibus (superst.) 9, convexis, ultimo non soluto, basi subacutè carinato; aperturá obliquè subcirculari, ad carinam canaliculatá; peristomate albo, reflexiusculo-expanso, supernè appresso.*

Long. 19, diam. supra medium 6 mill. Apert. cum peristomate oblique 5 mill. longa, $4\frac{1}{2}$ lata.

Hab. St. Domingo (Sallé).

11. *CYLINDRELLA ADAMSIANA*, Pfr. *C. testá vix rimatá, oblongo-pupiformi, truncatá, nitidá, confertè striato-punctatá, albidá, cornea, irregulariter strigatá et variegatá; suturá lineari, albo-cremulatá; anfractibus (superst.) 8-9, planis, ultimo angustiore, non soluto, basi cristá compressá, obtusá munito; aperturá vix*

obliqua, subcirculari, ad cristam subcanaliculatá; peristomate albo, breviter expanso-reflexo, supernè interrupto.

Long. 14–15½, diam. 5 mill. Apert. 4¼ mill. longa et lata.

Hab. St. Domingo (Sallé).

12. *CYLINDRELLA SALLEANA*, Pfr. *C. testá non rimatá, cylindracea, gracili, truncatá, obliquè confertissimè costulato-striatá, nitidá, pallide fuscescente, vel rufo-fuscá; anfractibus (superst.) 17–18, vix convexiusculis, ultimo angustiore, basi cariná compressá, acutá munito, antrorsum breviter porrecto; aperturá subobliquá, rhombeo-rotundatá, ad carinam distinctè canaliculatá; peristomate albo, nitido, undique reflexiusculo-expanso.*

Long. 27, diam. (prope basin) 5 mill. Apert. cum peristomate 4¾ mill. longa et lata.

Hab. St. Domingo (Sallé).

13. *CYLINDRELLA GOULDIANA*, Pfr. *C. testá vix subrimatá, turritá, truncatá, confertissimè costulato-striatá, sericeá, pallide cornéa; suturá impressá, subdenticulatá; anfractibus (superst.) 9, convexiusculis, ultimo soluto, antrorsum breviter descendente, basi subcompresso; aperturá subobliquá, ferè circulari, latere dextro subangulatá; peristomate albo, undique breviter expanso.*

Long. 10, diam. 2⅓ mill. Apert. 2 mill. longa et lata.

Hab. St. Domingo (Sallé).

14. *CYCLOSTOMA ORBIGNYI*, Pfr. *C. testá subperforatá, elongato-pupoidé, solidá, confertim arcuato-striatá, rubello-fulvá; spirá subcylindricá, sensim attenuatá, apice conicá; suturá profundá; anfractibus 8 vix convexis, penultimo lato, ultimo fasciá latá violacéa, antrorsum evanescente, ornato, basi cristá compressá, obtusá munito; aperturá circulari; peristomate incrassato, subreflexo, supernè appresso, infra cristam anfractibus penult. subexciso. Operculum tenue, albidum, extus concavum, arctispirum.*

Long. 27, diam. 9 mill.

β. *Unicolor virenti-fulvum.*

γ. *Minus, interdum omnino violaceum, anfractibus convexioribus.*

Hab. St. Domingo (Sallé).

15. *HELICINA VERSICOLOR*, Pfr. *H. testá depressá, tenui, levigatá, citriná, sæpe viridí variegatá, suturá vel vertice purpureo; spirá parúm elevatá, obsolete papillatá; anfractibus 4½, planiusculis, rapidè accrescentibus, ultimo lato, subdepresso, anticè vix descendente; aperturá diagonali, subtriangulari-semiovali; columellá brevissimá, callum crassum, semicircularem, nitidum, album emittente; peristomate breviter expanso, margine basali subreflexo, immediatè in columellam continuato. Operculum tenue, submembranaceum, castaneum, margine columellari et nucleo pallidis.*

Diam. maj. 8, min. 6⅔, alt. 5½ mill.

Hab. St. Domingo (Sallé).

16. *HELICINA DOMINICENSIS*, Pfr. *H. testá globoso-conicá, solidulá, concentricè confertim striatá, parúm nitidá, albidá, luteo-*

vel fulvo-zonatá; spirá conicá, acutá; anfractibus 6, planiusculis, suturá profundá junctis, ultimo convexiore, vix descendente; columellá brevissimá, basi denticulatá, callum emittente tenuem, vix circumscriptum; aperturá parùm obliquá, semiovali; peristomate acuto, subrecto. Operculum tenue, testaceum, carneum, margine columellari elevato.

Diam. maj. $6\frac{1}{3}$, min. $5\frac{3}{4}$, alt. 5 mill.

Hab. St. Domingo (*Sallé*).

3. CONTRIBUTIONS TOWARDS A MONOGRAPH OF THE TROCHIDÆ, A FAMILY OF GASTEROPODOUS MOLLUSCA.
BY ARTHUR ADAMS, R.N., F.L.S. ETC.

Genus 1. TROCHUS, Linn.—*Pyramidea*, sp. Swains.

1. TROCHUS NILOTICUS, Linn.

Trochus niloticus, Linn.; Gmel. p. 3565. no. 1; Chemn. Conch. v. t. 167. f. 1605, t. 168. f. 1614.—*Trochus marmoratus*, Lamk. (young).

Hab. North Australia (*Dring*).

2. TROCHUS MAXIMUS, Koch.

Trochus maximus, Koch; Phil. Abbild. Trochus, t. 6. f. 3.

Hab. —?

3. TROCHUS ACUTANGULUS, Chemn.

Trochus acutangulus, Chemn. Conch. v. t. 163.—*Trochus conus*, Gmel.

Hab. Burias.

4. TROCHUS SPINOSUS, Lamk.

Trochus spinosus, Lamk. Hist. An. s. Vert. t. vii. p. .

Hab. —?

5. TROCHUS ASPERULUS, Lamk.

Trochus asperulus, Lamk. Hist. An. s. Vert. t. vii. p. 22.

Hab. —?

6. TROCHUS CUMINGII, A. Adams. *T. testá turrito-conicá, violaced, maculis viridibus pulcherrimè pictá; anfractibus planis, cingulis, granorum moniliformibus ornatis, infernè nodoso-plicatis, anfractu ultimo angulato; peripherid radiatim nodo-spinosá, basi concavá, cingulis granulosis, insculptá, centro profundè excavato umbilicum simulante; columellá supernè tortuosá, basi dente terminatá; aperturá tetragoná; labro intus lirato.*

Hab. Sibonga, island of Zebu, under stones at low water (*H. C.*).
Mus. Cuming.

7. TROCHUS FASTIGIATUS, A. Adams. *T. testá conicá, imperforatá, rubrá, maculis albis longitudinalibus variegatá; an-*

fractibus planis, in medio concavis, supernè cingulis tribus nodulorum ornatis, ad suturam nodis subspinosis instructis, basi planà, concentricè lirata; liris crenulatis; columellâ posticè canaliculata, anticè truncata; labro in medio angulato.
Hab. —?

Genus 2. CARDINALIA, Gray. *Pyramidea*, Swains.

1. CARDINALIA VIRGATA, Gmel.

Trochus virgatus, Gmel. p. 3580. no. 83.

Hab. —?

Genus 3. PYRAMIS, Chemn.

Tectus, Montf.—*Pyramidea*, sp. Swains.

1. PYRAMIS DENTATUS, Forskal.

Trochus dentatus, Forsk. Egypt. Desc. Anim. p. 125. no. 67.—

Trochus foveolatus, Gmel.

Hab. Port Essington (*Jukes*).

2. PYRAMIS NODULIFERUS, Lamk.

Trochus noduliferus, Lamk. Hist. An. s. Vert. t. vii. p. 18.

Hab. Mindanao and Madagascar.

3. PYRAMIS CÆRULESCENS, Lamk.

Trochus cærulescens, Lamk. Hist. An. s. Vert. t. vii. p. 18.

Hab. —?

4. PYRAMIS OBELISCUS, Gmel.

Trochus obeliscus, Gmel. p. 3579.—*Trochus pyramis*, Chemn.

Hab. Bolinao, island of Luzon, on the reefs (*H. C.*).

5. PYRAMIS ACUTUS, Lamk.

Trochus acutus, Lamk. Hist. An. s. Vert. t. vii. p. 23.

Hab. Ticao, on the reefs.

6. PYRAMIS TRISERIALIS, Lamk.

Trochus triserialis, Lamk. Hist. An. s. Vert. t. vii. p. 22.

Hab. Philippines.

7. PYRAMIS PRASINUS, Menke.

Trochus prasinus, Menke, Moll. Nov. Holl. sp. p. 16. no. 64.

Hab. Eastern Seas.

8. PYRAMIS MAURITIANUS, Gmel.

Trochus mauritianus, Gmel. p. 3582. no. 99.

Hab. Capul, on the reefs.

9. PYRAMIS FENESTRATUS, Gmel.

Trochus fenestratus, Gmel.; Chemn. Couch. v. t. 163. f. 1549-50.

Hab. —?

10. PYRAMIS CRENULATUS, Lamk.

Trochus crenulatus, Lamk. Hist. An. s. Vert. t. vii. p. 22.*Hab.* Guimaras, under stones (*H. C.*).

11. PYRAMIS ARCHITECTONICUS, A. Adams. *P. testá conicá, imperforatá, albidá; anfractibus planis, subimbricatis, longitudinaliter costatis, costis crassis, rotundis, subnodosis, basi planá, liris concentricis exarátá; columellá brevi, tortuosá, anticè truncatá; labro margine fimbriato.*

Hab. Signet Bay, North Australia (*Dring*).

12. PYRAMIS LEUCOGASTER, A. Adams. *P. testá conicá, imperforatá; spirá acutá, in medio tumidá, albd, viridi variegatá; anfractibus planulatis, longitudinaliter corrugatis, transversim cingulis nodulosis ornatis, ad suturam nodis sulcatis fimbriatis, basi planá, albd, concentricè sulcatá; columellá brevi, valde tortuosá; labro anticè intus lirato.*

Hab. —?

Genus 4. TEGULA, Lesson.

1. TEGULA PELLIS-SERPENTIS, Wood.

Trochus pellis-serpentis, Wood, Ind. Test. Suppl. pl. 5. f. 4.—*Trochus strigillatus*, Anton.*Hab.* —?Genus 5. INFUNDIBULUM, Montf.—*Carinidea*, Swains.

1. INFUNDIBULUM CONCAVUM, Linn.

Trochus concavus, Linn.; Chemn. v. pl. 168. f. 1620–21.*Hab.* —?

2. INFUNDIBULUM RADIATUM, Chemn.

Trochus radiatus, Chemn. v. pl. 170. f. 1640–42.*Hab.* Zanzibar.

3. INFUNDIBULUM CARINIFERUM, Beck.

Trochus cariniferus, Beck; Reeve, Conch. Syst. pl. 218. f. 8.*Hab.* Signet Bay, North Australia.

4. INFUNDIBULUM KOCHII, Phil.

Trochus Kochii, Phil. Abbild. Trochus, vi. t. 3. f. 8.—? *Trochus Listeri*, Wood, Ind. Test. Suppl. p. 5. f. 8.*Hab.* —?

5. INFUNDIBULUM DELICATULUM, Phil.

Trochus delicatulus, Phil. Zeit. f. Malac. 1846, July, p. 105; Chemn. v. pl. 171. f. 1669.*Hab.* St. Elena.

6. INFUNDIBULUM SAGA, Phil.

Trochus Saga, Phil. Zeit. f. Malac. 1846, July, p. 103.*Hab.* —?

7. INFUNDIBULUM DEPRESSUM, Gmel.

Trochus depressus, Gmel. 3573; Chemn. Conch. v. pl. 171. f. 1668.

Hab. —?

8. INFUNDIBULUM CHLOROMPHALUS, A. Adams. *I. testâ depresso-conicâ, pseudo-umbilicatâ, viridi, atro-purpureo punctatâ; anfractibus planis, cingulis confertis granorum ornatâ, basi concavâ, cingulis inæqualibus articulatis insculptâ, regione umbilicali infundibuliformi, intus viridi; columellâ superne tortuosâ, tuberculatâ.*

Hab. —?

9. INFUNDIBULUM CALIFORNICUM, A. Adams. *I. testâ depresso-conicâ, pseudo-umbilicatâ, albâ, viridi rufoque variegatâ; anfractibus planis, supra angulatis, ultimo angulato, cingulis tuberculorum subdistantium multiformium ornatâ; interstitiis longitudinaliter obliquè costatis, basi concavâ, cingulis confertis crenulatis insculptâ, regione umbilicali infundibuliformi, viridi, lined albâ elevatâ cincto; columellâ superne tortuosâ, tuberculatâ.*

Hab. California.

Genus 6. POLYDONTA, Schumacher.—*Lamprostoma*, Swains.

1. POLYDONTA MACULATA, Linn.

Trochus maculatus, Linn.; Chemn. v. pl. 168. f. 1615–18.

Hab. Port Essington, adhering to rocks, deep water (*Jukes*).

2. POLYDONTA INÆQUALIS, Chemn.

Trochus inæqualis, Chemn. v. pl. 170. f. 1635–36.—*Trochus granosus*, Lamk.

Hab. Philippines.

3. POLYDONTA REGIA, Chemn.

Trochus regius, Chemn. v. p. 170. f. 1637.

Hab. —?

4. POLYDONTA TENTORIUM, Chemn.

Trochus Tentorium, Chemn. v. p. 169. f. 1628.

Hab. Philippines.

5. POLYDONTA STELLATA, Chemn.

Trochus stellatus, Chemn. v. pl. 169. f. 1630.

Hab. —?

6. POLYDONTA VERRUCOSA, Gmel.

Trochus verrucosus, Gmel.; Chemn. v. pl. 170. f. 1638.—*Trochus elatus*, Lamk.

Hab. Zanzibar.

7. POLYDONTA COSTATA, Chemn.

Trochus costatus, Chemn. v. pl. 169. f. 1633–34.

Hab. —?

8. **POLYDONTA SPENGLERI**, Chemn.
Trochus Spengleri, Chemn. v. pl. 169. f. 1631.
Hab. —?
9. **POLYDONTA OCHROLEUCOS**, Gmel.
Trochus ochroleucos, Gmel. ; Chemn. v. pl. 169. f. 1629.
Hab. —?
10. **POLYDONTA VERNALIS**, Chemn.
Trochus vernalis, Chemn. v. pl. 169. f. 1625–26.—*Trochus ver-*
mis, Gmel.—*Trochus subviridis*, Phil.
Hab. —?
11. **POLYDONTA VIRIDESCENS**, Chemn.
Trochus viridescens, Chemn. v. pl. 170. f. 1643–44.—*Trochus vi-*
ridis, Gmel.
Hab. Capul, Philippines.
12. **POLYDONTA RETICULATA**, Wood.
Trochus reticulatus, Gray in Wood, Ind. Test. Suppl. pl. 6. f. 38.
Hab. Bencoonet, Sumatra, on the reefs (*H. C.*).
13. **POLYDONTA LINEATA**, Lamk.
Trochus lineatus, Lamk. Hist. An. s. Vert. tom. vii. p. 23.
Hab. Swan Point (*Dring*).
14. **POLYDONTA HANLEYANA**, Reeve.
Trochus Hanleyanus, Reeve, Conch. Syst. t. f. —*Trochus en-*
grainus, Philippi.
Hab. Swan Point (*Dring*).
15. **POLYDONTA TIARATA**, Quoy & Gaim.
Trochus tiaratus, Quoy & Gaim. Voy. de l'Astr. t. 64. f. 8.—*Poly-*
donta elegans, Gray.
Hab. New Zealand (*Earl*).
16. **POLYDONTA INCRASSATA**, Lamk.
Trochus incrassatus, Lamk. Hist. An. s. Vert. tom. vii. p. 20 ;
Chemn. Conch. v. p. 169. f. 1632.
Hab. —?
17. **POLYDONTA ELEGANTULA**, Wood.
Trochus elegantulus, Gray in Wood, Ind. Test. Suppl. p. 5. f. 9.
Hab. —?
18. **POLYDONTA ASPERA**, Chemn.
Trochus asper, Chemn. Conch. v. pl. 169. f. 1633–34.
Hab. Banguay, province of North Iloco, island of Luzon, on the
reefs at low water (*H. C.*).
19. **POLYDONTA CONCINNA**, Philippi.
Trochus concinnus, Phil. Zeit. f. Malac. 1846, July, p. 105.
Hab. —?

20. POLYDONTA TURRIS, Phil.

Trochus turris, Phil. Zeit. f. Malac. 1846, July, p. 102.

Hab. — ?

21. POLYDONTA INCARNATA, Phil.

Trochus incarnatus, Phil. Zeit. f. Malac. 1846, July, p. 103.

Hab. Suez, Red Sea.

22. POLYDONTA IGNOBILIS, Phil.

Trochus ignobilis, Phil. Zeit. f. Malac. 1846, July, p. 102.

Hab. — ?

23. POLYDONTA PUSTULOSA, Phil.

Trochus pustulosus, Phil. Kust. Conch. Cab. pl. 44. f. 6.

Hab. — ?

24. POLYDONTA GIBBERULA, A. Adams. *P. testá elevato-conicá, in medio gibbosá, anfractu ultimo angustato; albidá, lineis roseis flammulatis radiatim pictá; anfractibus subconvexis, cingulis granosis transversis ornatá, ultimo obtusè angulato; basi convexiusculá, albá, fasciis roseis radiatim pictá; centro excavato, umbilicum mentiente; columellá supernè solutá, margine tuberculo-denticulato; labro intus lirato, infernè denticulato.*

Hab. Philippines.

25. POLYDONTA PALLIDULA, A. Adams. *P. testá elevato-conicá, albidá, maculis luteolis pictá; anfractibus planis, cingulis tuberculorum ornatá, tuberculis infernè in costas excurrentibus, basi convexá, cingulis granosis ornatá, cavitate contortá umbilicum simulante; columellá supernè solutá, margine tuberculato-dentato; labro intus lirato, infernè denticulato.*

Hab. — ?

26. POLYDONTA CORRUGATA, A. Adams. *P. testá elevato-conicá, albidá, rufo-fusco variegatá; anfractibus planiusculis, sulcis transversis, sulcisque obliquis nodoso-reticulatis, infernè obliquè costatis, costis nodosis ornatís; basi planiusculá, in medio concavá, excavatá, umbilicum mentiente; columellá supernè solutá, margine tuberculato-dentato; labro intus lirato, infernè denticulato.*

Hab. — ?

27. POLYDONTA SQUAMIGERA, A. Adams. *P. testá elato-conicá, albidá, cinereo-viridi radiatim pictá; anfractibus planiusculis, cingulis granulorum tribus ornatís, infernè obliquè costatis, costis in spinis squamiformibus excurrentibus, basi planá striis granosis, fasciisque rufo-viridibus ornatá, centro excavato umbilicum simulante, intus albo lineis elevatis cincto; aperturá lineis acutis elevatis, transversis in faucibus instructá.*

Hab. — ?

Genus 7. PHORCUS, Risso.—*Omphalius*, Philippi.

1. PHORCUS MELALEUCOS, Jonas.
Trochus melaleucos, Jonas, Zeit. f. Malac. 1844, p. 169 ; Phil. Abbild. Trochus, t. v. f. 7.
Hab. — ?
2. PHORCUS OCCULTUS, Phil.
Trochus occultus, Phil. Abbild. p. 17. t. 5. f. 8.
Hab. — ?
3. PHORCUS MODESTUS, Koch.
Trochus modestus, Koch ; Phil. Abbild. Trochus, p. 30, t. 5. f. 10.
Hab. — ?
4. PHORCUS VARIEGATUS, Chemn.
Trochus variegatus, Chemn. v. pl. 171. f. 1677.—*Trochus viridulus*, Gmel. ; Wood, Ind. Test. p. 28. f. 42.—*Trochus Byronianus*, Wood.—*Trochus Brazilianus*, Menke.
Hab. — ?
5. PHORCUS CARNEUS, Gmel.
Trochus carneus, Gmel. 3574 ?—*Trochus indusii*, Chemn.
Hab. — ?
6. PHORCUS CRUCIATUS, Chemn.
Trochus cruciatus, Chemn. pl. 171. f. 167.
Hab. — ?
7. PHORCUS QUADRICOSTATUS, Wood.
Trochus quadricostatus, Gray in Wood, Ind. Test. Suppl. p. 5. f. 15.
—*Trochus torulosus*, Phil. Abbild. t. 2. f. 12.
Hab. — ?
8. PHORCUS DENTATUS, Gmel.
Turbo dentatus, Gmel. ; Chemn. Conch. v. p. f.
Hab. — ?
9. PHORCUS QUADRICARINATUS, Gmel.
Trochus quadricarinatus, Gmel. ; Chemn. ii. t. 196. f. 1892–93.—
Trochus rubro-flammulatus, Koch.
Hab. — ?
10. PHORCUS UMBILICARIS, Linn.
Trochus umbilicaris, Linn. ; Chemn. v. p. f. --*Trochus excavatus*, Lamk.—*Trochus cinereus*, Da Costa.
Hab. — ?
11. PHORCUS SCALARIS, Anton.
Trochus scalaris, Anton. ; Phil. Abbild. Trochus, p. 18. t. 2. f. 7.
Hab. — ?

12. PHORCUS FUSCESCENS, Phil.

Trochus fuscescens, Phil. Abbild. Trochus, t. 3. f. 8.

Hab. — ?

13. PHORCUS NODICINCTUS, A. Adams. *P. testá conoideá, umbilicatá, fuscá luteo variegatá, lævi; anfractibus subplanulatis, cingulis tribus nodulosis, liris elevatis transversis ornatis, anfractu ultimo subangulato, basi convexiusculá, lineis elevatis concentricis sculptá, regione umbilicali albidá; columellá brevi, arcuatá, basi dentibus duobus terminatá; labro fusco marginato.*

Hab. — ?

14. PHORCUS GRANIFER, A. Adams. *P. testá orbiculato-conicá, fuscá, cingulis transversis granorum distantium ornatá, cingulis remotiusculis, interstitiis transversim liratis; anfractibus rotundatis, suturá canaliculatá; umbilico aperto, perspectivo; columellá sinuatá, basi dentibus duobus terminatá; labro intus crenulato.*

Hab. — ?

15. PHORCUS LIRATUS, A. Adams. *P. testá conoideá, umbilicatá, fuscá, lineis pallidis undulatis ornatá, cingulis distantioribus transversis insculptá; columellá sinuatá, basi dentibus tribus terminatá, umbilico aperto, perspectivo, peromphalo viridulo; labro intus lævi.*

Hab. — ?

16. PHORCUS SEMIGRANOSUS, A. Adams. *P. testá orbiculato-conoideá, umbilicatá, purpureo alboque variegatá, transversim tenuiter striatá; anfractibus planiusculis, cingulis confertis subgranosis ornatis, ultimo subangulato, basi planiusculá, cingulis granosis insculpto; margine umbilici lineá albá elevatá cincto; labio supra calloso; columellá supernè sinuatá, basi in tuberculis duobus terminatá et infra tuberculos dentibus duobus instructá; labro intus lævi, anticè callo marginato.*

Hab. West Indies.

17. PHORCUS CALIFORNICUS, A. Adams. *P. testá orbiculato-conicá, profundè umbilicatá, viridi, atro-purpureo radiatim maculatá, liris transversis subnodulosis inæqualibus ornatá; anfractu ultimo subangulato; basi convexiusculá; umbilico perspectivo; labio in medio valde excavato, columellá anticè dentatá, intus lævi.*

Hab. California. Mus. Cuming.

Genus 8. CLANCULUS, Montfort.

Polydonta b., Schum.—*Fragella*, Swainson.—*Apiculum*, sp., Humph.—*Monodonta*, sp., Lamk.—*Otavia*, Risso (not Cantraine).

1. CLANCULUS PHARAONIS, Linn.

Trochus Pharaonis, Linn. Syst. Nat. ed. 12. no. 584; Chemn. Conch. pl. 171. f. 1672–73.

Hab. — ?

2. CLANCULUS CORALLINUS, Gmel.
Trochus corallinus, Gmel. no. 3576 ; Adans. Senegal, p. 183. t. 12.
 f. 4.—*Monodonta punicea*, Phil.
Hab. — ?
3. CLANCULUS SMITHII, Wood.
Trochus Smithii, Gray in Wood, Ind. Test. Suppl. pl. 5. f. 20.
Hab. Japan.
4. CLANCULUS MAUGERI, Wood.
Trochus Maugeri, Gray in Wood, Ind. Test. Suppl. pl. 5. f. 27.
Hab. Australia.
5. CLANCULUS FLORIDUS, Phil.
Trochus clangulus, Gray in Wood, Ind. Test. Suppl. pl. 5. f. 31.
Hab. New Zealand (*Jukes*).
6. CLANCULUS MEDITERRANEUS, Wood.
Trochus mediterraneus, Wood, Ind. Test. Suppl. pl. 5. f. 32.—
Monodonta Vieilloti, Payr.—*Mon. Araonis*, Bast.
Hab. Naples ; on rocky ground (*Philippi*).
7. CLANCULUS CLANGULOIDES, Wood.
Trochus clanguloides, Gray in Wood, Ind. Test. Suppl. pl. 6. f. 39.
Hab. — ?
8. CLANCULUS LIMBATUS, Quoy et Gaimard.
Trochus limbatus, Quoy et Gaim. Voy. de l'Astrol. p. 245. pl. 63. f. 16.
Hab. — ?
9. CLANCULUS PATAGONICUS, d'Orbigny.
Monodonta Patagonica, d'Orb. Voy. dans l'Am. Mérid. t. 55. f. 2.
Hab. — ?
10. CLANCULUS COUTURII, Payr.
Monodonta Couturii, Payr. Cat. p. 134. t. 6. f. 19, 20.
Hab. Malta.
11. CLANCULUS RINGENS, Menke.
Monodonta ringens, Menke, Moll. Nov. Holl. sp. p. 14.
Hab. New Holland.
12. CLANCULUS AGRESTIS, Chemn.
Trochus (Globulus) agrestis, Chemn. Conch. p. 171. f. 1678.—
Monodonta villana, Phil.
Hab. — ?
13. CLANCULUS GUIANICUS, Chemn.
Trochus (Globulus) Guianicus, Chemn. Conch. pl. 171. f. 1680.—
Trochus Guineensis, Gmel.—*Trochus (Globulus) Subucula*, Chemn.
 (var.).
Hab. — ?

14. CLANCULUS JUSSIEUI, Payr.

Monodonta Jussieui, Payr. Cat. pl. 6. f. 17.*Hab.* Corsica; Languedoc; France.

15. CLANCULUS TURGIDULUS, Brocchi.

Trochus turgidulus, Brocchi.*Hab.* Corsica.

16. CLANCULUS LUPINUS, Menke.

Monodonta lupina, Menke, Moll. Nov. Holl. sp. p. 15.*Hab.* ———?

17. CLANCULUS KRAUSII, Phil.

Monodonta Krausii, Phil. Zeit. f. Malac. 1846, July, p. 101.*Hab.* ———?

18. CLANCULUS CORRUGATUS, Koch.

Trochus corrugatus, Koch; Phil. Abbild. p. 67. Troch. t. 2. f. 7.*Hab.* ———?

19. CLANCULUS OCHROLEUCUS, Phil.

Trochus ochroleucus, Phil. Zeit. f. Malac. 1846.

20. CLANCULUS SPADICEUS, Phil.

Trochus spadiceus, Phil. Zeit. f. Malac. 1846.

21. CLANCULUS ANUS, Phil.

Trochus anus, Phil. Zeit. f. Malac. 1846.

22. CLANCULUS PERSONATUS, Phil.

Trochus personatus, Phil. Zeit. f. Malac.*Hab.* New Holland. Mus. Hanley.

23. CLANCULUS SCABROSUS, Phil.

Trochus scabrosus, Phil. Zeit. f. Malac. 1846.

24. CLANCULUS LUDWIGI, Krauss.

Trochus Ludwigi, Krauss, Sudafrik Moll. t. 5. f. 33.

25. CLANCULUS MARGARITARIUS, Phil.

Monodonta margaritaria, Phil. Zeit. f. Malac. 1846, July, p. 100.26. CLANCULUS ORMOPHORUS, A. Adams. *C. testá depresso-**conicá, umbilicatá; anfractibus rotundatis, cingulis granorum**æqualibus ornatis, cingulo primo, secundo et tertio granis fuscis**albis alternantibus, quarto granis fuscis ornatis; anfractu penul-**timo gibboso, ultimo rotundato; umbilico crenulato; columellá**callosá, subreflexá, basi dente triplicato.**Hab.* ———?

27. *CLANCULUS VARIEGATUS*, A. Adams. *C. testá depresso-conicá, pallidá, rufo-fusco variegatá; anfractibus supra tumidis, cingulis granorum ornatis; interstitiis striis obliquis longitudinalibus; anfractu ultimo acutè angulato, basi plano; umbilico crenulato; columellá supra tortuosá, margine reflexá, crenulatá, basi dente buplicato terminatá; labro intus dentibus lamellaribus, superiore majore.*
Hab. Island of Siquijor, under stones (*H. C.*).

28. *CLANCULUS CINGULIFER*, A. Adams. *C. testá elevato-conoideá, carneolá, cingulo albo rufoque articulado, ornatá; anfractibus rotundatis, cingulis transversis granosis sculptis; basi concavá, peromphalo albo roseo radiato, margine plicato; columellá crassá, supra nodosá, infra uniplicatá; basi dente triplicato terminatá; labro intus lirato; tuberculo maximo, prope marginem superiorem.*
Hab. — ?

29. *CLANCULUS MACULOSUS*, A. Adams. *C. testá elevato-conoideá, rufo-fuscá, maculis albidis variegatá; anfractibus rotundatis, cingulis granorum ornatis, interstitiis obliquè striatis, margine umbilici crenulato; columellá supra tuberculo magno instructá, basi dente buplicato terminatá; labro intus lirato, lird supremá maximá.*
Hab. — ?

30. *CLANCULUS SULCARIUS*, A. Adams. *C. testá parvá, albidá, fasciis fuscis radiatim ornatá, cingulis distantioribus granorum instructá, interstitiis longitudinaliter obliquè striatis; anfractibus parum convexis; margine umbilici crenulato; columellá dente pliciformi; labro intus crenulato.*
Hab. Island of Masbate, sandy mud, 7 fathoms (*H. C.*).

31. *CLANCULUS ACUMINATUS*, A. Adams. *C. testá elevato-conicá; spirá acuminatá, fuscá, nigro-fusco punctatá, cingulis transversis subdistantibus granorum ornatá; interstitiis lineis transversis et longitudinalibus decussatis; margine umbilici subnoduloso; columellá margine reflexo, integro, basi dente simplici magno terminatá; labro intus lirato.*
Hab. Sibonga, island of Zebu, under stones (*H. C.*).

32. *CLANCULUS ALBINUS*, A. Adams. *C. testá conoideá, albidá, cingulis granorum confertis ornatá, granis nonnullis fusco punctatis; anfractibus convexis, ultimo rotundato; margine umbilici plicato-dentato; columellá callosá, plicis duabus transversis, basi dente triplicato terminatá; labro supernè inflexo, intus lirato; tuberculo magno trisulcato prope marginem superiorem.*
Hab. — ?

33. *CLANCULUS TURBINOIDES*, A. Adams. *C. testá turbinato-conoideá, fuscá, cingulis subdistantibus granorum ornatá; interstitiis lineis transversis prominulis; anfractibus rotundatis, suturá canaliculatá; basi cingulis concentricis granorum instructá;*

umbilico dentato; columellá sulcatá, margine reflexá, tuberculis quatuor; labro intus lirato.

Hab. —?

34. *CLANCULUS STIGMATARIUS*, A. Adams. *C. testá elevato-conicá, cingulis confertis granorum ornatá, lutescenti cingulo tertio et septimo granis albis et roseis subdistantibus, basi granis roseis ornatá; umbilici margine subnodoso; columellá crassá, transversim subplicatá, basi dente magno triplicato terminatá; labro supra inflexo, intus lirato, tuberculo magno bisulcato prope marginem superiorem.*

Hab. Island of Corigidor, bay of Manila, coarse sand, 9 fathoms (H. C.).

35. *CLANCULUS TEXTILOSUS*, A. Adams. *C. testá conoideá; spirá acuminatá, cingulis granorum inæqualibus ornatá, primo, tertio et sexto coccineá, secundo, quarto, quinto et septimo granis albis nigris alternantibus ornatá; margine umbilici dentato; columellá biplicatá, margine acutá, basi dente triplicato terminatá; labro intus lirato, prope marginem superiorem tuberculo magno.*

Hab. Island of Ticao, sandy mud, 6 fathoms (H. C.).

36. *CLANCULUS MINOR*, A. Adams. *C. testá purvá, conicá, albidá, fasciis rufo-fuscis radiatim ornatá; anfractibus planis, cingulis transversis granosis sculptá, anfractu ultimo angulato, basi planiusculá, margine umbilici crenulatá; columellá tuberculo de-curvato terminatá; labro intus lirato.*

Hab. Island of Masbate, sandy mud, 7 fathoms (H. C.).

37. *CLANCULUS BRUNNEUS*, A. Adams. *C. testá depresso-conicá, fuscá, cingulis granorum subdistantibus ornatá; interstitiis longitudinaliter elevatè striatis; anfractibus planiusculis, ultimo acutè angulato, umbilici margine planá; columellá transversim plicatá, margine fimbriatá, basi dente biplicato terminatá; labro intus lirato, lirá supremá majore.*

Hab. —?

38. *CLANCULUS UNEDO*, A. Adams. *C. testá elevato-conoideá; spirá prominulá, apice roseo, cingulis granorum confertis (in anf. ultim. quinque) ornatá, coccineá, cingulo secundo, quarto et quinto granis albis et nigris ornatis; umbilici margine plicato-crenulatá; columellá obliquá, crassá, margine reflexá, basi dente magno triplicato terminatá; labro intus lirato, supra tuberculo magno.*

Hab. —?

39. *CLANCULUS ZEBRIDES*, A. Adams. *C. testá conoideá, fuscescenti, nigro-fusco radiatim pictá, cingulis granorum sculptá; interstitiis lineolis transversis elevatis; anfractibus rotundatis; umbilici margine crenulatá; columellá supra tuberculo, margine callosá, basi tuberculo magno terminatá; labro intus dentibus linearibus instructo.*

Hab. —?

40. CLANCULUS EDENTULUS, A. Adams. *C. testá orbiculato-conoidea, sordidè rufá, albo variegatá, cingulis transversis granosis sculptá; anfractibus parum convexis; umbilici margine subcrenulatá; columellá supra plicatá, infra edentulá, margine infra tuberculis tribus; labro intus subsulcato.*

Hab. — ?

41. CLANCULUS NIGRICANS, A. Adams. *C. testá depresso-conicá, umbilicatá, nigricante; anfractibus planis cingulis quinque granulatis ornatá, ultimo angulatá, carinis planis duabus in parte inferiore, cingulis 5-6 articulatis sulcisque intermediis sculptá; umbilici margine crenulato; columellá rectá, supernè solutá, in parte superiore tuberculatá, extus tuberculis tribus instructá; labro intus levi.*

Hab. — ?

42. CLANCULUS CARINATUS, A. Adams. *C. testá conicá, albidá, flammulis rubris pictá, anfractibus planis, cingulis inæqualibus confertis granorum ornatá, supra suturam angulatá, anfractu ultimo margine carinato, cariná albo rufoque articulatá; umbilici margine plano; columellá rectá, supra subcallosá, basi dente simplici acuto terminatá; labro intus sulcato.*

Hab. — ?

43. CLANCULUS MICRODON, A. Adams. *C. testá orbiculato-conicá, fuscá, nigro-fusco maculatá, cingulis granorum ornatá; interstitiis lineis elevatis transversis; anfractibus rotundatis, basi cingulis subnodosis, rufo- et nigro-fusco articulatá; umbilici margine dentato, dente superiore majore; columellá supra flexuosá, plicatá, margine reflexo, sulcato-crenulato, basi dente parvo terminatá; labro intus lirato.*

Hab. — ?

44. CLANCULUS OMALOMPHALUS, A. Adams. *C. testá depresso-conicá, pallidá, fusco maculatá, anfractibus paulum rotundatis, cingulis granorum ornatá; interstitiis striis longitudinalibus, anfractu ultimo acutè carinato, cariná albo rufoque articulatá, basi planá; umbilici margine plano; columellá transversim plicatá, margine reflexo dentato, basi dente biplicato terminatá; labro intus lirato.*

Hab. Sydney (Strange).

45. CLANCULUS GIBBOSUS, A. Adams. *C. testá depresso-conicá, pallidá, fasciis fuscis radiatim dispositis ornatá, cingulis transversis æqualibus granosis sculptá; anfractibus rotundatis, suturá profundá, canaliculatá, anfractu ultimo gibboso, infra subangulato; umbilici margine crenulato; columellá plicatá, margine reflexo supra dentato, basi dente magno biplicato terminatá; labro intus corrugato-crenulato, supra inflexo, tuberculo magno instructo.*

Hab. New Ireland (Jukes).

46. CLANCULUS CONSPERSUS, A. Adams. *C. testá orbiculato-conicá, rufescente, albo rubroque variegatá, cingulis moniliformibus transversis ornatá, cingulo infra suturam majore, anfractu ultimo angulato; columellá postice subcanaliculatá vix tortuosá, anticè plicá magná transversá terminatá; labro intus valdè dentato-lirato.*

Hab. —?

47. CLANCULUS NODILIRATUS, A. Adams. *C. testá depresso-turbinatá, carneolá, liris transversis nodulosis subdistantibus ornatá; interstitiis longitudinaliter tenuissimè striatis; anfractibus subquadratis, margine umbilici dentato; columellá rectá, anticè tuberculo parvo terminatá; labro intus lirato.*

Hab. —?

Genus 9. ZIZIPHINUS, Leach.

Calliostoma, Swains.—*Labio*, sp. Oken.—*Trochilus*, sp. Humph.

1. ZIZIPHINUS VULGARIS, Gray; Mrs. Gray, Fig. of Moll. An. p. 89.

Trochus ziziphinus, Linn. Syst. Nat. ed. 12. p. 1231.—*Trochus conulus*, Penn.—*Trochus zyziphinus*, Born.—*Trochus zezyphinus*, Chemn.—*Trochus discrepans*, Brown.—*Trochus Lyonsii*, Leach.—*Trochus albidus*, Wood.—*Trochus Sisyphinus*, Macgill.—*Trochus Sedgwickii*, Sow.—*Trochus conuloides*, Lamk.

Hab. British islands; Mediterranean; Norway, &c.

2. ZIZIPHINUS CONULUS, Linn.

Trochus conulus, Linn. Syst. Nat. ed. 12. p. 1230.—*Trochus violaceus*, Risso.

Hab. British islands.

3. ZIZIPHINUS ALABASTRUM, Beck.

Margarita alabastrum, Beck; Lovén, Ind. Moll. Scandin. p. 20.—*Trochus occidentalis*, Mighels & Ad.—*Trochus formosus*, Forbes.

Hab. British islands.

4. ZIZIPHINUS GRANULATUS, Born.

Trochus granulatus, Born, Test. Mus. Cæs. Vind. p. 337. pl. 12. f. 9, 10.—*Trochus papillosus*, Da Costa.—*Trochus fragilis*, Pultney.—*Trochus tenuis*, Montague.

Hab. British islands.

5. ZIZIPHINUS SELECTUS, Chemn.

Trochus selectus, Chemn. Conch. xi. t. 196. f. 1896–97.—*Ziziphinus tigris*, Gray.

Hab. New Zealand.

6. ZIZIPHINUS DOLIARIUS, Chemn.

Trochus doliarius, Chemn. Conch. x. t. 165. f. 1579–80.—*Ziziphinus canaliculatus*, Gray.

Hab. Australia; New Zealand.

7. ZIZIPHINUS CUNNINGHAMI, Gray.
Ziziphinus Cunninghami, Gray, Brit. Mus.
Hab. — ?
8. ZIZIPHINUS ANNULATUS, Martyn.
Trochus annulatus, Martyn, Conch. i. t. 33.—*Trochus virgineus*, Gmel.
Hab. Monterey, California (*Hartweg*).
9. ZIZIPHINUS GRANATUM, Gmel.
Trochus granatum, Gmel.; Chemn. Conch. v. t. 170. f. 1654–55.
Hab. Australia, Port Essington (*Jukes*).
10. ZIZIPHINUS ORNATUS, Lamk.
Trochus ornatus, Lamk. Hist. An. s. Vert. t. vii. p. 27.
Hab. — ?
11. ZIZIPHINUS ARMILLATUS, Wood.
Trochus armillatus, Wood, Ind. Test. Suppl. pl. 5. f. 5.
Hab. — ?
12. ZIZIPHINUS INTERRUPTUS, Wood.
Trochus interruptus, Wood, Ind. Test. Suppl. pl. 6. f. 42.
Hab. — ?
13. ZIZIPHINUS TRANQUEBARICUS, Chemn.
Trochus Tranquebaricus, Chemn. Conch. v. t. 166. f. 1595–96.
Hab. — ?
14. ZIZIPHINUS PYRAMIS, Gmel.
Trochus Pyramis, Gmel.; Chemn. Conch. v. pl. 170. f. 1652–53.
—*Trochus crenulatus*, Brocc.—*Trochus Matonii*, Payr.—*Trochus punctatus*, Ren.—*Trochus conulus*, Donov.—*Trochus tricolor*, Risso.
Hab. — ?
15. ZIZIPHINUS MONTAGUI, Gray.
Trochus Montagui, Gray; Wood, Ind. Test. Suppl. pl. 6. f. 43.—
Trochus striatus, Forbes.
Hab. British islands.
16. ZIZIPHINUS INDISTINCTUS, Wood.
Trochus indistinctus, Wood, Ind. Test. Suppl. pl. 6. f. 41.
Hab. — ?
17. ZIZIPHINUS PYRAMIDATUS, Lamk.
Trochus pyramidatus, Lamk. Hist. An. s. Vert. t. vii. p. 30.
Hab. — ?
18. ZIZIPHINUS LANGIERI, Payraud.
Trochus Langieri, Payraud. Cat.
Hab. — ?

19. ZIZIPHINUS JUJUBINUS, Gmel.

Trochus jujubinus, Gmel.; Chemn. Conch. v. pl. . f. .

Hab. Java.

20. ZIZIPHINUS FILOSUS, Wood.

Trochus filusus, Wood, Ind. Test. Suppl. pl. 5. f. 23.—*Trochus castaneus*, Nuttall?—*Trochus ligatus*, Gould.

Hab. Straits of Juan de Fuco, Upper California.

21. ZIZIPHINUS DUBIUS, Philippi.

Trochus dubius, Phil. En. Moll. Sicil. ii. p. 149. t. 25. f. 7.

Hab. Sicily.

22. ZIZIPHINUS GEMMOSUS, Reeve.

Trochus gemmosus, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 218. f. 9.

Hab. Puerto Galero, island of Mindanao, sandy mud, 6 fathoms.

23. ZIZIPHINUS EXIMIUS, Reeve.

Trochus eximius, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 218. f. 12.

Hab. —?

24. ZIZIPHINUS ANTONII, Koch.

Trochus Antonii, Koch; Phil. Abbild. Trochus, p. 2. t. 1. f. 4.

Hab. —?

25. ZIZIPHINUS EXIGUUS, Pultney.

Trochus exiguus, Pultney Hutchins, Hist. Dorset, p. 44.—*Trochus erythroleucus*, Gmel.; Lamk.—*Trochus exasperatus*, Penn.—*Trochus erythroleucus*, Hanley.—*Trochus conulus*, Da Costa.—*Trochus minutus*, Chemn.; Dillw.

Hab. Mediterranean; British islands.

26. ZIZIPHINUS STRIATUS, Linn.

Trochus striatus, Linn. Syst. Nat. ed. 12. p. 1230.—*Trochus parvus*, Da Costa.—*Trochus conicus*, Donovan.—*Trochus erythroleucus*, Maton & Rack.—*Trochus depictus*, Deshayes.—*Trochus Sartorii*, Arad & Magg.—*Trochus vittatus*, Lamk.

Hab. British islands.

27. ZIZIPHINUS CILIARIS, Menke.

Trochus ciliaris, Menke, Moll. Nov. Holl. p. 17; Phil. Abbild. Trochus, t. 7. f. 11.

Hab. —?

28. ZIZIPHINUS DECORATUS, Phil.

Trochus decoratus, Phil. Zeit. f. Malac. 1846, July, p. 102.

Hab. —?

29. ZIZIPHINUS LÆVIGATUS, Phil.

Trochus lævigatus, Phil. En. Moll. Sicil. v. 1. t. 11. f. 2.

Hab. Naples, rocky shores.

30. ZIZIPHINUS STRIGOSUS, Gmel.
Trochus strigosus, Gmel.; Chemn. Conch. v. t. 170. f. 1651.—
Trochus callichrous, Phil.
 Hab. Morocco.
31. ZIZIPHINUS LURIDUS, Nuttall.
Trochus luridus, Nuttall.
 Hab. Fayal.
32. ZIZIPHINUS BICINGULATUS, Lamk.
Trochus bicingulatus, Lamk. Hist. An. s. Vert. tom. vii. p. 27.—
Trochus vinctus, Phil.
 Hab. Rains Island (*Ince*).
33. ZIZIPHINUS MILLEGRANUS, Phil.
Trochus millegranus, Phil. En. Moll. Sicil. v. 1. p. 183. pl. 10. f. 25.
 —? *Trochus Clelandi*, Wood.—*Trochus Martini*, Smith.—*Trochus miliaris*, Scacc.
 Hab. —?
34. ZIZIPHINUS AGRESTIS, Phil.
Trochus agrestis, Phil. Abbild. p. 33, *Trochus*, t. 1. f. 6.
 Hab. Singapore, fine sand, 6 fathoms (*H. C.*).
35. ZIZIPHINUS CHLOROSTOMUS, Menke.
Trochus chlorostomus, Menke, Spec. Moll. Nov. Holl. p. 17; Phil.
 Abbild. *Trochus*, t. 2. f. 8.
 Hab. New Holland.
36. ZIZIPHINUS PERSPECTIVUS, Koch.
Trochus perspectivus, Koch; Phil. Abbild. *Trochus*, p. 2. t. 1. f. 5.
 Hab. —?
37. ZIZIPHINUS MINIATUS, Anton.
Trochus miniatus, Anton, Verzeich. p. 58; Phil. Abbild. *Trochus*,
 t. 1. f. 7.
 Hab. —?
38. ZIZIPHINUS GILVUS, Phil.
Trochus gilvus, Phil.
 Hab. —?
39. ZIZIPHINUS METAFORMIS, Phil.
Trochus metaformis, Phil.; Kust. Conch. Cab. t. 43. f. 13.
 Hab. —?
40. ZIZIPHINUS ZONAMESTUS, A. Adams. *Z. testâ obliquè pyramidalî, umbilicatâ, carnedâ, cingulis transversis granosis permultis ornatâ; interstitiis purpurascensibus, striis obliquis longitudinalibus; anfractibus planis, supra suturas angulatis, ultimo acutè angulato, basi plano-concavâ, cingulis granulatis insculptâ; umbi-*

lico magno, infundibuliformi, intus albo; aperturá rhomboided, intus albá; columellá rectá, basi truncatá.

Hab. Honduras (Dyson).

41. *ZIZIPHINUS TICAONICUS*, A. Adams. *Z. testá elevato-conicá, perforatá, luteá vel carned, liris transversis rufo articulatis prope suturas ornatá; anfractibus paulum rotundatis, longitudinaliter striatis, apice atro-purpureo; anfractu ultimo subangulato, basi convexiusculá, cingulis rufo-articulatis insculptá; aperturá subquadratá; columellá rectá, anticè subtruncatá; aperturá intus albá.*

Hab. Island of Ticao, sandy mud, 6 fathoms (H. C.).

42. *ZIZIPHINUS JAPONICUS*, A. Adams. *Z. testá turrítico-conicá, lævi, nitidá, imperforatá; anfractibus planis, basi lineis duabus impressis, ultimo angulato, rubrá flammulis fuscis et albidis ornatá, basi convexá, cingulis articulatis insculptá; aperturá subquadratá, intus viride iridescenti.*

Hab. Japan.

43. *ZIZIPHINUS ELEGANTULUS*, A. Adams. *Z. testá conicá, imperforatá, lutescenti; anfractibus planis, lineis elevatis distantibus granulatis moniliformibus violaceis alternis minoribus cinctá; interstitiis longitudinaliter striatis; basi planiusculá, cingulis quatuor violaceis ornatá; aperturá subquadratá, intus albá; columellá basi subtruncatá.*

Hab. Malacca, coral sand, 10 fathoms (H. C.).

44. *ZIZIPHINUS DECUSSATUS*, A. Adams. *Z. testá elevato-conicá, subperforatá, albidá, maculis viridibus longitudinalibus ornatá; anfractibus planis, basi marginatis, prominulis; cingulis transversis granulatis lineisque elevatis longitudinalibus decussatè insculptá; anfractu ultimo angulato, basi convexiusculá, cingulis granulatis ornatá; aperturá subquadratá; columellá rectá, basi truncatá.*

Hab. Calipan, Mindoro, coarse gravel, 12 fathoms (H. C.).

45. *ZIZIPHINUS RUBROPUNCTATUS*, A. Adams. *Z. testá parvá, orbiculato-conicá, lutescenti; cingulis transversis spinulosis ornatá (in anfractu ultimo quatuor), interstitiis clathratis pulcherrimè rubro-punctulatis.*

Hab. — ?

46. *ZIZIPHINUS UNICINCTUS*, A. Adams. *Z. testá turrítico-conicá, imperforatá, luteolá; anfractibus planis, subimbricatis, basi cingulis prominulis rubro-articulatis lineisque transversis confertis ornatís; anfractu ultimo angulato, basi productá, lineis concentricis et cingulá elevatá articulatá sculptá; aperturá subtrigoná; columellá rectá, basi subcanaliculatá.*

Hab. Lord Hood's Island, on pearl oysters, 8 to 10 fathoms (H. C.).

47. *ZIZIPHINUS NEBULOSUS*, A. Adams. *Z. testá conoideá, imperforatá, rufo-fuscá albo variegatá; anfractibus planiusculis, cingulis inæqualibus granorum ornatá, ultimo subangulato, basi convexiusculá, cingulis subgranulosis rufo alboque articulatis ornatá; aperturá subtetragoná; columellá albá, incurvatá, basi subtruncatá; labro intus lirato.*

Hab. Rains Island (*Ince*).

48. *ZIZIPHINUS PICTURATUS*, A. Adams. *Z. testá turrito-conicá, imperforatá, viridi aut violaceá, fasciis undulatis lineisque ziczaciformibus ornatá; anfractibus planis, basi marginatis crenulatis, lineis impressis transversis sculptá; anfractu ultimo angulato, basi convexiusculá; aperturá subquadratá, intus albá; columellá incurvá, basi truncatá.*

Hab. Delaguete, island of Negros, sandy mud, 7 fathoms (*H. C.*).

49. *ZIZIPHINUS ASPERULATUS*, A. Adams. *Z. testá conicá, imperforatá, albidá, maculis purpureis radiatim ornatá; anfractibus planiusculis, in medio carinatis, cingulis inæqualibus ornatá, superioribus granulatis, inferioribus subplanis; anfractu ultimo subangulato, basi planá, cingulis planis insculptá; regione umbilicali depressá, callo obtectá; aperturá subrotundá; columellá rectá, basi truncatá; labro intus lirato.*

Hab. — ?

50. *ZIZIPHINUS POLYCHROMA*, A. Adams. *Z. testá turrito-conicá, perforatá, viridi, fasciis albidis undulatis, lineis luteis angulatis variè pictá; anfractibus planis, subimbricatis; basi marginatis articulatis prominulis, lineis transversis subdistantibus impressis ornatá, longitudinaliter substriatá; anfractu ultimo angulato, basi convexiusculá, cingulis luteo articulatis insculptá; aperturá subquadratá, intus viridi; columellá rectá, basi subtruncatá.*

Hab. Island of Masbate, sandy mud, 7 fathoms (*H. C.*).

51. *ZIZIPHINUS DUPLICATUS*, A. Adams. *Z. testá turrito-conicá, imperforatá; anfractibus convexis cingulis granorum ornatá; basi cingulis duabus majoribus prominentibus instructis; interstitiis longitudinaliter striatis; anfractu ultimo subrotundato, basi convexiusculá, cingulis granorum insculptá; aperturá subrotundatá; labro intus lirato; columellá basi tuberculo terminatá.*

Hab. — ?

52. *ZIZIPHINUS CALIFORNICUS*, A. Adams. *Z. testá elevato-conicá, imperforatá, rufescenti; anfractibus subrotundatis, supra excavatis, liris transversis granulosis, duabus, supra suturam, majoribus; anfractu ultimo subrotundato, basi convexiusculá; aperturá subquadratá; columellá rectá, anticè subtuberculatá.*

Hab. California. (*Mus. Cuming.*)

Genus 10. CANTHIRIDUS, Montfort.

Eleuchus, sp. Humph.; Swains.—*Phasianella*, c., Menke.—*Trochus*, sp. Philippi.

1. CANTHIRIDUS IRIDIS, Chemn.

Trochus iridis, Chemn. Conch. v. t. 161. f. 1522–23.—*Trochus iris*, Gmel.

Hab. — ?

2. CANTHIRIDUS PURPURATUS, Martyn.

Trochus purpuratus, Martyn; Chemn. v. t. 161. f. 1524–25.—*Trochus notatus*, Gmel.—? *Trochus elegans*, Gmel.—? *Phasianella rubella*.

Hab. — ?

3. CANTHIRIDUS NITIDULUS, Phil.

Trochus nitidulus, Phil.; Kust. Conch. Cab. pl. 43. f. 10.

Hab. — ?

4. CANTHIRIDUS CINGULIGER, A. Adams. *C. testá elevato-conicá, cinereá, punctis fuscis in lineis flammulatis dispositis, transversim sulcatá; anfractibus planis, cingulá prominenti supra suturam, anfractu ultimo angulato, cingulo plano cincto; umbilico subobtecto; columellá rectá; labro intus albo, lævi.*

Hab. — ?

5. CANTHIRIDUS PUNCTULOSUS, A. Adams. *C. testá elevato-conicá, imperforatá, lævi, nitidá, cinereá, transversim sulcatá; cingulis transversis, luteo alboque punctatis nigro-maculatis ornatá; anfractibus planis, ultimo acutè angulato; regione umbilicali roseá; aperturá subquadratá; columellá albá, rectá, anticè subtruncatá; labro intus lævi, limbo punctulato.*

Hab. Swan River, 4 fathoms (Jukes).

6. CANTHIRIDUS ZEALANDICUS, A. Adams. *C. testá obliquè conicá, subturritá, imperforatá, lævi, nitidá; atro-purpureá, lineis pallidis transversis, ubique cinctá; anfractibus paulum convexis; aperturá obliquá, subrotundatá; labio albo, simplici, arcuato; labro intus sulcato, margaritaceo, vividè iridescenti.*

Hab. New Zealand.

7. CANTHIRIDUS MONILIGER, A. Adams. *C. testá elevato-conicá, imperforatá, cinereá, cingulis moniliformibus transversis ornatá; interstitiis longitudinaliter elevatè striatis; anfractibus planis, apice purpureo, suturá canaliculatá; anfractu ultimo angulato; aperturá subquadratá; columellá anticè subtruncatá; labro intus sulcato.*

Hab. Swan River, 8 fathoms (Jukes).

8. CANTHIRIDUS ARTICULARIS, A. Adams. *C. testá elevato-conicá, lævi, nitidá, cinereá; cingulis confertis, nigro alboque*

articulatis ornatá; interstitiis longitudinaliter striatis; anfractibus planis, ultimo angulato, basi planiusculá, cingulis articulatis sculptá; aperturá subquadratá; columellá anticè subtruncatá; labro intus lævi, limbo articulado.

Hab. — ?

9. *CANTHIRIDUS ARTIZONA*, A. Adams. *C. testá elevatè conoideá, pallidá; cingulis carneolis angustis elevatis transversis ornatá; interstitiis transversim striatis; anfractu ultimo angulato; aperturá intus viridescenti; labro intus lirato, limbo rufo articulado.*

Hab. — ?

10. *CANTHIRIDUS RUFOZONA*, A. Adams. *C. testá conoideá, pallidá, cingulis rubris transversis interstitiis planis ornatá; anfractu ultimo rotundato; labro intus albo, lævi, limbo rufo articulado; columellá albá.*

Hab. — ?

11. *CANTHIRIDUS TENEBROSUS*, A. Adams. *C. testá parvá, elevato-conicá, imperforatá, subnigrá, transversim sulcatá, sulcis albicantibus planis; anfractibus paulum convexis, ultimo subangulato, basi convexá; aperturá subrotundatá, intus albá, margaritaceá; labro intus sulcato.*

Hab. — ?

12. *CANTHIRIDUS NIGRICANS*, A. Adams. *C. testá depresso-conicá, atro-purpureá, cingulis elevatis transversis ornatá; interstitiis longitudinaliter obliquè striatis; anfractu ultimo subangulato; labro intus albo, sublævi, limbo nigro.*

Hab. — ?

13. *CANTHIRIDUS PALLIDULUS*, A. Adams. *C. testá elevato-conicá, imperforatá, pallidá; cingulis transversis elevatis luteo-articulatis ornatá; interstitiis concinnè longitudinaliter striatis; columellá subrectá, in medio tumidá; labro intus lirato.*

Hab. Australia.

Genus 11. ELEUCHUS, Swains.

Phasianella, d., Menke.—*Canthiridus*, sp. Gray.

1. *ELEUCHUS BADIUS*, Wood.

Trochus badius, Wood, Ind. Test. Suppl. pl. 6. fig. 46.

Hab. — ?

2. *ELEUCHUS ROSEUS*, Lamk.

Monodonta rosea, Lamk. Hist. An. s. Vert. t. vii. p. 37.

Hab. — ?

3. *ELEUCHUS LINEATUS*, Lamk.

Monodonta lineata, Lamk. Hist. An. s. Vert. t. vii. p. 38.

Hab. — ?

4. **ELEUCHUS IRISODONTES**, Quoy & Gaim.
Trochus irisodontes, Quoy & Gaim. Voy. de l'Astr. iii. p. 246.
 t. 63. f. 7-12.—*Monodonta virgata*, Menke.
Hab. —?
5. **ELEUCHUS BELLULUS**, Dunker.
Trochus bellulus, Dunker; Phil. Abbild. t. 7. f. 6.
Hab. —?
6. **ELEUCHUS APICINUS**, Menke.
Monodonta apicina, Menke, Moll. Nov. Holl. sp. p. 15.
Hab. —?
7. **ELEUCHUS LEUCOSTIGMA**, Menke.
Trochus leucostigma, Menke; Phil. Abbild. t. 7. f. 7.—*Phasi-
 nella leucostigma*, Menke.—*Canthiridus variegatus*, Gray.
Hab. —?
8. **ELEUCHUS AUSTRALIS**, Quoy & Gaim.
Trochus australis, Quoy & Gaim. Voy. de l'Astr. pl. 63. f. 13, 14.
Hab. —?
9. **ELEUCHUS SPLENDIDULUS**, Swains.
Eleuchus splendidulus, Swains. Treatise on Malacol. p. .
Hab. —?
10. **ELEUCHUS VULGARIS**, A. Adams. *E. testá ovato-conoideá,
 subturritá, imperforatá, lævigatá, virenti, transversim tenuis-
 simè striatá; lineis undulatis viridis pictá, basi convexá; aper-
 turá ovatá; columellá basi dente acuto terminatá; labro posticè
 subangulato.*
Hab. Swan River.
11. **ELEUCHUS RUTILUS**, A. Adams. *E. testá turrítico-conicá,
 imperforatá; spirá acuminatá, virido-fuscá, lineis longitudina-
 libus rufescentibus ornatá, transversim striatá; anfractu ul-
 timo vix angulato; aperturá intus vividè iridescente; labro
 viridi marginato.*
Hab. Australia.

Genus 12. **BANKIVIA**, Deshayes.

1. **BANKIVIA PURPURASCENS**, Beck.
Bankivia purpurascens, Beck; Deshayes, Manuel de Conchylio-
 logie.—*Bankivia varians*, Gray, MS. Mus. Brit.
Hab. Australia.
2. **BANKIVIA MAJOR**, A. Adams. *B. testá ovato-turritá, nigro-
 fuscá albo variegatá, lævigatá, longitudinaliter obliquè striatá;
 anfractu ultimo ventricosò, transversim sulcato; columellá albá,
 tortuosá.*
Hab. Australia. Mus. Cuming.

3. *BANKIVIA NITIDA*, A. Adams. *B. testá turritá, acuminatá, carneolá, suturis nigricantibus, lævi, nitidá, transversim tenuissimè striatá; columellá anticè tortuosá; labro ad marginem nigricante.*
Hab. Australia. Mus. Cuming.

Genus 13. *THALOTIA*, Gray.

Elenchus, sp. Humph.—*Helenchus*, Herman.

1. *THALOTIA PICTA*, Wood.
Trochus pictus, Wood, Ind. Test. Suppl. pl. 5. f. 28.—*Thalotia picta*, Gray.—*Monodonta turrita*, Menke.
Hab. New Holland.
2. *THALOTIA PULCHERRIMA*, Wood.
Trochus pulcherrimus, Wood, Ind. Test. Suppl. pl. 6. f. 45.—*Trochus Preissii*, Menke.—*Trochus porcatus*, Philippi.
Hab. New Zealand.
3. *THALOTIA AUSTRALIS*, Quoy et Gaim.
Trochus australis, Quoy et Gaim. Voy. de l'Astrol. pl. 63. f. 13, 14.
Hab. Australia.
4. *THALOTIA LEHMANNI*, Menke.
Trochus Lehmanni, Menke, Moll. Nov. Holl. sp. p. 18.—? *Phasianella elegans*, Lamarck.
Hab. New Holland.
5. *THALOTIA ELONGATA*, Wood.
Trochus elongatus, Wood, Ind. Test. Suppl. pl. 5. f. 19.—*Trochus attenuatus*, Jonas.
Hab. —?
6. *THALOTIA OBSCURA*, Wood.
Trochus obscurus, Wood, Ind. Test. Suppl. pl. 5. f. 26.—*Trochus signatus*, Jonas.
Hab. —?
7. *THALOTIA PYRGOS*, Phil.
Trochus pyrgos, Phil. Kust. Conch. Cab. pl. 43. f. 14.
Hab. —?
8. *THALOTIA ZEBUENSIS*, A. Adams. *Th. testá elevato-conoideá, perforatá, atro-fuscá, fasciis longitudinalibus ornatá, transversim sulcatá; anfractibus planulatis, ultimo rotundato, basi convexá; labio subrecto, anticè reflexo, dilatato; aperturá sub-circulari, intus albá; labro intus lævi, atro-marginato.*
Hab. San Nicholas, island of Zebu, sandy mud, 6 fathoms (H.C.).
9. *THALOTIA STRIGATA*, A. Adams. *Th. testá turrito-conicá, perforatá, albidá, fasciis latis rufo-fuscis radiatá; anfractibus in*

medio angulatis porcis transversis subgranulosis, interstitiis longitudinaliter striatis ornatá, basi convexá, concentricè porcatá; umbilico aperto; aperturá subrotundatá; columellá subflexuosá, basi truncatá; labro intus lirato, margine crenulato.

Hab. Swan Point, N. Australia (*Dring*).

10. *THALOTIA ZEBRIDES*, A. Adams. *Th. testá turrítico-conicá, subperforatá, virescenti, lineis atro-purpureis longitudinalibus ornatá, porcis transversis confertis sculptá, longitudinaliter striatá, basi convexá; umbilico subobtecto; columellá sinuatá, callo terminatá; labro intus lirato, margine atro-purpureo articulado.*

Hab. —?

11. *THALOTIA SUTURALIS*, A. Adams. *Th. testá conicá, subperforatá, virescenti, lineis purpureis longitudinalibus undulatis ornatá, transversim liratá, longitudinaliter striatá; anfractibus planis, supra suturam elevatis; suturá canaliculatá, basi planiusculá; columellá brevi, basi tuberculo terminatá; labro intus lævi, viridi.*

Hab. Cape Upstart, Torres Straits, Australia, under stones, low water (*Dring*).

12. *THALOTIA TRICINGULATA*, A. Adams. *Th. testá conicá, imperforatá, nigrá, lineis albis longitudinalibus ornatá; anfractibus angulatis, ultimo cingulis tribus transversis prominentibus instructo, basi convexá, cingulis concentricis nigro alboque articulatis ornatá; labio ad basin tuberculato; aperturá subrotundatá, intus albá; labro intus liris elevatis, atro-marginato.*

Hab. —?

13. *THALOTIA CRENELLIFERA*, A. Adams. *Th. testá elevato-conicá, imperforatá, rufescente, rubro maculosá; spirá acuminatá, apice rubro; anfractibus planulatis, liris confertis, crenellatis, transversis, interstitiis obliquè longitudinaliter striatis; anfractu ultimo subangulato, basi convexiusculá; aperturá subquadratá, intus albá; columellá albá, incurvatá, anticè truncatá.*

Hab. Australia. Mus. Cuming.

Genus 14. MONODONTA, Lamarck.

Monodon, Schweiger.—*Monodontes*, Montfort.—*Odontis*, Sow.—*Trochidon*, Swains.—*Diloma*, Phil.—*Trochulus*, sp. Humph.

1. MONODONTA LABIO, Linn.

Trochus Labio, Linn. Syst. Nat. ed. 12. no. 595. p. 1230; Chemn. Conch. pl. 166. fig. 1579–81. v. p. 60.

Hab. —?

2. MONODONTA TURBINATA, Gmel.

Trochus turbinatus, Gmel. t. 63. f. D. E.

Hab. —?

3. **MONODONTA ASPERA**, Chemn.
Trochus asper, Chemn. v. pl. 166. f. 3582.
Hab. —?
4. **MONODONTA CANALIFERA**, Lamck.
Monodonta canalifera, Lamck. Hist. An. s. Vert. tom. vii. p. 35.
Hab. —?
5. **MONODONTA AUSTRALIS**, Lamck.
Monodonta australis, Lamck. Hist. An. s. Vert. tom. vii. p. 35 ;
 Chemn. Conch. ii. t. 196. f. 1890, 1891.
Hab. —?
6. **MONODONTA ATRATA**, Gmel.
Turbo atratus, Gmel. 3601 ; Chemn. Conch. pl. 177. f. 1754, 1755.
 —*Monodonta canaliculata*, Lamck.—*Monodonta Fermoni*, Payr.
Hab. Island of Ticao, on stones on the reefs, low water (*H. C.*).
7. **MONODONTA VIRIDIS**, Lamck.
Monodonta viridis, Lamck. Hist. An. s. Vert. tom. vii. p. 35.
Hab. Port Essington (*Jukes*).
8. **MONODONTA TRICARINATA**, Lamck.
Monodonta tricarinata, Lamck. Hist. An. s. Vert. vii. p. 36.
Hab. —?
9. **MONODONTA BACCATA**, Menke.
Monodonta baccata, Menke, Moll. Nov. Holl. sp. p. 14. no. 51.
Hab. New Holland.
10. **MONODONTA DUNKERI**, Koch.
Monodonta Dunkeri, Koch, Phil. Abbild. Trochus, tab. 2. f. 5.
Hab. —?
11. **MONODONTA PHILIPPII**, Koch.
Monodonta Philippii, Koch, Phil. Abbild. Trochus, tab. 2. f. 6.
Hab. —?
12. **MONODONTA CRENULATA**, Menke.
Monodonta crenulata, Menke, Moll. Nov. Holl. sp. p. .
Hab. —?
13. **MONODONTA ASPERSA**, Koch.
Trochus aspersus, Koch, Zeit. fur Malac. 1846, July, p. 103.
Hab. —?
14. **MONODONTA INDECORA**, Phil.
Trochus indecorus, Phil. Zeit. fur Malac. 1846, July, p. 104.
Hab. —?
15. **MONODONTA GEMMATA**, Gould.
Trochus (Monodonta) gemmatus, Gould, Exp. Shells, p. .
Hab. Sandwich Islands.

16. *MONODONTA INCONSPICUA*, Phil.

Trochus (Monodonta) inconspicuus, Phil. Kust. Conch. Cab. t. 43. f. 12.

Hab. — ?

17. *MONODONTA RUGULOSA*, A. Adams. *M. testá ovato-conoideá, depressá, atro-fuscá, fasciis latis luteo-albis irregulariter pictá, cingulis rotundatis interruptis ornatá; columellá basi bituberculatá, canali parallelo instructá, dente magno acuto terminatá; labro duplicato, intus lirato.*

Hab. — ?

18. *MONODONTA CIRCUMCINCTA*, A. Adams. *M. testá ovato-conoideá, imperforatá, lævi, nitidá, crassá, cingulis rubris albo viridi maculatis alternantibus pictá; anfractibus convexis; columellá basi tuberculatá, dente magno acuto terminatá; labro duplicato, intus lirato.*

Hab. Island of Ticao, on the stones on reefs at low water (*H. C.*).

19. *MONODONTA TUBERCULATA*, A. Adams. *M. testá ovato-conoideá, imperforatá, crassá, viridescenti, cingulis tuberculorum oblongorum violaceorum ornatá; anfractibus convexis; columellá basi trituberculatá, canali parallelo instructá, dente prominente acuto terminatá; labro duplicato, intus lirato.*

Hab. — ?

Subgenus *ARADASIA*, Gray.

Operculum suborbicular, paucispiral.

Aradasia, Gray, in Mrs. Gray's Figures of Molluscous Animals, p. 90. — ? *Otavia*, Cantr.

20. *MONODONTA SULCIFERA*, A. Adams. *M. testá globoso-conicá, umbilicatá, fuscá, cingulis granorum distantium moniliformibus, interstitiis profundè sulcatis, sulcis sublævibus longitudinaliter striatis ornatá; columellá ad basin trisulcatá, dente parvo acuto instructá; labro tenui, intus sulcato.*

Hab. Roebuck Bay, North Australia (*Dring*).

21. *MONODONTA CLATHRATA*, A. Adams. *M. testá ovato-conoideá, albá, imperforatá, cingulis subgranosis distantibus ornatá, in anfractu ultimo septem, interstitiis costulis longitudinalibus eleganter clathratis; columellá tuberculo parvo terminatá; labro intus sulcato.*

Hab. Guidulman, island of Bohol, rocky ground, 60 fathoms (*H. C.*).

22. *MONODONTA TRICINGULATA*, A. Adams. *M. testá globoso-conoideá, umbilicatá, rubente, albo et fusco variegatá, cingulis parvulis granorum ornatá; suturá canaliculatá; anfractibus convexis, carinis tribus transversis prominentibus cinctis; umbilico profundo; columellá ad basin tuberculo parvo terminatá; labro expanso, tenui, intus lævi.*

Hab. Malacca; Singapore, fine sand, 6 fathoms (*H. C.*).

23. **MONODONTA PHILIPPINA**, A. Adams. *M. testá globoso-conicá, perforatá, fuscá nigro punctatá; cingulis granulatis inæqualibus ornatá, interstitiis clathratulis; umbilico parvo; columellá tuberculo parvo terminatá; labro intus sulcato.*
Hab. Puerto Galero, island of Mindoro, in coarse sand, 9 fathoms; Bolinao, province of Zambales, island of Luzon, sandy mud, 10 fathoms (*H. C.*).
24. **MONODONTA EDENTULA**, A. Adams. *M. testá ovato-conoideá, umbilicatá, fuscá, costellis transversis imbricatis, interstitiis clathratis sculptá; anfractibus valde rotundatis; umbilico infundibuliformi; columellá subrectá, basi tuberculo terminatá; labro margine crenulato.*
Hab. Catbalonga, island of Samar, sandy mud, 6 fathoms (*H. C.*).
 Mus. Cuming.
25. **MONODONTA FOVEOLATA**, A. Adams. *M. testá globoso-conoideá, subperforatá, crassá, albá, cingulis transversis nodulosis subdistantibus (in anfractu ultimo septem), interstitiis costellis longitudinalibus foveolatis ornatá; columellá dente minuto terminatá; labro intus crasso et lirato.*
Hab. Lord Hood's Island, on pearl oysters, 8 to 10 fathoms (*H. C.*).
 Mus. Cuming.
26. **MONODONTA EXIGUA**, A. Adams. *M. testá parvâ, conoideá, umbilicatá, albidâ fusco variegatâ, cingulis transversis granulosis interstitiis longitudinaliter liratis ornatá; anfractibus parum convexis, ultimo subangulato; umbilico recto, dente valido acuto terminatá; labro intus sulcato.*
Hab. Japan (*Siebold*).
27. **MONODONTA RUBRA**, A. Adams. *M. testá globoso-conoideá, umbilicatá, rubrá, cingulis transversis granorum moniliformibus æquantibus interstitiis lineis longitudinalibus impressis ornatá; anfractibus rotundatis, suturâ canaliculatá, umbilico magno; columellá rectá, dente prominente terminatá; labro intus crasso, sulcato.*
Hab. — ?
28. **MONODONTA ALVEOLATA**, A. Adams. *M. testá globoso-conoideá, umbilicatá, albidâ, fasciis fuscis longitudinalibus undulatis pictâ, cingulis transversis granorum acutorum interstitiis costis longitudinalibus alveolatis ornatá; suturâ canaliculatá; umbilico angusto; columellá rectá, dente valido terminatá; labro intus valde lirato.*
Hab. Guidulman, island of Bohol, rocky ground, 60 fathoms; Baclayon, island of Bohol, under stones, low water; island of Capul, on the reefs at low water (*H. C.*). Mus. Cuming.
29. **MONODONTA ANGULIFERA**, A. Adams. *M. testá elevato-conoideá, imperforatá; anfractibus planiusculis, imbricatis, infernè angulatis, longitudinaliter nodoso-costatis, cingulis trans-*

versis tuberculorum subdistantium interstitiis alveolatis ornatá; anfractu ultimo subangulato; columellá rectá, brevi, dente parvo terminatá; labro subduplicato, intus sulcato.

Hab. Puerto Galero, island of Mindoro, sandy mud, 6 fathoms (H. C.). Mus. Cuming.

30. *MONODONTA STRANGEI*, A. Adams. *M. testá conoideá, perforatá, fuscá, cingulis granorum æqualibus confertis ornatá; anfractibus parum convexis, ultimo subangulato; columellá curvatá, dente obtuso terminatá; labro intus sulcato, tuberculo propè basin columellæ.*

Hab. Sydney, under stones (*Strange*).

31. *MONODONTA PUNCTIGERA*, A. Adams. *M. testá globoso-conoideá, umbilicatá, albá fusco punctatá, cingulis granulosis inæqualibus rufo-punctatis ornatá; suturá canaliculatá; anfractibus rotundatis; umbilico aperto, infundibuliformi; columellá rectá, brevi, basi bituberculatá, dente parvo acuto terminatá; labro expanso, intus sulcato.*

Hab. Singapore, fine sand, 6 fathoms (H. C.). Mus. Cuming.

32. *MONODONTA EXASPERATA*, A. Adams. *M. testá globoso-conoideá, umbilicatá, subdepressá, albidá nigro-variegatá, cingulis spino-granulatis exasperatá; columellá sinuatá, dente prominenti terminatá; labro incrassato, duplicato, intus valde lirato.*

Hab. Sibonga, island of Zebu, at low water (H. C.); island of Siquijor, under stones. Mus. Cuming.

33. *MONODONTA SPILOTA*, A. Adams. *M. testá parvâ, ovato-depressâ, conoideá, imperforatâ, lævi, nitidâ, viridi, maculis pallidis triangularibus; columellá planâ, albâ, canali parallelo instructâ, dente obtuso terminatá; labro duplicato, intus lirato.*

Hab. —?

34. *MONODONTA LIROSTOMA*, A. Adams. *M. testá elevato-conicâ, imperforatâ, albidâ; anfractibus planis, cingulis tribus granulatis, interstitiis valde clathratis; suturá canaliculatá; anfractu ultimo angulato; columellá tuberculatá; labro intus valde lirato.*

Hab. Lord Hood's Island, on pearl oysters, 8 to 10 fathoms (H. C.). Mus. Cuming.

Genus 15. LABIO, Oken.

Osilinus, Philippi.—*Trochius*, Leach.—*Gibbium*, Gray.—*Monodonta*, sp. Lamck.—*Melagraphia*, Steutz.

1. LABIO CONSTRICTA, Lamck.

Monodonta constricta, Lamck. Hist. An. s. Vert. tom. vii. p. 36.—*Monodonta interrupta*, Menke (olim).—*L' Oslin*, Adanson.

Hab. Australia.

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2. LABIO TESSELLATA, Chemn.

Trochus tessellatus, Chemn. Conch. t. 166. f. 1583-87.—*Trochus tessellatus*, Born.—*Monodonta fragarioides*, Lamck.—*Monodonta Olivieri*, Payr.

Hab. New Zealand.

3. LABIO ZEBRA, Wood.

Trochus zebra, Wood, Ind. Test. Suppl. pl. 5. f. 18.—*Trochus atratus*, Wood.

Hab. —?

4. LABIO RETICULARIS, Wood.

Trochus reticularis, Wood, Ind. Test. Suppl. pl. 5. f. 35.—*Turbo lunaris*, &c., Chemn. Conch. pl. 185. f. 1849.—*Tr. concameratus*, Wood.

Hab. New Zealand and Australia.

5. LABIO ARTICULATA, Lamck.

Monodonta articulata, Lamck. Hist. An. s. Vert. tom. vii. p. 36.—*Monodonta Draparnaudii*, Payr.

Hab. Malta.

6. LABIO SULCATA, Wood.

Trochus sulcatus, Wood, Ind. Test. Suppl. pl. 6. f. 40.

Hab. New Zealand (*Earl*).

7. LABIO TÆNIATA, Quoy et Gaim.

Trochus tæniatus, Quoy et Gaim. Voy. de l'Astrol. p. 249. pl. 63. f. 15-17.

Hab. New Zealand.

8. LABIO STRIOLATA, Quoy et Gaim.

Trochus striolatus, Quoy et Gaim. Voy. de l'Astr. p. 253. pl. 63. f. 18-22.

Hab. Australia.

9. LABIO ZEALANDICA, Quoy et Gaim.

Trochus Zealandicus, Quoy et Gaim. Voy. de l'Astr. p. 237. pl. 64. f. 12-15.

Hab. New Zealand.

10. LABIO CINGULATA, Quoy et Gaimard.

Trochus cingulatus, Quoy et Gaim. Voy. de l'Astr. p. 259. pl. 64. f. 16-20.—*Trochus radula*, Philippi.

Hab. New Zealand.

11. LABIO NIGERRIMA, Gmel.

Turbo nigerrimus, Gmel. Chemn. v. pl. 185. f. 1848.

Hab. New Zealand (*Earl*).

12. LABIO SUBROSTRATA, Gray.

Monodonta subrostrata, Gray.

Hab. Australia.

13. LABIO MELANOLOMA, Menke.

Monodonta melanoloma, Menke, Moll. Nov. Holl. specim. p. 14. no. 50.—*Trochus melanonoma*, Phil. Abbild. p. 22.

Hab. New Zealand.

14. LABIO TAMSII, Dunker.

Trochus Tamsii, Dunker, Phil. Abbild. Trochus, t. 5. f. 3.

Hab. South Africa; Guinea; Cape of Good Hope.

15. LABIO SCORPIO, Gray.

Monodonta scorpio, Gray.

Hab. New Zealand.

16. LABIO PICA, Chemn.

Turbo pica, Chemn. Conch. v. pl. 175. f. 1850.—*Trochus zebri-
nus*, Philippi.

Hab. New Zealand.

17. LABIO LINEATA, Da Costa.

Turbo lineatus, Da Costa, Brit. Conch. p. 100. pl. 6. f. 7.—*Trochus
crassus*, Pultney.—*Monodonta lugubris*, Lamk.—*Trochus punctula-
tus*, Blainv.—*Monodonta crassa*, MacGill.—*Trochus lineatus*, Forbes
& Hanley.

Hab. British Islands.

18. LABIO TURGESTINA, Phil.

Trochus turgestinus, Phil. Kust. Conch. Cab.

19. LABIO INDECORA, Phil.

Trochus indecorus, Phil. Kust. Conch. Cab.

20. LABIO FULGURATA, Phil.

Trochus fulguratus, Phil. Kust. Conch. Cab.

21. LABIO CRINITUS, Phil.

Trochus crinitus, Phil. Kust. Conch. Cab.

22. LABIO PORCATA, A. Adams. *L. testá ovato-conoideá, imper-
foratá, fuscá albo reticulatá; anfractibus convexis, transversim
carinatis, carinis numerosis, elevatis, distantibus; labio albo,
inferne subcalloso; labro intus sulcato.*

Hab. Australia.

23. LABIO PORCIFERA, A. Adams. *L. testá orbiculato-conicá,
imperforatá, fulvescente, liris transversis æquidistantibus nigro-
articulatis ornatá; longitudinaliter obliquè striatá; labio plano,
regione umbilicali impresso; columellá tuberculis duobus, infe-
riore majore; labro intus duplicato, margine luteo nigro-articu-
lato.*

Hab. — ?

24. LABIO RUDIS, A. Adams. *L. testá orbiculato-conicá, imper-
foratá; spirá obtusá, lutescente, lineis transversis nigris ornatá,*

longitudinaliter obliquè striatá, transversim subexaratá; labio complanato; columellá anticè subtuberculatá; labro nigro luteoque intus marginato.

Hab. Australia.

25. LABIO FULIGINEA, A. Adams. *L. testá orbiculato-conicá, imperforatá, nigrá, liris transversis æquidistantibus luteo-articulatis ornatá; regione umbilicali impressá; columellá tuberculis duobus, antico majore; labro duplicato, nigro-marginato.*

Hab. — ?

26. LABIO CORROSA, A. Adams. *L. testá turbinatá, imperforatá, spirá elevatiusculá, anfractibus rotundatis, rugosá, cinereo-lutescente; anfractu ultimo subangulato; labio complanato; columellá simplici; labro luteo marginato.*

Hab. New Zealand (*Hart*).

27. LABIO CONCOLOR, A. Adams. *L. testá turbinato-conicá, imperforatá; spirá acutá, brunneá, longitudinaliter obliquè striatá, transversim subliratá; labio complanato, regione umbilicali impresso; columellá arcuatá, anticè tuberculo terminatá; labro nigro-fusco marginato.*

Hab. New Zealand (*Hart*).

Genus 16. CHLOROSTOMA, Swainson.—*Oxysteles*, Philippi.

1. CHLOROSTOMA ARGYROSTOMA, Chemn.

Trochus argyrostomus, Chemn. v. pl. 165. f. 1562, 1563.

Hab. Cape of Good Hope.

2. CHLOROSTOMA AGRESTE, Chemn.

Trochus agrestis, Chemn. v. pl. . f. 1645, 1646.—*Trochus rusticus*, Gmel.

Hab. South Seas.

3. CHLOROSTOMA NIGERRIMUM, Gmel.

Trochus nigerrimus, Gmel.; Chemn. v. pl. . f. 1647.

Hab. New Zealand.

4. CHLOROSTOMA ÀTRUM, Lesson.

Trochus ater, Lesson, Voy. de la Coquille, Moll. pl. 16. f. 2.—*Trochus atropurpureus*, Jonas.

Hab. Valparaiso, under stones (*H. C.*).

5. CHLOROSTOMA MÆSTUM, Jonas.

Trochus mæstus, Jonas, Zeit. f. Malac. 1844, August, p. 113.

Hab. Chili.

6. CHLOROSTOMA TIGRINUM, Chemn.

Trochus tigrinus, Chemn. v. pl. 165. f. 1566.

Hab. Algoa Bay.

7. CHLOROSTOMA CARINATUM, Koch.

Trochus carinatus, Koch, Phil. Abbild. Troch. t. 2. f. 3.*Hab.* Valparaiso, 6 fathoms, coarse sand (*H. C.*).

8. CHLOROSTOMA EURYOMPHALUS, Jonas.

Trochus euryomphalus, Jonas, Zeit. f. Malac. 1844, August, p. 113.*Hab.* West coast of America.

9. CHLOROSTOMA STENOMPHALUS, Jonas.

Trochus stenomphalus, Jonas, Zeit. f. Malac. 1844, August, p. 114.—*Trochus tridens*, Jonas, olim.—*Trochus microstomus*, D'Orbigny.*Hab.* Valparaiso.

10. CHLOROSTOMA MERULA, Chemn.

Trochus merula, Chemn. v. pl. 165. f. 1564, 1565.—*Trochus Sinesis*, Gmel.—*Trochus lugubris*, Lamk.*Hab.* Cape of Good Hope.

11. CHLOROSTOMA MARGINATUM, Nuttall.

Trochus marginatus, Nuttall, MSS.*Hab.* Upper California.

12. CHLOROSTOMA CICER, Menke.

Trochus cicer, Menke, Phil. Abbild. Troch. t. 3. f. 5.*Hab.* —?

13. CHLOROSTOMA SAGITTIFERUM, Lamk.

Trochus sagittiferus, Lamck. Hist. An. s. Vert. tom. vii. p. .*Hab.* —?

14. CHLOROSTOMA TABULARE, Krauss.

Trochus tabularis, Krauss, Sudafrik. Mollusk. p. 97. t. 5. f. 30.*Hab.* Cape of Good Hope.

15. CHLOROSTOMA LÆVE, Chemn.

Trochus laevis, Chemn. Conch. v. p. 171. f. 1670.—*Trochus levi-*
gatus, Gmel.—*Trochus Richardi*, Payraud.*Hab.* —?

16. CHLOROSTOMA SAUCIATUM, Koch.

Trochus sauciatum, Koch, Phil. Abbild. Trochus, t. 5. f. 7.*Hab.* —?

17. CHLOROSTOMA BICANALICULATUM, Dunker.

Trochus bicanaliculatus, Dunker, Phil. Abbild. Troch. t. 5. f. 4.*Hab.* —?

18. CHLOROSTOMA PFEIFFERI, Philippi.

Trochus Pfeifferi, Phil. Zeit. f. Malac. 1846, July, p. 104.*Hab.* —?

19. **CHLOROSTOMA G ALLINA**, Forbes.
Trochus gallina, Forbes, Moll. Kellett's Voy.
 Hab. — ?
20. **CHLOROSTOMA PULLIGO**, Martyn.
Trochus pulligo, Martyn.
 Hab. — ?
21. **CHLOROSTOMA IMPERVIUM**, Menke.
Trochus impervius, Menke, Spec. Moll. Nov. Holland.—*Trochus
 suavis*, Phil. Kust. Conch. Cab. pl. 42. f. 1.
 Hab. New Holland.
22. **CHLOROSTOMA ODONTIS**, Wood.
Trochus odontis, Wood, Ind. Test. Suppl. pl. 6. f. 37.
 Hab. Port Philip, on the rocks at low water (Jukes).
23. **CHLOROSTOMA CASTANEUM**, A. Adams. *C. testá obliquè
 conicá, umbilicatá, castaneá; anfractibus planis, longitudinalli-
 ter obsolete nodoso-plicatis et obliquè striatis, penultimo infra
 marginato, ultimo acutangulo, basi concavo pallidè fuscá, lineis
 viridi-fuscis radiatim pictá; umbilico infundibuliformi, per-
 spectivo, intus albo, peromphalo albo lined elevatá cincto; aper-
 turá subrhomboidé; columellá supra sinuatá, basi dente ter-
 minatá.*
 Hab. — ?
24. **CHLOROSTOMA UNDULOSUM**, A. Adams. *C. testá globoso-
 conicá, imperforatá; spirá depressá, virescenti lineis undulatis
 atro-purpureis longitudinalibus ornatá, longitudinaliter sub-
 striatá; labio complanato, margine columellari subtuberculato;
 labro intus sulcato, margine luteo, atro-purpureo articulado.*
 Hab. New Zealand (Earl).
25. **CHLOROSTOMA TURBINATUM**, A. Adams. *C. testá turbi-
 natá, profundè umbilicatá, nigrá; spirá obtusá, longitudinaliter
 subplicatá, transversim sulcosá; anfractu ultimo rotundato, re-
 gione umbilicali partim callo lutescente obtectá; columellá
 anticè bituberculatá; labro nigro marginato.*
 Hab. — ?
26. **CHLOROSTOMA RUGOSUM**, A. Adams. *C. testá turbinato-
 conoidali, profundè umbilicatá, luteo-fuscá, nigro variegatá, lon-
 gitudinaliter nodoso-plicatá, transversim sulcatá; anfractu ul-
 timo rotundato, infra suturam angustato; columellá incurvatá,
 anticè bituberculatá, tuberculo supremo magno, prominente; la-
 bro fusco marginato.*
 Hab. — ?
27. **CHLOROSTOMA CORRUGATUM**, A. Adams. *C. testá orbicu-
 lato-conoidali, profundè umbilicatá; spirá subacutá, longitudi-*

naliter corrugato-plicatá et obliquè striatá; anfractu ultimo subrotundato, basi plano convexo, regione umbilicali albido subcalloso; columellá tuberculis duobus, supremo magno.

Hab. — ?

28. *CHLOROSTOMA TROPIDOPHORUM*, A. Adams. *C. testá orbiculato-depressá, profundè umblicatá; spirá brevi, nigrá, transversim sulcatá, cingulis transversis prominentibus ornatá; anfractu ultimo carinato, basi concentricè exarato, regione umbilicali albo sulco circulari circumdato; columellá tuberculis duobus, supremo acuto, prominente.*

Hab. Valparaiso.

29. *CHLOROSTOMA MACULOSUM*, A. Adams. *C. testá conicá, profundè umblicatá, viridi-fuscá, maculis nigro-fuscis ornatá; anfractibus planulatis, longitudinaliter substriatis, transversim striatis; anfractu ultimo angulato, basi concavo; columellá anticè tuberculo acuto terminatá.*

Hab. — ?

30. *CHLOROSTOMA SEMINODOSUM*, A. Adams. *C. testá depresso-conicá, profundè umblicatá, fuscá; anfractibus planulatis, supernè subnodosis, longitudinaliter obliquè striatis; anfractu ultimo angulato, supra angulum cingulá transversá elevatá ornato, basi planiusculá; columellá tuberculis duobus, supremo acuto, prominente.*

Hab. — ?

31. *CHLOROSTOMA ARTICULATUM*, A. Adams. *C. testá orbiculato-conicá, umblicatá, nigro-fuscá, cingulis transversis elevatis albo-articulatis ornatá; anfractu ultimo subangulato, basi cingulis albo-articulatis instructo, regione umbilicali viridi; columellá tuberculo parvo terminatá.*

Hab. — ?

32. *CHLOROSTOMA XANTHOSTIGMA*, A. Adams. *C. testá conoideá, imperforatá, glabrá, nigrá, longitudinaliter obliquè substriatá; anfractibus parum rotundatis, basi concentricè lirato, luteo-carneolo; regione umbilicali callo luteo obtectá; columellá arcuatá, basi dente terminatá et infra tuberculo instructá.*

Hab. — ?

33. *CHLOROSTOMA TURBINATUM*, A. Adams. *C. testá ovato-conoideá, imperforatá, castaneá, lævi, longitudinaliter obliquè striatá, striis transversis indistinctis insculptá; anfractibus rotundatis, suturá angustè canaliculatá, regione umbilicali impressá; labio curvato, basi dente et tuberculo terminatá; labro intus sulcato.*

Hab. — ?

Genus 17. GIBBULA, Leach.

Trochus, sp. Linn.—*Steromphala*, Leach.—*Monodonta*, sp. Lam.

1. GIBBULA MAGUS, Linn.

Trochus magus, Linn. Syst. Nat. ed. 12. p. 1228.—*Trochus tuberculatus*, Da Costa.

Hab. British Islands.

2. GIBBULA FANULUM, Gmel.

Trochus Fanulum, Gmel., Petiver, Gazoph. t. 156. f. 15.

Hab. Malta.

3. GIBBULA DECLIVIS, Forskal.

Turbo declivis, Forsk. Descr. Anim. p. 126; Chemn. Conch. pl. 171. f. 1663, 1664.—*Trochus Ægyptiacus*, Gmel.

Hab. Suez.

4. GIBBULA CINERARIA, Linn.

Trochus cinerarius, Linn. Syst. Nat. ed. 12. p. 1229.—*Trochus lineatus*, Da Costa.—*Trochus perforatus*, Smith.—*Trochus inflatus*, Blainv.—*Trochus versicolor*, Andrg.—*Trochus lineolatus*, Potiez and Mich.—*Trochus littoralis*, Brown.—*Trochus electissimus*, Bean.

Hab. British Islands.

5. GIBBULA SCABRA, Linn.

Trochus scaber, Linn. Syst. Nat. ed. 10. no. 510. p. 785; Chemn. Conch. t. 171. f. 1667.

Hab. European Seas.

6. GIBBULA QUADRATA, Gmel.

Trochus quadratus, Gmel., Wood, Ind. Test. pl. 29. f. 45; Chemn. Conch. pl. 171. f. 1683.—*Trochus Biasoletti*, Philippi.—*Trochus magulus*, Deshayes.

Hab. Mediterranean.

7. GIBBULA FUSCATA, Born.

Trochus fuscatus, Born, Test. Mus. Cæsar. t. 12. f. 1, 2.—*Trochus umbilicaris*, Lamk. (not Linn.)

Hab. ——— ?

8. GIBBULA CINEREA, Montague.

Trochus cinereus, Mont., Donovan. Nat. Hist. Brit. Sh. v. t. 155. f. 3.

Hab. Britain.

9. GIBBULA DIVARICATA, Linn.

Trochus divaricatus, Linn. Syst. Nat. ed. 12. p. 1229.—*Trochus rarilineatus*, Michaud.—? *Turbo sanguineus*, Gmel.

Hab. Mediterranean.

10. GIBBULA TUMIDA, Montague.

Trochus tumidus, Mont. Test. Brit. t. 10. f. 4.—*Trochus Rackettii*,

Payr.—*Trochus patholatus*, Dillw.—? *Trochus nassaviensis*, Chemn.—*Trochus nitens*, Woodward.—*Margarita undulata*, var. *trochiformis*, Forbes.—Fry, *Skenea serpuloides*, Macgillivray.

Hab. British Islands, Mediterranean.

11. GIBBULA ADANSONII, Payraud.

Trochus Adansonii, Payr. Cat.—*Trochus radiatus*, Phil.—*Trochus turbinoides*, Desh.—*Trochus euxinicus*, Andrg.

Hab. Corsica, France.

12. GIBBULA AGATHENSIS, Recluz.

Trochus Agathensis, Recluz.

Hab. —?

13. GIBBULA VARIA, Gmel.

Trochus varius, Gmel.—*Trochus varians*, Desh.—*Trochus Gabaldianus* (quibusd.).—*Trochus lævigatus*, Gmel.?

Hab. —?

14. GIBBULA MULTICOLOR, Krauss.

Trochus multicolor, Krauss, Sudafrik. Moll. t. 5. f. 31.

Hab. Cape of Good Hope.

15. GIBBULA PHILBERTI, Recluz.

Trochus Philberti, Recl.

Hab. —?

16. GIBBULA JUCUNDA, Gould.

Trochus jucundus, Gould, Expedition, Shells, p. 56.

Hab. —?

17. GIBBULA CAPENSIS, Gmel.

Trochus Capensis, Gmel. Syst. Nat. no. 40; Chemn. Conch. v. t. 171. f. 1661, 1662.

Hab. Cape of Good Hope.

18. GIBBULA VULNERATA, Philippi.

Trochus vulneratus, Phil. Zeit. f. Malac. 1846.

Hab. —?

19. GIBBULA FASCIATA, Born.

Trochus fasciatus, Born.—*Trochus canaliculatus*, Phil.—*Monodonta Fermonii*, Payr.

Hab. —?

20. GIBBULA UMBILICATA, Montague.

Trochus umbilicatus, Mont. Test. Brit. p. 286.—*Trochus umbilicaris*, Pennant.—*Trochus umbilicalis*, Da Costa.—*Trochus obliquoradiatus*, Chemn.—*Trochus cinerarius*, Pultney.

Hab. British Islands.

21. GIBBULA ROTELLIFORMIS, Philippi.

Trochus rotelliformis, Phil. Zeit. f. Malac. 1846.

Hab. —?

22. GIBBULA ADELAIDÆ, Philippi.

Trochus Adalaidæ, Phil. Zeit. f. Malac. 1846.

Hab. —?

23. GIBBULA OBLIQUATA, Gmel.

Trochus obliquatus, Gmel. Syst. Nat.; Wood, Suppl.

Hab. —?

24. GIBBULA FUMOSA, Philippi.

Trochus fumosus, Phil. Zeit. f. Malac. 1846.

Hab. —?

25. GIBBULA SULCOSA, A. Adams. *G. testá conoideá, umbilicatá, maculis roseis flammulis albo-punctatis variegatá, anfractibus paulum convexis, longitudinaliter substriatá, transversim sulcatá, sulcis subdistantibus, anfractu ultimo subangulato, basi convexiusculá, lineis impressis concentricis sculptá; aperturá suborbiculari; columellá supernè sinuatá, basi subtruncatá.*

Hab. Sir C. Hardy's Island, North Australia, 8 fathoms, coarse sand (Mr. Jukes).

26. GIBBULA MINDORENSIS, A. Adams. *G. testá elevato-conoideá, perforatá, viridi-fuscá, fasciis pallidis longitudinalibus ornatá; anfractibus rotundatis, liris transversis subgranulosis cinctis, ultimo subangulato, basi convexá; columellá subrectá, basi tuberculo terminatá; labro intus sulcato.*

Hab. Puerto Galero, island of Mindoro, in coarse sand, 9 fathoms (H. C.).

27. GIBBULA UNDOSEA, A. Adams. *G. testá orbiculato-conoideá, umbilicatá, virescenti, lineis fusco-viridibus undatis longitudinalibus pictá; anfractibus rotundatis, transversim tenuè liratis, ultimo subangulato, basi convexá; aperturá expansá, intus iridescenti; columellá supernè sinuatá, basi rotundatá.*

Hab. —?

28. GIBBULA PORCELLANA, A. Adams. *G. testá depresso-conicá, latè umbilicatá, glabrá, solidá, nitidá, lacteá, lineis radiantibus undulatis pulcherrimè pictá; anfractibus planis cingulis prominentibus, duabus maculis albis et rufo-fuscis vividè pictis ornatá; interstitiis transversim sulcatis, basi convexiusculá, cingulis concentricis lineis maculisque rufo-fuscis ornatá; umbilico perspectivo, intus concentricè lirato, margine lineá elevatá cincto; columellá subrectá, basi rotundatá.*

Hab. New Holland.

29. GIBBULA PULCHRA, A. Adams. *G. testá orbiculato-conicá, umbilicatá, rosed, ad suturam albo luteo fuscoque radiatim pulcherrimè pictá; anfractibus planis, biangulatis, transversim sulcatis, sulcis rubro-articulatis, anfractu ultimo angulato, cingulá albo luteo nigro fuscoque eleganter pictá, basi convexá, concentricè sulcatá; umbilico intus albo, basi rotundatá.*

Hab. Australia.

30. GIBBULA KALINOTA, A. Adams. *G. testá orbiculato-conoideá, perforatá, virescenti, carneo cinereo variegatá; anfractibus rotundatis, lineis elevatis albo-articulatis, supernè gibbosis; suturá profundá, anfractu ultimo rotundato, basi convexá, cingulis articulatis concentricis ornatá, margine umbilici angulato, lineá elevatá cincto; columellá supernè sinuatá, basi subtruncatá; labro intus lævi.*

Hab. —?

31. GIBBULA VENUSTA, A. Adams. *G. testá orbiculato-conoideá, umbilicatá, viridi-fuscá, maculis albis prope suturas, cingulis subdistantibus fusco rubroque articulatis, interstitiis liratis, longitudinaliter obliquè striatá; anfractibus supernè gibbosis, rubro pictis; suturá canaliculatá, anfractu ultimo rotundato, basi convexiusculá, cingulis fusco alboque articulatis, regione umbilicali roseo pictá; columellá sinuatá, basi truncatá.*

Hab. Australia.

32. GIBBULA PUNCTO-COSTATA, A. Adams. *G. testá turriconicá, lutescenti, umbilicatá; anfractibus supernè cingulis tribus nodulosis, rubro-articulatis nodulis punctatis, infernè liris transversis nodulosis rubro-articulatis, infra, cingulá punctonodosá basi planá, cingulis concentricis subnodosis rubro-articulatis ornatá, margine umbilici lineá elevatá cinctá; columellá subrectá, basi truncatá; labro intus lirato.*

Hab. Island of Capul, on the reefs at low water (H. C.).

33. GIBBULA LEUCOSTICTA, A. Adams. *G. testá conoideá, perforatá, nigrá, punctis lacteis pictá, anfractibus convexiusculis, transversim lirata, longitudinaliter striatá, liris subdistantibus albo-punctatis, interstitiis lineis elevatis transversis ornatá; anfractu ultimo angulato, basi convexiusculá, cingulis nigro alboque articulata; aperturá subrotundatá; columellá supernè sinuatá, basi rotundatá.*

Hab. Gindulman, island of Bohol, rocky ground (H. C.).

34. GIBBULA NIVOSA, A. Adams. *G. testá orbiculato-conoideá, umbilicatá, cinereá, maculis nivosis subrotundatis pictá, transversim sulcatá, longitudinaliter substriatá; aperturá subrotundatá; columellá flexuosá, basi rotundatá.*

Hab. —?

Genus 18. MONILEA, Swainson.—*Talopia*, Gray.

1. MONILEA CALLIFERA, Lamk.

Trochus calliferus, Lamk. Hist. An. s. Vert. t. vii. p. 27.—*Trochus callosus*, Wood.

Hab. Philippines.

2. MONILEA CALYCVLUS, Wood.

Trochus calyculus, Wood, Ind. Test. Suppl. pl. 2. f. 44.—*Trochus Belcheri*, Philippi.

Hab. Eastern Seas.

3. MONILEA BENZI, Krauss.

Trochus Benzi, Krauss, Sudafr. Moll. p. 99. t. 5. f. 32.

Hab. South Africa.

4. MONILEA NUCLEUS, Phil.

Trochus nucleus, Phil. Zeit. f. Malac. 1846.

Hab. ———?

5. MONILEA LENTIGINOSA, A. Adams. *M. testá orbiculato-conicá, umbilicatá, albidd, luteo fuscoque variegatá; anfractibus rotundatis, cingulis subgranulosis confertis ornatis, ultimo rotundato, basi convexiusculá, regione umbilicali excavatá; columellá supernè callosá, basi dente terminatá; labro intus lirato.*

Hab. Ilo Ilo, island of Panay, 7 fathoms (H. C.).

6. MONILEA KALISOMA, A. Adams. *M. testá orbiculato-conoideá, umbilicatá, lutescenti, cingulis purpureo-articulatis ornatá, cingulis subdistantibus, supremis granulatis, infimis planis; anfractibus planiusculis, ultimo subangulato, basi paulum convexá, cingulis purpureo-maculatis insculptá; columellá supernè sinuatá, basi dente terminatá; labro intus lirato.*

Hab. ———?

7. MONILEA PLUMBEA, A. Adams. *M. testá orbiculato-conoideá, umbilicatá, plumbeá; anfractibus rotundis, cingulis granorum transversis in paribus dispositis ornatá, basi convexá; umbilico mediocri, intus albo; columellá brevi, supernè sinuatá, basi dente terminatá; labro intus lirato.*

Hab. ———?

8. MONILEA LIRATA, A. Adams. *M. testá orbiculato-conicá, umbilicatá, pallidd; anfractibus paulum convexis, liris transversis elevatis distantibus, interstitiis decussatè striatis ornatis; anfractu ultimo angulato, basi convexá, margine umbilici sulco cincto.*

Hab. ———?

9. MONILEA PUSILLA, A. Adams. *M. testá orbiculato-conicá, umbilicatá, rubescenti, fusco variegatá; anfractibus planiusculis, cingulis granorum transversum distantibus (circa quatuor)*

ornatis, interstitiis transversim striatis; columellá in medio sinuatá.

Hab. — ?

10. *MONILEA SWAINSONII*, A. Adams. *M. testá conoideá, umbilicatá, albidá, nigro variegatá; anfractibus planis, cingulis subgranosis, albo nigroque articulatis ornatis, ultimo subangulato, basi planiusculá, cingulis rufo-articulatis ornatá; columellá basi tuberculatá; labro intus lirato.*

Hab. — ?

Genus 19. *MARGARITA*, Leach.—*Trochus*, sp. Auct.

1. *MARGARITA HELICINA*, O. Fabricius.

Turbo helicinus, O. Fabr. Faun. Grœnland. p. 393.—*Trochus neritoides*, Gmel.—*Turbo margarita*, Montag.—*Helix margarita*, Lasky.—*Phorcus margarita*, Risso.—*Trochus margaritus*, Gray.—*Margarita vulgaris*, Leach.—*Margarita arctica*, Gould.—*Margarita helicina*, Möller.—*Margarita margarita*, Brown.—*Margarita helicoides*, Beck.—*Turbo inflatus*, Totten.—*Paludina inflata*, Menke.

Hab. British Islands.

2. *MARGARITA GRÆNLANDICA*, Beck.

Margarita Grœnlandica, Beck; Sow. Conch. Illustr. f. 10.

Hab. Greenland.

3. *MARGARITA UMBILICALIS*, Brod. and Sow.

Margarita umbilicalis, Brod. and Sow. Zool. Journ. iv.; Conch. Illustr. f. 5.

4. *MARGARITA STRIATA*, Leach.

Margarita striata, Leach, Append. Ross's Voy. to North Pole; Gray, Zool. Journ. vol. ii. p. 567.—*Turbo carneus*, Lowe.—*Margarita carnea*, Sow.

Hab. — ?

5. *MARGARITA GLAUCA*, Möller.

Margarita glauca, Möller, Ind. Moll. Grœnland. p.

Hab. Greenland.

6. *MARGARITA UNDULATA*, Sowerby.

Margarita undulata, Sow. Conch. Illustr. f. 4.—*Turbo incarnatus*, Couthouy.

Hab. Casco Bay.

7. *MARGARITA OBSCURA*, Couthouy.

Turbo obscurus, Couthouy, Bost. Journ. Nat. Hist. ii. 100. pl. 3. f. 2.

Hab. — ?

8. *MARGARITA VAHLII*, Möller.

Margarita VahlII, Möll. Ind. Moll. Grœnland. p. 81.

Hab. Greenland.

9. MARGARITA ACUMINATA, Sowerby.
Margarita acuminata, Sow. Conch. Illustr. f. 7.
 Hab. — ?
10. MARGARITA COSTELLATA, Sowerby.
Margarita costellata, Sow. Conch. Illustr. f. 15.
 Hab. — ?
11. MARGARITA ARGENTEA, Gould.
Margarita argentea, Gould, Invert. Massachus. p. 256. f. 164.
 Hab. Casco Bay.
12. MARGARITA NITILIGINEUS, Menke.
Trochus nitiligineus, Menke, Spec. Moll. Nov. Holl. p.
 Hab. Misamis, island of Mindanao, sandy mud (*H. C.*).
13. MARGARITA CINEREA, Couthouy.
Turbo cinereus, Couthouy, Bost. Journ. Nat. Hist. ii. 99. pl. 3. f. 9.
 — *Trochus costalis*, Lovén.
 Hab. — ?
14. MARGARITA SULCATA, Sow.
Margarita sulcata, Sowerby, Conch. Illustr. f. 1.
 Hab. Greenland.
15. MARGARITA SOLARIIFORMIS, Sowerby.
Margarita solariiformis, Sow. Conch. Illustr. f.
 Hab. San Nicholas, island of Zebu, sandy mud, 6 fathoms (*H. C.*).
16. MARGARITA BICARINATA, Adams and Reeve.
M. bicarinata, Adams and Reeve, Moll. Voy. Samarang, pl. 11. f. 11.
 Hab. Eastern Seas.
17. MARGARITA CARINATA, A. Adams. *M. testá elevato-conicá, perforatá, fuscá, liris transversis ornatá, superioribus duabus costellis longitudinalibus decussatis, inferioribus planis, interstitiis longitudinaliter tenuissimè striatis; basi planiusculá, cingulis concentricis, interstitiis radiatim striatis insculptá; margine umbilici crenulato.*
 Hab. Catbalonga, coarse sand, 8 fathoms (*H. C.*).
18. MARGARITA ANGULATA, A. Adams. *M. testá orbiculato-conicá, latè umbilicatá, albidá, fusco variegatá; anfractibus supra angulatis, transversim omnino striatis; basi convexá, concentricè striatá; umbilico magno, perspectivo.*
 Hab. Sandwich Islands.
19. MARGARITA CALOSTOMA, A. Adams. *M. testá conoideá, crassá, perforatá, transversim valdè sulcatá, albidá; anfractibus subrotundatis, ultimo subangulato; aperturá rotundá, intus vividè violascenti iridescenti; umbilico callo, columellari subobtecto; labri margine argenteo.*
 Hab. Juan de Fuco, Upper California.

20. MARGARITA CUMINGII, A. Adams. *M. testá elevato-conicá, cinereá, lineis fuscis undulatis pictá, latè umbilicatá; anfractibus costellis transversis ornatis, ultimo tribus liris intermediis cincto, longitudinaliter elevatè striato; umbilico magno, cingulá crenulatá cinctá, intus lineis radiantibus et transversis eleganter decussato.*

Hab. Philippines.

21. MARGARITA VARIABILIS, A. Adams. *M. testá orbiculato-conicá, subdepressá, latè umbilicatá, pallidá, fusco griseo alboque variè pictá; anfractibus rotundatis, transversim valdè sulcatis; umbilico perspectivo, margine crenulato; basi planiusculá; labio margine subcrenulato.*

Hab. — ?

22. MARGARITA BALTEATA, A. Adams. *M. testá orbiculato-conicá, vix umbilicatá, griseá, fusco tessellatá; anfractibus gibbosis, transversim valdè sulcatis; anfractu ultimo subangulato; basi planiusculá, concentricè sulcatá; columellá curvatá, vix truncatá.*

Hab. — ?

23. MARGARITA TESSELLATA, A. Adams. *M. testá depresso-conicá, latè umbilicatá, lævi, cinereá, regulariter griseo tessellatá; anfractibus planiusculis, ultimo subangulato; basi convexá; umbilico intus albido; aperturá rotundá, intus viridi-iridescenti.*

Hab. — ?

Subgenus PHOTINA, H. and A. Adams.

Shell smooth, subconical; spire depressed; axis covered by a smooth callus; columella ending in a simple point.

This section includes all the species of *Margarita* that are not umbilicated.

1. PHOTINA TÆNIATA, Wood.

Trochus tæniatus, Wood, Ind. Test. Suppl. pl. 5. f. 12.—*Trochus bicolor*, Lesson, Voy. de la Coquille.—*Margarita tæniata*, Sow.

Hab. East Falkland (*Don*).

2. PHOTINA CÆRULESCENS, King.

Margarita cærulescens, King, Zool. Journ. vol. v.

Hab. — ?

3. PHOTINA EXPANSA, Sow.

Margarita expansa, Sow. Conch. Illustr. f. .

Hab. — ?

4. PHOTINA SIGARETINA, Sow.

Margarita sigaretina, Sow. Conch. Illustr. f. 14.

Hab. — ?

5. PHOTINA VIOLACEA, King.

Margarita violacea, King, Zool. Journ. vol. v. p. 346.

Hab. — ?

6. PHOTINA LINEATA, SOW.

Margarita lineata, Sow. Proc. Zool. Soc.

Hab. — ?

7. PHOTINA NIGRA, A. Adams. *P. testá depresso-conicá, imperforatá, solidá, nigrá, lævi; anfractibus subrotundatis, transversim sulcatis; longitudinaliter obliquè substriatá; anfractu ultimo subangulato; regione umbilicali impressá; callo albo obtecto.*

Hab. — ?

8. PHOTINA FUSCA, A. Adams. *P. testá obliquá, subconicá, nitidá, fusco variegatá; anfractibus parum convexis, transversim sulcatis, ultimo subangulato; aperturá subrotundatá, intus viridi iridescenti.*

Hab. — ?

9. PHOTINA SANDWICHIANA, A. Adams. *P. testá orbiculato-conicá, imperforatá, lævi, albidá, viridi fuscoque maculatá; anfractibus rotundatis, ultimo subangulato, apice roseo; aperturá apertá, orbiculatá, intus viridi margaritaceá; labio albo; umbilico callo albo obtecto.*

Hab. Mataineka, Sandwich Islands.

Mr. Oswald then communicated the following remarks by Mr. Mack, on the fact of black eggs being laid by a white duck of the ordinary domestic breed :—

“The egg (observes Mr. Mack) which is herewith sent was laid by a white duck, one of two belonging to Mr. Dickinson of Mitcham, which stray during the day on the common, but are confined at night. The drake was lost about a month since, and then one of the ducks commenced laying black eggs, the other still continuing to lay white ones,—she laid ten or twelve and then ceased for some days; she has again commenced laying black eggs. The ducks are fed once a day with barley, at the time the other poultry are fed.

“Mr. Dickinson, showing the egg this morning to one of the guards on temporary duty on the Brighton rail at Croydon, he said he had a duck which laid the same colour, or even blacker, and that he had raised (at East Bourne) two broods of ducks from black eggs.”

Haling Cottage, Croydon, May 24, 1851.



J. Wolf. lith.

M & N Hanhart f.

TENIOPTERA ERYTHROPYGIA. *Sclater*



J Wolf lith

M. & N. Hanhart

TENIOPTERA STRIATICOLLIS. Salazar

June 10, 1851.

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

The following papers were read:—

1. ON TWO NEW SPECIES OF BIRDS OF THE GENUS TÆNIOPTERA.
BY PHILIP LUTLEY SCLATER, B.A., F.Z.S. ETC.

(Aves, Pl. XLI. XLII.)

TÆNIOPTERA ERYTHROPYGIA, Sclater. *T. nigrescens*; *vertice fronte gulâque canescente-griseis*; *maculâ secundariorum albâ*; *uropygio, abdomine toto crissoque, cum tectricibus caudæ superioribus et alarum inferioribus levitè brunneo-rufis*; *rectricibus brunneo-rufis nigro terminatis*; *rostro pedibusque nigris*.

Long. tot. 9 unc. 5 lin.; alæ, 5 unc. 7 lin.; caudæ, 4 unc. 4 lin.; rostri à rictû, 1 unc.; à fronte, 6 lin.

Hab. in republicâ Equatorianâ.

Wings and interscapulars black, growing lighter towards the crown, and greyish white on front and throat; breast darkish grey; outer web of the last four or five secondaries broadly edged with white, forming a white mark on the wing; lower back and tail-coverts and whole body beneath below the breast, as also under wing-coverts, light brownish rufous; tail-feathers the same, but broadly tipped with black. For the loan of this and the following species I have to thank Mr. Edward Wilson, who received them from M. Verreaux of Paris. I was at first inclined to refer both species to the genus *Agriornis* of Mr. Gould, but having had through Mr. G. Gray's kindness an opportunity of examining the type of that form, *Agriornis lividus** (Kittlitz), I now consider them better placed in the present genus *Tænioptera*, with which they agree in all their distinctive characters.

TÆNIOPTERA STRIATICOLLIS, Sclater. *T. suprâ saturatè fumoso-brunnea*; *uropygio paululùm rufescente tincto*; *superciliis rufescente-albidis*; *pennis caudâque nigris*; *secundariis tertiariisque levitè brunnescente marginatis*; *infrâ levitè brunneo-rufa*; *gutturæ toto colloque albis nigro striatis*; *rectricibus remigibusque brunneo-rufis nigro terminatis*; *rostro pedibusque nigris*.

Long. tot. 9 unc. 5 lin.; alæ, 5 unc. 3 lin.; caudæ, 4 unc.; rostri à rictu, 1 unc. $\frac{1}{2}$ lin.; à fronte, $7\frac{1}{2}$ lin.

Hab. in republicâ Equatorianâ.

Above dark smoke-brown; an obscure whitish line from the bill to the top of the eye; quill-feathers brown-rufous, outer margins and ends black; secondaries, tertials, and wing-coverts nearly black, margined with light brown; beneath brown-rufous; chin, throat and neck white, with longitudinal striæ of black; tail-feathers brown-rufous, the two outer broadly tipped with black; the rest have also the outer web black, except the two medial, which are wholly black.

* *Tyrannus gutturalis*, Voy. de la Favorite, Ois. t. 11.

This species is of the same form as the former, from which it may be distinguished by its shorter and weaker beak, and the want of the rufous colouring on the rump and upper tail-coverts, as also by the conspicuous striæ on the neck and throat.

2. NOTES ON AN UNDESCRIBED SPECIES OF TAILOR-BIRD. BY DR. NICHOLSON.

It may appear irregular to use what has been meant and applied as a specific name, as a generic one, but then that name appears to me to include, and to be indiscriminately applied to, two or three distinct birds, as we may gather by looking at the accompanying sketch, by the examination of the species described by Colonel Sykes as inhabiting the Dukhun, and by reading the following description, taken from Forbes, 'Oriental Memoirs,' p. 34. vol. i., under the name of *Motacilla sutoria*:—"The Tailor-bird resembles some of the humming-birds at the Brazils in shape and colour; the hen is clothed in brown, but the plumage of the cock displays the varied tints of azure-purple, green and gold, so common in those American beauties." Often have I watched the progress of an industrious pair of Tailor-birds, in my garden, from their first choice of a plant, until the completion of the nest, and the enlargement of their young.

Now, it is evident either that Mr. Forbes alludes to a distinct and an uncommon species, which I have never met with, or else he must have mistaken the common *Cinnyris* or Sun-bird representing the Humming-birds, and both sexes of which he has generally described above. But then the *Cinnyris* builds a common-shaped nest in the fork of a branch, in fashion resembling that of the humming-birds.

This is a resident bird, not very conspicuous, as it keeps hopping about among the brushwood and plants. It has a loud, short, and not unmelodious song; its general cry is 'wheet, wheet, wheet,' often repeated; but its alarm-cry is like 'cheertah, cheertah, cheertah.'

I have found its singular sewn nest containing eggs or young at all seasons of the year, in May and in November; and this may be owing to the vegetation of gardens being always kept up by means of artificial irrigation; for cultivated spots seem its favourite, if not exclusive resort at least in the north of India. Though no doubt it haunts suitable jungles, I never observed it there, nor ever discovered its nest so situated; but I have found many nests in my gardens, both at Surat and at Raghote, as well as in Cutch. It seems to prefer the leaf of the Bringal (*Solanum esculentum*), or that of the *Cucurbita octangularis*, for the purposes of nidification; and it lays four small white eggs, marked with faint dark spots at the larger end. After selecting a fitting leaf, it proceeds by means of its feet and beak to draw the edges together, perforating holes therein, and securing their proximity by threads of cotton, with bunches at the end to prevent their giving way. Then the nest is constructed inside the leaf, now forming a sort of corve, with cotton; the entrance is at the top, and the nest seems small in proportion to the bird. If this



J. Wolf. lith.

M & N. Hanhart. In.

ARTAMUS CUCULLATUS, *Nicholson.*

bird should prove a distinct species, I would suggest the name of *Sutoria agilis* for it.

Weight of the male $2\frac{1}{2}$ drachms.

Length from bill to tail $5\frac{1}{4}$ inches. Alar extent $6\frac{1}{2}$ inches.

Head: bill long, slender and curved towards the point. Culmen slightly divides the frontal feathers, and is nearly on a line with the top of the head: there is an almost obsolete notch at the end of the upper mandible. Tongue short, slightly extensible, and divided into several filaments at the point. Gape wide, commissure under the eye; a small denuded spot above the commissure. Nostrils basal, pyriform, under a tegument; some small bristles and feathers reflexed from the canthus of the eye towards the bill and over the nares. Eyes small. Iris greenish yellow. Eyelashes edged with small feathers. Eyelids bare. Four remarkable (but inconspicuous) bristles, like feathers, project from the back part of the occiput.

Wings short and perfectly rounded; first quill only half as long as the second; fourth and fifth quills are longest; the second, third and fourth graduated; the first, third, fourth, fifth, sixth and seventh quills are emarginate on the outer web.

Tail of twelve graduated feathers, the two outer being the shortest; under-coverts are long.

Legs long, the tarsus $\frac{2}{3}$ ths of an inch; the outer toe longer than the inner. Hallux very strong, and as long as the outer toe, with a large pad beneath the base, its claw the largest; the tarsus is covered with seven scales in front and one entire behind; two large scales lie across the front of the foot; the claws are curved and sharp.

Contents of stomach a mass of insect exuviae.

Colours: all above dull green, tinged with ash, light brown towards the end of the tail and quills, which are lighter on the edges. Two-thirds of the front breadth of the neck, round the eye, the breast, belly and thighs (except a chestnut spot on the hallux) are silver-white; there is, besides, a remarkable spot on the neck, of a brown colour, as if the white feathers had been deranged, showing the roots of a different colour. Bill ash-brown or horn-colour, the lower jaw lighter, and both lighter on the edges, as also are the legs and claws of the same colour; forehead of a fine chestnut; crown of olive-brown.

3. NOTES ON A NEW SPECIES OF ARTAMUS, FROM INDIA.

BY DR. NICHOLSON.

(Aves, Pl. XLIII.)

These birds are only found in very thick jungles among the brush-wood, where they are always moving about, and are shot with great difficulty, and even then, if not killed outright, they are so tenacious of life, that they creep into the first hole or crevice they come to. The only note I ever heard was like 'chick, chick.' I think they

are residents, but the few I have seen just appear and are lost again in a moment, so that I know little of their habits; the one figured here had one leg and both wings broken, and still crept into the hole of a jerboa-rat, from which I dug it out dead.

Male: weight $6\frac{1}{2}$ oz.

Length from bill to tip of tail $7\frac{2}{8}$ inches. Alar extent 10 inches.

Head large. Bill strong, narrow and sharp, gently arched on the culmen; a distinct notch near the tip of upper mandible; gape wide. Tongue horny and divided at the point. Nostrils basal, small. Eye rather small. Iris of a silvery colour, tinged with yellow.

Wings rounded; first quill very short; third longest; second, third and fourth quills emarginate on outer web.

Tail short, and nearly even at the end, of twelve feathers, $2\frac{3}{4}$ inches long.

Tarsus strong. Hallux and claw stronger than the other toes, and as long as the inner toe, and has a large pad at its base; the outer toe is shortest; the claws are much hooked.

Contents of stomach were a few grains of *Holcus spicatus* and the exuviae of insects.

Plumage is soft and loose.

Colours: the whole top of the head is covered with a cap of black. Bill lead-colour at base and black at the point. The chin, the breast, and all underneath white; the body all above of a leaden colour. Quills and tail of a light black, edged with light on both webs; the outer web of the outer tail-feather is white, as well as the tips of the first five on each side. Feet and legs black.

I propose for this species the name of *Artamus cucullatus*.

4. OBSERVATIONS ON THE BREEDING OF THE NIGHTINGALE IN CAPTIVITY.

BY H. HANLEY, SERGEANT-MAJOR 1ST LIFE GUARDS.

Being of opinion that any bird which breeds in this country in a wild state, might, by studying its habits, be brought to do so in a state of captivity, I made preparations during the winter of 1844 for trying the Nightingale, which I considered to be the most retired in its habits of any of our summer visitants. I had a cage made, 4 feet long by 3 feet high, the back, ends and top solid, with a wire front, in which I placed a small Scotch fir-tree, planted in a flower-pot; to each end of the cage I attached a common-sized canary's breeding-cage, communicating with the large cage by a hole about 4 inches square. I broke a new birch-broom, and filled up the cages at each end, to make them resemble as near as possible the bottom of a thick hedge, and then put in a plentiful supply of withered oak-leaves and moss, of which the nightingale forms its nest, covering the fronts of the two small cages with green glazed calico: I placed the cages high up against a wall facing a landing-window. The following spring, that is, about the latter end of April 1845, I directed a bird-catcher (Blake, of John-street, Tottenham-court-road), who goes to Watford

every season to catch nightingales, to bring me a cock and hen bird which had paired naturally ; he did so, and, fortunately, they meated off very readily. By "meating off," I mean that such birds as live on insect food will not peck at dead food until taught to do so, which is effected by enclosing meal-worms in a small glass tube, corked up at each end, and then placing the tube in their food ; on pecking at the worm the beak slips off the glass amidst the food, which they swallow, and will afterwards go to it without the aid of a tube. On finding my birds feed freely in the small cage, in which until then I had confined them, I turned them into the place I had fitted up for them, and was much gratified, about a week afterwards, to observe the hen bird flying about with an oak-leaf in her beak. She made her nest in one of the small cages at the end of the large one ; laid four eggs, of which she hatched and brought up three young ones. During the time she was sitting, the cock sang as well and as loud as I ever heard one in a wild state : when the young were excluded he left off singing, and was most assiduous in assisting to feed and rear them.

June 24, 1851.

J. E. Gray, Esq., F.R.S., Vice-President, in the Chair.

The following communications were made :—

1. ON A NEW GENUS OF ANOMIADÆ, IN THE COLLECTION
OF MR. CUMING.

BY J. E. GRAY, ESQ., F.R.S., V.P.Z.S., P.B.S. ETC.

TEDINIA.

Shell irregular, loosely lamellar ; upper or right valve with a broad cardinal groove, and with three muscular scars, the upper small, oblong near the cartilage, the other two large, subcentral, upper sub-trigonal, lower oblong, transverse, united by a nearly straight medial cross line ; left or attached valve with an elongated, triangular, convex cardinal ridge, with a deep groove on each side, having the cartilage on its inner edge, with two muscular scars, one small, half oblong near the cardinal ridge, the other large, subcentral, subcircular, and with a roundish circular hole near the upper edge, with a slight impression showing the grooves to the margin some distance from the cardinal ridge ; the plug shelly, fixed into and exactly fitting the hole, with a triangular base sunk into the surface, commencing from the apex of the shell on the outer surface, and formed of erect shelly longitudinal plates within.

The shell has the plug and much the external appearance of the subgenus *Pododesmus*, but differs from it and all the other *Anomia-*

de in the following particulars: 1. That the line which indicates the junction of the two edges of the sinus which forms the perforation, instead of being placed on the side of the ridge which supports the cartilage, is placed at a considerable distance from it; 2. The sides of the sinus are firmly soldered together, leaving only a circular hole; 3. The support of the cartilage, instead of being merely a ridge or process, here forms a large elongated subtriangular talus, like that found in the genus *Ostrea*; 4. It differs greatly in the number and form of the muscular scars; the two large ones in the free valves are placed as in the genus *Placunanomia*, and there is a third anterior one in each valve not found in any genus of the family, and very unlike the third scar of the genus *Anomia*. I know only of a single specimen of the genus, which is in the collection of Mr. Cuming, who believes that it came from California. It may be called *Tedinia pernoides*; subquadrangular, reddish, subsquamose, obscurely radiated, internally reddish brown.

2. DESCRIPTION OF A NEW SPECIES OF BULIMUS FROM AUSTRALIA. BY LOVELL REEVE, F.L.S. ETC.

(Mollusca, Pl. XII.)

BULIMUS MACONELLI. *Bul. testá acuminato-oblongá, tenuiculá, subobliquè convolutá, spirá brevi, suturis rudibus, anfractibus quatuor ad quinque, minutè et creberrimè spiraliter undulato-striatis, ultimo valdè inflato, columellá subcontortá, aperturá subamplá, labro simplici; brunnea, maculis parvis punctisque nigris undique pictá et seriatim fasciatá, maculis infra suturas regularibus, aperturæ fauce fusciscente.*

Hab. Brisbane, Moreton Bay, Australia.

This fine species has been forwarded to me from the Manchester Museum of Natural History, with the above name attached to it in manuscript, by Captain Brown. It is chiefly remarkable on account of its absolute similarity in texture, in colour, and in pattern, to *Helix Falconari* of the same locality. It appears to differ in nothing but in that difference of convolution which characterizes the respective genera. Mr. Cuming possesses an exactly similar un-umbilicated specimen; and none of several examples of *H. Falconari*, with which it has been compared and which are all largely umbilicated, present any indication of an intermediate form. It is the first instance on record of a strictly typical richly painted *Bulimus* and *Helix* agreeing in colour, in pattern, and in all respects save that of form.

3. OBSERVATIONS ON THE DENTITION OF THE TIGER BEETLES. BY J. O. WESTWOOD, PRES. E.S., F.L.S. ETC.

Mr. Westwood directed the attention of the meeting to the necessity which existed of a more precise examination and description of the diversity in the dentition of the mandibles of insects, especially



W. H. Baaly.

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BULIMUS MACONELLI, Reeve

Hymenoptera and Coleoptera, than had hitherto been bestowed thereon. In the higher orders of animals so much importance had been given to this character, that it was remarkable that, in general, entomologists contented themselves with examining, describing, and figuring a single mandible as affording a sufficient diagnosis of the structure of both of the mandibles, overlooking the necessary result which arose from the circumstance of the horizontal instead of perpendicular action of these organs in insects, and the variation in the position of the teeth which such action must necessarily induce. In general, indeed, the teeth of the mandibles were not greatly developed, and there was a general similarity between the two jaws; but when these organs are of an increased size, and especially when the extremity of one jaw laps over that of the opposite one, a diversity in the dentition will necessarily exist. It was likewise necessary to examine the mandibles of both sexes of a species, as it occasionally happened that there was considerable difference in their dentition. These observations were illustrated by the case of the Tiger Beetles (*Cicindelidæ*), which offered a much greater range of diversity in their dentition than had hitherto been supposed. It was chiefly to the genus *Megacephala* that Mr. Westwood directed the attention of the members.

In the type of that genus (*Megacephala senegalensis*, Latr., Dej., *Cic. megalcephala*, Fabr.), an apterous species from Senegal, the right mandible of the male has two large, nearly equal-sized, acute teeth in the middle of the inner margin, the extremity being hooked and very acute; there is also a small tooth at the base of the large, broad, compound basal tooth. The left mandible is nearly similar, except that the two teeth in the middle of the inner margin are unequal in size, the upper one being the smaller of the two. The figure of the jaws of this species, given in the Crochard edition of the Animal Kingdom (Ins. pl. 16. f. 2 a), is very incorrect, being apparently reversed. The dentition of the female is almost identical with that of the male. In the allied bat-winged African species, *Megacephala 4-signata*, Dej., from Senegal, the tothing of the mandibles is similarly arranged, but the two teeth in the middle of the inner margin, in both sexes, are broad and obliquely truncate. In the male of *M. euphratica* (which has recently been observed to extend from Spain to India), the teeth are nearly as in *M. senegalensis*, except that the subapical tooth of the left mandible is considerably smaller. But in the species lately received from the north-west of Australasia (*M. Australasiæ*, Hope), we find a different arrangement as well as number in the teeth, the right mandible having three teeth in the middle of the inner margin (exclusive of the small tooth* at the base of the upper side of the large compound basal tooth), the upper one small, the middle one very small, and lower one large, all being acute. The left mandible has also three teeth in the same position,—the

* This small tooth exists in all the species, and in both sexes; and as it appears to form part of the great basal tooth, I have omitted noticing it in the descriptions given in this paper.

upper one very small, and the middle and lower one large and nearly equal in size.

On turning to the New-World species of the genus, we find four variations in the dentition of the mandibles; the group of pale species typified by *M. æquinoctialis*, Dej. (*bifasciata*, Brullé), corresponds almost identically in the dentition of both sexes with the old type (*M. senegalensis*), as described above, the right mandible having two equal-sized large acute teeth in the middle of the inner margin, and the left one also two, the upper one being very small. For this group I have proposed the subgeneric name of *Ammosia*, in allusion to their habits, which differ materially from those of the other species.

A black-coloured species from South America (*M. sepulchralis*, Fabr., *M. variolosa*, Dej.) differs from the *Ammosia* in the left mandible, while the inner margin has only one tooth in the middle, of considerable size, and exhibiting on its *under* side a minute tooth, being all that remains of the large middle tooth of the left mandible of the *Ammosia*. This species is the type of Mr. Hope's subgenus *Anaira*.

Another very fine Brazilian species (*M. testudinea*, Klug) differs in the dentition of the sexes in a more striking manner than any of the preceding. The right mandible of the male is long and sickle-shaped, with a small tooth obliquely truncated below the middle of the inner margin, and between this and the tip of the jaw is a minute acute tooth. The left mandible has two teeth on the inner margin above the middle, the lower one broad and acute, but rather obliquely truncate, whilst the upper one is very small. The right mandible of the female, on the contrary, has two very large equal-sized teeth in the middle of the inner margin, whereas the left jaw in this sex is quite similar to that of the male.

There still remains a numerous group of American species (the type of which is *Cic. Carolina*, Linn.), which differ from the rest of their continental brethren in possessing three teeth in the middle of the inner margin of each jaw, thus resembling the Australian species above noticed, and hence I proposed the name of *Tetracha*, or four-toothed, for this group, counting the acute apical portion of the mandible as a fourth tooth. In general, in both sexes, the tooth next below the apex of the jaw is equal in size to, or even larger than, the apical part or tooth itself (thus differing from the Australasian species), and the middle of the three teeth is smaller than the rest; but in the left mandible in the males the tooth below the apical tooth is even still larger, whilst the middle tooth is much smaller, and the lower tooth is quite minute. In the female, on the contrary, the middle one of the three teeth of the inner margin is rather larger than the upper one (which is only of a moderate size), and the lower one is small.

From these particulars (united with the peculiarities of colouring, geographical range and habits of the species) we are enabled to propose well-founded subgenera, a task which has hitherto been considered hopeless in the genera of *Cicindelidæ*. The Old-World spe-



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M & N Hanhart

SAGMATOPRIBNA TAHAMI. Ep.

cies thus seem to form only one group, divisible however into still smaller sections from the presence or absence of wings, and form and colouring of the elytra ; the Australian species stands alone ; and the New-World species constitute the four following subgenera :—

AMMOSIA, Westw. Type, *M. bifasciata*, Brullé.

———, Westw. Type, *M. testudinea*, Klug.

ANAIRA, Hope. Type, *M. sepulchralis*, Fabr.

TETRACHA, Westw. Type, *M. Carolina*, Linn.

July 8, 1851.

In consequence of the death of the President, no meeting was held on this day.

July 22, 1851.

John Edward Gray, Esq., F.R.S. &c., Vice-President, in the Chair.

The following papers were read :—

1. ON THE LARGEST KNOWN SPECIES OF PHALERIDINE BIRD.
BY CHARLES LUCIEN, PRINCE BONAPARTE.

(Aves, Pl. XLIV.)

Among the new additions lately made to the British Museum I was struck by one of the *Alcidæ*, which I had never seen before, and which was very properly placed close by two beautiful specimens of my singular *Ceratorrhina*, also lately added to the zoological treasures of the English nation. The bird which is the subject of the present note is evidently the *Labrador Awk* of Latham, so miscalled from the erroneous impression that it came from those eastern shores of America, but too well described not to be recognized. Gmelin compiled his *Alca labradora* from the description of Latham, and all those who did not follow him blindly, have referred that indication to an immature state of the Razor-bill (*Mormon arctica*), a course in which they were led by geographical consideration only. Although our bird belongs to the family of the *Alcidæ*, it is not even an *Alcine*, as the Razor-bill, but, as is shown by the nakedness of the cere, it belongs to the other subfamily, or *Phaleridine*, of which it is at present the largest known.

In its family it is certainly allied to *Ceratorrhina*, but well deserving to constitute a genus by itself. The bill still more compressed, is in fact much more angulated beneath, and covered at the base, not by a bony process or *horn*, but by a soft membrane or *saddle*, which leaves a simple slit along the margins for the imperious nostrils.

Genus novum PHALERIDINARUM.

SAGMATORRHINA, Bp. Saddle-Bill.

Rostrum duplo longius quam altum; maxilla ad basin recta cerâ maximâ induta, apice incurva; mandibula ultra medium statim adscendens, angulum obtusum constituens; nares lineares, marginales.

As the bird has been so well described by Latham, Mr. G. R. Gray very properly suggests that its specific name should be taken from that author.

SAGMATORRHINA LATHAMI, Bp. *Maxima; nigricans; subtus albido-fuliginosa: rostro pedibusque rubris; cerâ palmisque nigris.*

Long. 16 poll.; rostr. 2 poll. long., 1 altum, $\frac{5}{8}$ latum ad basin, $\frac{3}{8}$ ad med.; alæ $7\frac{1}{2}$ poll.; cauda $3\frac{1}{2}$; tars. $1\frac{1}{4}$; digitorum longissimus $2\frac{3}{8}$.

This species is the largest of the subfamily, which is well known to contain the dwarfs of the Water birds; it is one-third larger than *Ceratorrhina monocerota*, of which it has precisely the colouring, wanting only (at least in the state we have it) the little white feathers above the eye and at the corners of the mouth. The proportions of wings, tail, feet and toes are the same: the bill and toes must have been reddish; the cere and membranes black. Like the *Ceratorrhina*, it seems to be confined to the North-western Arctic regions of America; and we are led to believe it does not extend to the Siberian shores, from the circumstance of its not having been noticed by Russian naturalists.

The well-marked family of *Alcidæ* forms, with the *Colymbidæ*, *Podicipidæ* and *Spheniscidæ*, the great section of the *Urinatores*, which, with the *Lamellirostres*, constitutes alone the Order *Anseres*, as it must be restricted to the *web-footed Præcoces* of Prof. Owen. The other two sections, *Longipennes* and *Totipalmi*, constitute now the Order *Gaviæ* of my *Conspectus*, being, in fact, *web-footed Altrices*, which have no more right to remain in *Anseres* than the *Pigeons* among the *Gallinæ*,—than the *Herodiones* among the *Grallæ*. The passage between my *Gaviæ* or *web-footed Altrices*, and my *Herodiones* or *grallatorial Altrices*, is beautifully exemplified by that most remarkable bird the *Balaniceps*, whose affinity with *Pelecanidæ* has so well been pointed out, and even exaggerated, by Mr. Gould. On the other hand, it is no less obvious that the *Longipennes*, some of which, with tumid bills, have been considered as *Sea-Pigeons*, connect them (the *Gaviæ*) with the *Columbæ*; whilst between the two subclasses the connections and correspondence (affinity and analogy) take place

in different degrees and by different means and sides, chiefly as exemplified in the following table:—

AVES.

- | | |
|---------------------------|----------------------------|
| 1. ALTRICES (Insessores). | 2. PRÆCOCES (Grallatores). |
| 1. PSITTACI. | |
| 2. ACCIPITRES. | |
| 3. PASSERES. | |
| <i>a.</i> OSCINES. | |
| <i>b.</i> VOLUCRES. | |
| 4. COLUMBÆ. | |
| <i>a.</i> INEPTI. | 8. STRUTHIONES. |
| <i>b.</i> GYRANTES. | 9. GALLINÆ. |
| 5. GAVIÆ. | 10. ANSERES. |
| <i>a.</i> TOTIPALMI. | <i>a.</i> LAMELLIROSTRES. |
| <i>b.</i> LONGIPENNES. | <i>b.</i> URINATORES. |
| 6. HERODIONES. | 7. GRALLÆ. |
| | <i>a.</i> ALECTRIDES. |
| | <i>b.</i> CURSORES. |

2. ON THE CHANGE OF COLOUR IN A CHAMÆLEON (CHAMÆLEO VULGARIS). By H. N. TURNER, JUN.

Notwithstanding that the peculiarity of the Chamæleon in changing its colour is so universally known, and that an illustrated work on the subject was published by Van der Höven, I have thought that a careful record of the varieties of tint, presented by the specimen which has lived for some time in my possession, might prove serviceable to the naturalist if compared with similar observations upon other species and upon the same one under different circumstances, and might also assist in the determination of the means by which it is effected, the influences by which it is regulated, and the objects which it serves in the oeconomy of the animal.

Its general tints vary between different shades of brown, olive, yellow, and light green, the last-named being the most rarely observed, and the yellow being the tint usually assumed when the animal has been hidden from the light. This is the colour it always presents if taken for inspection at night, and when brought into the influence of lamp-light it appears at first almost white, but may soon be seen to darken and some of the markings to appear. The side that is next the light will change rather sooner than the other, the changes being always gradual. It has three distinct sets of markings, the first to appear being two ranges of irregular distant elongated spots, which may appear either as a dark tint upon the ground-colour when that is light, or a light one if it be dark. These marks are never entirely absent when either of the other sets is present, although sometimes but faintly discernible.

The other two sets of markings consist of an irregular marbling, and a number of full round spots ; the latter never appear otherwise than as dark upon the ground-colour, and the marbling, which is generally also dark, only occasionally appears a little lighter than the ground-colour, and then of a different tone ; either may be visible without the other, or both may be distinctly traceable. Sometimes the marbling will be apparent together with such of the spots as are placed within its intervals, those upon the surface occupied by the marbling being amalgamated with it.

When the general colour is light yellow or pale greenish, which is the case if the animal be suddenly brought into the light, the elongated spots, which form two rows on each side, will begin to appear of a very delicate purple tint. After that the marbling gradually shows itself, and the general tint begins to darken ; when some time has elapsed a brown colour is assumed, and the elongate spots, at first purple of a darker tint than the yellow ground-work, are seen to be brown, of a lighter and rather richer tint than that which now pervades the whole. These distinctions may go on increasing, may then decrease and again increase ; the spots may appear, may come and go with different degrees of intensity, so that the variety of appearances presented is almost indefinite. When visited in the day-time, the colour is generally brown, sometimes without markings, generally with the elongate spots of a lighter tint, and the marbling or the round spots, or both, more or less apparent. Occasionally it presents a uniform dull olive, and then has no markings. Sometimes it is of a light drab colour, with the different marks faintly indicated. The ventral series of prominent scales remains constantly white, as stated by Van der Höven, not participating in the changes of the surrounding parts.

This author does not in any of his plates represent the longitudinal rows of markings as a decided dark upon the ground-colour, nor is the marbling anywhere clearly shown as pervading the whole body ; neither does he give the deep brown tint with the marbling as a dark, and the longitudinal rows of spots definitively marked as a light.

I have never seen my specimen present anything like the appearances delineated in his plates 4 and 5, probably because I have not irritated it.

It has generally been imagined that the purpose of this singular faculty accorded to the Chamæleon is to enable it to accommodate its appearance to that of surrounding objects, but the observations of Van der Höven seem to negative that idea, and the few experiments I have made with that view have not led to any such results. The box in which it is kept is of deal, with a glass at the top and a piece of flannel laid at the bottom ; a small branching stick being introduced by way of a perch. I have introduced at various times pieces of coloured paper, covering the bottom of the box, of blue, yellow and scarlet, but without the slightest effect upon the appearance of the animal. Considering that these primary colours were not such as it would be likely to be placed in contact with in a state of nature, I next tried a piece of green calico, but equally without result. The animal went through all its usual changes, without their

being in any way modified by the colours placed underneath it. The general tints approximate, as may readily be observed, to those of the branches of trees, just as those of most animals do to the places in which they dwell; but I have never seen the faculty of changing called into play with any apparent object. It is only when the light is removed that the animal assumes a colour which absorbs but little of it.

Regretting that I have not been able to attain any more definite conclusions, I offer these few remarks, hoping that to some naturalist, who may undertake the investigation of these singular phenomena, they may prove not to have been thrown away.

Pimlico, July 1851.

3. ON THE ARRANGEMENT OF THE EDENTATE MAMMALIA. BY H. N. TURNER, JUN.

In offering to the Society a summary of my observations on the craniology of the Edentate order, I have not so great a number of hitherto unrecorded facts to bring forward as in some of my former communications. The very remarkable modifications which this order is seen to present, not only in comparison with the rest of the Mammalian class, but also among its own members, and the wonderful variety of extinct gigantic species which the New World has yielded to research, have caused the osteology of the group to be more minutely investigated; while the small number of species and the striking external differences which they exhibit, have left but little room for doubt in the minds of naturalists as to their true arrangement. I will therefore simply point out such of the cranial peculiarities as seem to be characteristic of the order and of its families and genera, dividing it, as appears to me necessary, into five families, since the two forms inhabiting the Old World differ so much from each other, and from the three groups into which those of the New World naturally divide themselves, that although each consists of a single genus, and one of but a single species, it seems requisite that both should stand distinct. It will also be necessary to remodel the genera of the Armadilloes, and to define them anew by their external characters as well as by those of the skull, since the presence of a tooth in each of the intermaxillary bones of a single species of the family has prevented the essential similarities and differences from being duly appreciated.

Although some few naturalists may still associate this order with the true Ungulata, for the sake of keeping the divisions of the class within the predetermined number five, I think that most of those who have given particular attention to the subject will agree, that so natural and strongly-marked a group is well worthy of isolation, which was the opinion of Linnæus and Cuvier, although the former wrongly associated with it a few genera belonging properly to other groups.

The characters possessed in common by the members of so diver-

sified an order, must be expected to be comparatively few; those which I have observed in the skull are as follows:—

The tuberosity of the maxillary bone is articulated by the whole of its upper surface to the frontal and orbitosphenoid bones.

The zygoma is flat and straight, projecting at once outwards and forwards, its articulating surface being more or less confluent with a concavity at the inner side of it which forms a portion of a more or less elongated cone, whose apex would point backwards. In such forms as have the articulation longitudinal, the glenoid surface is distinguishable from that of Rodents by its posterior termination, which is *not* a thin free edge like the anterior.

The alisphenoid bone never extends high, so that the pterygoid ridge forms its upper boundary, or even extends above it.

The absence of enamel in the teeth, when they exist, must also be named among the cranial characters.

Fam. 1. BRADYPODIDÆ.

The intermaxillary bones confined to the lower part of the nasal opening; the maxillary bones provided with simple teeth, shortened, their malar processes much pushed forwards upon them, and the molar series converging behind; the posterior palatine foramina replaced by a series of minute openings extending the whole length of the palate; the malar bone having a descending masseteric process transversely compressed, longitudinally extended, and with a distinct superadded process arising between its frontal and zygomatic processes; the foramen rotundum distinct, and opening exteriorly at the base of the pterygoid process some distance below the sphenorbital foramen and anterior to the foramen ovale; the zygoma straight and trigonal, its origin thick and extensive, reaching back quite to the posterior part of the squamous bone; the mastoid bone with a wide digastric fossa, and a strong thick styloid process, terminating in a circular concavity for the reception of the stylohyal bone; the lower jaw widened anteriorly with an extended symphysis.

It must be observed that the superadded process of the malar bone is peculiarly characteristic of this family, and is quite distinct from any of the processes of that bone to which special names have been assigned. It is situated between the frontal or postorbital and zygomatic processes, both of which seem also to exist in a more or less rudimental form in most of the known species; and when the latter is wanting as in the genus *Cholæpus*, the fact that the new process stands aloof, above the zygoma, is enough to prevent its being taken for the zygomatic process, which in all mammalia possessing a complete zygomatic arch either abuts simply against the extremity of the zygoma, or more generally seems to support it from beneath.

The zygomatic process is well developed in the *Megatherium*, and completes the arch, leaving the other, which might be called the supratemporal process, projecting above it. In *Myiodon robustus* the frontal process is reduced to a slight angle upon the base of the supratemporal process. In the *Scelidotherium* the process existing

above the zygomatic process appears to be broken off, but the obliquity of its base renders it improbable that it would be the true frontal process so largely developed.

The circular pit for the attachment of the stylohyal bone is precisely similar in the Sloths to that in the large fossil genera, and it is somewhat remarkable that Prof. Owen, while describing the character in these extinct forms, should have made no allusion to its existence in the recent Sloths, even though Cuvier expressly points it out. The tongue is largely developed in this family, and the living sloth may be seen to make great use of it in taking food into its mouth, as was observed by Mr. Ball, in a short communication published in the 'Proceedings' some years back. On the other hand, it is long and slender in the insect-feeding tribes, so that the maximum degree to which it was developed in the *Glossotherium* is certainly no indication that such was the food of that remarkable genus.

CHOLÆPUS, Illiger.

Intermaxillary bones small, produced anteriorly; postorbital process well-developed; malar bone with a well-marked frontal process, but no zygomatic process, the supratemporal process projecting backwards or bent a little upwards; pterygoid bones inflated; crotaphite impression approaching near to the occipital ridge; tympanic bone reduced to a simple ring; lower jaw produced anteriorly, straight below, its condyle depressed; teeth $\frac{5-5}{4-4}$, simple, rounded, the anterior ones in each jaw enlarged, trigonal.

C. didactylus.

BRADYPUS, Gray.

Intermaxillary bones reduced or wanting; postorbital process slightly developed; malar bone with the frontal and zygomatic processes slightly marked, the supratemporal process rising obliquely; pterygoid bones inflated; crotaphite impression terminating at a considerable distance from the occiput; tympanic bone well-developed, forming a bulla; lower jaw with a flattened square process in front, deep posteriorly, the lower outline convex, the condyle elevated; teeth $\frac{5-5}{4-4}$, simple, rounded, the anterior ones similar, small in the upper jaw.

B. crinitus.

In addition to the character of the pterygoids, which, in the absence of actual knowledge, might possibly have belonged to age or sex, I find this species to be clearly distinguishable from those of the next genus by the great distance that intervenes between the posterior termination of the temporal fossæ and the occiput, which is much greater in the old specimens even than in the young of the genus *Arctopithecus*. The occiput also differs from them in being proportionally smaller, of a rounder form; the digastric fossæ converging a little superiorly, instead of diverging as in the other genus. The lower jaw also presents a character more decided than the anterior pro-

duction which Mr. Gray points out in his paper on the genus *Bradypus*: it is much deepened behind, rendering the lower outline very convex. And further, there are certain characters pointed out by Cuvier in the 'Ossements Fossiles' which appear to be constant, so far as I have been able to observe, as it is only in young specimens that the sutures are discernible. They are, first, that in this species, the *Ai à collier*, the nasal bones are bevelled towards the middle posteriorly, so that they form a point between the frontals, while in the other species they are bevelled in the opposite direction, the frontals descending between their extreme points. Secondly, that the palatine bone forms but a narrow slip within the orbit, and the alisphenoid bone occupies a much larger portion of the temporal fossa than in the other species.

The skull spoken of by Mr. Gray as being taken from a skin, presents characters intermediate between the other one and that upon which the *B. affinis* is founded, therefore I refrain from inserting the latter as a species until further evidences are obtained.

ARCTOPITHECUS, Gray.

Intermaxillary bones short and small; postorbital process slightly developed; malar bone with the frontal and zygomatic processes slightly marked, or the former wanting, the supratemporal process rising obliquely; pterygoid bones compressed and simple; crotaphite impression extending to very near the occipital ridge; tympanic bone well-developed, inflated; lower jaw with its inferior outline concave posteriorly, its condyle elevated; teeth $\frac{5-5}{4-4}$, simple, rounded, the anterior ones similar, small in the upper jaw.

A. GULARIS. *Ai à dos brûlé.*

A broad patch of soft yellow hair between the shoulders, and a black line running through it down the back; the upper anterior molars proportionally larger, and the second less, than in the following species; the occiput again affords us a very good distinction, as it is much wider and not so deep as in the following species, and the foramen magnum not so large. Two skulls in the British Museum present these characters, and evidently belong to adult, probably aged, individuals; that of the skeleton, also from Bolivia, seems referable to the other species.

A. MARMORATUS.

Fur everywhere more or less lengthened, no yellow spots, dorsal line grey brown; anterior upper molars very small, the next rather larger than those which follow; occiput deeper and narrower than in the preceding species, its foramen larger.

The *A. Blainvillii* is not distinguishable by external markings, and the skulls bearing that name in the Museum collection all present a general robustness, such as age and sex might very probably occasion. One of them, which, from retaining some of the sutures, seems to be younger than the others, has the frontal bones less swollen, and the

lower jaw with its angular process as much produced as in those labelled *marmoratus*, though deeper, but not so deep as in the others.

The *A. flaccidus* may be only a local variety, the skulls not being very clearly distinguishable, for there are not two between which some individual peculiarities may not be traced.

The skull to which the name *problematicus* is given is evidently young, having all its sutures well-marked, and in the absence of the fur cannot be safely looked upon as the type of a species. It agrees with the others in the character of the occiput, which distinguishes them all from the *A. gularis*, as well as from the *Bradypus crinitus*. The palæontologist is well aware of the uncertainty of establishing species upon trivial details of form, although slight distinctions are in some cases known to afford a true indication: the skulls of the Three-toed Sloths vary greatly, and all present a coarse, rough-hewn appearance which must detract from our confidence in little differences of detail. With regard to the lower jaw, they certainly do not present differences so strikingly characteristic as those upon which the species of *Myiodon* are established.

MEGATHERIUM, Cuvier.

Intermaxillary bones lengthened and prominent; postorbital process lengthened and drawn out, but not inflated; malar bone with its frontal and zygomatic processes well-developed, the latter attached firmly to the zygoma; the supratemporal process rising obliquely; pterygoid bones compressed, and not inflated; crotaphite impression approaching near to the occipital ridge; tympanic bone attached, small, and not inflated; (immediately in front of the circular facet for the stylohyal bone there descends a strong process, which may probably belong to the tympanic bone and form a portion of a vaginal process;) lower jaw produced in front, deepened in the middle by the extensive implantation of the molars, the condyle much elevated; teeth $\frac{5-5}{4-4}$, quadrate, grooved transversely on the crown when worn, the cæmentum being thickened on the anterior and posterior surfaces; the posterior upper one small.

M. CUVIERI.

Dr. Lund figures a tooth having the characters of this well-known genus, but of smaller size, under the name of *Megatherium Laurillardii*.

MEGALONYX, Jefferson.

General cranial characters unknown; teeth $\frac{?}{4-4}$, subelliptical, with a ridge on the inner side.

M. Jeffersonii.

MYLONDON, Owen.

Intermaxillary bones small (lost in the skeleton); postorbital process but little developed, thick; malar bone with the frontal process indicated by a slight angle, the zygomatic well-developed, touching
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the zygoma, the supratemporal process rising obliquely; pterygoid bones thin and compressed; crotaphite impression approaching near to the occipital ridge; tympanic bone reduced and separate; (the foregoing characters can of course apply only to the *Myiodon robustus*, it being the only species of which the cranium is known;) lower jaw broad and more or less prolonged in front, the lower outline straight, the condyle depressed; teeth $\frac{5-5}{4-4}$, the anterior ones rounded or trigonal, the posterior ones larger, trigonal in the upper jaw, gradually becoming bilobed in the lower. The species can only be characterized by the lower jaw, as it is the only part that is known in all of them. The characters are taken chiefly from Prof. Owen's works.

M. DARWINII.

Lower jaw much produced anteriorly, with a double mammelliform tuberosity upon the symphysis below. The first tooth rounded or subtrigonal, the second subelliptical, with a slight depression on the inner side; the third subquadrate, grooved on the inner side; the posterior internal angle produced; the fourth bilobed, sharply grooved on the inner side.

M. HARLANI.

Lower jaw with the symphysis short; the second tooth subquadrate, grooved on the inner side, with the posterior internal angle produced; the third trapezoid, obliquely placed, with the inner side rounded; the fourth bilobed, the inner groove biangular, and a small shallow one anterior to it.

M. ROBUSTUS.

Lower jaw produced and very broad anteriorly, the first tooth round, the second subtrigonal, grooved internally, the third subquadrate, oblique, the fourth bilobed, with a deep scallop on the inner side and a smaller one anterior to it.

GLOSSOTHERIUM, Owen.

Crotaphite impression approaching near to the occipital ridge; tympanic bone reduced and separate. The general cranial characters are unknown, but the fragment is recognizable by the great size of the surface for the stylohyal bone, and of the precondyloid foramen.

SCOLIDOTHERIUM, Owen.

Malar bone with a well-developed zygomatic process; the character of its frontal process cannot be determined through mutilation of the specimen; crotaphite impression approaching near to the occipital ridge; tympanic bone reduced and separate; lower jaw greatly curved below, its condyle depressed; teeth $\frac{5-5}{4-4}$, transversely extended, the anterior ones fully as large as the others, the first in each jaw elongate trigonal, the others gradually becoming bilobed, the last upper one trigonal.

S. leptcephalum.

PLATYONYX, Lund.

This genus is proposed by Dr. Lund, to include a series of species discovered by him, the first three of which he had previously referred to the genus *Megalonyx*, and Prof. Owen, in the conspectus at the end of his memoir on the *Mylodon*, has placed them in his genus *Scelidotherium*; but I prefer to adopt, for the present, Dr. Lund's latest arrangement, since in the lower jaws figured, the last lower molar has a deep groove on its posterior side, and the fourth species, of which an entire skull is figured (tab. 38), agrees in this character, and shows a marked distinction from the *S. leptcephalum* in the zygomatic arch being incomplete; the malar bone has no frontal process, and but a slight angular indication of the zygomatic process.

P. Cuvieri.

P. minutus.

P. Bucklandi.

P. Brongniartii.

In addition to these, Dr. Lund represents a metacarpal bone of a species which he calls *P. Owenii*, and an os scaphoides of the foot of another, which he names *P. Agassizii*.

The genera *Cælodon* and *Sphenodon* of Dr. Lund seem open to the objection suggested by Prof. Owen, namely that the teeth would be first developed in the form of hollow obtuse cones, not assuming the cylindrical form until worn down to the part which has acquired in process of growth the normal thickness; but while I feel naturally cautious of introducing into my category any genera or species, the establishment of which is not made fully satisfactory to my mind, I must not be considered as rejecting any of those of Dr. Lund, when his illustrations and lists of names are the only evidences I can attain; since his original specimens are far beyond my reach, and my ignorance of the Danish language prevents my comprehending his descriptive memoirs.

Fam. 2. DASYPODIDÆ.

The nasal bones long, of nearly uniform width, their extremities projecting forwards beyond the intermaxillaries; the intermaxillaries are portions of cylinders, reaching further especially on their palatal surface than in the other families; the maxillary bone swollen and provided with simple teeth; its zygomatic process projecting boldly outwards, and a ridge continued from it for the masseter, the molar series diverging behind; the posterior palatine foramina are replaced by a row of minute openings extending the whole length of the palate; the malar bone, when there is a descending masseteric process, or a rudiment of one, has it compressed longitudinally, extended transversely; the foramen rotundum is included in the foramen sphenno-orbitarium; the zygoma is flat, gently twisted upwards towards its extremity; the mastoid bone with a deep narrow groove, containing one or more mastoid foramina; the basi-occipital bone with a transverse depression just anteriorly to the edge of the foramen magnum, and (excepting in the genera *Tolypeutes* and *Glyptodon*) with an articular surface upon the lower edge of that foramen receiving the odontoid process of the axis when the head is deflexed;

the occipital condyles are portions of cylinders, placed horizontally, each in a line with the paroccipital process; the precondyloid foramen is placed close to the condyle; the supra-occipital bone is broad above, forming on each side a strong thickened ridge; the lower jaw is narrowed and slenderly produced anteriorly.

The true affinities existing among the various Armadilloes have been rightly perceived by the Baron Cuvier, and are well pointed out in the 'Ossemens Fossiles'; but he did not designate the subgenera by any particular names, and naturalists, for the most part, have adopted the arrangement of Mons. F. Cuvier, which limits the genus *Dasypus* to the single species that has teeth in the intermaxillary bone, and unites all the rest, excepting the Giant Armadillo, under the generic name *Tatusia*. Mr. Gray, in the 'List of Specimens of Mammalia in the British Museum,' has adopted in addition the genus *Xenurus* of Wagler, and it will be further necessary to make use of Illiger's genus *Tolypeutes* for the Apra or Three-banded Armadillo. The species *villosus* and *minutus* must be associated, as Baron Cuvier has done with the *Encoubert* in the genus *Dasypus*.

The groups recognized in the 'Ossemens Fossiles' being thus restored and the names proposed by other authors applied to them, I shall proceed to characterize them by their external armour, by which they may very easily be distinguished, and to add the characters of the cranium, in which my observations have been assisted by the immortal work alluded to.

TATUSIA.

Ears thrown backwards and approximated; plates of the head of irregular shape and smooth; those of the scapular and pelvic shields much smaller than those of the bands, and surrounded with others smaller still; fore-feet with four toes, the claws straight, the index and medius nearly equal, the pollex and annularis small; maxillary bone terminating in a pointed process behind; teeth rather small, none of them being further back than the root of the malar process; this process concave anteriorly, projecting outwards and backwards; the infra-orbital canal entirely below it; malar bone simply a portion of an inverted arch, hollowed on the outer side for nearly its whole length by the masseteric impression, merely abutting against the zygoma; palatine bone reduced in vertical extent, being encroached on above by a large thickened portion of the ethmoid bone which appears in the orbit, the sphenopalatine foramen being a narrow fissure between them; pterygoid bone simply bordering the termination of the palatine, without hamular process; zygoma compressed and elevated, its glenoid surface circular; tympanic bone reduced to a ring; mastoid narrowed; lower jaw slender, its condyle but little elevated, transverse and flat, coronoid process elevated.

T. SEPTEMCINCTA.

Ears about one-third of the length of the head; plates smooth; tail as long as the body.

T. affinis of Dr. Lund may possibly be identical.

T. HYBRIDA.

Ears about one-fourth of the length of the head; plates of the pelvic shield convex and elevated; tail about two-thirds of the length of the body. The characters of this species, which was named by M. Desmarest, are carefully pointed out by Mr. Martin in the 'Proceedings' of the Society, January 1837.

Cuvier speaks of a third species brought from Brazil by M. de Saint-Hilaire, under the name of *Tatou verdadeiro*, differing from the mule Armadillo in having the tail terminated by a horny sheath of one piece, the bands broader, and the plates of the pelvic shield larger.

Dr. Lund figures two ossicles of a *Tatusia*, indicating dimensions much greater than those usually attained by specimens belonging to the genus, and applies the name *Dasyppus punctatus*. I find in the Museum of the College of Surgeons a recent carapace, denuded of its horny epidermal scutes, and wanting the scapular shield; it is as large as Dr. Lund's figures would imply, and has the same punctate depressions in the grooves which mark the surfaces of the component ossicles. It differs from a smaller one, still a large specimen, also denuded of the epidermal scutes, in the latter having the central area of each ossicle a little elevated at its posterior margin, and the punctate depressions fewer and smaller behind this area than in front of it; while in the larger specimen they are all about equal in size.

It is difficult to compare these specimens with those which retain their natural covering; but the punctate character seems to belong to the genus rather than to the species, it not being perceptible until the horny scutes are removed: and whether the *Tatusia punctata* be a species, or merely a large variety of one of the others, it would appear not to be extinct.

CHLAMYPHORUS, Harlan.

Plates of the head, the scapular shield and the body forming an uninterrupted series, each a parallelogram, those of the neck smaller, and those of the muzzle irregular; pelvic shield small, flat, or slightly convex, placed vertically, at right angles to the dorsal armour, and composed of concentric semioval rows of trapezoid plates; fore-feet with five toes, the medius being the longest, the two inner claws the smallest, and the three outer ones very deep and compressed; frontal bone with a large thickened process above the eye; malar bone thin, deep anteriorly, with a rudiment of a descending masseteric process assuming a transverse position; auditory process bending forwards round the base of the zygoma; lower jaw with the ascending ramus much elevated, the condyle higher than the coronoid process.

C. truncatus.

DASYPPUS.

Head broad behind, ears wide apart, its plates irregular, marked like those of the body; those of the scapular and pelvic shields oblong parallelograms, like those of the bands, but becoming pentagonal or hexagonal towards the neck and croup—all the plates

marked with an indented pattern ; bands about six or seven ; fore-feet with five toes, the index nearly as thick as the medius, which is the longest, the claws a little twisted outwards ; maxillary bone terminating behind in a strong vertical column formed by the alveolus of the last tooth, and concealing the sphenopalatine and pterygopalatine foramina ; teeth rather large ; malar process compressed in the antero-posterior direction, suddenly projecting, concave anteriorly ; infra-orbital canal short, pierced through the base of the process ; malar bone angular, with a rudiment of a descending process, compressed in the antero-posterior direction ; its zygomatic process deep, extending beneath the zygoma ; palatine bone ascending into the orbit ; no appearance of the ethmoid within the orbit ; pterygoid bones with well-defined hamular processes, bent outwards ; zygoma well-developed, flat ; its glenoid surface slightly convex, reniform ; tympanic bone well-ossified, forming a bulla ; auditory process largely developed ; mastoid bone very broad, placed entirely in the occipital region ; lower jaw deep and thick, its ascending ramus high ; coronoid process largely developed, condyle broad.

D. SEXCINCTUS.

Muzzle broad ; plates large, distinct, but slightly indented ; bands six or seven, *no* separate band on the anterior edge of the scapular shield ; terminal plates of the bands and pelvic shield small ; hairs few, white ; teeth $\frac{9-9}{10-10}$, the first upper one on each side being in the intermaxillary bone.

D. VILLOSUS.

Muzzle broad ; plates closely united, roughly tubercular, those of the bands closely united and small ; bands eight ; a separate band on the anterior edge of the scapular shield, behind the row of nuchal plates ; terminal plates of the bands and pelvic shield large and falcate ; hairs profuse, brown.

D. MINUTUS.

Muzzle tapering, narrow at the end ; plates of the head smooth, those of the shield and bands closely united, and flatly tubercular ; terminal plates of the bands and pelvic shield large and falcate ; bands six or seven ; a separate band on the anterior edge of the scapular shield, behind the row of nuchal plates ; upper parts with black hairs ; sides of the head and limbs with brownish hairs ; under parts with whitish hairs ; teeth $\frac{8-8}{9-9}$, none in the intermaxillary bones, nasal and intermaxillary bones lengthened.

XENURUS, Wagler.

Head broad behind, ears wide apart, its plates irregular, smooth ; those of the scapular shield irregular in the middle, hexagonal towards the sides ; bands twelve, composed of short and square plates ; pelvic shield with square plates in the middle, becoming hexagonal towards the sides ; tail almost naked ; fore-feet with five toes, the index longest, but very slender, the three outer toes rapidly diminishing in

length, but furnished with large claws, twisted outwards; maxillary bones articulated posteriorly by suture to the palatine, its malar process thick, rounded anteriorly; malar bone but slightly angular, its zygomatic process extending beneath the zygoma; palatine bone ascending into the orbit, and pushing up the sphenopalatine foramen into a fossa which contains the foramina of the orbit; pterygoid bones with their hamular processes styliform, projecting backwards; zygoma small, rounded above; tympanic incompletely ossified; mastoid bone broad, placed obliquely; lower jaw slender, its condyle elevated, reniform; coronoid process feebly developed, lower than the condyle.

X. UNICINCTUS.

Cuvier mentions a species with a shorter and more entirely naked tail; it is probably the same that has been called *nudicaudis* by Dr. Lund. *X. antiquus* of the same distinguished author may possibly be identical.

PRIODONTES, Frederick Cuvier.

Head broad behind, ears wide apart; plates of the head and body as in *Xenurus*; tail closely covered with quadrangular scales, placed in a quincuncial arrangement; fore-feet as in *Xenurus*, the outer toe much reduced; maxillary bone articulated posteriorly by suture to the palatine; teeth numerous and minute; infra-orbital canal long, commencing below the malar process, and terminating nearly on the middle of the bone; malar bone forming simply a portion of an inverted arch, round, and devoid of processes; palatine bone ascending into the orbit; pterygoid bone strongly developed, with an angular termination; zygoma rather small, the glenoid surface lengthened, the lower part of the squamous and the alisphenoid bone forming a longitudinal swelling within it; tympanic bone small, and loose; mastoid bone broad, forming the sides of the occiput which are rounded; lower jaw thin and compressed, condyle longitudinal, but little elevated; coronoid process much reduced.

P. gigas.

TOLYPEUTES, Illiger.

Head broad behind, ears wide apart; plates very closely articulated to each other, their surface divided by impressed marks, and studded with blunt tubercles, those of the scapular and pelvic shields varying from a square to a pentagonal or hexagonal form; bands three, composed of oblong parallelograms, equally subcircular, and closely articulated; fore-feet four-toed, the outer being absent; the medius slightly longer than the index, with a much larger claw, both having an outward twist; maxillary bone articulated posteriorly to the palatine, its malar process standing suddenly outwards, compressed; infra-orbital canal commencing below and behind its root, rather lengthened, rising a little in its course; teeth rather large; malar bone slender, and simply abutting by an oblique suture against the zygoma; palatine bone ascending into the orbit, pterygoids with blunt hamular

processes, a little bent outwards; zygoma rather narrowed, glenoid surface flat, reniform; tympanic bone reduced to an annular form; lower jaw slender, condyle moderately elevated, reniform, coronoid process elevated.

T. TRICINCTUS.

Cuvier cites the *Cheloniscus* of Fabricius Columna as being this species, but represented with four bands instead of three; the last row of plates of the scapular shield is composed of oblong parallelograms like those of the bands, which may have given rise to such an error.

CHLAMYDOTHERIUM, Lund.

Judging by the plates that accompany Dr. Lund's Memoir, this appears to be a genus of extinct gigantic Armadilloes, having the body provided with moveable bands like the recent ones, and teeth of a compressed form, and irregularly fluted; two species are distinguished.

C. Humboldtii. *C. giganteum.*

HETERODON, Lund.

Distinguished by the unequal sizes of the teeth: the fragment of the lower jaw figured contains six teeth, of which two are much larger than the others.

H. diversidens.

EURYODON, Lund.

Dr. Lund figures a tooth resembling those of the Armadilloes, but apparently broader in proportion to its antero-posterior diameter.

E. latidens.

GLYPTODON, Owen.

Carapace ovoid, without distinction of shields or bands, composed of small hexagonal pieces with sculptured surfaces; teeth divided into narrow transverse lobes; malar bone with a lengthened descending process, placed transversely; zygoma flat, its glenoid surface elevated, transversely elongate, looking a little backwards; mastoid proportionally small, placed laterally.

G. CLAVIPES.

The central tubercle upon each ossicle large, round, or subhexagonal, conspicuous above the surrounding ones, which are small, and more cut up by reticulate depressions.

G. ORNATUS.

The central tubercle of each ossicle not conspicuously marked above the rest; all more finely granular.

This may possibly be the young of that to which the name *reticulatus* has been applied, and which, therefore, I will at present omit.

G. TUBERCULATUS.

Ossicles approaching to a square or rhomboidal form, their surface divided into numerous irregular elevations.

The genus *Hoplophorus* of Dr. Lund appears to be identical with *Glyptodon*; he figures two teeth in which the characters of that genus are clearly shown, and several detached ossicles and portions of carapace bearing a general resemblance to the species of *Glyptodon*, principally to the *G. ornatus*. He distinguishes two species, the *H. Euphractus* and *H. Selloi*. Prof. Owen refers to the *H. Euphractus* a portion of carapace brought home by Mr. Darwin, and figured in the 'Voyage of the Beagle,' which very closely resembles those afterwards figured in the 'Catalogue of Fossil Mammalia and Aves in the Museum of the Royal College of Surgeons' under the name *G. ornatus*.

I am not as yet acquainted with the *Pachytherium magnum* of Dr. Lund's catalogues.

Fam. 3. MYRMECOPHAGIDÆ.

The nasal bones simple, of uniform width, emarginated at the ends; the intermaxillary bones much reduced; the maxillary bones much lengthened, toothless, the malar process projecting backwards, outwards and downwards; the posterior palatine foramen single, or wanting; the malar bone reduced to a slender stylet free at the posterior end; the foramen rotundum included in the foramen sphenoorbitarium; the zygoma very small, and pushed quite to the anterior superior angle of the squamous portion; the supra-occipital bone encroaches upon the upper surface of the skull, and has a median protuberance; the lower jaw much lengthened and slender at the end, without coronoid process.

Not having seen the skull of the little Two-toed Ant-eater, I have used a little caution in characterizing this family. For example, I have avoided alluding to the peculiar character of the pterygoids, as Cuvier informs us that they do not enclose a long canal as in the larger species. I therefore limit the diagnoses of the genera to the few points, in which, in the absence of a skull of the small species, they are known to differ*.

MYRMECOPHAGA, Linnæus.

Fore-feet with four toes; hind-feet with five toes; palatine and pterygoid bones united beneath the nasal canal for their whole length.

M. JUBATA, Linn.

Varied with black and grey, the latter predominating on the head, back, sides, fore-limbs and tail; throat, a mark running obliquely from the shoulder upwards and backwards, and hind-limbs black; fur very coarse; tail but little longer than the body, very bushy.

* I have since seen the cranial portion of the skull of the Little Ant-eater, and find that although the pterygoid bones do not enclose the nasal canal below, they resemble those of the larger species in their great extent backwards.

M. TAMANDUA.

Head, shoulders, fore-limbs, outside of the hind-limbs, and middle third of the tail white ; a stripe from each side of the neck over the shoulder and remaining parts black ; tail but little longer than the body, its terminal third scaly. Varies chiefly by the diminution of the intensity of the black.

I have found that the Yellow Ant-eater, hitherto considered to be one of the varieties of this species, differs remarkably in the length and size of the tail ; the ears also appear to be larger, but this latter character is less decisive, owing to the different degrees to which they may shrink when dry. A specimen in the British Museum, and one in that of this Society, resemble each other exactly, while a young pale specimen of *M. Tamandua* has a tail proportionally of the same length as the larger and darker individuals. Under these circumstances I have been induced to propose a name for the Yellow Ant-eater, deeming it probable that the species may be distinct.

M. LONGICAUDATA.

General colour uniform light ochraceous, a paler line runs down the middle of the back ; tail nearly double the length of the body, its terminal half covered with small scales and a few scattered black hairs ; ears large, round, about one-third the length of the head.

Although the flanks show a slightly darker reflection in certain directions of the light, there is no trace of the mark which runs across the shoulder.

On referring to the figure, in Krusenstern's Voyage (tab. 6 e), on which M. Desmarest founded his *Myrmecophaga annulata*, I find it to be a very excellent representation of a Coati-mondi, probably the brown species. The head is bent downwards, the tongue protruded, and curved beneath the left fore-foot ; from under the further side of the foot there comes a small twig of a tree, which, if it were not branched, would look like a continuation of the tongue. But the figure published in Griffith's translation of the 'Règne Animal' is not so easy to interpret. The general form of the body is more like that of an Ant-eater, though rather too long and slender ; the tapering head and the dark stripe from the end of the muzzle to the eye remind one of the *Myrmecobius*, which was not known until several years afterwards ; the tail is just such as a Coati-mondi might have supplied. The figure is said to have been drawn from a stuffed specimen, but the authors do not state where the specimen existed, and possibly may never have seen it.

Cuvier asserts, with much probability, that the animal from which Buffon took his figure of the *Tamandua* was made up of the skin of a Coati-mondi, to which striped markings had been artificially applied.

CYCLOTHURUS, Gray.

Fore-feet with two toes, the outer one much the larger ; "the palatines only meet below for two-thirds of their length, and the bony canal of the nares there terminates, the pterygoids not meeting, but presenting only two long parallel and little prominent crests."

C. DIDACTYLUS.

Dr. Lund inserts in his lists of fossil species one which he has named *Myrmecophaga gigantea*, but I have seen no representation of any portion of the animal among the figures published.

Fam. 4. MANIDÆ.

The intermaxillary bones small, having ascending processes running upwards and backwards; each encloses a separate incisive foramen; the maxillary bones short, toothless, their malar processes projecting backwards, outwards and downwards; the palatine bones much spread out in front, and with distinct posterior palatine foramina; the malar and lacrymal bones wanting, but a large lacrymal opening; the alisphenoid bone much reduced; the zygoma deep, thin, concave exteriorly, and pushed downwards to the anterior and inferior angle of the squamous portion; the occipital condyles prominent, oblique, the precondyloid foramina at some distance anterior to them.

This family consists of but one genus, containing several well-marked species.

MANIS, Linnæus.

In characterizing the species of this genus, I give the number of scales in each transverse row, instead of the number of longitudinal rows, which has been the usual method adopted. The number in each case will appear much less, but it will be recollected that this is owing to the scales of one row being alternate with those of the next one.

M. PENTADACTYLA, Linn. (*macroura*, Desm.)

Each transverse row of scales composed of three on each side of the median one; scales striated at the base, smooth at the end, the striated part distinctly separated from the smooth portion; ends of the scales simple; under parts naked; tail very broad at the base, about equal to the body in length; fore-feet five-toed, the claw of the medius much the largest, that of the annularis next, that of the index much less, the other two very small; hind-feet with lengthened claws; limbs scaled to the bases of the claws.

M. JAVANICA, Desm.

Four scales on each side of the median one in each transverse row, the lower ones on each side, and the lateral ones beneath the tail, keeled and pointed at the ends; tail broad at the base, equalling the head and body in length; under parts with short white hairs; limbs scaled to the bases of the claws; fore-feet with the middle claw largest, the index a little less than the annularis, the others very small; hind-feet with lengthened claws.

M. TEMMINCKII, Smutz.

Body altogether very broad; scales broad, three on each side in every transverse row, striated to the tips which are rounded, none of them carinate; under parts naked; tail about the length of the body, broad and rounded at the end; limbs scaled to the bases of the claws;

fore-feet with the middle claw largest, the two next less, the remaining two much less; those of the hind-feet vertical, truncated.

M. TETRACTYLA, Linn. (*Africana*, Desm.)

Scales large, three on each side in every transverse row, striated to the tip, which is square, with a point projecting from the middle, the lower ones at the sides and the lateral ones beneath the tail carinate; tail double the length of the body, a little narrowed at the base, soon becoming broad; limbs only scaled at the base, then covered with black hairs like the under parts; fore-feet with the middle claw very long and compressed, the index and annularis much less and nearly equal, the minimus less still, the inner toe very small; hind-feet with lengthened claws, nearly equal.

M. MULTISCUTATA, Gray, Proc. Z. S. Feb. 1843.

Five scales on each side of the median one in every transverse row; scales striated to the tip, which is square, with a median point; those on the sides of the trunk and limbs, and the lateral ones beneath the tail, carinate; tail nearly double the length of the body, of moderate width; under parts with short whitish brown hairs; forelimbs scaled to the carpus; toes all well-developed, except the thumb, which is small, the medius longest; hind-feet scaled nearly to the base of the claws, which are all lengthened and well-developed, except the thumb, which is small; the annularis nearly as long as the medius.

M. aurita, Hodgson.

Fam. 5. ORYCTEROPODIDÆ.

The nasal bones long and much spread out behind, narrowed and not projecting anteriorly; the intermaxillaries well-developed, prominent below, not enclosing foramina; the maxillary bones lengthened and deep, provided with compound teeth; the palate terminating soon with a strong transverse ridge, having a pair of large posterior palatine foramina; the lacrymal bone large, extending much upon the face; the malar bone large, extending much upon the face, but its zygomatic process small and slender; the frontal bone large and swollen, with a small and contracted post-orbital process; the parietals extended downwards at their anterior inferior angles to articulate with the alisphenoids; the zygoma slender, twisted as in the Armadilloes; a strong post-articular and a post-auditory process, and just within the latter a short truncate styloid process, not enclosed by any vaginal process, as the tympanic bone is much reduced and separate; the occipital condyles hemicylindrical, but with a portion of articular surface continued from them upon the lower edge of the foramen magnum; the paroccipital processes in a line with them, but distinctly separated.

As this family consists, so far as is yet satisfactorily known, of a single species, its characters might be multiplied to almost any extent; should another form be discovered, they will of course need revision.

This communication having extended far beyond the length that I at first contemplated, notwithstanding that I have limited myself in most cases to the distinctive peculiarities of the skull, it will readily be seen that, had I entered upon the whole osteology of the order, or even introduced in every instance the characters by which the genus or species may be known externally, I should have swelled this little monograph to such a degree as almost to preclude its insertion in the 'Proceedings' of the Society, and entailed upon myself an amount of labour from which I would by no means shrink, but fear I shall be compelled to defer until more favourable opportunities present themselves; but I trust that the little I have as yet accomplished may afford the naturalist a clearer insight into the relations of the living Edentata among themselves, and with those that formerly peopled the portion of the world which was then, as now, the principal abode of this remarkable group.

Pimlico, July 1851.

4. A MONOGRAPH OF SCUTUS, A GENUS OF GASTEROPODOUS
MOLLUSCA, BELONGING TO THE FAMILY FISSURELLIDÆ.
BY ARTHUR ADAMS, R.N., F.L.S. ETC.

Genus SCUTUS, De Montfort.

Animal with the head probosciform; tentacles thick and subulate, with the eyes on tubercles at their outer bases; mantle reflexed over the sides of, and nearly covering, the shell; sides of foot with a series of short cirrhi.

Shell oblong, scutiform, flattened; apex dorsal, oblique, posteriorly inclined; margin of aperture sinuated in front; muscular impression horse-shoe shaped, open anteriorly.

Parmophorus, Blainv.—*Dascinus*, Rafin.—*Scutellites*, Auct.—*Scutum*, Sow. jun.—*Parmophora*, Desh.—*Emarginula*, sp. Sow.—*Patella*, sp. Lamk.

1. SCUTUS UNGUIS, Linn.

Patella unguis, Linn. Mus. Ludovic. Ulric. Reg. p. 69. no. 419.—*Patella ambigua*, Chemn.—*Scutus antipodis*, Montf.—*Parmophorus australis*, Lamk.—*Parm. elongatus*, Blainv.

Hab. New Zealand. Mus. Cuming.

2. SCUTUS ELONGATUS, Lamarck.

Patella elongata, Lamk. Ann. du Mus. i. p. 310.—*Parmophorus elongatus*, Lamk. Hist.—*Emarginula elongata*, Sow. Gen.

Hab. East Australia. Mus. Cuming. Also occurs fossil.

3. SCUTUS GRANULATUS, Blainv.

Parmophorus granulatus, Blainv. Bullet. des Scienc. 1817; Lamk. Hist. An. s. Vert. vol. vii. pt. ii. p. 5; Reeve, Conch. Syst. pl. 139. f. 4.

Hab. Port Essington, on the rocks, low water. Mus. Cuming.

4. SCUTUS CORRUGATUS, Reeve.

Parmophorus corrugatus, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 139. f. 1.

Hab. —? Mus. Cuming.

5. SCUTUS TUMIDUS, Quoy et Gaimard.

Parmophorus tumidus, Quoy et Gaim. Voy. de l'Astrol. pl. 69. f. 6.
—*Parm. gibbosus*, Anton.—? *Parm. breviculus*, Blainv. Bull. des Sci. 1817; Sowerby's Gen. (Emarg.) fig. 2.

Hab. Madagascar. Mus. Cuming.

6. SCUTUS IMBRICATUS, Quoy et Gaimard.

Parmophorus imbricatus, Quoy et Gaim. Voy. de l'Astrol. pl. 69. f. 17, 18.

Hab. Island of Burias. Mus. Cuming.

7. SCUTUS ANGUSTATUS, A. Adams. *S. testá elongatá, subquadrangulari, lateribus angustatis, coarctatis; dorso plano, concentricè striato, vertice subcentrali, postice declinato; extremitate anticá sinuatá, posticá excurvatá, subelevatá.*

Hab. Eastern Seas. Mus. Cuming.

5. A MONOGRAPH OF THE GENUS MONOPTYGMA OF LEA.

BY ARTHUR ADAMS, R.N., F.L.S. ETC.

Genus MONOPTYGMA, J. Lea. (? *Menestho*, Müll.)

Animal unknown.

Shell subulately turreted, transversely striated, apex simple, acute; aperture oval, longer than wide, rounded and entire in front; columella with a single oblique fold.

This genus differs from *Actæon* in being elongated, and in having an oblique fold, instead of a transverse plait on the columella.

1. MONOPTYGMA STRIATA, Gray. *M. testá turrito-subulatá, solidá, olivaceá, anfractibus planis, transversim sulcatis, sulcis profundis, distantibus; aperturá oblongá, intus albá.*

This species, which is typical, is a very thick and strong shell, with a somewhat convex lateral outline, and strongly transversely grooved across the flattened whorls. Mus. Cuming.

2. MONOPTYGMA FULVA, A. Adams. *M. testá turrito-subulatá, graciliori, solidá, fulvá, anfractibus planis, transversim sulcatis, sulcis profundis, distantibus; aperturá oblongá, intus fuscá.*

This elegantly-formed shell is more slender than *M. striata*, and of a different colour; the transverse grooves are also much closer together, and their edges are rounded; the twist of the columella is not so distinct, and the aperture is brown internally. Mus. Cuming.

3. MONOPTYGMA GRANULATA, A. Adams. *M. testá ovato-turritá, albá, solidá, anfractibus planiusculis, gradatis, longitudi-*

naliter corrugato-plicatis, transversim sulcatis, sulcis profundis, valde distantibus; interstitiis lævibus; aperturá oblongá, columellá plicá subproductá.

This is a rather short and obtuse white and solid species, very strongly grooved transversely, and with the whorls longitudinally corrugately plicated. Mus. Cuming.

4. MONOPTYGMA LAUTA, A. Adams. *M. testá turrito-subulatá, albidá, tenui, subpellucidá, anfractibus planiusculis, longitudinaliter eleganter striatis, transversim sulcatis, sulcis distantibus, interstitiis crenulatis; aperturá oblongá, columellá obliquá et curvatá.*

A very beautifully-sculptured species, dredged from 10 fathoms, at Bolinao, by Mr. Cuming; the outline is subulated, and the whorls rather flattened and longitudinally striated. Mus. Cuming.

5. MONOPTYGMA AMÆNA, A. Adams. *M. testá ovato-acuminatá, tenui, subpellucidá, albidá, longitudinaliter substriatá, anfractibus convexiusculis, transversim sulcatis, sulcis valde distantibus, interstitiis eleganter punctatis; aperturá oblongá, antice dilatatá, columellá rectá.*

This is a most exquisite species, both in form and sculpture; the whorls are rounded and punctate-striate, and the shell is nearly pellucid; it is from Bolinao, 10 fathoms water. Mus. Cuming.

6. MONOPTYGMA CASTA, A. Adams. *M. testá ovato-turritá, albá, tenui, semipellucidá, anfractibus convexiusculis, transversim sulcatis, sulcis subconfertis, interstitiis pulcherrimè striatis; aperturá oblongá, antice productá, columellá obliquá, subtortuosá.*

This pure white ovate form is from the China Seas, being collected by the writer during the Voyage of H.M.S. Samarang. The whorls are grooved, with the interstices striated. Mus. Cuming.

7. MONOPTYGMA SPECIOSA, A. Adams. *M. testá turritá, subulatá, albidá, tenui, semipellucidá, anfractibus octo, convexiusculis, suturá profundá, cingillis transversis elevatis, interstitiis concinnè cancellatis, ornatá; aperturá oblongo-ovali, columellá subrectá, supernè plicá obliquá subobsoletá instructá.*

Hab. Baclayon; Philippines. Mus. Cuming.

An elegant semipellucid species, resembling an elongated *Actæon*, with the whorls encircled with elevated cingilli, and the interstices cancellated.

8. MONOPTYGMA SPIRATA, A. Adams. *M. testá turritá, albá, epidermide fusco tectá, anfractibus octo, planiusculis, gradatis, suturá canaliculatá, plicis longitudinalibus, angustis, confertis, et sulcis transversis decussatim ornatá; aperturá oblongá, labio plicá unicá obliquá instructo.*

Hab. Camaguin; Philippines. Mus. Cuming.

A small turreted species, covered, in the living state, with a light brown epidermis, and with the surface regularly and beautifully decussated with raised lines.

9. **MONOPTYGMA TENELLA**, A. Adams. *M. testá ovato-turritá, albá, subpellucidá, anfractibus quatuor, convexiusculis, transversim tenuiter striatá; aperturá ovali, labio subreflexo, plicá obsoletá instructo; labro dilatato, margine flexuoso incrassato et subreflexo.*

Hab. Philippine Islands. Mus. Cuming.

A small *Rissoa*-like shell, with only a faint indication of a plait on the columellar lip; the aperture dilated, and the outer lip expanded and slightly thickened anteriorly.

10. **MONOPTYGMA STYLINA**, A. Adams. *M. testá subulatá, in medio incrassato, albá, subpellucidá, anfractibus 9-12, planiusculis, transversim tenuiter sulcatá, longitudinaliter substriatá; aperturá oblongá, labio superne plicá obliquá instructo; labro, in medio, subrecto.*

Hab. Catanuan; Philippines. Mus. Cuming.

A remarkable white subulate shell, with the middle whorls, especially those near the apex, enlarged.

11. **MONOPTYGMA SUTURALIS**, A. Adams. *M. testá subulato-turritá, subumblicatá, albá, nitidá, subdiaphaná, anfractibus septem planis, suturá canaliculatá, transversim sulcatá, anfractu ultimo subsoluto, fasciis angustis, albo articulatis, ornato; aperturá oblongo-ovali, labio plicá evanidá instructo.*

Hab. Philippine Islands. Mus. Cuming.

A small white species, with the last whorl nearly free, and having the suture deeply channeled.

6. DESCRIPTIONS OF NEW SHELLS, FROM THE CUMINGIAN COLLECTION; WITH A NOTE ON THE GENUS NEMATURA.

BY ARTHUR ADAMS, R.N., F.L.S. ETC.

- PYRAMIDELLA METULA**, A. Adams. *P. testá subulatá, turritá, apice obtusiusculo, albidá anfractibus decem planulatis, longitudinaliter costatá, costis confertis æquantibus, interstitiis lineis transversis elevatis ornatá; aperturá ovali, labio incrassato, in medio plicá unicá instructo; labro margine subincrassato.*

Hab. Mizamis, Cagayan. Mus. Cuming.

A small elongated species, somewhat resembling a *Rissoina*, with the intervals between the ribs finely cancellated, and the whorls very numerous.

- PYRAMIDELLA ACLIS**, A. Adams. *P. testá subulatá albá nitidá, anfractibus octo planiusculis longitudinaliter plicatá, plicis æqualibus subconfertis, interstitiis lavibus; aperturá semiovatá, labio subincrassato plicá unicá munito; labro subdilatato.*

Hab. Philippines. Mus. Cuming.

This is a slender subulate species, likewise resembling in appearance a *Rissoina*.

LACUNA CARINIFERA, A. Adams. *L. testá ovatá, spirá acuminatá, anfractibus quatuor, latè umbilicatá, fulvá, anfractu ultimo angulato, cariná transversá elevatá, rufo-fusco articulatá, ornato; aperturá semiovatá; labro acuto, angulato, labio recto, fissurá umbilicali elongatá.*

Hab. Borneo. Mus. Cuming.

The single prominent keel round the periphery of the last whorl is the principal feature of this species.

VELUTINA SITKENSIS, A. Adams. *V. testá nigro-fuscá, epidermide liris elevatis transversis confertis obtectá, longitudinaliter valdè sulcatá, sulcis subdistantibus; aperturá ovali, intus sulcatá; labro margine reflexo, nigro, incrassato; postice non-producto supra anfractum ultimum.*

Hab. Sitka. Mus. Cuming.

The dark brown colour and oval form distinguish this species from *V. lævigata*, which also has the outer lip arched and expanded posteriorly.

OTINA FUSCA, A. Adams. *O. testá magná, solidá, semiopacá, fuscá, sine epidermide, dorso convexá, longitudinaliter subplicatá, transversim tenuiter striatá, labio lato, plano, et excavato; labro recto, non reflexo aut expanso.*

Hab. Benguela. Mus. Cuming.

The large size of this species, and its convex form, distinguish it from *O. otis*, and its absence of bands, and the outer lip not being expanded, from *O. zonata*, Gould, the only two species at present known to me.

7. NOTE ON NEMATURA, BY A. ADAMS.

The genus *Nematura*, established by Mr. Benson, appears to have the closest affinity with *Bithynia* of Leach, but the horny operculum, with grooved margins, and the contraction of the aperture, will distinguish them. There appear to have been found at present but six species, three of them known, and three here indicated for the first time; in the rivers and streams of the East are doubtless many more; they are usually found adhering to the under surface of dead floating leaves.

1. NEMATURA DELTÆ, BENSON. *N. testá magná, pallidè fulvá, globosá, lævi; aperturá orbiculari, peritremate simplici.*

Mus. Cuming.

2. NEMATURA MINIMA, BENSON. *N. testá parvâ, corned, semi-pellucidâ, ovali, spirâ subproductâ; politâ, fasciis rufis sub-obsolete ornata; aperturá orbiculari, peritremate simplici.*

Mus. Cuming.

3. NEMATURA POLITA, Sowerby. *N. testá magná, castaneo-fusca, compressá, subvaricosá; aperturá ovali, peritremate anticè striato; regione umbilicali lirá callosá circumdato; punctato-striatá.*
Mus. Cuming.
4. NEMATURA OLIVACEA, A. Adams. *N. testá ovatá, opacá, olivaced, viridi-fusco reticulatá; aperturá ovali, spirá elevatá, apice decollato, peritremate simplici.*
Mus. Cuming.
5. NEMATURA GLABRATA, A. Adams. *N. testá magná, ovatá, non compressá aut varicosá, subviridi-cornéa; spirá acutá, apice acuminato, lævi, politá; aperturá orbiculari, angustatá, peritremate nigro.*
Hab. Penang. Mus. Cuming.
6. NEMATURA PUNCTICULATA, A. Adams. *N. testá mediocri, pallidè fulvá, compressá, anfractu ultimo gibboso, et subangulato ad latera, lineolis punctatis transversis ornatá, peritremate simplici.*
Hab. Eastern Islands. Mus. Cuming.
8. A MONOGRAPH OF THE RECENT SPECIES OF RIMULA, A GENUS OF MOLLUSCA, BELONGING TO THE FAMILY FISSURELLIDÆ.
BY ARTHUR ADAMS, R.N., F.L.S. ETC.

The genus *Rimula* of DeFrance has been usually confounded with *Puncturella* of Lowe, or the *Cemoria* of Leach, but it is at once distinguished by the absence of the arcuated plate in the interior of the vertex. The species already known are fossil, to which we now add a few recent examples.

GENUS RIMULA, DeFrance.

Shell conical, with an elevated, recurved, entire vertex, turned towards the posterior end; surface cancellated, with radiating ribs; a linear perforation in the upper part of the shell, half-way between the vertex and anterior margin; margin of aperture crenulated; interior simple, with no shelly plate; muscular impression crescentic, interrupted in front.

1. RIMULA EXQUISITA, A. Adams. *R. testá magná, ovali, semi-pellucidá, albá, costis longitudinalibus, radiantibus, lineisque elevatis, transversis, concentricis, cancellatá; cancelli subquadrati; costis crenulatis, inæqualibus, prominentibus, anterioribus duabus divergentibus, interstitiis costellis duabus instructis; supra perforationem concavá; perforatione elongatá subquadratá.*

Hab. Catanuan, island of Luzon and island of Burias, found on dead shells, 7 and 10 fathoms, sandy mud (*H. C.*). Mus. Cuming.

2. *RIMULA CUMINGII*, A. Adams. *R. testá parvá, ovatá, opacá, costellis longitudinalibus, radiantibus, lineisque transversis, crassis, concentricis, cancellatá; cancelli transversi, elongati; costis nodulosis, subæqualibus, prominentibus, distantibus, anterioribus duabus antice divergentibus, interstitiis costellis duabus instructis, perforatione elongatá, subquadratá.*

Hab. Eastern Seas. Mus. Cuming.

3. *RIMULA CARINATA*, A. Adams. *R. testá parvá, ovali, costellis simplicibus, permultis, confertis, longitudinalibus, radiantibus, ornatá; interstitiis cancellatis; cancelli punctiformes; costellis duabus anterioribus, antice convergentibus, et apud aperturæ marginem junctis; interstitiis, supra perforationem, convexis, supra verticem extendentibus, quasi cariná; perforatione ovali, angustá, antice angustatá.*

Hab. Cagayan, province of Misamis, island of Mindanao, on dead shells, 25 fathoms, sandy mud (*H. C.*). Mus. Cuming.

4. *RIMULA PROPINQUA*, A. Adams. *R. testá parvá, elongato-ovalí; costellis prominentibus, asperis, longitudinalibus, radiantibus, subdistantibus; interstitiis valde cancellatis; cancelli transversi, subquadrati; costellis duabus anterioribus, antice convergentibus, ad aperturæ marginem junctis; perforatione angustato-ovalí, antice acuminatá.*

Hab. Catapan, Philippines. Mus. Cuming.

9. A MONOGRAPH OF PUNCTURELLA, A GENUS OF GASTEROPODOUS MOLLUSCA, BELONGING TO THE FAMILY FISSURELLIDÆ.

BY ARTHUR ADAMS, R.N., F.L.S. ETC.

Genus PUNCTURELLA, Lowe.

Head probosciform, tentacles subulate, with the eyes on swellings at their outer base; sides with a range of cirrhi, interrupted behind on each side; mantle-margin simple; branchial plumes two; anal siphon prominent, forming a truncated membranous canal projecting from the subapical perforation.

Shell conical, with an elevated, slightly recurved, obliquely spiral entire vertex, turned towards the posterior end; aperture expanded, oval; surface with radiating ribs; margin entire; a linear perforation in the upper part of the shell, between the vertex and front margin, in the line of an elevated rib. Interior with a linear groove, vaulted over with a shelly plate corresponding to the perforation; muscular impression crescentic, interrupted in front.

Cemoria, Leach, MSS.—*Sipho*, Brown.—*Rimula*, Lovèn; Gould; Couthouy.—? *Diadora*, Gray.

1. PUNCTURELLA NOACHINA, Linnæus.

Patella noachina, Linn. Mantissa, p. 551; Chemn. Conch. Cab. vol. xi. p. 186. pl. 197. f. 1927, 1928.—*Patella fissurella*, Müller.—

Fissurella Noachina, Schum.—*Puncturella Noachina*, Lowe.—*Cemoria Flemingii*, Leach, MSS.—*Cemoria Noachina*, Lowe.—*Rimula Flemingii*, Macgill.—*Rimula Noachina*, Couthouy.—*Sipho Noachina*, Brown.

Hab. British Islands. Mus. Cuming.

2. PUNCTURELLA CUCULLATA, Gould.

Rimula cucullata, Gould, Expedition, Shells, p. 14.

Hab. Puget Sound.

3. PUNCTURELLA GALEATA, Gould.

Rimula galeata, Gould, Expedition, Shells, p. 14.

Hab. Puget Sound. Mus. Cuming.

4. PUNCTURELLA COGNATA, Gould.

Rimula cognata, Gould, Expedition, Shells, p. 14.

Hab. Orange Harbour.

5. PUNCTURELLA CONICA, D'Orb. Voy. Am. Mer.

6. PUNCTURELLA FASTIGIATA, A. Adams. *P. testá albidá elevato-conicá, nitidá, vertice acuminato involuto, costellis longitudinalibus aequalibus æquidistantibus, interstitiis planis lineis incrementi concentricis; fissurá lanceolatá; aperturá ovali, margine crenulato, fornice costá, costá valde arcuatá, transversali, simplici.*

Hab. Eastern Seas. Mus. Cuming.

7. PUNCTURELLA PRINCEPS, Mighels and Adams.

Cemoria princeps, Mighels and Adams, Bost. Journ. Nat. Hist. vol. iv. p. 43.

10. ON SOME GENERA OF SHELLS, ESTABLISHED IN 1807 BY THE LATE H. F. LINK. BY DR. HERRMANNSEN, OF KIEL.

In several programs, hitherto not at all taken notice of by any Conchologist, the renowned Botanist Link of Berlin, then Professor of Natural History, Chemistry and Botany at Rostock, in the course of the years 1806 to 1808, has published an account of the Collections of the Rostock University. These little treatises seem to be very rare, nor do I remember ever to have found them mentioned, before my 'Index Generum Malacozoorum' recorded them. Yet they may claim priority in many instances, which I hope will be redeemed by simply noticing their contents. The German titles of these octavo pamphlets are as follows:—

Beschreibung der Naturalien-Sammlung der Universität zu Rostock, von Dr. H. F. Link. Rostock. Gedruckt bei Adlers Erben.

Erste Abtheilung; zum Weihnachtsfest, d. 25 Dec. 1806 (p. 1–18).
 Zweite Abth.; zum Osterfest, d. 29 März 1807 (p. 49–98).
 Dritte Abth.; zum Pfingstfest, d. 17 Mai 1807 (p. 99–165).
 Vierte Abth.; zum Weihnachtsfest, d. 25 Dec. 1807 (p. 1–30).
 Fünfte Abth.; zum Osterfest, d. 7 April 1808 (p. 1–38).
 Sechste Abth.; zum Pfingstfest, d. 5 Juni 1808 (p. 1–38).

Passing over those genera which are either superfluous because formerly rightly published under other names, or unhappily contrived, I will hint at those that may deserve to be attended to.

MOLLUSCA. GASTEROPODA. SIPHONBRANCHEA.

LAMBIDIUM, Link, 1807, *l. c.* iii. p. 112.

Spire little prominent; aperture longitudinal, narrow; inner lip callous, with raised points; outer lip marginated; base truncated; shell destitute of varices or spines.

Lambidium oniscus (*Strombus*), Linn.

This genus having been indicated in 1798, by Dr. Bolten, as *Morum*, but without definition, the botanical signification of that name may have induced Link to select another, which, being correctly founded, must be preferred to *Oniscia* of Mr. Sowerby; or at least, if we should dissect the genus with Dr. Gray, into *Oniscia*, *Sconsia*, and *Morum*, to the last.

PHALIUM, Link, 1807, *l. c.* iii. p. 112.

Spire shorter than the last whorl; aperture longitudinal, wide; inner lip callous and smooth, or extended into a folded or granulated lamina; outer lip marginated; shell often varicose; base strongly recurved, notched; inner columella not folded.

A. Lamina of the inner lip folded: *Phalium glaucum* (*Buccinum*), Linn. &c.—B. Lamina of the inner lip granulated: *Phalium erinaceum* (*Bucc.*), Linn. &c.

This is *Bezoardica*, Schum., or *Cassidea*, Swains.

CASSIDEA, Link, 1807, *l. c.* iii. p. 111.

Spire little prominent; aperture longitudinal, narrow; outer lip marginated, like the inner one, with many folds; shell spineless, often varicose; base strongly reflected, notched; inner columella folded.

Cassidea rufa, *tuberosa*, *cornuta*, *testiculus*, *flammea*, *pennata*.

This has been proposed by Mr. Stutchbury as *Cypræcassis*, but must at all events retain the name of *Cassis*, Browne, 1756.

GALEODEA, Link, 1807, *l. c.* iii. p. 113.

Spire much shorter than the last tumid whorl; inner lip extended in shape of a smooth lamina; outer one slightly marginated; base rather elongated, reflected, not emarginate.

Galeodea echinophora (*Bucc.*), Linn.

Synonyms are *Morio*, Montf., and *Cassidaria*, Lamck., both of a more recent date.

THAIS, Link, 1807, *l. c.* iii. p. 114.

[*Thais* of Bolten Mus. includes some *Ricinulae* and *Monoceros* of Lamarck, from which Link has depurated it.]

Spire shorter than the last, ventricose whorl; aperture semicircular; inner lip plane, obliquely cut off, callous, smooth; outer lip scarcely marginated; shell without varices; base short.

Thais Persica (Bucc.), Linn.—*patula*, Linn. sp.—*hæmastoma* (Chemn. fig. 964, 965).—*fucus*, Gmel. sp.—*minuta*, Link.

This genus, which is synonymous with *Microtoma*, Swainson, I should think advisable to be retained at least as a section of the hitherto confused genus *Purpura*.

MANCINELLA, Link, 1807, *l. c.* iii. p. 115.

Spire much shorter than the last whorl; aperture longitudinal, rounded; inner lip smooth and callous, outer one little or not at all marginated; shell without varices, but provided with spines and imbricate scales; base short, or scarcely elongated, twisted outwards, slightly notched.

Mancinella aculeata (Chemn. 967, 968).—*hystrix*, Linn. sp.—*castanea*, Link (Chemn. 956–958).—*armigera*, Chemn. sp.—*mutabilis*, Chemn. 951–953.—*Bezoar*, Chemn. 754, 755.

This genus, combining some *Purpuræ* with some *Pyrulæ* of Lamarck, comes near to *Rapana a*, Schum., and perhaps may be adopted.

VOLEMA, Link, 1807, *l. c.* iii. p. 115. (*Volema*, Bolt. emend.)

Spire much shorter than the last whorl, often distorted; aperture oblong, rounded; inner lip smooth and callous, outer lip simple; shell without varices; if grown old, with spines or imbricated scales; base elongated, rather turned aside.

The species are to be found in my 'Ind. Gen. Malacoz.' vol. ii. p. 699.

This genus unites *Busycum*, Bolt. (= *Fulgur*, Montf.) with *Cassidulus*, Humphr., Gray.

XANCUS, Bolten, 1798, Mus. (edit. 1819, p. 94); Link, 1807, *l. c.* iii. p. 116.

Spire shorter than the last whorl; aperture above rounded, wide, below narrow; inner lip callous, with three folds; outer lip simple; shell heavy, without varices or spines; base elongated.

Xancus pyrum, Linn. sp., and *maculatus*, Link (Chemn. f. 917, 918).

This genus, by Humphrey called *Rapum*, by Fabricius *Pyrum*, by Dr. Gray *Turbinellus*, and by M. Deshayes *Scolymus*, is here characterized for the first time, and sufficiently.

CYMATIUM, Link, 1807, *l. c.* iii. p. 119.

Spire rather long; aperture above rounded; inner lip callous, with three folds; outer one marginated; a great number of crowded and ridged varices run down the shell, to which they are firmly grown; base little elongated.

Cymatium polygonum, &c.

This is quite identical with *Latirus*, Montf., or *Polygona*, Schum.

VASUM, Link, 1807, *l. c.* iii. p. 119. (*Vasum*, Bolt. emend.)

Spire rather long; aperture longitudinal; inner lip callous, with alternately larger folds; outer lip simple; shell without distinct varices; base elongated.

Vasum Ceramicum, Linn. sp., &c.

This is *Cynodonta*, Schum., *Scolymus*, Sw.

TUDICLA, Link, 1807, *l. c.* iii. p. 120. (*Tudicla*, Bolt. emend.)

Spire very short, depressed; aperture above semicircular; inner lip callous, with a single fold; outer one simple; no varices or spines; canal straight, thin.

Tudicla spirillus, Linn. sp.

Subsequently established as *Haustellum a*, Schum., *Pyrella*, Swains., *Spirillus*, Schlut., *Spirilla*, Sow. jun.

TRITONIUM, Link, 1807, *l. c.* iii. p. 121.

Spire rather long; aperture above rounded; inner lip callous, generally with small folds; outer lip marginated; shell with varices that are commonly discontinuous; base rather elongated.

With respect to this genus I may refer to my 'Ind. Gen. Malacoz.' vol. ii. p. 609.

DISTORTRIX, Link, 1807, *l. c.* iii. p. 122.

Spire rather long; whorls distorted; inner lip callous, folded; outer lip marginated; varices indistinct; base short-tailed.

Distortrix anus, Linn. sp., and *reticulata* (Chemn. f. 405, 406).

This name then is to be substituted in the place of *Persona*, Montf.

GYRINEUM, Link, 1807, *l. c.* iii. p. 123.

Spire nearly equal to the last whorl; aperture rounded; inner lip callous, often slightly folded or granulated; outer lip marginated; shell compressed, with two opposite varices; base short or a little elongated.

Gyrineum echinatum (Chemn. f. 1274, 1275), *rana* (f. 1269, 1270), *bufonium* (f. 1240, 1241), *natator* (f. 1229, 1230), *verrucosum* (f. 1233, 1234), *caudatum* (f. 1045-1047), *scrobiculator*, = *Ranella*, Lamck.

CANRENA, Link, 1807, *l. c.* iii. p. 126.

Spire short; aperture longitudinal; inner lip folded; outer lip interiorly strongly dentated; shell crowded with spines, but without distinct varices; base short.

Canrena neritoidea (Mart. f. 972, 973, 976-979) = *Ricinula*, Lamck. &c.

ADELOBRANCHEA.

ASTRALIUM, Link, 1807, *l. c.* iii. p. 135.

Spire depressed; aperture broad, rounded, bending downwards.

Astraliium deplanatum (Chemn. f. 1718-1720).—*Astraliium calcar*, Gm., sp.

This genus will no doubt be acknowledged, being congruous with *Calcar*, Montf., Phil. It had been indicated before by G. Humphrey,

under the name of *Sol*, and by Bolten as *Astræa*. But I think it should be extended farther, so as to receive *Imperator* and *Hercoles*, Montf., *Stellaria*, Schmidt, *Cyclocantha*, *Canthorbis*, subg., and *Tubicanthus*, Swains., *Bolma*, Risso, *Cookia*, Less., and *Astrarium*, Phil.

UMBONIUM, Link, 1807, *l. c.* iii. p. 136.

Spire much depressed; aperture directed downwards, or to the side, simple; base showing a convex callus in the place of the umbilicus.

Umbonium vestiarium, Linn. sp., and *excisum* (Chemn. f. 1602).

That Link's name is to be adopted instead of *Globulus*, Schum., or *Rotella*, Lamck., can hardly be controverted; although his second species belongs to another tribe.

PYTHIA, Bolten, 1798, Mus. (ed. 1819, p. 74); Link, 1807, *l. c.* iii. p. 139.

Whorls, each of them composed of two pieces; aperture longitudinal, toothed on both sides.

Pythia scarabæa, Linn. sp.

This name is preferable to that of Fischer, *Polydonta*, which, although contemporary, is badly made, and wants correction.

ACEPHALA.

SUNETTA, Link, 1807, *l. c.* iii. p. 148.

Equivalve, in front rather obtuse, closed; hinge with two cardinal teeth, lateral ones indistinct; anterior slope shorter than the furrow-shaped posterior slope; ligament external.

Sunetta scripta (Chemn. f. 261-265) = *Cuneus*, Muhlf. 1811 = *Meroë*, Schum. 1817.

TIVELA, Link, 1807, *l. c.* iii. p. 152.

Equivalve, longitudinal, without epiderm, closed; hinge with two cardinal and one elongated lateral tooth; anterior and posterior slopes equally elongated; ligament external.

Tivela vulgaris (Chemn. f. 362).—*T. tripla* (*Venus*), Linn. = *Trigona*, Muhlf. 1811.

MUSCULIUM, Link, 1807, *l. c.* iii. p. 152.

Equivalve, closed; hinge with two small cardinal teeth, no lateral ones; anterior and posterior slope nearly equal.

Musculium lacustre (*Tellina*), Linn.

The genus established here, fourteen years afterwards was published as *Pisidium*.

TENTACULATA. See 'Ind. Gen. Malacoz.' ii. 541.

VERPA, Bolten, 1798, Mus. (ed. 1819, p. 49); Link, 1807, *l. c.* iii. p. 159.

Shell tubular, partly straight, partly winding, at one extremity open, at the other closed by a convex perforated blade.

Verpa penis (*Serpula*), Linn.

The oldest denomination of this genus that can be admitted; *Penicillus* (Da Costa, p.p.), Brug., being a term since the times of Rondelet consecrated to the Annulate class: all the other names, *Aquaria*, *Arytaena*, *Clepsydra*, *Aspergillum*, are of younger date, and will give way to *Verpa*, Bolt., defined by Link.

The following descriptions of new *Naticæ* were communicated by Dr. Philippi:—

11. DESCRIPTIONES NATICARUM QUARUNDAM NOVARUM EX COLLECTIONE CUMINGIANA, AUCTORE R. A. PHILIPPI.

1. NATICA CATENATA, Phil. *N. testâ subglobosâ, tenui, lividâ, zonis quatuor albis, maculas fuscas semilunatas exhibentibus pictâ; anfractibus rotundatis; spirâ breviusculâ, nigricante; sulcis radiantibus profundis superiorem anfractuum partem occupantibus; aperturâ semiorbiculari, intus purpureâ; umbilico amplo, margine acuto cincto; callo spirali satis valido medium umbilici occupante.*

Alt. $8\frac{1}{2}$, diam. $8\frac{2}{3}$ lin.

Hab. — ?

Differt a *N. tæniatâ*, Menke, anfractibus superius non horizontalibus sed declivibus, zonis longitudinaliter maculatis, callo labiali et callo umbilicali longe latoribus, etc.; a *N. depressâ* formâ globosâ, umbilico amplo, callo umbilicari mediano, etc.; a *N. maroccanâ* formâ globosâ, umbilico longe ampliore, callo ejus mediano, etc.

2. NATICA INCEI, Phil. *N. testâ depressâ, suborbiculari, solidâ, striatulâ, nitidâ, luteo-albidâ; anfractibus superius planatis; spirâ latè conicâ, acutâ; aperturâ semiorbiculari, valdè obliquâ; angulo basali columellæ incrassato; suturâ duplicatâ; callo maximo albo umbilicum magnum omninò implente.*

Alt. ab apice ad basin aperturæ $9\frac{1}{2}$, a dorso ad ventrem 6 lin.; diam. 12 lin.

Hab. ad insulam Raines, in freto Torres, ubi legit *Capt. Ince, R.N.*

Cave ne hanc speciem cum *N. Josephiniâ*, Risso (*N. Ollâ*, M. de Serr.), confundas, cui simillima est, et a quâ unice differt: ambitu paullo magis orbiculari; anfractibus minus rapide crescentibus; angulo umbilicum cingente paullo magis distincto; columellâ basi valde incrassatâ; callo umbilicari albo; colore fere albo in luteum vergente, præsertim versus basin, denique suturâ duplici. Linea superior suturæ a callo labiali, inferior a margine superiore anfractûs formatur, pariter ut in *Bullis* d. Gray.—Operculum corneum.

3. NATICA INTEMERATA, Phil. *N. testâ globoso-ovatâ, solidâ, striatulâ, nitidâ, lacteâ, ad suturam versus umbilicum et in parte ultimâ anfractûs ultimi flavâ; anfractibus superius planiusculis; spirâ conicâ, circa $\frac{1}{5}$ altitudinis æquante; aperturâ semiorbiculari; columellâ rectâ, incrassatâ; umbilico magno, pervio, lacteo, sulco profundo lato exarato; funiculo semicylindrico ejus a callo labiali distincto.*

Alt. $18\frac{1}{2}$, diam. $17\frac{1}{2}$ lin.

Hab. in sinu Californiæ; legit *Rever. Steel.*

Simillima videtur *N. porcellaneæ* d'Orb., sed umbilico multo ampliore et colore flavescente differt; a *N. castâ*, Phil., testâ solidiore minus depressâ, umbilico albo angustiore, funiculo umbilicali longe magis elevato, etc. distinguitur; a *N. pede elephantis* testâ haud depressâ, funiculo umbilicali minus elevato satis superque discrepat.

4. NATICA CARIBÆA, Phil. *N. testâ ovatâ, sordidè albâ, ad suturam zonâ lacteâ munitâ; anfractibus superius vix convexis; spirâ brevi, acutâ; aperturâ semiorbiculari; umbilico parvo; callo lato cum labio confluyente illum maximâ ex parte opplente.*

Alt. 8, diam. 7 lin.

Hab. in mari Caribæo ad insulam St. John.

Forma omnino accedit ad *N. mammillam* vel *N. lacteam* et umbilico pervio cum *N. lacteâ* convenit. Differt tamen umbilico longe angustiore, et callo ejus longe majore; an nihilominus mera varietas? *N. uberinâ*, d'Orb., testâ longe angustiore magis differre videtur.— Operculum tenue, corneum.

5. NATICA VESTALIS, Phil. *N. testâ ovato-oblongâ, acutâ, lacteâ, substriatâ, nitidissimâ; spirâ acutâ, conicâ, sextam vel septimam totius altitudinis partem occupante; aperturâ semiorbiculari; callo convexo, crassissimo, cum callo labiali confluyente, et sulco longitudinali ante marginem columellarem instructo, umbilicum fere omnino claudente.*

Long. $16\frac{1}{2}$, diam. 16 lin.

Hab. ad oram Mozambique dictam; legit *Rev. Steel.*

Forte nihil nisi varietas *N. mammillæ*, a qua unice differt callo umbilicali crassiore convexiore, sulco longitudinali ante medium marginis columellaris, parte liberâ umbilicum cingente.

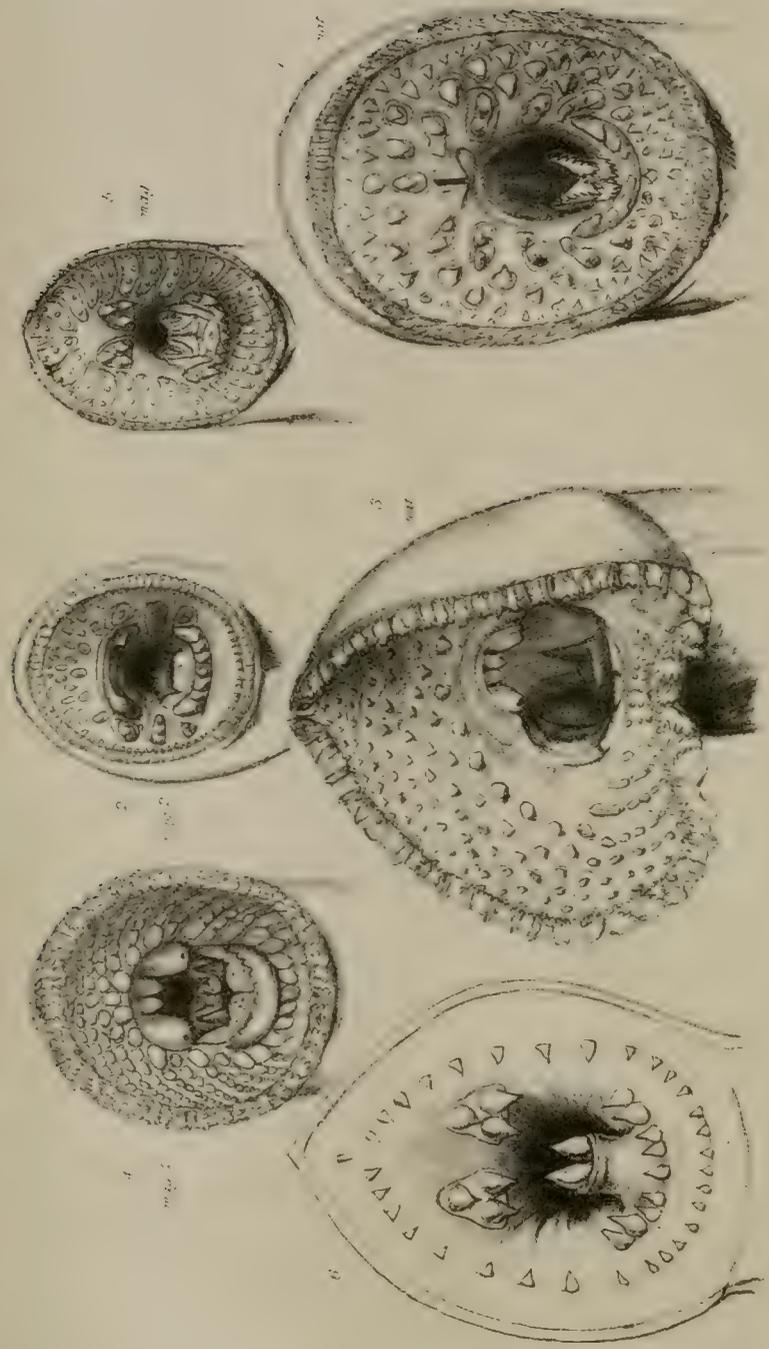
Obs.—Quæstio valde difficilis, utrum sub *N. mammillâ*, L. plures species lateant, an meræ varietates, vix examine singulorum speciminum in Musæis asservatorum decidi poterit, sed unice investigatione numerosæ gregis in ipso loco natali.

6. NATICA? POMUM, Phil. *N.? testâ ovatâ, inflatâ, tenuiusculâ, striatâ, glauco-fulvâ, basi albâ; anfractibus convexis, superioribus supernè subangulatis; spirâ quartam altitudinis partem æquante, subcontabulatâ; aperturâ ovato-oblongâ, propter anfractum penultimum prominentem fere lunatâ; umbilico angustissimo, perforato; labio parum calloso, basi supra umbilicum reflexo.*

Alt. 19, diam. $18\frac{1}{2}$ lin.

Hab. —?

Hæc species a reliquis Naticis valde aliena et forte ad genus *Amphibolam*, Schum. (*Ampullacera*, Quoy et Gaimard) mandanda est, etenim sinus latus satis profundus in parte supremâ labri hujus testæ in nullâ aliâ specie generis Naticæ observatur.



Part 1. 1851. *Lampyridae* & *Phalangia*.

1. *PETROGON MARINUS*. 2. *LAMPEIRA FLUVIATILIS*. 3. *GROUPEUS FLUVIATILIS*.
 4. *VELASIA CHILENSIS*. 5. *CARAGOLA LAPICIDA*. 6. *MORDACIA MORDAX*.

W. H. B. 1851.



CEPHALOCOTYLE

12. DESCRIPTION OF A NEW FORM OF LAMPREY FROM AUSTRALIA, WITH A SYNOPSIS OF THE FAMILY.

By J. E. GRAY, ESQ., F.R.S., V.P.Z.S. ETC.

(Pisces, Pl. IV. V.)

The Lamprey which I have now to present to the attention of the Society differs in so remarkable a degree from any other known species, that, premising that I propose for it the name of *Geotria Australis* (Pisces, Pl. V.), I think it best to connect with the description a revision of the whole Family to which it belongs.

PETROMYZONIDÆ.

Nasal aperture closed, and the palate entirely covered with skin.

Lampredia, Rafin. Anal. Nat. 94, 1818.—*Petromyzonidæ* (*Petromyzonini*), Bonap. Syst. Ichth. 1838; De Kay, Nat. Hist. of New York, 379.—(*Fam.*) *Hyperoartia*, Müll. Abhandl. Akad. Berlin, 1836, 77; Mag. Zool. & Bot. i. 406.—*Petromyzidæ*, Gray, Syn. B.M. 1842, 148, 150.

Müller (*Abhandl. Akad. Berlin*) divided the genera thus:—

1. *Petromyzon*, with visible teeth.
2. *Ammocetes*, without visible teeth.

Synopsis of Genera.

A. *Petromyzonina. Teeth distinct; eyes visible.*

1. **PETROMYZON.** Upper inner teeth two, conical, close together; lower single, crescent-shaped; labial teeth numerous, conical; lingual teeth two, pinnate (Pl. IV. f. 1).

2. **LAMPETRA.** Upper and lower teeth transverse, crescent-shaped; labial teeth in two submarginal rows; inner lateral teeth larger, two- or three-lobed, lingual teeth pectinate (Pl. IV. f. 2).

3. **GEOTRIA.** Upper and lower teeth transverse, crescent-shaped; upper lobed; labial teeth numerous, distant, acute, innermost largest; lingual teeth elongate, conical, arched (Pl. IV. f. 3).

4. **VELASIA.** Upper and lower teeth transverse, crescent-shaped; upper two-lobed; labial teeth numerous, crowded, truncate; innermost largest; lingual teeth elongate, arched.

5. **CARAGOLA.** Upper internal teeth two, far apart, three-lobed; lower crescent-shaped, nine-lobed; labial teeth transverse, band-like, four tubercles; lingual teeth flattened (Pl. IV. f. 5).

6. **MORDACIA.** Upper inner teeth two; lateral three-lobed; lower nine, conical, in an arched series; labial teeth conical, in a single submarginal series; lingual teeth elongate, conical, arched (Pl. IV. f. 6).

B. *Ammocetina. Teeth none; eyes hidden.*

7. **AMMOCETES.**

A. Petromyzonina. *Teeth distinct.*

1. PETROMYZON. (Pisces, Pl. IV. fig. 1.)

Upper inner teeth two, triangular, close together. Lower inner tooth single, large, crescent-shaped, many-toothed. Labial teeth conical, acute, numerous, in diverging, arched series; the inner one largest, and gradually becoming smaller near the edge. Tongue with two compressed, pectinated teeth above, and a broad, lunate, dentated tooth beneath, which is strongly bent up between the upper teeth in the centre.

Yarr. Brit. Fish. fig. p. 603; De Kay, Zool. New York, t. 56, 216 (bad).—*Petromyzon*, sp., Linn. Syst. Nat.; Rafin. Anal. Nat.; Müll. Abhandl. Akad. Berlin, 1834, 77 (1836).—*Petromyzon*, Gray, Proc. Zool. Soc. 1851.

1. PETROMYZON MARINUS. The LAMPREY.

Petromyzon marinus, Linn. Bloch, iii. pl. 77; Linn. (édit. de Gmelin) Faun. Suec. 292; Artedi, Ichth. gen. 64. syn. 90; Neue Schrift. der Berl. Naturf. 7. 466; Schneid. Bloch, i. 530, 1801; Penn. Brit. Zool. iii. 102. pl. 10, 1776–78; Shaw, Gen. Zool. v. 251. pt. 2. pl. 133, 1804; Don. Brit. Fish. pl. 81, 1820–21; Flem. Brit. An. 163. sp. 1, 1827; Cuv. Règ. An. ii. 404, 1829; Müll. Mémoires de l'Acad. Berlin, 1834, 78. t. 4. f. 1, 5; Osteol. t. 9, 65, 67, 68. f. 9; Yarr. Brit. Fish. 2 ed. ii. 598, 1841.—*Lamproie marbrée*, Daub. Encycl. Méth.; Bonn. Planches d'Hist. Nat. de l'Enc. Méth.—*Petromyzon maculosus*, Artedi, Ichth. gen. 64. syn. 90.—*Petromyzon lamproie*, Bloch, Hist. Nat. Poiss. 31, 77. pt. 13.—*Petromyzon maximus*, Cuv. Règ. An. ii. 118, 1817.—*Petromyzon*, Klein, Misc. Pisc. iii. f. 30. n. 3.—*Mustela sive Lampetra*, Belon, Aquat. 76; Salv. Aquat. f. 62 b.—*Lampetra major*, Schwenc. Theriotr. Siles. f. 451; Charlet, Onom. f. 153. n. 3; Aldrov. 539. liv. 4. c. 13; Jonston, liv. 2. tit. 2. c. 3. pl. 24. f. 5.—*Lamproie*, Coms. Hist. Nat. v. 284; Fermin, Surin. 85; Rond. 310. pt. 1. liv. 13; Valmont de Bomare, Dict. Hist. Nat.—*Lampetra Rondeletii*, *Lamprey* or *Lamprey-Eel*, Will. Ichth. 105. pl. 2. f. 2, 1685; Ray, Syn. f. 35. n. 3.—*Ioatzma unagi*, Kæmpfer, Voy. au Japon, i. pl. 12. f. 2.—*Il mustilla*, Forsk. Desc. Anim. f. 18.—*Plota fluta*, Authors.—*Lampetra*, *Lampreda kentmanni*, *lampreda*, *marina*, *mustela*, Gesn. (germ.) 180 b. et paralip. 22.—*Le Pétromyzon Lamproie*, Lacépède, Hist. Nat. Poiss. i. 2, 3. pl. 1, 1798.—*La Grande Lamproye*, Cuv. Règ. An. ii. 404, 1819.

Hab. European Seas.

2. PETROMYZON JURÆ. MACCULLOCH'S LAMPREY.

Petromyzon Juræ, MacCull. West. Isles, ii. 186, 187. t. 29. f. 1; Jen. B. V. A. 522.—*Petromyzon fluviatilis*, var., Flem. Brit. An. 162.

Hab. Coast of Scotland, east shore; island of Jura.

Probably a variety of *P. marinus*: the drawing of the teeth shows it has no relation to *P. fluviatilis*.

3. ?PETROMYZON AMERICANUS. AMERICAN SEA LAMPREY.

Petromyzon marinus, Schæpff. Beobachtungen, &c. viii. 184; Mitch. Trans. Lit. & Phil. Soc. i. 461.—*Petromyzon americanus*, Lesueur, Amer. Phil. Soc. (N. S.) i. 382; Hist. N. A. Fish. ined. plate; Storer, Rep. on the Fishes of Massachusetts; De Kay, Nat. Hist. of New York, 379. pl. 66. f. 216. pt. 1; Zool. 1842.

Hab. N. America.

4. PETROMYZON NIGRICANS. BLUISH SEA LAMPREY.

Petromyzon nigricans, Lesueur, Amer. Phil. Soc. (N. S.) i. 385; Storer, Rep. on the Fishes of Massachusetts; De Kay, Nat. Hist. of New York, 381. pl. 79. f. 247 (teeth indistinct), pt. 1; Zool. 1842.

Hab. N. America.

5. PETROMYZON ARGENTEUS. SILVERY LAMPREY.

Petromyzon argenteus, Kirtland, Boston Journ. iii. 342. pl. 4. f. 3; De Kay, Nat. Hist. of New York, 382. pt. 1; Zool. 1842.

Hab. N. America, river Ohio.

2. LAMPETRA. (Pisces, Pl. IV. fig. 2.)

Upper inner tooth single, transverse, lunate, entire, with a conical prominence at each end. Lower inner tooth single, transverse, lunate, many-toothed, outer lobe largest. Labial teeth unequal, the outer numerous, small, subequal, conical, in a single, submarginal series, the inner larger, unequal; of the upper part small, in series; of the sides in a single series, larger, with two or three conical tubercles. Tongue with two compressed, pectinated teeth above, and a large, crescent-shaped, transverse tooth below, crenated on the edge, and with a larger, conical projection in the centre.

Yarr. Brit. Fish. fig. p. 604; De Kay, Nat. Hist. of New York, t. 79, 249 (bad).—*Petromyzon*, *sp.*, Linn., Cuv., Müll.—*Lampetra*, *sp.*, Ray.—*Lampetra*, Gray, Proc. Zool. Soc. 1851.

* *Dorsal fins separate.*

1. LAMPETRA FLUVIATILIS. LAMPERN OR RIVER LAMPREY.

Petromyzon fluviatilis, Linn. Bloch, pt. 3. pl. 78. f. 1; Linn. (edit. de Gmel.); Müll. Prod. 37. n. 307; Aldrov. 587; Penn. Brit. Zool. v. pt. 106. pl. 10, 1776–78; Schneid. Bloch, 530, 2, 1801; Shaw, Gen. Zool. 257. pt. 2, 1804; Don. Brit. Fish. pl. 80, 1820–28; Flem. Brit. An. 404, 1827; Cuv. Règ. An. ii. 404, 1829; Mém. de l'Acad. Berlin, 78, 1834; Jen. Man. Brit. Vert. 521. sp. 210, 1835; Yarr. Brit. Fish. 2 ed. ii. 598, 1841; Parnell; Rich. Faun. Bor. 294, 1836.—*Petromyzon fluviatilis*, Cuv. Règ. An. ii. 118, 1817.—*Lamproie prycka*, Daub. Encycl. Méth.—*Nein-oga natting*, Faun. Suec. 106.—*Petromyzon*, &c., Artedi, gen. 64. syn. 89. sp. 99.—*La petite Lamproie*, Bloch, 34. pt. 3. pl. 78. f. 1.—*La Lamproie branchiale*, Bonn. Planches de l'Encycl. Méth.—*Petromyzon*, *Prick* (*negen-oog*), Gro-

nov. Mus. i. 64. n. 114; Zooph. 38.—*Mustela*, Pliny, liv. 9. c. 17.—*Mustela fluviatilis*, Belon, Aquat. 75.—*Lampetra subcinerea, maculis carens*, Salv. Aquat. 62.—*Lampetra, alterum genus*, Gesn. Aquat. 597.—*Lampreda*, Icon. Anim. 326.—*Lampetra, medium genus*, Will. Ichth. 106. tab. g. 2, 3. f. 1, 2; Ray, Syn. Pisc. 25. n. 1.—*Lampetra fluviatilis*, Aldrov. 587; Jonston, 104. pl. 28. f. 11; Schone, 41; Charlet, 159. n. 7; Marseli, Dan. Pann. iv. 2. t. 1, 1726.—*Lampetra fluviatilis, media*, Schwenck. Theriotr. Siles. 532.—*Jaatz me unagi*, Kæmpfer, Voy. dans le Japon, i. 156. pl. 12. f. 2.—*Minog*, Rzæzynski, 134.—*Lamproie*, Fermin, Hist. Nat. de Surinam, 85.—*Petromyzon*, Kramer, Elenchus, 38. n. 1; Klein, Misc. Pisc. iii. 29. n. 1. t. 1. f. 3.—*Le Petromyzon pricka*, Lacépède, Hist. Nat. des Poiss. i. 18, 1798.

Hab. Europe.

2. LAMPETRA PLANERI. FRINGED-LIPPED LAMPERN.

Petromyzon planeri, Linn. Bloch, viii. pl. 78. f. 3; Linn. (édit. de Gmelin); Schneid. Bloch, 531, 532, 4, 1801; Shaw, Gen. Zool. v. pt. 2. p. 259, 1804; Jen. Man. Brit. Vert. 522. sp. 211, 1835; Müll. Mém. de l'Acad. Berlin, 78, 1834; Cuv. Règ. An. ii. 404, 1829; Yarr. Brit. Fish. 2 ed. ii. 607, 1841.—*Lamproiea planer*, Bonn. Planches de l'Encycl. Méth.—*Le Pétromyzon planer*, Lacépède, Hist. Nat. des Poiss. i. 30. pl. 3, 1798.

Hab. Europe.

** *Dorsal fin in contact with the second.*

3. LAMPETRA SANGUISUGA. LEECH LAMPERN.

Petromyzon Sanguisuga, Lacépède, Hist. Nat. des Poiss. ii. 99. pl. 1; Supp. to Petromyzon; Shaw, Gen. Zool. v. pt. 2. p. 261, 1804.—*Petromyzon planeri, var.*, Cuv. Règ. An. ii. 118.

Hab. Europe, Seine.

A very doubtful species; Cuvier says it is the same as the former.

4. LAMPETRA LAMOTTENII. AMERICAN LAMPERN.

Petromyzon Lamottenui, Lesueur, Hist. N. A.; De Kay, Nat. Hist. of New York, 382. pl. 79. f. 249 (mouth), pt. 1; Zool. 1842.

Hab. N. America, New York.

3. GEOTRIA, n. g. (Pisces, Pl. IV. fig. 3.)

Upper internal tooth large, transverse, crescent-like, divided into four lobes; the two inner lobes small, acute; outer truncated. The lower internal tooth transverse, narrow, slightly sinuous. The labial teeth numerous, far apart, conical, acute, in arched series, diverging from the throat; the innermost one larger, rest small; the innermost one of the lower part on each side small, elongate, transverse, with two small, rudimentary tubercles. Tongue with two elongate, conical, arched teeth, with a triangular plate on the lower side of the base. Throat with a very large dilatable pouch. Dorsal fins two,

far apart. Mouth very large, surrounded with rather large, transverse, torn leaves.

This genus chiefly differs from *Velasia* in the rudimentary state of the lower internal tooth, in the form of the labial teeth, in the large size of the oral disk, and the extraordinary development of the throat-pouch, which is found in a rudimentary state in the *Petromyzon marinus*. This development of the pouch is perhaps to adapt the animal to the long drought of the Australian rivers.

1. GEOTRIA AUSTRALIS. POUCHED LAMPREY. (Pisces, Pl. V.)

Hab. South Australia. Fresh water.

4. VELASIA. (Pisces, Pl. IV. fig. 4.)

Upper internal teeth large, transverse, crescent-like, divided into four flat, elongated lobes; the outer lobes largest. The lower internal teeth large, transverse, crescent-like, convex, denticulated on the edge. The labial teeth very numerous, truncated, in crowded, arched series, diverging from the throat; the inner ones large, and gradually diminishing in size to the edge. Tongue with two very large, long, curved teeth, with a triangular plate beneath at their base. Dorsal fins two, far apart. Mouth moderate, edged with transverse foliations.

1. VELASIA CHILENSIS. CHILIAN LAMPERN.

Hab. Chili. In fresh water.

5. CARAGOLA. (Pisces, Pl. IV. fig. 5.)

Upper inner teeth two, large, separate, lateral, submarginal, each with three acute tubercles. Lower inner teeth large, crescent-shaped, nine-lobed; the central and two lateral lobes on each side larger. The labial teeth in a subcircular, submarginal series, large, transverse, band-like, with three or four tubercles. Tongue with two flattened teeth, and a triangular, transverse plate below, with an acute process between the teeth on the upper edge. Dorsal fins two, far apart.

1. CARAGOLA LAPICIDA. CARAGOL.

Hab. West Coast of America.

6. MORDACIA. (Pisces, Pl. IV. fig. 6.)

Upper inner teeth two, separate, lateral, subtrigonal, each with three tubercles. The lower nine conical, acute, in an arched series; the five central smaller. Labial teeth small, conical, in a single, circular, submarginal series, with a single, additional, odd tooth in the centre above. Tongue with two conical, arched teeth. (Rich. Voy. Erebus & Terror, t. 38.)

Petromyzon, sp., Rich. Voy. Erebus & Terror, t. 38, 1845.

1. MORDACIA MORDAX. AUSTRALIAN LAMPERN.

Petromyzon mordax, Rich. Voy. Erebus & Terror, t. 38, 1845.—
Mordacia mordax, Gray, Proc. Zool. Soc. 1851.

Hab. Tasmania.

Species of Doubtful Situation in the Family.

1. PETROMYZON APPENDIX. SMALL LAMPREY.

Petromyzon appendix, De Kay, Nat. Hist. of New York, 381. pl. 64.
 f. 211. pt. 1; Zool. 1842.

Hab. N. America, Hudson River.

“A ring of irregular-shaped corneous processes within the oral orifice, and a large isolated double tooth of the same texture on the inferior portion of the mouth.”—*De Kay*.

2. PETROMYZON TRIDENTATUS. TRIDENTATE LAMPREY.

Petromyzon tridentatus, Gairdener, Rich. Faun. Bor. Amer. 293,
 1836; De Kay, Nat. Hist. of New York, 381. pt. 1; Zool. 1842.

Hab. N. America, Falls of the Walamet.

3. PETROMYZON ARGENTEUS. SILVERY LAMPREY.

Petromyzon argenteus, Bloch, t. 415. f. 2; Schneid. Bloch, 532.
 t. 102. f. 1, 1801; Shaw, Gen. Zool. v. pt. 2. p. 262, 1841.

Hab. Indian Seas.

4. PETROMYZON BICOLOR. BRILLIANT LAMPREY.

Petromyzon bicolor, Shaw, Gen. Zool. v. pt. 2. p. 263, 1804.—
Petromyzon niger, Lacépède, iv. 667.

Hab. Europe, Seine.

5. PETROMYZON PLUMBEUS. LEADEN LAMPREY.

Petromyzon plumbeus, Shaw, Gen. Zool. v. pt. 2. p. 263, 1804.
 —*Petromyzon Septœil*, Lacépède, iv. 667.

Hab. Europe, Seine.

B. Ammocœtina. *Teeth none; eyes none.*

7. AMMOCÆTES.

Teeth none.

Ammocœtes, Dum. Zool. Anal.; Cuv. Règ. An. ii. 118, 1817;
 Müll. Abhandl. Akad. Berlin, 1834, 78 (1836).—?*Lampreda*, Rafin.
 Anal. Nat. 94, 1815.

1. AMMOCÆTES BRANCHIALIS. PRIDE OR SANDPIPER.

Ammocœtes branchialis, Dum.; Flem. Brit. An. 164. sp. 3, 1828;
 Cuv. Règ. An. 406, 1829; Müll. Mém. de l'Acad. Berlin, 1834;
 Jen. Man. Brit. Vert. 522. sp. 212, 1835; Yarr. Brit. Fish. 2 ed. ii.

609, 1841.—*Petromyzon branchialis*, Linn. (édit. de Gmelin) 1815; Bloch, pt. 3. pl. 78? f. 2; Linn. Faun. Succ. 292; Wulff. Ichth. Borus. 15. n. 20; Müll. Prod. Zool. Dan. 37. n. 307 b; Kramer, Elench. 483; Penn. Brit. Zool. iii. 107. pl. 10, 1776–78; Shaw, Gen. Zool. 260, 1804.—*Petromyzon corpore annuloso, &c.*, Artedi, gen. 42. syn. 90.—*Lamproie branchiale*, Bonn. Planches de l'Encycl.; Daub. Encycl. Méth.—*Petromyzon*, Gronov. Zooph. 38. n. 160; Klein, Misc. Pisc. iii. 30. n. 4.—*Petromyzon cæcus*, Couch, Mag. Nat. Hist. v. 23. f. 60.—*Mustela fluviatilis*, Gesner, Aquat. 589; Icon. Anim. 286; Thierb. 159 b.—*Lampetra minima*, Aldrov. 539.—*Lampern, or Pride of the Isis*, Will. Ichth. 104.—*Pride*, Plot, Hist. of Oxford, 182. t. 10.—*Lampetra cæca*, Will. Ichth. tab. g. 3. f. 1; Ray, Syn. Pisc. 35. n. 2, 4; Couch, Loudon's Mag. Nat. Hist. v. 23. f. 9, 10.—*Lampreta neunange*, Jonston, t. 28. f. 10.—*Lampreyon et Lamprillon*, Rond. Hist. Poiss. ii. 202.—*Querder, Schlamquerder*, Schwenckf. Theriotr. Siles. 423.—*Der Kiefferwurn*, Müll. l. c. iii. 234.—*Lampreyon*, Valmont de Bomare, Dict. Hist. Nat.—*Le Petromyzon lampreyon*, Lacépède, Hist. Nat. des Poiss. i. 26. pl. 2. f. 1, 1798.

Hab. Europe, rivers.

2. AMMOCÆTES RUBER. RED LAMPREY.

Ammocætes ruber, Cuv. Règ. An. 406, 1829; Müll. Mém. de l'Acad. Berl. 78, 1834.—*Petromyzon ruber*, Lacépède, Hist. Nat. des Poiss. ii. 99. pl. 1; Supp. to *Petromyzon*; Shaw, Gen. Zool. v. pt. 2. p. 261, 1804.—*Ammocætes branchialis, var.*, Cuv. Règ. An. ii. 118, 1817.

Hab. Europe, Seine.

3. AMMOCÆTES CONCOLOR. MUD EEL OR BLIND EEL.

Ammocætes concolor, Kirtland, Boston Journ. iii. 473. pl. 27. f. 1 a, b, 1841.

Hab. N. America, Mahoning and Scioto rivers.

4. AMMOCÆTES BICOLOR. COLOURED MUD LAMPREY.

Ammocætes bicolor, Lesueur, Amer. Phil. Soc. (N. S.) i. 386.—*Ammocætes bicolor*, Storer, Fishes of Massachusetts, 198; De Kay, Nat. Hist. of New York, 383, 679. f. 248. pt. 1; Zool. 1842.

Hab. N. America, Connecticut river.

5. AMMOCÆTES UNICOLOR. PLAIN MUD LAMPREY.

Ammocætes unicolor, De Kay, Nat. Hist. of New York, 383. pl. 79. f. 250. pt. 1; Zool. 1842.

Hab. N. America, Lake Champlain.

13. DESCRIPTIONS OF FORTY-THREE NEW SPECIES OF CYCLOSTOMACEA, FROM THE COLLECTION OF HUGH CUMING, ESQ.

BY DR. L. PFEIFFER.

1. *CYCLOSTOMA HIMALAYANUM*, Pfr. *C. testá umbilicatá, globoso-turbinatá, soliduld, costis spiralibus obtusis, 10–12, lineisque interjacentibus obsoletis sculptá, sub epidermide deciduá, . . . albidá; spirá turbinatá, supernè rufá, acutiusculá; anfractibus 5, convexiusculis, ultimo ventroso, circa umbilicum angustum, infundibuliformem vix compresso; aperturá subverticali, circulari; peristomate simplice, continuo, breviter adnato, fusco-igneo, subincrassato, breviter expanso, supernè subangulato.—Operculum?*

Diam. maj. 48, min. 39, alt. 35 mill.

Hab. in Himalayâ.

2. *CYCLOSTOMA EUCHILUM*, Pfr. *C. testá umbilicatá, turbinato-subglobosá, soliduld, obliquè confertim striatá, lineis impressis distantioribus obsoletè clathratulá, albidá, violaceo-fusco et fulvo variegatá, parum nitidá; spirá turbinato-elevatá, apice acutiusculá; anfractibus 5½, convexis, ultimo rotundato, ad suturam subdepresso, medio albo-fasciato, basi confertim et valide spiralter sulcato; umbilico mediocri, infundibuliformi; aperturá vix obliquá, subangulato-circulari, intus purpurascenti-carneo-micante; peristomate subcontinuo, albo, marginibus supernè dilatatis, callo submarginato junctis, dextro et basali latissimis, fornicatim revolutis, sinistro angustato, vix reflexo.—Operculum?*

Diam. maj. 43, min. 32, alt. 28 mill.

Hab. Madagascar.

3. *CYCLOSTOMA CRASSUM*, Pfr. *C. testá umbilicatá, turbinato-globosá, crassá, striatá et minutè malleatá, rubello-fulvá, fasciis et lineis interruptis castaneis ornatá; spirá turbinatá, obtusiusculá; anfractibus 5, convexis, ultimo supernè turgido, infra medium cariná funiformi et fasciá latiore nigricante circumdato, basi subplanulato; circa umbilicum angustum, infundibuliformem subcompresso; aperturá obliquá, subangulato-rotundá, intus rubellá; peristomate duplice: interno continuo, externo crasso, expanso, ad anfractum penultimum breviter interrupto.—Operculum?*

Diam. maj. 27, min. 23, alt. 18 mill.

Hab. Liew Kiew, et var. minor in insulá Ibyat (Bashee group).

4. *CYCLOSTOMA EXPANSUM*, Pfr. *C. testá umbilicatá, turbinato-subglobosá, solidiusculá, spiralter confertim striatá, opacá, supernè castaneo et albido variegatá; spirá conoidé, apice acutiusculá; anfractibus 5, convexiusculis, ultimo convexiore, dilatato, peripheriá subcarinato, basi fasciis angustis castaneis ornatá; umbilico angusto, pervio; aperturá subverticali, ferè circulari; peristomate subsimplice, continuo, breviter adnato, pallidè aurantiaco, undique æqualiter angulatim plano-expanso, margine subrevoluto.—Operculum?*

Diam. maj. 30, min. 22, alt. 19 mill.

Hab. ———?

5. *CYCLOSTOMA UNICOLOR*, Pfr. *C. testá umbilicatá, globoso-conicá, solidá, longitudinaliter confertissime et regulariter striatá, spiraliter confertim sulcatá, opacá, fulvido-stramineá; spirá conicá, subtruncatá; anfractibus 6, convexiusculis, ultimo supernè et medio acutè carinato: cariná tertid, validissimá, circa umbilicum angustum, infundibuliformem, intus profundè spiraliter sulcatum; aperturá parum obliquá, angulato-circulari; peristomate simplice, marginibus callo lunatim exciso junctis, dextro expansiusculo, sinistro medio dilatato, patente.—Operculum?*

Diam. maj. 20, min. 17, alt. 16 mill.

β. *Majus, striis longitudinalibus obsoletioribus, albidum.*

Diam. maj. 28, min. 22, alt. 20 mill.

Hab. —?

6. *CYCLOSTOMA PONDEROSUM*, Pfr. *C. testá latè umbilicatá, conoideo-depressá, crassá, ponderosá, subtiliter et obliquè mal-leato-rugulosá, olivaceo-fusculá; spirá breviter conoidea, obtusá; anfractibus 5, parum convexis, celeriter accrescentibus, ultimo lato, subdepresso, ad peripheriam obtusè funiculato-carinato; aperturá obliquá, angulato-ovali, intus albá, nitidá; peristomate crasso, recto, subcontinuo, supernè angulato-dilatato, margine columellari perarcuato.—Operculum membranaceum, pellucidum, fuscum, arctispirum.*

Diam. maj. 36, min. 30, alt. 20 mill.

Hab. Guatemala.

7. *CYCLOSTOMA DYSONI*, Pfr. *C. testá umbilicatá, conoideo-orbiculatá, solidá, pliculis confertis undulatis, subconfluentibus sculptá, fusco-olivacá, pallidius strigatá et obsolete fasciatá; spirá conoidea, obtusá; anfractibus $4\frac{1}{2}$, convexiusculis, celeriter accrescentibus, ultimo rotundato; umbilico mediocri, conico; aperturá ferè verticali, angulato-subcirculari, intus cærulescente, nitidá; peristomate simplice, recto, supernè angulato, breviter adnato, margine dextro declivi, columellari subdilatato-patente.—Operculum?*

Diam. maj. 27, min. 22, alt. 16 mill.

Hab. Honduras (Mr. Dyson).

8. *CYCLOSTOMA DISCULUS*, Pfr. *C. testá umbilicatá, depressá, discoidea, solidiusculá, nitidá, alabastriná; spirá planissimá; anfractibus vix 4, convexiusculis, ad suturam impressam striatis, ultimo teretiusculo, subdepresso, in umbilico lato distinctius striato, anticè brevissimè soluto; aperturá subverticali, circulari; peristomate continuo, simplice, recto.—Operculum?*

Diam. maj. 14, min. 11, alt. 5 mill.

Hab. —?

9. *CYCLOSTOMA DESCISCENS*, Pfr. *C. testá latè umbilicatá, depresso-semiglobosá, supernè confertim sulcatá, albida; spirá convexá; anfractibus $4\frac{1}{2}$, convexiusculis, ultimo terete, anticè subito deflexo, basi levigato; aperturá ferè horizontali, lunato-*

rotundatá, intus albá; peristomate incrassato, marginibus remotis, callo junctis, basali reflexo, columellari subito arcuatim ascendente.
—*Operculum?*

Diam. maj. 10, min. $8\frac{1}{2}$, alt. $5\frac{1}{2}$ mill.

Hab. Socotra.

10. *CYCLOSTOMA MARGARITA*, Pfr. *C. testá perforatá, globoso-conicá, solidulá, lævigatá, nitidulá, rubello-succined; spirá conicá, apice acutiúsculá, sanguineá; anfractibus 5, convexiusculis, ultimo subrotundato; aperturá parum obliquá, ovali; peristomate interrupto, simplice, recto, margine columellari perarcuato, subincrassato.*—*Operculum?*

Diam. maj. 7, min. 6, alt. 6 mill.

Hab. in insulá Rapâ Oceani pacifici.

11. *CYCLOSTOMA (LEPTOPOMA) LATELIMBATUM*, Pfr. *C. testá perforatá, globoso-conicá, tenui, minutè spiraliter striatá et lineis obtusis elevatis, subæquidistantibus cinctá, diaphand, parum nitidá, albá, maculis et fasciis pallidè fulvis variegatá; spirá turbinatá, acutiúsculá; anfractibus 5, convexiusculis, ultimo rotundato, medio lined acutè elevatá subcarinato; umbilico angusto, vix pervio; aperturá obliquá, subcirculari; peristomate duplice, albo: interno interrupto, breviter porrecto, marginibus callo tenui junctis, externo undique æqualiter dilatato, angulatim patente, supra perforationem exciso.*—*Operculum?*

Diam. maj. 17, min. 13, alt. 11 mill.

Hab. in insulis Philippinis.

12. *CYCLOSTOMA (LEPTOPOMA) REGULARE*, Pfr. *C. testá angustissimè perforatá, conicá, globosá, tenui, lineis approximatis supernè æqualibus sculptá, interstitiis spiraliter conferim striatá, diaphand, albidd, maculis fulvidis regulariter tessellatá; spirá turbinatá, apice acutá, pallidè corned, anfractibus $5\frac{1}{2}$, convexiusculis, ultimo convexiore, infra liram periphericam inflato, obsoletius lirato; aperturá obliquá, lunato-circulari; peristomate interrupto, tenui, albo, breviter patente, margine columellari basi subangulatim dilatato.* *Operculum?*

Diam. maj. $12\frac{1}{2}$, min. 10, alt. 10 mill.

13. *CYCLOSTOMA (LEPTOPOMA) SERICATUM*, Pfr. *C. testá perforatá, globoso-conicá, tenui, pellucidá, sericed, lineis obliquis, subdistantibus sculptá, supernè lineis 4–5 elevatis, spiralibus munitá, hyalino-albidd, liris corneis (vel undique violacescentifulvá, basi pallidiore); spirá turbinatá, acutá, apice nigricante; anfractibus 5, superis parum convexis, ultimo inflato, subcarinato, infra carinam fasciá unicá castaned ornato, basi liris spiralibus nonnullis obsoletioribus sculpto; umbilico angustissimo, non pervio; aperturá parum obliquá, submarginato-circulari; peristomate simplice, interrupto, tenui, horizontaliter patente, margine columellari medio sublingulatim dilatato.*—*Operculum?*

Diam. maj. 12, min. vix 10, alt. 9 mill.

Hab. in insulá Borneo (Taylor).

14. *CYCLOSTOMA PLEUROPHORUM*, Pfr. *C. testá umbilicatá, globoso-turbinatá, tenui, longitudinaliter confertè striatá et costulis filaribus, prominentioribus sculptá, diaphaná, parum nitidá, albidofulvescente; spirá turbinatá, apice acutiusculá, cornedá; suturá costis denticulatá; anfractibus 5, convexis, ultimo subterete, anticè breviter soluto; umbilico mediocri, profundo, angulo cariniformi cincto; aperturá subverticali, ovato-subcirculari; peristomate continuo, simplice, recto, margine columellari expansiusculo.—Operculum duplex, lamíná externá testaced, 5-spiratá, marginibus anfractuum liberis, interná pland, cartilagineá.*

Diam. maj. 11, min. $9\frac{2}{3}$, alt. $9\frac{2}{3}$ mill.

Hab. Honduras.

15. *CYCLOSTOMA FASCICULARE*, Pfr. *C. testá perforatá, acuminato-ovatá, solidulá, confertissimè costulato-striatá, vix sericed, griseo-corned; spirá conicá, acutiusculá; suturá costularum fasciculis crenatá; anfractibus 5, convexiusculis, ultimo rotundato, basi spiraliter sulcato; aperturá vix obliquá, ovali; peristomate simplice, recto, acuto.—Operculum terminale, testaceum, planum, paucispirum, anfractibus obliquè striatis.*

Long. 12, diam. 8 mill.

Hab. — ?

16. *CYCLOSTOMA GUATEMALENSE*, Pfr. *C. testá perforatá, oblongá, solidulá, subtruncatá, striatulá, olivaceo-fusced; spirá convexiusculo-turritá; anfractibus 6, parum convexis, ultimo angustiore, anticè descendente, breviter soluto, basi, circa perforationem apertam, compresso, nec carinato; aperturá verticali, subcirculari; peristomate libero, albo, duplice: interno continuo, vix porrecto, externo dilatato, horizontaliter expanso, supra perforationem exciso.—Operculum?*

Long. 24, diam. 8 mill.

Hab. Vera Paz in Guatemalá.

17. *CYCLOSTOMA CANESCENS*, Pfr. *C. testá subperforatá, oblongo-turritá, truncatulá, solidá, lineis longitudinalibus et spiralibus elevatis regulariter clathratá, parum nitidá, griseo-albidá; spirá elongatá; suturá tuberculis confertis, albis crenatá; anfractibus superstomate 7, vix convexiusculis, ultimo basi attenuato, circa perforationem obsoletam distinctius spiraliter sulcato; aperturá verticali, angulato-ovalí, intus fusco-carneá; peristomate duplice: interno vix porrecto, externo undique breviter expanso, supernè angulato, anfractui penultimo breviter adnato.—Operculum?*

Long. 20, diam. 7 mill.

Hab. — ?

18. *CYCLOSTOMA VIOLACEUM*, Pfr. *C. testá subobtectè perforatá, ovato-turritá, truncatá, solidulá, lineis elevatis spiralibus et confertioribus longitudinalibus oblongo-granulatá, haud scabrá, non nitente, saturatè violaced; spirá turritá, truncatá; anfractibus superstomate $4\frac{1}{2}$, convexis, ultimo rotundato; aperturá subverticali,*

ovali; peristomate simplice, albo, continuo, margine dextro subincrassato, angustè angulatim patente, columellari in laminam sinuosam, perforationem occultantem, nec claudentem, dilatato.—

Operculum immersum, testaceum, planum, cinereum, paucispirum.

Long. 20, diam. 11 mill.

Hab. — ?

19. *CYCLOSTOMA SHUTTLEWORTHII*, Pfr. *C. testá clausè umbilicatá, oblongá, truncatá, spiraliter confertim plicatá, lineis longitudinalibus obsolete decussatá, sericed, pallidissimè fulvidá, fasciis valde interruptis castaneis ornatá; spirá oblongá; anfractibus superstomate 3, convexiusculis, ultimo basi rotundato; aperturá verticali, angulato-ovali; peristomate duplice: interno brevi, expansiusculo, externo latè patente, concentricè striato, radiatim plicato et castaneo-radiato, ad columellam exciso, lamina alba fornicatá umbilicum prorsus claudente.—Operculum terminale, cartilagineum, paucispirum, nucleo basali.*

Long. 22, diam. 11½ mill.

Hab. in insulâ Cubâ.

20. *CYCLOSTOMA RADULA*, Pfr. *C. testá perforatá, ovato-oblongá, truncatá, tenui, lineis elevatis spiralibus et costis acutis longitudinalibus subtiliter asperato-decussatá, pallidè corneá, fasciis angustis, rufis, interruptis ornatá, non nitente; spirá sursum attenuatá, latè truncatá; suturá profundá, subsimplice; anfractibus superstomate 4, convexis, ultimo angustiore, rotundato; aperturá verticali, circulari; peristomate duplice: interno continuo, vix porrecto, externo dilatato, horizontaliter patente, concentricè striato, ad anfractum penultimum subexciso, margine sinistro fimbriato-inciso.—Operculum planum, e duabus laminis compositum, externá subtestaced, anfractibus 3½, nucleo subcentrali.*

Long. 14, diam. 7 mill.

Hab. Almendares prope Havana.

21. *CYCLOSTOMA OVATUM*, Pfr. *C. testá obtectè perforatá, oblongo-ovatá, truncatá, tenui, longitudinaliter confertim plicatulá, sericed, fusco-corneá, vel pallidissimè corneá, maculis rufis seriatim dispositis ornatá; spirá ovato-conicá, truncatá; suturá levi, irregulariter tuberculato-crenatá; anfractibus superstomate 5, convexiusculis, ultimo paulo angustiore, basi obsolete spiraliter sulcato; aperturá verticali, rotundato-ovali; peristomate fusculo, duplice: interno breviter porrecto, externo undique dilatato, campanulato-expanso, radiato-costato, supernè angulatim reflexo, anfractui penultimo longè adnato, perforationem claudente, margine sinistro subauriculato, libero.—Operculum?*

Long. 17½, diam. 8 mill.

Hab. in insulâ Cubâ.

22. *CYCLOSTOMA GRATELOUPI*, Pfr. *C. testá perforatá, oblongá, pupiformi, truncatá, tenuiusculá, spiraliter confertim sulcatá et costis longitudinalibus, confertis, non interruptis sculptá, diaphaná,*

parum nitidâ, corneo-albidâ, fasciis strigatim interruptis castaneis ornatâ; spirâ sursum parum attenuatâ, latè truncatâ; suturâ levî, crenatâ: crenis supernè minutis, confertis, in anfractibus ultimis fasciculatim dilatatis, obtusis; anfractibus superstomate 4, vix convexiusculis, ultimo anticè breviter soluto, basi rotundato; aperturâ verticali, ovali; peristomate duplici: interno breviter expanso, adnato, externo campanulato-patente, rufo radiato, supernè cucullatim elevato, tum emarginato et anfractui penultimo adnato.—Operculum testaceum, planum, anfractibus 3, marginibus lamelloso-liberis.

Long. 16, diam. 7 mill.

β. *T. minor, crenulis suturæ confertis, acutis.*

Hab. Yucatan, var. β. in Indiâ occidentali.

23. *CYCLOSTOMA HISTRIO*, Pfr. *C. testâ profundè rimatâ, ovato-conicâ, solidiusculâ, longitudinaliter confertim plicatâ, parum nitidâ, albidâ, strigis latis obliquis, angulosis, fuscis pictâ; spirâ elato-conicâ, vix truncatâ; suturâ supernè minutè denticulatâ, anfractuum inferiorum subsimplici; anfractibus 4½, convexis, ultimo rotundato, basi ultra axin subproducto; aperturâ subobliquâ, subcirculari, intus nitidâ, fulvidâ, nebulosâ; peristomate lateritio, duplici: interno continuo, latè expanso, appresso, externo latiore, horizontaliter patente, supernè sinuato-angulato, ad anfractum penultimum breviter interrupto.—Operculum?*

Long. 20, diam. 11 mill.

Hab. in insulâ Jamaicâ.

24. *CYCLOSTOMA INTEGRUM*, Pfr. *C. testâ perforatâ, turrîtâ, tenuiusculâ, integrâ, lineis obsoletè elevatis spiralibus et costulis confertis longitudinalibus (tertiâ vel quartâ quâvis validiore) subdecussatâ, fulvidâ, fasciis interruptis rufis cingulatâ; spirâ regulariter turrîtâ, apice obtusiusculâ; suturâ subconfertè denticulatâ; anfractibus 7, convexis, 2 primis lævigatis, ultimo rotundato, antrorsum breviter soluto, vix descendente, basi rotundato, fasciis 2–3 continuis rufis ornato; aperturâ vix obliquâ, ovali; peristomate subduplicato: interno continuo, adnato, externo patente, supernè subangulato-dilatato, tum emarginato, latere columellari undulato.—Operculum cartilagineum, planum, paucispirum.*

Long. 12, diam. 5 mill.

Hab. in Indiâ occidentali.

25. *CYCLOSTOMA HARPA*, Pfr. *C. testâ breviter rimatâ, oblongo-turrîtâ, tenuiusculâ, plicis longitudinalibus chordiformibus subdistantibus munitâ, cinnamomeo-carned, haud nitente, lineis rufis strigatim interruptis ornatâ; spirâ turrîtâ, integrâ, sursum nigro-violaceâ, apice obtusâ; suturâ profundâ, plicis prominentibus subcrenatâ; anfractibus 6, convexis, ultimo rotundato; aperturâ verticali, ovali-subcirculari; peristomate rubello, duplici: interno expansiusculo, appresso, externo undique vix dilatato-patente, anfractui penultimo breviter adnato.—Operculum?*

Long. 12, diam. 6 mill.

Hab. Almendares prope Havana.

26. *CYCLOSTOMA PINGUE*, Pfr. *C. testá umbilicatá, oblongo-turrítá, truncatá, solidá, liris spiralibus obtusis undulatá, striis longitudinalibus confertissimis sculptá, oleoso-micante, cinnamomeo-fuscá; suturá profundá, simplice; anfractibus superstomate 4, convexis, regulariter accrescentibus, ultimo rotundato; aperturá subverticali, ferè circulari; peristomate albo, duplice: interno expansiusculo, adnato, externo continuo, horizontaliter expanso, anfractui penultimo brevissimè adnato, supernè angulato.—Operculum?*

Long. $12\frac{1}{2}$, diam. 6 mill.

Hab. ———?

27. *CYCLOSTOMA PALLIDUM*, Pfr. *C. testá perforatá, ovato-turrítá, truncatá, tenui, lineis elevatis spiralibus et confertissimis longitudinalibus (hic illic irregularibus, subconfluentibus) minutè decussatá, pallidè corned, lineolis rufis interruptis obsolete pictá; suturá profundá, subsimplice; anfractibus superstomate 4, convexis, ultimo rotundato; aperturá verticali, ovali-circulari; peristomate duplice, interno albo, porrecto, expansiusculo, externo dilatato, horizontaliter patente, concentricè striato, anfractui penultimo breviter adnato, margine sinistro angustiore.—Operculum terminale, testaceum, anfractibus $3\frac{1}{2}$, obliquè striatis, marginibus subliberis.*

Long. $17\frac{1}{2}$, diam. $8\frac{1}{2}$ mill.

Hab. Almendares prope Havana.

28. *CYCLOSTOMA CUMANENSE*, Pfr. *C. testá perforatá, turrito-oblongá, truncatá, tenui, longitudinaliter confertim plicatá, sericed, pellucidá, corneo-lutescente, maculis castaneis fasciatim dispositis ornatá; suturá plicis excurrentibus confertim subcrenatá; anfractibus superstomate 5, subconvexis, ultimo basi rotundato, anticè breviter soluto, dorso carinato; aperturá subverticali, ovali, supernè subangulatá; peristomate libero, simplice, undique vix expanso.—Operculum cartilagineum, planum, paucispirum.*

Long. 15, diam. $7\frac{1}{2}$ mill.

29. *CYCLOSTOMA TURRITUM*, Pfr. *C. testá subperforatá, turrítá, truncatulá, lineis elevatis spiralibus et longitudinalibus regulariter clathratá, albidá, lineolis rufis interruptis cinctá; suturá subprofundá, confertim denticulatá; anfractibus superstomate 6, convexiusculis, regulariter accrescentibus, ultimo rotundato; aperturá verticali, ovali, intus fulvidá; peristomate subduplice: interno continuo, expansiusculo, externo supernè angulatim dilatato, margine dextro vix patente, columellari et sinistro exciso.—Operculum?*

Long. 16, diam. 7 mill.

Hab. Honduras (Mr. Dyson).

30. *CYCLOSTOMA DIAPHANUM*, Pfr. *C. testá subperforatá, oblongo-turrítá, truncatá, tenuiusculá, lineis elevatis spiralibus confertis, costulisque illas transgredientibus filaribus confertioribus decussatá, diaphaná, unicolore albidá; spirá elongatá; suturá irregulariter crenatá; anfractibus superstomate $4\frac{1}{2}$, convexis, sub-*

aqualibus, ultimo anticè soluto, dorso carinato, basi rotundato, distinctius spiraliter sulcato; aperturá verticali, angulato-ovali; peristomate subsimplice, continuo, undique breviter expanso.—Operculum?

Long. 12, diam. 5 mill.

Hab. — ?

31. *CYCLOSTOMA LUGUBRE*, Pfr. *C. testá perforatá, turrito-oblongá, solidá; truncatá, liris obtusis spiralibus, costulisque submembranaceis illas transgredientibus sculptá, fusculá, violaceo-fusco latè unifasciatá; spirá parum attenuatá; suturá confertim et subacutè fasciculato-crenatá; anfractibus superstomate 5, convexiusculis, ultimo anticè breviter soluto, subdescendente, dorso compresso, basi distinctius spiraliter lirato; aperturá verticali, obliquè ovali; peristomate subsimplice, continuo, margine sinistro breviter, reliquis paulò latius expansis, subundulatis.—Operculum?*

Long. 16, diam. ferè 7 mill.

Hab. in insulá Jamaicâ.

32. *CYCLOSTOMA KUSTERI*, Pfr. *C. testá perforatá, ovato-turritá, truncatá, tenui, sulcis spiralibus et costulis longitudinalibus confertis regulariter granulato-reticulatá, vix nitente, diaphand, fusco-corneá, lineis obsolete rufis interruptis pictá; spirá convexo-turritá, latè truncatá; suturá profundá, simplice; anfractibus superstomate 4, convexis, ultimo angustiore, rotundato; aperturá subverticali, subcirculari; peristomate duplice: interno breviter expanso, adnato, externo campanulato-expanso, concentricè striato, anticè concavo, rufo-radiato, supernè angulato, ad anfractum penultimum angustato.—Operculum?*

Long. 14, diam. 7 mill.

Hab. Honduras (Mr. Dyson).

33. *CYCLOSTOMA TROCHLEA*, Pfr. *C. testá perforatá, oblongo-turritá, truncatá, costis filaribus spiralibus et longitudinalibus subregulariter clathratá, haud nitente, pallidè fusculá, punctis rufis subseriatis variegatá; spirá elongatá, trochleari, latè truncatá; suturá profundá, simplice; anfractibus superstomate 5, perconvexis; aperturá verticali, subcirculari; peristomate duplice: interno vix porrecto, externo horizontaliter expanso, supernè in rostrum recurvatum dilatato, ad anfractum penultimum breviter interrupto, latere sinistro inciso-crenulato.—Operculum?*

Long. 14, diam. 6 mill.

Hab. — ?

34. *CYCLOSTOMA ALTERNANS*, Pfr. *C. testá mediocriter umbilicatá, conoideo-depressá, tenuiusculá, acutè multiliratá, liris alternis minoribus, haud nitente, subepidermide pallidè lutescente fugace albá; spirá breviter conoideo-elevatá, obtusiusculá; suturá subcanaliculatá; anfractibus 5, convexiusculis, ultimo rotundato; aperturá parum obliquá, subcirculari; peristomate simplice, recto, fusco-limbato, subcontinuo, marginibus ad anfractum penultimum*

callo nitido junctis.—*Operculum membranaceum, planum, cereum, arctispirum.*

Diam. maj. 20, min. 16, alt. 10 mill.

Hab. Madagascar.

35. *CYCLOSTOMA RUSTICUM*, Pfr. *C. testá latè umbilicatá, depressá, subdiscoideá, solidá, spiraliter confertim lirátá, non nitente, sordidè albidá, pallidè fuscúlá irregulariter variegatá; spirá parum elevatá, vertice submucronato; anfractibus $4\frac{1}{2}$, convexiusculis, ad suturam subdepressis, ultimo terete, anticè descendente; aperturá diagonali, subcirculari, intus carnéd; peristomate simplice, breviter expanso, marginibus callo brevi junctis, supero repando.*—*Operculum?*

Long. maj. $17\frac{1}{2}$, min. $13\frac{1}{2}$, alt. $7\frac{1}{2}$ mill.

Hab. — ?

36. *CYCLOSTOMA PSILOMITUM*, Pfr. *C. testá mediocriter umbilicatá, depresso-conoideá, solidulá, virenti-luteá, vix nitidulá, lineis spiralibus subtilissimis, piloso-elevatis crebris obscurioribus cinctá; spirá breviter conoideá, obtusá; suturá subcanaliculatá; anfractibus 4, convexis, ultimo terete, non descendente; aperturá ferè verticali, subcirculari, intus albidá; peristomate simplice, acuto, marginibus ferè contiguís, callo brevi junctis.*—*Operculum?*

Diam. maj. 15, min. 11, alt. 8 mill.

Hab. Venezuela.

37. *CYCLOSTOMA ALATUM*, Pfr. *C. testá latè umbilicatá, conoideo-depressá, solidulá, obliquè confertim et inæqualiter costulatá, vix diaphandá, albidá, fasciis angustis pallidissime corneis variegatá; spirá brevissime conoideá, acutiusculá; suturá simplice; anfractibus 4, modicè convexis, ultimo subterete, anticè vix descendente, lilaceo-nebuloso; aperturá diagonali, subcirculari, intus lilaceofusculá; peristomate subduplice, latere dextro et basali connato, expanso, externo supernè alatim dilatato, latere sinistro subreflexo.*—*Operculum?*

Diam. maj. 16, min. 13, alt. 8 mill.

Hab. S. Yago de Cuba.

38. *CYCLOSTOMA SCALARE*, Pfr. *C. testá angustè umbilicatá, conoideá, solidulá, obliquè striatulá, nitidulá, corneo-luteá; spirá elatá, scalari, apice acutá; suturá profundá; anfractibus $4\frac{1}{2}$, perconvexis, ultimo terete, anticè subsoluto; aperturá obliquá, circulari, intus margaritacéá; peristomate simplice, continuo, undique vix expansiusculo.*—*Operculum?*

Diam. maj. 9, min. 7, alt. $6\frac{1}{2}$ mill.

Hab. in insulis Philippinis.

39. *CYCLOSTOMA (CYCLOPHORUS) LUTESCENS*, Pfr. *C. testá umbilicatá, depresso-conoideá, solidá, obliquè filoso-striatá, sericéá, fusco-lutescente; spirá breviter conoideá, apice acutiusculá; suturá profundá, simplice; anfractibus $4\frac{1}{2}$, convexis, rapide accrescentibus,*

ultimo non descendente; umbilico mediocri, profundo; aperturâ vix obliquâ, rotundato-ovali; peristomate simplice, recto, acuto, continuo, breviter adnato, supernè vix angulato.—Operculum membranaceum, pallidè corneum, rectispirum, extus profundè concavum.
Diam. maj. 20, min. $15\frac{1}{2}$, alt. 12 mill.
Hab. in Brasiliâ.

40. CYCLOSTOMA GUTTATUM, Pfr. *C. testâ umbilicatâ, depressâ, solidâ, glabrâ, nitidâ, late castaneâ, maculis albis subtriangularibus guttatâ; spirâ vix elevatâ, apice fuscâ, submucronatâ; anfractibus $4\frac{1}{2}$, convexiusculis, celeriter crescentibus, ad suturam impressam striatulis; umbilico latiusculo, pervio; aperturâ parum obliquâ, circulari, intus albidd; peristomate subduplice: interno vix distinguendo, externo expanso, supernè in linguam brevem, anfractui penultimo adnatam, dilatato.*—Operculum?

Diam. maj. 19, min. 15, alt. 9 mill.
Hab. —?

41. CYCLOSTOMA IGNEDESCENS, Pfr. *C. testâ perforatâ, globoso-conicâ, tenui, lineis spiralibus subtilissimis confertim sculptâ, diaphanâ, nitidâ, ignescente; spirâ turbinatâ, obtusiusculâ; suturâ profundâ; anfractibus $4\frac{1}{2}$, convexis, ultimo basi distinctius sulcato; aperturâ obliquâ, subcirculari; peristomate simplice, expanso, marginibus approximatis, non junctis.*—Operculum?

Diam. maj. 14, min. 11, alt. $11\frac{1}{2}$ mill.
Hab. in Novâ Hiberniâ.

42. CYCLOSTOMA FUSCULUM, Pfr. *C. testâ angustissime umbilicatâ, globoso-conicâ, tenui, lineis elevatis spiralibus subconfertis, lirâque periphericâ validiore cariniformi sculptâ, vix nitidulâ, unicolore fuscâ, fasciâ unicâ angustâ rufâ infra carinam pallidam ornatâ; spirâ conicâ, obtusiusculâ; anfractibus 5, convexis, ultimo interdum carinâ, secundo superne notato, basi minute spiraliter sulcato; aperturâ parum obliquâ, rotundato-ovali; peristomate simplice, tenui, undique expansiusculo, marginibus approximatis, non junctis.*—Operculum testaceum, planum, cinereum, 4-spirum, nucleo subcentrali.

Diam. maj. $11\frac{1}{2}$, min. $9\frac{1}{2}$, alt. 9 mill.
Hab. —?

43. CYCLOSTOMA CASTANEUM, Pfr. *C. testâ angustè umbilicatâ, globoso-conicâ, tenui, obliquè striatuld et liris subacutis multis sculptâ, nitidâ, saturatè castaneâ; spirâ elevato-conicâ, apice obtusiusculâ; anfractibus $4\frac{1}{2}$, angulato-convexis, ultimo liris 6 subæqualibus, pluribusque minoribus, confertioribus in umbilico munito; aperturâ parum obliquâ, subcirculari; peristomate simplice, tenui, undique expansiusculo, marginibus approximatis, non junctis.*—Operculum testaceum, planum, paucispirum, nucleo subcentrali.

Diam. maj. 11, min. 9, alt. 9 mill.
Hab. in insulâ Madagascar.

To this was added the following description of various species of *Helicea*.

14. DESCRIPTION OF FIFTY-FOUR NEW SPECIES OF HELICEA,
FROM THE COLLECTION OF HUGH CUMING, ESQ.

BY DR. L. PFEIFFER.

1. *STREPTAXIS DISCUS*, Pfr. *S. testá latè umbilicatá, discoideá, subregulari, lævigatá, albido-hyaliná; spirá planá, vertice prominulo; anfractibus 6½, vix convexiusculis, irregulariter varicosis, ultimo depresso, subtus deviante, pone aperturam rotundato, deflexo; aperturá subhorizontali, transversè sinuato-auriformi, plicá obliquá parietali et dentibus peristomatis coarctatá; peristomate candido, reflexo, margine supero impresso, obsolete dentato, dextro dente distinctiore munito, basi intus transversè calloso.*

Diam. maj. 14, min. 11, alt. 4½ mill.

Hab. — ?

2. *HELIX RICHMONDIANA*, Pfr. *H. testá imperforatá, trochiformi, solidá, striatá et irregulariter granulatá, nitidá, castaneá; spirá castaneá, sursum pallidiore, apice obtusiusculá; anfractibus 5½, planis, sensim accrescentibus, ultimo compressè carinato, anticè vix deflexiusculo; basi plano; aperturá perobliquá, subrhombè, ad carinam rostratá; intus livido-opaliná; peristomate nigro-fusco, subincrassato, marginibus callo tenui junctis, supero expanso, basali dilatato, reflexo.*

Diam. maj. 54, min. 47, alt. 30 mill.

Hab. ad Richmond River, Australia.

3. *HELIX SEMIDECUSSATA*, Pfr. *H. testá perforatá, conoideá, solidá, supernè minute decussatá, opacá, unicolore rufo-fuscá; spirá conoideá, acutiusculá; anfractibus 7, vix convexiusculis, ultimo carinato, non descendente, basi convexo; aperturá diagonali, angulato-lunari; peristomate simplice, recto, obtuso, margine columellari supernè brevissimè reflexiusculo.*

Diam. maj. 33, min. 30, alt. 18 mill.

Hab. in insulâ Mauritií.

4. *HELIX SOULEYETIANA*, Pfr. *H. testá perforatá, conoideo-depressá, solidulá, rugoso-striatá, supernè inter strias sub lente confertissimè undulato-lineatá, pallidè fulvá; spirá breviter conoideá, obtusiusculá; anfractibus 6 subplanis, lentè accrescentibus, ultimo acutè carinato, infra carinam castaneo-fasciato, convexo, medio profundè excavato; aperturá perobliquá, angulato-lunari; peristomate simplice, marginibus subparallelis, dextro antrorsum subarcuato, columellari subincrassato, supernè brevissimè reflexo.*

Diam. maj. 52, min. 36, alt. 18 mill.

Hab. — ?

5. *HELIX RADIANS*, Pfr. *H. testá imperforatá, depressá, tenui, lævigatá, nitidissimá, pellucidá, cornè, strigis albidis irregulariter radiatá; spirá brevissimá, convexá; suturá impressá, submarginatá; anfractibus 4½, planiusculis, ultimo non descendente, supernè*

angulato, basi convexo, medio subimpresso; aperturâ subverticali, angulato-lunari; peristomate simplicissimo, recto.

Diam. maj. 9, min. 8, alt. 4 mill.

Hab. in insulâ Tahiti.

6. *HELIX GARTNERIANA*, Pfr. *H. testâ umbilicatâ, coniformi, solidâ, irregulariter elevato-striatâ, opacâ, nitidulâ, lutescenti-carned; spirâ conicâ, apice obtusâ; suturâ submarginatâ; anfractibus 7, convexis, ultimo peripheriâ subangulato, lined rubrâ cincto, anticè non descendente, subtus planiusculo; umbilico angustissimo, pervio; aperturâ parum obliquâ, subtetragonâ; peristomate albo, margine superi ferè angulatim arcuato, expanso, basali substricto, columellari lilaceo, brevi, verticali, reflexo.*

Diam. maj. 22, min. 19, alt. 22 mill.

Hab. —?

7. *HELIX LITURATA*, Pfr. *H. testâ imperforatâ, turbinato-semiglobosâ, striatâ, minutè rugoso-malleatâ, nitidulâ, roseo-carned, fasciis punctatim vel lituratim interruptis rufis ornatâ; spirâ depresso-turbinatâ, apice acutiusculâ; anfractibus 5, convexiusculis, ultimo vix descendente, peripheriâ rotundato, fasciâ castaned, subtessellatâ circumdato, basi convexiusculo; aperturâ diagonali, rotundato-lunari; peristomate simplice, margine dextro vix expansiusculo, columellari subcalloso.*

Diam. maj. 23, min. 20, alt. 15 mill.

Hab. —?

8. *HELIX BRARDIANA*, Pfr. *H. testâ umbilicatâ, subturbinato-depressâ, tenui, striatâ, fulvâ, pellucidâ, maculis luteis opacis irregulariter variegatâ; spirâ subturbinatâ, apice acutiusculâ; anfractibus 5, vix convexiusculis, ultimo non descendente, peripheriâ angulato, basi convexiore; umbilico angusto, pervio; aperturâ parum obliquâ, rotundato-lunari; peristomate simplice, tenui, undique expanso, margine columellari subdilato, patente.*

Diam. maj. 14, min. 12, alt. 8½ mill.

Hab. in insulâ Bourbon.

9. *HELIX STURMIANA*, Pfr. *H. testâ mediocriter umbilicatâ, depresso-semiglobosâ, solidâ, supernè confertim plicatâ, parum nitidâ, unicolore fusco-lutescente; spirâ brevi, convexâ, obtusâ; anfractibus 4, planiusculis, rapidè accrescentibus, ultimo anticè descendente, subdepresso, peripheriâ rotundato, basi convexo, lævigato; aperturâ parum obliquâ, lunato-ovali, intus margaritaced; peristomate simplice, marginibus conniventibus, callo tenui junctis, supero recto, basali subreflexo.*

Diam. maj. 22, min. 18½, alt. 12 mill.

Hab. —?

10. *HELIX LAYARDI*, Pfr. *H. testâ perforatâ, turbinatâ, tenuiusculâ, ruguloso-striatâ, parum nitente, pellucidâ, pallidè corned; spirâ conoided, apice acutiusculâ; anfractibus 5½, convexiusculis, ultimo carinato, non descendente, basi convexo; aperturâ parum*

obliquâ, rotundato-lunari, vix angulatâ; peristomate recto, tenui, acuto, margine columellari supernè brevissimè reflexiusculo.

Diam. maj. 13, min. ferè 12, alt. 9 mill.

Hab. in insulâ Ceylon (*Mr. Layard*).

11. *HELIX WOODIANA*, Pfr. *H. testâ umbilicatâ, depressâ, tenui, lævigatâ, nitidissimâ, corneo-fuscâ; spirâ parum elevatâ, vertice subtili; suturâ impressâ; anfractibus 5, vix convexiusculis, lentè accrescentibus, ultimo depresso, obsoletè angulato, non descendente, basi planiusculo; umbilico angusto, pervio; aperturâ subverticali, lunari; peristomate simplice, recto, acuto, margine columellari vix reflexiusculo.*

Diam. maj. 10, min. 9, alt. $4\frac{1}{2}$ mill.

Hab. in insulâ Ceylon (*Mr. Layard*).

12. *HELIX FORSTERIANA*, Pfr. *H. testâ umbilicatâ, globoso-depressâ, tenuiusculâ, undique minutè granulatâ, diaphandâ, corneo-isabellinâ, fasciis 2 angustis rufis supernè ornatâ; spirâ parum elevatâ, convexo-conoideâ, vertice acutiusculo; anfractibus 6, convexiusculis, ultimo anticè vix descendente, basi subplanulato; umbilico mediocri, pervio; aperturâ obliquâ, rotundato-lunari; peristomate simplice, marginibus remotis, dextro recto, basali reflexo, columellari in laminam triangularem, violaceo-fuscam, fornicatim dilatato.*

Diam. maj. $20\frac{1}{2}$, min. 18, alt. 12 mill.

Hab. in Australiâ boreali.

13. *HELIX PTYCHOMPHALA*, Pfr. *H. testâ umbilicatâ, depresso-globosâ, tenui, supernè confertim costulatâ, lineis concentricis paucis obsoletè decussatâ, nitidâ, castaneo-corned; spirâ vix convexâ; anfractibus 4, vix convexiusculis, ultimo non descendente, obsoletissimè angulato, basi convexo, lævigato, corneo-virente, circa umbilicum mediocrem, pervium confertim plicato; aperturâ parum obliquâ, irregulariter truncato-ovali, multo altiore quam latâ; peristomate simplice, obtuso, margine columellari elongato, substrictè descendente, supernè fornicatim reflexo.*

Diam. maj. 22, min. 20, alt. 13 mill.

Hab. ad Portum Essington.

14. *HELIX POIRETIANA*, Pfr. *H. testâ perforatâ, conicâ, solidâ, striatulâ, nitidâ, carneo-albidâ, strigis pallidè fuscis irregulariter pictâ; spirâ conicâ, obtusiusculâ; suturâ impressâ, subtilissimè crenulatâ; anfractibus 7, vix convexiusculis, ultimo subrotundato, fasciâ und fuscâ signato, anticè breviter descendente; aperturâ diagonali, lunato-rotundatâ; peristomate acuto, margine dextro repando, basali subincrassato, columellari fornicatim reflexo, perforationem ferè tegente.*

Diam. maj. $19\frac{1}{2}$, min. $18\frac{1}{2}$, alt. 23 mill.

Hab. ad Portum Essington.

15. *HELIX DILLWYNIANA*, Pfr. *H. testâ umbilicatâ, depressâ, solidâ, irregulariter rugosâ et subtilissimè malleatâ, nitidâ, cre-*

taced; spirâ subplanâ, vertice papillatim prominulo, castaneo; anfractibus $4\frac{1}{2}$, planiusculis, ultimo rotundato, anticè breviter deflexo, basi inflato; umbilico angusto, non pervio; aperturâ perobliquâ, latè lunari, intus albâ; peristomate acuto, intus incrassato, margine supero subhorizontali et dextro arcuato expansis, basali substricto, reflexo, columellari brevissimo, angusto, patente.

Diam. maj. 31, min. 25, alt. 14 mill.

Hab. — ?

16. **BULIMUS GLAUCOPHTHALMUS**, Pfr. *B. testâ imperforatâ, ovato-oblongâ, solidâ, striatâ, nigro-castaneâ, epidermide hydrophanâ fusco-cinereâ strigatâ; spirâ convexo-conicâ, apice saturatè cæruleâ, obtusâ; suturâ impressâ; anfractibus 5, convexiusculis, ultimo spirâ breviorè, basi obsoletè angulato; columellâ subdeclivi, dilatâ, planâ, albâ, basi subdentatâ; aperturâ obliquâ, truncato-ovalî, intus lividâ; peristomate simplice, brevissimè expanso, margine dextro repando.*

Long. 36, diam. 25 mill.

Hab. in insulis Philippinis.

17. **BULIMUS SUTURALIS**, Pfr. *B. testâ imperforatâ, oblongo-conicâ, tenui, striatâ, nitidâ, alabastrino-albidâ; spirâ conicâ, apice obtusâ; suturâ parum impressâ, candidâ, confertissimè noduloso-crenatâ; anfractibus 7, planiusculis, ultimo $\frac{3}{7}$ longitudinis subæquante, infra medium obtusè angulato et fasciis 2 nigricantibus ornato; columellâ supernè fusco-callosâ, subtortâ; aperturâ obliquâ, truncato-oblongâ; peristomate simplice, vix expansiusculo.*

Long. 43, diam. 23 mill.

Hab. in Africâ occidentali.

18. **BULIMUS LUCTUOSUS**, Pfr. *B. testâ perforatâ, oblongo-acuminatâ, solidâ, obsoletè decussatâ, vix nitidâ, atro-castaneâ; spirâ elongatâ, apice obtusâ; suturâ impressâ, submarginatâ; anfractibus 7, convexiusculis, ultimo $\frac{1}{3}$ longitudinis paulo superante, basi circa perforationem angustam subcarinato; columellâ verticali, levissimè arcuatâ; aperturâ parum obliquâ, subsemiovali, ad columellam angulatâ, intus lividâ; peristomate simplice, recto, margine columellari fornicato, breviter reflexo.*

Long. 39, diam. 17 mill.

Hab. in Africâ occidentali.

19. **BULIMUS INFUNDIBULUM**, Pfr. *B. testâ umbilicatâ, ovato-conicâ, subfusiformi, confertim striatâ, opaci, albâ; spirâ convexo-conicâ, apice attenuatâ, rosâ, acutiusculâ; suturâ lineari; anfractibus 9, ferè planis, ultimo $\frac{3}{7}$ longitudinis subæquante, basi attenuato, circa umbilicum latum, pervium, infundibuliformem compresso; aperturâ subverticali, angustâ, oblongâ; peristomate simplice, marginibus supernè approximatis, dextro breviter expanso, columellari subdilato, patente.*

Long. 18, diam. 7 mill.

Hab. in Andibus Peruvianis.

Nearly allied to *Bul. umbilicaris*, Souleyet.

20. **BULIMUS SUBINTERRUPTUS**, Pfr. *B. testá perforatá, subfusiformi-oblongá, tenuiusculá, lævigatá, sub lente spiraliter striatá, nitiduld, albidd, fasciis 5 latis, subinterruptis, spadiceis ornatá; spirá elongato-conicá, acutá; suturá parum impressá; anfractibus 6, planiusculis, ultimo spiram paulo superante, basi attenuato; columellá substrictá, recedente; aperturá obliquá, angustá, acuminato-semiovali; peristomate simplice, tenui, lutescente, margine dextro latè expanso, columellari triangulatim e basi dilatato, supernè latè reflexo.*

Long. 37, diam. $13\frac{1}{2}$ mill.

Hab. in Andibus Boliviae.

21. **BULIMUS VARICOSUS**, Pfr. *B. testá perforatá, oblongo-acuminatá, tenui, striatá, sub lente obsoletè decussatulá, parum nitente, albidd, strigis castaneis sparsis irregulariter variegatá; suturá irregulariter crenulatá; spirá elongato-conicá, acutiusculá; anfractibus 6, convexiusculis, varicosis (varicibus prioribus obtusis, ultimo acutè prominente), ultimo spirá vix brevior, basi subcompresso; columellá supernè subtortá; aperturá parum obliquá, oblongo-ovali; peristomate simplice, tenui, margine dextro latè expanso, columellari dilatato, applanato, patente.*

Long. 35, diam. 14 mill.

Hab. in republicâ Mexicanâ.

22. **BULIMUS ATTENUATUS**, Pfr. *B. testá subperforatá, fusiformi-oblongá, solidiusculá, sublævigatá, nitidá, albá, strigis latis, maculatim subinterruptis, spadiceis, ornatá; spirá conicá, acutiusculá; anfractibus ferè 6, convexiusculis, ultimo spiram paulo superante, anticè striato, basi attenuato; columellá intrante, tortá, funali; aperturá vix obliquá, ovali-oblongá; peristomate simplice, tenui, margine dextro breviter expanso, columellari breviter reflexo, supernè adnato.*

Long. 34, diam. 13 mill.

Hab. Vera Cruz.

23. **BULIMUS ELÆODES**, Pfr. *B. testá imperforatá, ovatá, tenuiusculá, rugoso-striatá, transversè submalleatá, diaphaná, nitidá, castaneo-olivaced; spirá conoideá, apice obtusá; anfractibus 4, convexiusculis, ultimo $\frac{1}{7}$ longitudinis subæquante, anticè descendente, basi subrotundato; columellá intrante, subtortá, rosed; aperturá subverticali, ovali, intus margaritaced; peristomate roseo, subincrassato, breviter reflexo, marginibus callo supra regionem umbilici dilatato junctis.*

Long. 36, diam. 18 mill.

Hab. in Andibus Novæ Granadæ.

24. **BULIMUS SCYTODES**, Pfr. *B. testá imperforatá, ovato-conicá, tenui, remotè striatá, undique minutè granulatá (granulis non seriatis), haud nitente, fuscá, maculis rufis majoribusque nigricantibus irregulariter adpersá, lineis longitudinalibus flexuosis, angulatis, luteis, sæpe geminatis vel anastomosantibus pictá; spirá brevi, convexo-conicá, obtusiusculá; anfractibus 4, convexiusculis,*

ultimo magno, $\frac{4}{5}$ longitudinis æquante, anticè deflexo, basi rotundato; columellâ filari, intrante, leviter arcuatâ; aperturâ parum obliquâ, ovali, intus concolore, nitidâ; peristomate simplice, tenui, rubello, undique breviter expanso.

Long. 35, diam. $17\frac{1}{2}$ mill.

Hab. in Andibus Novæ Granadæ.

25. **BULIMUS MELEAGRIS**, Pfr. *B. testâ imperforatâ, acuminato-ovatâ, tenuiusculâ, striis incrementi confertis et lineis spiralibus granulatâ, parum nitente, fulvâ, fusco-strigatâ et irregulariter guttatâ; spirâ conicâ, acutâ; suturâ subcrenulatâ; anfractibus $5\frac{1}{2}$, planiusculis, ultimo spiram paulo superante, convexiore, anticè descendente, basi rotundato; columellâ filari, leviter arcuatâ; aperturâ obliquâ, oblongo-ovalî, intus submargaritacæ; peristomate simplice, recto.*

Long. 31, diam. 14 mill.

Hab. in Andibus Novæ Granadæ.

26. **BULIMUS NIGROLIMBATUS**, Pfr. *B. testâ imperforatâ, ovatâ, tenui, rugosâ, striis confertis spiralibus subgranulatâ, parum nitidâ, olivaceo-fulvâ, strigis angustis castaneis variegatâ; spirâ conicâ, apice obtusâ; anfractibus 5, convexiusculis, ultimo spiram paulo superante, convexiore, basi rotundato; columellâ tenui, subcallosâ, subrecedente; aperturâ obliquâ, angulato-ovalî, intus plicatâ, margaritacæ; peristomate simplice, recto, obtuso, nigro-limbato.*

Long. 28, diam. 14 mill.

Hab. in Andibus Novæ Granadæ.

27. **BULIMUS DUBIUS**, Pfr. *B. testâ subperforatâ, oblongo-fusiformi, tenui, striatâ, nitidâ, albo-lutescente, strigis spadiceis subundulatis ornatâ; spirâ gracili, elongato-conicâ, apice obtusâ; suturâ submarginatâ; anfractibus 6, vix convexiusculis, ultimo spirâ paulo breviorè, basi attenuato, subcompresso; columellâ subverticali, fere ad basin aperturæ elongatâ; aperturâ vix obliquâ, oblongâ, utrinque angustatâ, intus concolore; peristomate simplice, recto, margine dextro levissime arcuato, columellari breviter fornicatim reflexo, subappresso.*

Long. 28, diam. 10 mill.

Hab. in Andibus Novæ Granadæ.

28. **BULIMUS NUBECULATUS**, Pfr. *B. testâ umbilicatâ, ovato-oblongâ, solidâ, sublevigatâ, nitidâ, pallidè cornè, saturatius nubeculatâ; spirâ conicâ, apice obtusâ; suturâ profundâ; anfractibus $5\frac{1}{2}$, convexis, ultimo $\frac{3}{7}$ longitudinis æquante, basi rotundato; columellâ verticali, ad basin aperturæ porrigente; aperturâ parum obliquâ, subellipticâ, basi subangulatâ, intus albidâ; peristomate simplice, recto, margine dextro perarcuato, columellari dilatato, fornicatim reflexo, libero.*

Long. 16, diam. $8\frac{1}{2}$ mill.

Hab. in Americâ centrali (Morelet.)

29. *BULIMUS EGANUS*, Pfr. *B. testá perforatá, conico-ovatá, tenui, lineis longitudinalibus et spiralibus sub lente obsolete decussatá, vix nitidulá, quasi pruinósá, fusco-corneá; spirá conicá, apice obtusá; suturá mediocri; anfractibus 5, modice convexis, ultimo spiram paulo superante, medio obsolete angulato, basi vix compressiusculo; aperturá obliquá, subellipticá, basi subangulatá; peristomate simplice, tenui, margine dextro repando, columellari sursum dilatato, reflexo, subappresso.*

Long. 13, diam. $6\frac{1}{2}$ mill.

Hab. Ega Brasilie.

30. *BULIMUS ACALLES*, Pfr. *B. testá subperforatá, ovato-conicá, tenui, longitudinaliter confertim striatá et distantius plicatá, haud nitente, fulvo-grised; spirá conicá, obtusiusculá, fulvescente; anfractibus $4\frac{1}{2}$, vix convexiusculis, ultimo spiram superante, basi rotundato; columellá vix arcuatá, subrecedente; aperturá obliquá, ovali, intus fulvo-carned; peristomate simplice, recto, margine dextro arcuato, columellari supernè reflexo, subadnato.*

Long. 10, diam. 6 mill.

Hab. in Andibus Peruvianis.

31. *BULIMUS DILLWYNIANUS*, Pfr. *B. testá perforatá, ovato-oblongá, solidá, ruditer striatá et irregulariter malleatá, vix nitidulá, carneá, fusculo punctatá et variegatá; spirá convexo-conicá, apice obtusulá; suturá impressá, marginatá; anfractibus 5, convexiusculis, ultimo spiram paulo superante, basi attenuato, subcompresso; columellá valide torto-plicatá; aperturá vix obliquá, sinuoso-oblongá; peristomate albo, expanso-reflexo, margine dextro leviter arcuato, columellari supernè dilatato, perforationem fere claudente.*

Long. 39, diam. $16\frac{1}{2}$ mill.

Hab. in Andibus Novæ Granadæ.

32. *ACHATINA FULGURATA*, Pfr. *A. testá conico-ovatá, tenui, striis longitudinalibus supernè confertis, in anfractu ultimo obsolete, lineisque spiralibus granulatá, corneo-luted, strigis latis fulguratis nigricantibus ornatá; spirá conicá, obtusá; anfractibus $6\frac{1}{2}$, superis parum convexis, ultimo ventricoso, lineis paucis spiralibus infra suturam granulato, infra medium sublævigato; columellá cærulescente, vix arcuatá, supra basin aperturæ elliptico-semi-ovali abruptè truncatá; peristomate simplice, recto.*

Long. 67, diam. 36 mill.

Hab. in Africâ occidentali.

33. *ACHATINA PLICATULA*, Pfr. *A. testá oblongo-fusiforimi, tenui, longitudinaliter confertim plicatulá, lineis spiralibus obsolete decussatá, diaphaná, parum nitente, fusco-carned; spirá elongato-conicá, apice obtusá; suturá marginatá, minutè crenulatá; anfractibus 7, vix convexiusculis, ultimo spiram æquante, paulo conveziore, basi attenuato; columellá callosá, vix arcuatá, ad basin aperturæ*

semiovali, intus nitidissimæ, abruptè truncatâ; peristomate simplice, tenui.

Long. 60, diam. 25 mill.

Hab. in Andibus Novæ Granadæ.

34. *ACHATINA ALBICANS*, Pfr. *A. testâ ovato-conicâ, tenui, longitudinaliter striatâ, lineis spiralibus infra medium anfractu ultimi obsoletis decussatâ, diaphanâ, vix nitidâ, albicante; spirâ pyramidatâ, obtusiusculâ; suturâ submarginatâ; anfractibus $6\frac{1}{2}$, vix convexiusculis, ultimo spirâ paulo longiore, basi vix attenuato; columellâ verticali, substrictâ, supra basin aperturæ rhombo-semiovalis horizontaliter et breviter truncatâ; peristomate simplice, recto, margine basali leviter arcuato.*

Long. 46, diam. 23 mill.

Hab. in Africâ occidentali.

35. *ACHATINA INORNATA*, Pfr. *A. testâ turrito-oblongâ, solidâ, confertim striatâ, pallide fulvâ, strigis saturatoribus variegatâ; spirâ turritâ, apice obtusiusculâ; suturâ lævi, confertissime crenulatâ; anfractibus $7\frac{1}{2}$, planiusculis, ultimo $\frac{2}{5}$ longitudinis subæquante, basi vix compresso, læviore; columellâ perarcuatâ, albo-callosâ, obliquè abruptè truncatâ; aperturâ sinuoso-semiovali, intus albâ; peristomate simplice, obtuso, margine dextro repando.*

Long. 28, diam. 11 mill.

Hab. in insulâ Ceylon.

36. *ACHATINA VIOLACEA*, Pfr. *A. testâ oblongo-conicâ, solidâ, striatâ, parum nitente, violacæ; spirâ elongato-conicâ, sursum rubellâ, apice obtusâ; suturâ lævi, marginatâ; anfractibus 7, convexiusculis, ultimo $\frac{2}{5}$ longitudinis subæquante, infra medium angulato; columellâ subarcuatâ, tenuiter callosâ, supra basin aperturæ obliquæ, angulato-ovalis breviter truncatâ; peristomate simplice, recto.*

Long. 38, diam. 18 mill.

Hab. in Africâ occidentali.

37. *ACHATINA (GLANDINA) ATTENUATA*, Pfr. *A. testâ oblongo-fusiforimi, gracili, tenui, lævigatâ, nitidissimâ, fulvâ, strigis arcuatis saturatoribus pictâ; spirâ elongato-conicâ; apice obtusiusculâ; suturâ lævi, subsimplice; anfractibus 7, planiusculis, ultimo $\frac{3}{5}$ longitudinis subæquante, basi attenuato; columellâ subcallosâ, leviter arcuatâ, subtortâ, basi obliquè truncatâ; aperturâ angustissimâ, oblongâ, supernè acutâ, prope basin sinistrorsum dilatâ; peristomate simplice, margine dextro repando.*

Long. 31, diam. 11 mill.

Hab. in Americâ centrali.

38. *HELIX SUBRUGATA*, Pfr. *H. testâ subperforatâ, depressoturbinatâ, distanter subrugatâ, pellucidâ, pallide cornæ; spirâ breviter conoideâ, acutiusculâ; anfractibus $5\frac{1}{2}$ —6, planiusculis, ultimo carinato, basi convexiusculo, lævigato; aperturâ diagonali,*

subangulato-lunari; *peristomate recto, acuto, margine columellari supernè vix reflexiusculo.*

Diam. maj. 13, min. $11\frac{1}{2}$, alt. $6\frac{1}{2}$ mill.

Hab. ad Clarence River, New South Wales.

39. *HELIX OTOSTOMA*, Pfr. *H. testá angustè umbilicatá, sublentiformi, solidá, acutè carinatá, striatá et subtiliter granulatá, olivaceo-nigricante vel castaneá; spirá subconoideo-convexá, obtusá; anfractibus 5, planiusculis, ultimo utrinque convexo, anticè subito deflexo, supra et infra carinam ascendentem profundè scrobiculato; aperturá perobliquá, subrhombéo-ensiformi, ringente; peristomate continuo, ad anfractum penultimum sinuoso, medio laminam longe intrantem emittente, margine supero dente conico obtusulo munito, basali medio subangulatim descendente, parte sinistrá dentem validum, compressum, parte dextrá dentem leviter et irregulariter bifurcatum gerente.*

Diam. maj. 31, min. 26, alt. 13 mill.

Hab. in Andibus Novæ Granadæ.

40. *HELIX ANNULIFERA*, Pfr. *H. testá umbilicatá, depressá, lentiformi, carinatá, solidá, striatá et minutè granulatá, saturate castaneá, ad carinam acutam latè albo-fasciatá; spirá breviter conoided, obtusá; anfractibus 5, planiusculis, ultimo anticè breviter deflexo, basi convexo, anticè strangulato et scrobiculato; umbilico mediocri; aperturá subhorizontali, irregulari, ringente; peristomate subincrassato, albo, continuo, margine parietali perarcuato, laminam elongatam intrantem emittente, in umbilicum descendente et cum basali parallelo juncto; margine basali usque ad medium substricto, acutè dentato, tum angulatim descendente, latè reflexo, lamina linguæformi latá munito, ad carinam ascendente, a dextro expanso canali angusto, supernè in anulum apertum desinente separato.*

Diam. maj. 34, min. 29, alt. 13 mill.

Hab. Panama.

This is the shell figured by Prof. E. Forbes in Trans. Zool. Soc. 1850, p. 53. Moll. t. 9. f. 4, under the name of *H. labyrinthus* var. *sipunculata*.

41. *HELIX GASKOINI*, Pfr. *H. testá umbilicatá, turbinato-depressá, solidá, obliquè rugato-plicatá, nitidá, albá; spirá conoideo-convexá, obtusá; anfractibus $5\frac{1}{2}$, convexis, ultimo anticè deflexo, medio carinato, basi convexiusculo, sublævigato; aperturá perobliquá, lanceolato-ovali; peristomate subincrassato, marginibus callo umbilicum mediocrem, pervium semioccultante junctis, supero breviter expanso, basali reflexo.*

Diam. maj. 31, min. 27, alt. 15 mill.

Hab. in insulâ Haiti (Sallé).

42. *BULIMUS TASMANICUS*, Pfr. *B. testá imperforatá, ovato-conicá, solidulá, rugoso-striatá, vix nitidá, albá; spirá conicá, acutiusculá, apice subcrubescente; anfractibus 5, vix convexiusculis, ultimo*

spiram paulo superante, basi rotundato; columellâ filari, subrecedente; aperturâ obliquâ, ovali, intus pallide fulvescente; peristomate simplice, recto, margine dextro leviter arcuato, columellari vix reflexiusculo, adnato.

Long. 25, diam. 11 mill.

Hab. Van Diemen's Land.

43. *BULIMUS BELCHERI*, Pfr. *B. testâ imperforatâ, ovato-oblongâ, solidâ, glabriusculâ, fulvido-albidâ, castaneo-fasciatâ; spirâ convexo-conicâ, obtusâ; anfractibus 5, convexiusculis, ultimo spirâ vix breviorè, ad suturam et basin latè, medio angustè fasciato; columellâ planâ, substrictâ, supra basin recedente; aperturâ obliquâ, truncato-oblongâ; peristomate subincrassato, nigricante, reflexiusculo.*

Long. 40, diam. $23\frac{1}{2}$ mill.

Hab. in insulis Philippinis.

44. *BULIMUS NEWCOMBIANUS*, Pfr. *B. testâ sinistrorsâ vix subperforatâ, ovato-turritâ, tenuiusculâ, plicis validis longitudinalibus sulcisque spiralibus sculptâ, olivaceo-fuscâ; spirâ turritâ, gracili, obtusulâ; anfractibus $5\frac{1}{2}$, summis planis, sequentibus convexiusculis, ultimo $\frac{3}{7}$ longitudinis subæquante, medio inflato; columellâ callosâ, substrictè recedente; peristomate recto, acuto, margine externo leviter arcuato, subrependo, columellari reflexo, subappresso.*

Long. $14\frac{1}{2}$, diam. $5\frac{1}{2}$ mill.

Hab. in insulis Sandwich.

This species is nearly allied to *Achatinella plicata*, Gould, which must be rather referred to the genus *Bulimus*, in which there being already a *Bulimus plicatus*, I have marked it in Mr. Cuming's Museum with the name of *Bulimus liratus*.

45. *BULIMUS PORPHYROSTOMUS*, Pfr. *B. testâ imperforatâ, ovato-conicâ, solidâ, rugoso-plicatâ, pallide carneâ, epidermide deciduâ fusco-olivaceâ indutâ; spirâ conicâ, obtusiusculâ; anfractibus 6, vix convexiusculis, ultimo spiram æquante, basi subattenuato; columellâ oblongè plicatâ, albâ; aperturâ verticali, angustâ, oblongâ, obliquè recedente, intus saturatè purpureo-castaneâ, nitidâ; peristomate incrassato, recto, albo, marginibus callo crasso, albo, medio tuberculifero junctis.*

Long. 62, diam. 28 mill.

Locality unknown.

46. *BULIMUS MICRODON*, Pfr. *B. testâ breviter rimatâ, subfusiformi-turritâ, obliquè costulato-striatâ, albidâ, strigis sparsis corneis, lacteo-marginatis ornatâ; spirâ elongatâ, apice acutiusculâ; anfractibus 12, vix convexiusculis, ultimo $\frac{2}{5}$ longitudinis subæquante, infra medium filoso-unicarinato; columellâ superne plicâ dentiformi munitâ; aperturâ vix obliquâ, truncato-ovalî; peristomate simplice, margine dextro breviter expanso, columellari dilatato, angulatim reflexo.*

Long. 15, diam. 4 mill.

Hab. in insulâ Jamaica.

47. *ACHATINA NEWCOMBI*, Pfr. *A. testá turritá, solidá, longitudinaliter rugoso-striatá, cingulis obtusè elevatis sculptá, castaned; spirá elongatá, sursum in conum convexiusculum, acuminatum attenuatá; anfractibus 9, planiusculis, ultimo $\frac{2}{7}$ longitudinis subæquante, infra medium angulato, fasciá pallide cincto, basi nigro; columellá lamellá angustá, tortá, albá munitá, basi subtruncatá; aperturá obliquá, subrhombéd; peristomate simplice, recto.*

Long. 71, diam. 19 mill.

Hab. in insulis Sandwich (*Newcomb*).

48. *ACHATINELLA MELAMPOIDES*, Pfr. *A. testá oblongá, solidá, ruguloso-striatá, vix nitidulá, saturatè fuscá; spirá convexo-conicá, acutiusculá; suturá impressá, submarginatá; anfractibus 6, vix convexiusculis, ultimo spirá paulo brevioré, basi rotundato; columellá medio acutè tuberculatá; aperturá verticali, sinuato-ovali; peristomate recto, acuto, intus labiato, margine columellari calloso, albo, appressè reflexo.*

Long. 13, diam. $5\frac{2}{3}$ mill.

Hab. in insulis Sandwich.

49. *PARTULA NODOSA*, Pfr. *P. testá perforatá, conico-ovatá, solidulá, obsoletè decussatulá, castaned, ad suturam fasciá latá albá et interdum nonnullis pallidis ornatá; spirá conicá, acutá; anfractibus $5\frac{1}{2}$, planiusculis, ultimo spiram subæquante; columellá supernè profundè plicatá, tum subnodosá; aperturá subverticali, oblongá, angustá; peristomate extus vix expanso, intus callo acutè prominente munito, marginibus subparallelis, dextro strictiusculo.*

Long. 16, diam. 8 mill.

Hab. in insulis Tahiti et Navigatorum.

50. *PARTULA FILOSA*, Pfr. *P. testá perforatá, conico-ovatá, solidá, lineis impressis spiralibus, confertis sculptá, haud nitente, castaned, strigis filaribus cinereis ornatá; spirá conicá, obtusiusculá; anfractibus 5, planiusculis, ultimo spiram æquante, convexiore; columellá supernè vix plicatá; aperturá parum obliquá, subtriangulari-semiovali; peristomate expansiusculo, intus callo crasso prominente munito.*

Long. 16, diam. $8\frac{1}{2}$ mill.

Hab. in insulis Navigatorum.

51. *HELIX GLABRIUSCULA*, Pfr. *H. testá perforatá, conoideo-semiglobosá, tenui, lævigatá, pellucidá, nitente, lutescente, rufo angulato-lineatá; spirá convexo-conoided, acutiusculá; anfractibus $5\frac{1}{2}$, convexiusculis, ultimo non descendente, basi planiusculo; aperturá obliquá, subdepressá, lunari; peristomate simplice, recto, margine columellari declivi, supernè vix reflexiusculo.*

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

Hab. in Nová Seelandiá (*Strange*).

52. **HELIX SOLIDA**, Pfr. *H. testá imperforatá, conoideo-semiglobosá, crassá, striatá, fulvescente, epidermide tenui, fuscá, non nitente obductá; spirá convexá, obtusá, apice rubellá; anfractibus 5, convexiusculis, ultimo convexiore, dimidium altitudinis formante, medio obsolete angulato, anticè vix descendente; columellá strictá, declivi, latá, albidá; aperturá obliquá, subtetragono-lunari, intus albá; peristomate subincrassato, vix expansiusculo, fusco-limbato.*

Diam. maj. 37, min. 33, alt. 27 mill.

Hab. prope Nanjan, insulæ Mindoro.

53. **HELIX OBLITA**, Pfr. *H. testá perforatá, sublenticulari, tenuissimá, supernè confertim arcuato-plicatá, pellucidè, pallidè corned; spirá depresso-turbinatá, acutiusculá; anfractibus 6, vix convexiusculis, ultimo non descendente, medio obtusè denticulato-carinato, basi convexiore, radiatim striato; aperturá parum obliquá, lunari; peristomate simplice, tenui, recto, margine basali leviter arcuato, ad perforationem breviter reflexo.*

Diam. maj. 23, min. 20, alt. $11\frac{1}{2}$ mill.

Hab. in Indiâ.

54. **HELIX VILIS**, Pfr. *H. testá umbilicatá, depresso-globosá, tenuiusculá, granulato-striatá, corned; spirá breviter conoideá, acutiusculá; anfractibus 5, vix convexiusculis, celeriter accrescentibus, ultimo anticè deflexo, peripheriá obsolete subangulato, basi convexo; umbilico angusto, non pervio; aperturá diagonali, fere circulari; peristomate intus valide labiato, marginibus approximatis, columellari supernè dilatato, patente.*

Diam. maj. 11, min. 9, alt. 6 mill.

Hab. — ?

September 9, 1851.

Sir Roderick Impey Murchison, G.C. St.S., F.R.S. &c.,
in the Chair.

Professor OWEN read an elaborate paper "On the Skeleton of *Trogodytes Gorilla*," which will be published in the Transactions of the Society.

November 11, 1851.

W. J. Broderip, Esq., Vice-President, in the Chair.

Professor OWEN read a paper "On the Capacity of the Cranium in the Negro, the Orang, and the Gorilla," which will be published in the Transactions of the Society for the present year.

The following papers were also read:—

1. DESCRIPTIONS OF SIXTEEN NEW SPECIES OF RISSOINA, A GENUS OF MARINE GASTEROPODOUS MOLLUSKS, FROM THE CUMINGIAN COLLECTION. BY ARTHUR ADAMS, SURGEON R.N., F.L.S. ETC.

RISSOINA, D'Orbigny.

About eighteen species of this genus, as restricted by M. d'Orbigny, have been already described, inhabiting various countries. Those here named are a portion of the discoveries made by Mr. Cuming among the islands of the Philippine Archipelago, and are many of them of considerable size; and it is in these that the peculiarity of operculum is best seen.

The process of the semiovate, horny, subspiral operculum, first pointed out by D'Orbigny, is sometimes very long and slender, and very much resembles in appearance the analogous appendage of the operculum of *Nerita* and *Neritina*. The genus *Jeffreysia* of Alder, or *Rissoella* of Gray, has a similar appendage, but the position of the eyes, and the peculiar structure of the fore part of the head, place the latter genus in a different family, viz. *Pyramidellidæ*. The *Rissoinæ* may also readily be known from the neighbouring genus *Rissoa*, by the aperture being somewhat channeled anteriorly, whereas in *Rissoa* it is continuous and entire. The nature of the animal resembles *Rissoa*, according to D'Orbigny, who places the genus among the *Melaniadæ*.

1. RISSOINA PLICATA, A. Adams. *R. testâ turrato-subulatâ, subpyramidali, albâ, sordidâ, anfractibus octo, planis, longitudinaliter valdè plicatâ, transversim striatâ, plicis elevatis, posticè subangulatis, interstitiis transversim striatis; aperturâ semiovatâ, anticè subcanaliculatâ; labro anticè subdilatato, margine incrassato.*

Hab. Isle of Masbate. Mus. Cuming.

2. RISSOINA FASCIATA, A. Adams. *R. testâ subulato-turratâ, solidâ, sordidè albâ, rufo-fusco fasciatâ, anfractibus octo, convexiusculis, transversim tenuissimè (sub lente) striatâ, longitudinaliter plicatâ, plicis obliquis, æqualibus, subdistantibus; aperturâ semiovatâ, anticè subcanaliculatâ; labro subdilatato.*

Hab. Sydney, under stones, low water (Mr. Strange). Mus. Cuming.

3. *RISSOINA SCALARIANA*, A. Adams. *R. testá subulato-turritá, albá, solidá, anfractibus octo, convexiusculis, transversim tenuissimè striatá, longitudinaliter costatá, costis elevatis, æqualibus, subdistantibus, anfractu ultimo anticè callo circumdato; aperturá semiovali, anticè subcanaliculatá; labio anticè callo desinente; labro flexuoso, anticè subproducto.*
Hab. Isle of Burias, Philippines. Mus. Cuming.
4. *RISSOINA PYRAMIDALIS*, A. Adams. *R. testá turrito-pyramidalis, sordidè albá, solidá, anfractibus octo, planiusculis, transversim tenuiter striatá, longitudinaliter plicatá, plicis obliquis, confertis, subelevatis, interstitiis transversim striatis; aperturá semiovatá, anticè subcanaliculatá; labio anticè callo desinente; labro subdilatato, incrassato.*
Hab. Isle of Baclayon. Mus. Cuming.
5. *RISSOINA D'ORBIGNYI*, A. Adams. *R. testá subulato-turritá, albidá, subpellucidá; anfractibus decem, convexiusculis, supremis costellatis, lineolis elevatis, transversis, et longitudinalibus, decussatá; aperturá semiovatá, anticè subcanaliculatá; labio anticè subcalloso; labro dilatato, subreflexo, margine flexuoso, subacuto.*
Hab. Isle of Luzon. Mus. Cuming.
6. *RISSOINA CLATHRATA*, A. Adams. *R. testá subulato-turritá, albá, solidá, anfractibus convexiusculis, lineis elevatis, longitudinalibus et transversis decussatis, valde clathratá, anfractu ultimo anticè sulco transverso instructo; aperturá semiovatá, anticè subcanaliculatá; labro flexuoso, anticè producto, margine extus varicoso.*
Hab. Isle of Bohol. Mus. Cuming.
7. *RISSOINA MICANS*, A. Adams. *R. testá turrito-subulatá, albá, solidá, nitidá, anfractibus convexis, novem, longitudinaliter plicatá, plicis elevatis, subdistantibus, æqualibus, interstitiis transversim striatis, anfractu ultimo anticè valde sulcato; aperturá semiovatá, anticè subcanaliculatá; labro flexuoso, anticè subproducto, extus varicoso.*
Hab. Island of Mindanao. Mus. Cuming.
8. *RISSOINA NIVEA*, A. Adams. *R. testá parvâ, subulato-turritá, subpellucidá, nived, subnitidá, anfractibus convexiusculis, longitudinaliter plicatá, plicis obliquis, anticè subobsoletis; aperturá semiovatá, anticè subcanaliculatá; labro subdilatato, extus incrassato.*
Hab. Port Lincoln, Australia. Mus. Cuming.
9. *RISSOINA MONILIS*, A. Adams. *R. testá turrito-subulatá, solidá, fulvá, anfractibus septem, planis, granulis moniliformibus ad suturas, longitudinaliter plicatá, plicis confertis, angustis, æqualibus, interstitiis punctato-clathratis; aperturá*

semiovatá, anticè subcanaliculatá; labio subincrassato; labro extus valde varicoso, margine transversim striato.
Hab. Philippine islands. Mus. Cuming.

10. *RISSOINA BELLULA*, A. Adams. *R. testá subulato-turritá, albá, semipellucidá; anfractibus octo, convexiusculis, cingillis transversis, elevatis, granulosis, interstitiis longitudinaliter concinnè clathratis, ornatá; anfractu ultimo sulco profundo instructo; aperturá semiovatá, anticè subcanaliculatá; labio anticè callo terminato; labro flexuoso, margine extus valde varicoso.*

Hab. Isle of Calapan. Mus. Cuming.

11. *RISSOINA STRIOLATA*, A. Adams. *R. testá subulato-turritá, albá, tenui, pellucidá; anfractibus undecim, supremis longitudinaliter plicatis, planulatis, prope suturas subangulatis; transversim striatá, striolis confertis concentricis; aperturá semiovatá, anticè subcanaliculatá; labio posticè incrassato, anticè callo desinente; labro dilatato, margine incrassato, sub-reflexo.*

Hab. Baclayon island, Philippines. Mus. Cuming.

12. *RISSOINA COSTATA*, A. Adams. *R. testá subulato-turritá, albá, opacá, solidá, anfractibus septem, convexiusculis, longitudinaliter costatá, costis crassis, elevatis, posticè subangulatis, anfractu ultimo anticè sulco transverso valido instructo; aperturá semiovatá, anticè subcanaliculatá; labio anticè tuberculo terminato; labro subdilatato, margine varicoso, flexuoso.*

Hab. Cobiga, Peru. Mus. Cuming.

13. *RISSOINA NITIDA*, A. Adams. *R. testá turrito-subulatá, albá, solidá, nitidá, anfractibus novem, convexiusculis, longitudinaliter costatá, transversim liratá, liris ad costas nodulosis; aperturá semiovatá, anticè subcanaliculatá; labio anticè callo desinente; labro extus incrassato, margine subacuto, anticè diaphano producto.*

Hab. Isle of Camaguing. Mus. Cuming.

14. *RISSOINA CONCINNA*, A. Adams. *R. testá subulato-turritá, albá, solidá, nitidá, anfractibus septem, planiusculis, longitudinaliter plicatá, plicis anticè evanidis, transversim striatá, striis creberrimis, confertis; aperturá semiovatá, anticè subcanaliculatá; labio calloso; labro margine valde incrassato et rotundato.*

Hab. Cagayan, Philippines. Mus. Cuming.

15. *RISSOINA NODICINCTA*, A. Adams. *R. testá subulato-turritá, albá, solidá, anfractibus 10-12, convexis, longitudinaliter plicatá, plicis angustis, distantibus, transversim tenuissimè striatá, in medio anfractuum cingulá elevatá ad plicas nodosá, ornatá, suturá nodulis moniliformibus cinctá; aperturá semiovatá,*

anticè subcanaliculatá; labio anticè callo terminato; labro dilatato, extus incrassato, margine flexuoso.

Hab. Isle of Capul, Philippines. Mus. Cuming.

16. *RISSOINA CÆLATA*, A. Adams. *R. testá subulato-turritá, albidá, solidá; anfractibus octo, convexiusculis, supremis clathratis, ultimo cingulis elevatis, æqualibus, subdistantibus, transversis, interstitiis lineis elevatis, longitudinalibus et transversis, decussatim ornato; aperturá semiellipticá, anticè subcanaliculatá; labio calloso; labro anticè dilatato, margine incrassato, subreflexo.*

Hab. Siquijor. Mus. Cuming.

The two following species are true *Rissoæ*, characterized by the simple aperture, which is not channeled in front, and by the absence of the calcareous appendage to the operculum. Many species of small shells have been inaccurately referred to *Rissoa*, some of which belong, however, to entirely different families.

RISSOA BELLA, A. Adams. *R. testá turrito-subulatá, albá, solidá; anfractibus quinque, planiusculis; spirá apice obtuso, lineis transversis, elevatis, concentricis, confertis, ornata; aperturá ovali, anticè integrá; labio subcalloso; labro subdilatato, extus marginato, margine flexuoso.*

Hab. Philippine islands. Mus. Cuming.

RISSOA ELEGANS, A. Adams. *R. testá subulato-turritá, albá, semipellucidá; anfractibus 7, convexiusculis; suturá canaliculatá, lineis elevatis transversis concentricis et longitudinalibus concinnè decussatá; aperturá ovali, subproductá, anticè integrá; labio calloso; labro anticè dilatato, extus varicoso, margine acuto, subreflexo.*

Hab. Philippines. Mus. Cuming.

2. DESCRIPTIONS OF SEVERAL NEW SPECIES OF MUREX, RISSOINA, PLANAXIS, AND EULIMA, FROM THE CUMINGIAN COLLECTION. BY ARTHUR ADAMS, F.L.S. ETC.

1. *MUREX IOSTOMUS*, A. Adams. *M. testá ovato-fusiforimi; spirá acuminatá; anfractibus planulatis, squamulosis, spinis acutis, in serie elevato disposito ornatis, cineré; anfractu ultimo spinis elevatis, bifidis, in seriebus quatuor dispositis instructo, varicibus sex, longitudinalibus; aperturá ovato-oblongá, intus violaceá; labio subtuberculari; labro fimbriato.*

Hab. Philippines. Mus. Cuming.

2. *MUREX SOLIDUS*, A. Adams. *M. testá solidá, profundè umbilicatá, albá; spirá brevi, obtusá; anfractibus planulatis, longitudinaliter plicato-varicosis (varicibus in anfractu ultimo 7), transversim liratis; liris, ad plicas, incrassatis, interstitiis lon-*

gitudinaliter cancellatis; aperturá subrotundatá; canali recto, aperturam æquante; labro simplici, intus lævi.
Hab. Ichiboe, West Africa. Mus. Cuming.

3. MUREX EURACANTHUS, A. Adams. *M. testá ovato-fusiforimi, umbilicatá; spirá acuminatá; anfractibus planis, serie tuberculorum spiniformium in medio dorsi, albá, spinis et parte anticá rubro tinctis; anfractu ultimo liris squamulosis, et spinis tubulosis, longis, in seriebus duobus dispositis, ornato; aperturá ovatá, oblongá; labio anticè producto et tuberculato; canali brevi, subrecurvá.*

Hab. —? Mus. Cuming.

Figured by Mr. Reeve as *M. noduliferus*, which is very different from the present species.

4. MUREX EXASPERATUS, A. Adams. *M. testá ovato-fusiforimi, umbilicatá, albá, nitidá; spirá acuminatá; anfractibus angulatis, in medio longitudinaliter plicato-varicosá, transversim liratá; liris subspinulosis ad plicas; aperturá ovatá; canali mediocri, subincurvato; labro intus sulcato.*

Hab. —? Mus. Cuming.

5. MUREX LIGNARIUS, A. Adams. *M. testá ovato-fusiforimi, subumbilicatá; spirá acuminatá, rufo-fuscá; anfractibus superne excavatis, in medio liris duabus, elevatis, nodulosis; transversim liratá, liris elevatis rugulosis, inæqualibus, longitudinaliter trivaricosá, varicibus, in medio, spinis duabus, elevatis, fimbriatis; aperturá ovato-rotundatá, intus albá; canali aperturam æquante, subrecurvato.*

Hab. West Africa. Mus. Cuming.

6. MUREX FUSIFORMIS, A. Adams. *M. testá fusiformi, cinereá, fulvo variegatá; spirá productá; anfractibus rotundis; varicibus longitudinalibus, subelevatis, nodospinosis, et lineis elevatis, transversis, latè clathratá; aperturá oblongo-ovatá; canali aperturam æquante, recto; labro extus varicoso, intus sulcato.*

Hab. Africa. Mus. Cuming.

7. MUREX SPINOSUS, A. Adams. *M. testá ovatá, umbilicatá, albá, lineis rufo-fuscis transversis ornatá; anfractibus rotundis, transversim liratá; varicibus longitudinalibus regularibus (6 in anfractu ultimo), spinis longis, rectis, armatis; canali subrecurvato, aperturam æquante; aperturá ovato-rotundatá.*

Hab. —? Mus. Cuming.

8. MUREX SEROTINUS, A. Adams. *M. testá ovato-fusiforimi; spirá peracutá, serotiná, longitudinaliter plicatá, transversim liratá; liris, ad plicas, nodulosis; aperturá ovatá, oblongá; labio anticè bituberculato; labro extus incrassato, margine dentato, intus lirato; canali mediocri, subrecurvato.*

Hab. —? Mus. Cuming.

9. **MUREX BIFASCIATUS**, A. Adams. *M. testá ventricosá, profundè umbilicatá; spirá brevi; anfractibus rotundatis; albá; anfractu ultimo fasciis duabus, latis, rufo-fuscis ornato, transversim elevatè liratá, liris rugosis; longitudinaliter varicibus æqualibus (in anfractu ultimo 9) subelevatis, rotundatis, fimbriatis; aperturá ovato-rotundatá; labio subproducto, fulvo; canali aperturá breviorè, valde recurvato.*

Hab. Senegal. Mus. Cuming.

10. **MUREX CRASSUS**, A. Adams. *M. testá ovato-fusiforimi, umbilicatá, solidá, fulvá; spirá mediocri; anfractibus rotundatis, supernè angulatis, obsoletè transversim liratá, varicibus crassis, distantibus, irregularibus (4 in ultimo anfractu), ornatá; aperturá ovatá, intus violacèá; labro extus incrassato, intus dentato.*

Hab. China. Mus. Cuming.

11. **MUREX PAGODUS**, A. Adams. *M. testá ovato-fusiforimi; spirá acuminatá, lævi, albá, anticè maculis fuscis sparsim pictá; anfractibus septem, concavis, seriebus spinarum ornatis, spinis regularibus, tubulosis, recurvatis, marginibus fimbriatis; aperturá subrotundatá; columellá lævi; canali recurvato, ad dextram inclinato, aperturam æquante.*

Hab. —? Mus. Cuming.

12. **MUREX EXCAVATUS**, A. Adams. *M. testá ovato-fusiforimi, subumbilicatá, albá, solidá; spirá acuminatá; anfractibus concavis (quasi excavatis) ad partem anticam; in medio angulatis, longitudinaliter plicatá, transversim liratá, liris ad plicas nodulosis; anfractu ultimo liris duabus elevatis ornato; aperturá semiovali; canali mediocri, vix recto; labro intus sulcato.*

Hab. —? Mus. Cuming.

13. **MUREX INORNATUS**, A. Adams. *M. testá fusiforimi, valde umbilicatá; spirá acuminatá; anfractibus rotundis, albidá, liris transversis, elevatis, squamulosis, et varicibus longitudinalibus, rotundatis (in anfractu ultimo 7), ornatá; aperturá ovali; canali subrecurvato, aperturam æquante; labro extus fimbriato, intus lirato.*

Hab. —? Mus. Cuming.

14. **MUREX OBELISCUS**, A. Adams. *M. testá ovato-pyramidali, subtrigonalis; spirá elevatá; anfractibus planis, apice obtuso, albá, seriebus transversis macularum rufo-fuscarum ornatá, transversim liratá, liris subgranosis, varicibus tribus, longitudinalibus, varice intermedio, brevi, triangulari, ad partem posticam instructá; aperturá ovatá; canali valde recurvato.*

Hab. —? Mus. Cuming.

15. **MUREX LYRATUS**, A. Adams. *M. testá ovato-fusiforimi, subumbilicatá; spirá acuminatá; anfractibus planiusculis, albá, varicibus rufo-fuscis ornatá, transversim liratá; liris trans-*

versis, angustis, asperulatis, varicibus longitudinalibus, rotundatis, subfimbriatis (7 in ultimo anfractu); aperturá subrotundatá, intus albá; columellá posticè callosá; canali brevi, recto, vix clauso; labro intus lirato.

Hab. —? Mus. Cuming.

16. MUREX PULCHER, A. Adams. *M. testá ovato-fusifor-
mi, subtrigonalí; spirá acuminatá; anfractibus rotundatis, nodu-
losis, varicibus tribus subspinosis; liris transversis, elevatis,
anfractu ultimo varicibus prominentibus, subspinosis, ornato;
varicibus anticè fimbriatis et spinosis; aperturá ovato-rotundá;
labio tuberculato; labro intus crenato-lirato, canali perlongo,
subrecurvo, vix clauso.*

Hab. St. Croix, 60 fathoms; *M. Sueuson.* Mus. Cuming.

17. MUREX SINGAPORENSIS, A. Adams. *M. testá ovato-fusi-
formi; spirá acuminatá; anfractibus rotundatis; fulvá, longi-
tudinaliter plicatá, plicis rotundis, transversim liratá, liris
asperulatis, squamulis aculeatis obsitis; aperturá ovatá, oblongá,
intus lividá; canali aperturam æquante, subreflexo; labro intus
dentato.*

Hab. Singapore. Mus. Cuming.

18. MUREX NIVEUS, A. Adams. *M. testá ovatá, umbilicatá,
nivedá; spirá brevi, acuminatá; anfractibus rotundatis; longi-
tudinaliter plicatá, plicis rotundis, prominentibus, crassis
(8-10 in anfractu ultimo), transversim liratá, liris squamulis,
confertis, longitudinalibus, obsitis; aperturá ovatá, oblongá;
canali brevi, subrectá; labro intus lirato.*

Hab. —? Mus. Cuming.

19. MUREX CUMINGII, A. Adams. *M. testá oblongo-fusifor-
mi, trivariicosá; spirá subproductá, anfractibus rotundatis, pallidè
rufo-fuscá, fasciis tribus, transversis, rufo-fuscis, ornata; vari-
cibus longitudinalibus, tribus, continuis, obtusis, liris intermediis
nodosis, liris transversis inæqualibus, rufo-fusco articulatis, in-
structá; aperturá ovali, labro intus crenato-lirato extus fimbriato,
fimbriis non squamulosis, canali clauso, anticè recurvato.*

Hab. Philippines. Mus. Cuming.

Somewhat closely allied to *M. triquetra* of Born.

20. MITRA MARQUESANA, A. Adams. *M. testá ovato-fusifor-
mi, anfractibus planis, spirá acutá, carneolá, maculis albis et lineis un-
dulatis, longitudinalibus rufo-fuscis, eleganter pictá, longitudinali-
ter substriatá, transversim liratá, interstitiis valde punctatis;
aperturá spiram majorem æquante, columellá plicis quinque in-
structá, labro margine crenato.*

Hab. Marquesas. Mus. Cuming.

Markings very similar to those of *M. serpentina*, Lamk. The *Mitra* figured in Mr. Reeve's Monograph, as *M. nebulosa* of Swainson, is quite different from that species, and requires therefore a change of name; I have called it *M. propinqua*.

21. *ANCILLARIA LINEOLATA*, A. Adams. *A. testá ovato-fusiformi; spirá brevi, subacutá, suturis albis, pallidè fulvá, lineis longitudinalibus, confertis, fuscis, ornatá; anfractu ultimo cingulá elevatá transversá, ad marginem labri, in dente acuto desinente; aperturá oblongá; columellá tortuosá, albá, anticè plicis obliquis instructá.*

Hab. —? Mus. Cuming.

A very pretty species, distinguished by the fine longitudinal brown lines.

22. *PLANAXIS OBSCURA*, A. Adams. *P. testá ovato-conicá, epidermide fusco obtectá; fusco-rufescente; anfractibus planis, suturá distinctá, transversim valde sulcatá, interstitiis longitudinaliter striatis; aperturá ovato-oblongá, columellá longitudinaliter sulcatá; labro subdilatato, margine acuto, intus valde lirato.*

Hab. —? Mus. Cuming.

23. *PLANAXIS FULVA*, A. Adams. *P. testá ovato-conicá, fulvá; spirá acuminatá, apice acuto, anfractibus planis, ultimo angulato, transversim tenuiter striatá; aperturá ovato-oblongá; columellá incurvatá, anticè callosá; labro margine subdilatato, extus incrassato, intus lirato.*

Hab. Swan River. Mus. Cuming.

Allied to *P. mollis*, Sowerby, but the last whorl is angulated.

24. *PLANAXIS ZONATA*, A. Adams. *P. testá ovato-conicá, rimatá, glabrá, nitidá; spirá acuminatá; anfractibus convexiusculis, pallidè lutescente, zonulá transversá rufo-fuscá cinctá ad suturas, et, in anfractu ultimo, fasciis duabus transversis ornatá, transversim tenuissimè striatá; aperturá ovatá; columellá incurvatá; labro subdilatato, intus lirato.*

Hab. Calapan, Philippines. Mus. Cuming.

25. *PLANAXIS CINGULATA*, A. Adams. *P. testá ovato-conicá, solidá, rimatá; spirá acutá; anfractibus convexiusculis, fulvá, zonulis rufo-fuscis transversis, prope suturas, duplicatis, ornatá, longitudinaliter tenuissimè striatá, transversim valde sulcatá; aperturá ovato-oblongá, coarctatá; columellá incurvatá; labro extus incrassato, intus dentato-lirato.*

Hab. China Seas. Mus. Cuming.

Species collected by me during the voyage of H.M.S. Samarang.

26. *PLANAXIS SUCCINCTA*, A. Adams. *P. testá ovato-conicá, spirá acuminatá, apice acuto, anfractibus convexiusculis, pallidè fuscá, fasciis linearibus, transversis, multis, rufo-fuscis, ornatá, longitudinaliter substriatá; anfractu ultimo transversim sulcato; aperturá ovato-oblongá; columellá fuscá; labro intus sulcato.*

Hab. Peru, and the West Indies. Mus. Cuming.

Allied to *P. lineata* of Montagu, but of larger growth and different form.

27. *PLANAXIS BUCCINEA*, A. Adams. *P. testá ovatá; spirá brevi, acutá, apice obtuso, rubro; anfractibus planis, plicato-granulosis; nigro-fuscá, cingillis articulatis, transversis, ornatá; longitudinaliter substriatá, transversim valde sulcatá; aperturá ovato-oblongá; columellá excavatá; labro intus creno-plicato, extus incrassato, varicoso.*

Hab. West Indies. Mus. Cuming.

28. *PLANAXIS LABIOSA*, A. Adams. *P. testá ovato-conicá, spirá acutá, anfractibus convexiusculis, atro-purpureá, fasciis pallidis (5-6) transversis, in anfractu ultimo; transversim striatá; aperturá ovato-oblongá; columellá incurvatá et dilatátá; labro dilatato, margine reflexo et incrassato, intus lirato.*

Hab. Sandwich Islands. Mus. Cuming.

29. *LAGENA CALIFORNICA*, A. Adams. *L. testá solidá, ovato-fusiformi; spirá, in medio, tumidá, anfractibus planiusculis, infernè nodospinosis, albá, cingulis transversis, elevatis, rufo-fuscis articulatis ornatá, interstitiis obscuris, fuscis; anfractu ultimo longitudinaliter plicato, seriebus duobus tuberculorum subspinosorum instructo; aperturá ovato-oblongá; columellá carneá, plicis quatuor, albis, obliquis; labro intus lirato.*

Hab. California. Mus. Cuming.

Allied to *L. picta*, Lamk., but of different form and markings.

30. *NASSA AUSTRALIS*, A. Adams. *N. testá ovato-fusiformi; spirá acuminatá, pallidè olivaceá, fasciis tribus, transversis, fuscis, ornatá, longitudinaliter valde plicatá, interstitiis valde transversim sulcatis; anfractu ultimo anticè liris transversis subgranosis, posticè, prope suturam, tuberculis moniliformibus ornato; aperturá ovato-rotundatá, intus fuscá, et dentato-liratá; labro margine albo, posticè valde inflexo et dentato.*

Hab. Australia. Mus. Cuming.

November 25, 1851.

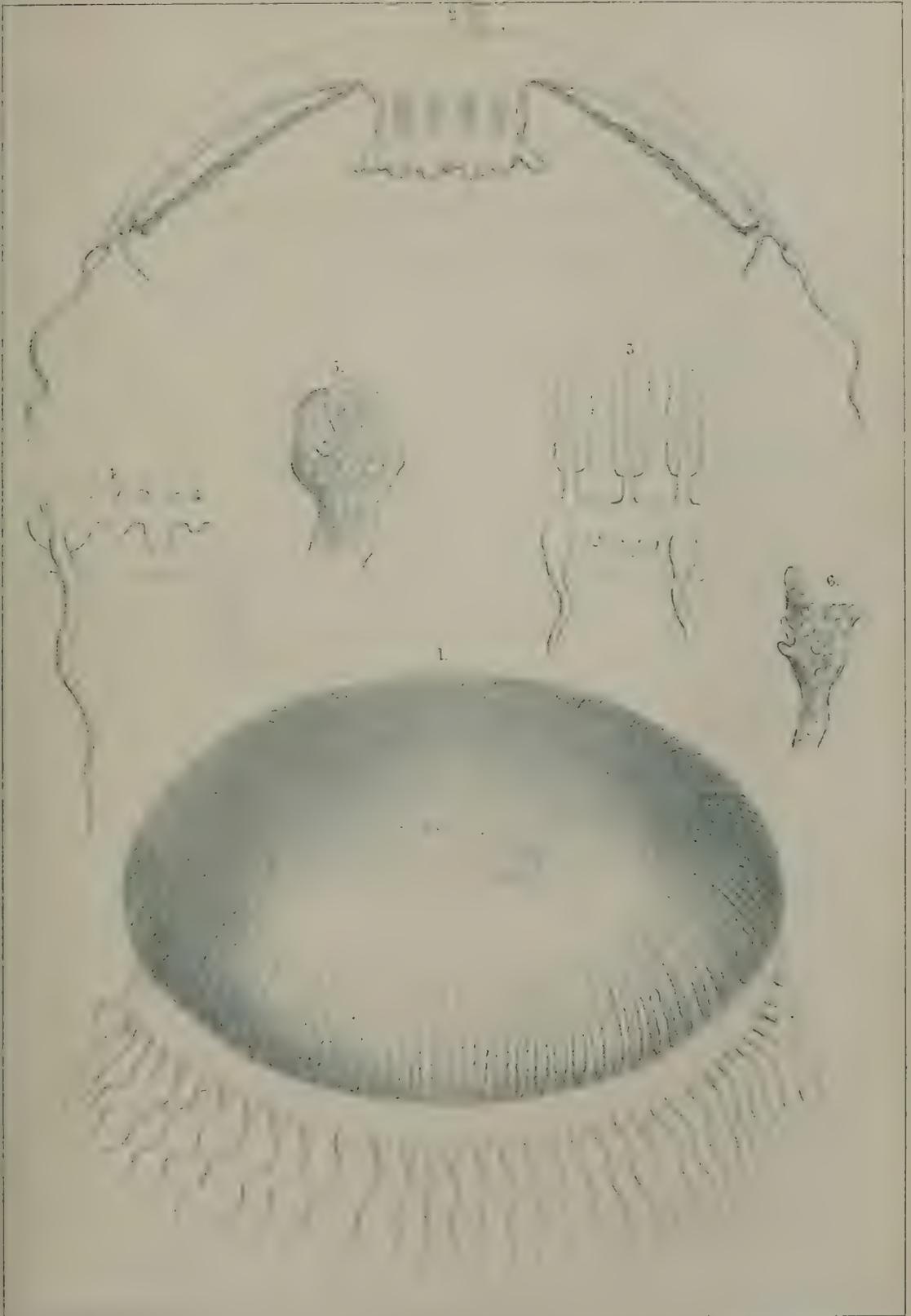
W. J. Broderip, Esq., F.R.S., Vice-President, in the Chair.

The following papers were read:—

1. ON A SPECIES OF *ÆQUOREA* INHABITING THE BRITISH SEAS.
BY PROF. EDWARD FORBES, F.R.S.

(Radiata, Pl. IV.)

In the first volume of the 'Wernerian Memoirs' a "*Medusa æquorea*" is mentioned by Prof. Jameson as an inhabitant of the seas of the north of Scotland, and in the 'History of British Animals' by Dr. Fleming, the name "*Geryonia æquorea*" is used to designate it. As no



description or figure was ever published of this creature, and as the diagnosis of the "*Medusa*" to which Linnæus applied the name of "*æquorea*" was too brief for identification, it is possible that some one out of several *Acalephæ* inhabiting our seas might have been intended.

It is also possible, however, that a true *Æquorea* had been seen, for there is a most beautiful species of this genus an inhabitant of the Scottish seas. I met with it for the first time in August 1850, when exploring the Minch (the channel between the outer Hebrides and Skye) in company with Mr. MacAndrew and Prof. Goodsir, with the advantages of the appliances for natural-history research with which Mr. MacAndrew has furnished his yacht, the *Naiad*. As there is neither figure nor description of any British *Æquorea* to be found, and as considerable obscurity hangs around the Atlantic species of the genus, I have drawn up the following notice.

A number of individuals were observed: they were swimming near the surface of the sea on a very calm and hot day: they varied in size, from three inches in diameter to as much as half a foot or more: they resembled broad shield-shaped discs of glass, slightly prominent above, incurved at their sides and concave beneath: through the discs were seen shining the pendent brown-tinged stomach, and around it, like so many equal stripes or rays proceeding to the margin, the linear violet genital glands: from the margin depended highly-contractile violet tentacles.

The umbrella is broad, shallow, and disc-shaped, its outline describing a gentle curve. It is hyaline, not very thick, and quite smooth. The central portion of its interior, occupying about one-fourth of its diameter, has dependent from it the membranous veil-like walls of the stomach; these hang not quite so low as on a line with the margins of the umbrella. The stomach, although equal in width throughout, may be divided into two regions, an upper and a lower. The latter has a furbelowed and somewhat scalloped, but not ciliated margin, and may be regarded as the mouth. The former is marked internally by eight bands of transverse fibres, separated by as many longitudinal ones; these appear to be muscular. The whole of the membrane of the stomach and lips is tinged with pale foxy brown, partly disposed in streaks. Around the upper and inner margin of the cavity are the orifices of the gastro-vascular canals; these run, without dividing or anastomosing, to the circular marginal canal of the umbrella. In a specimen five inches across, they were 136 in number. From the lower side of each canal depend two narrow, rather wavy membranes of a violet colour, causing the ray-like streaks that shine so conspicuously through the disc; each of these arises gradually near the superior extremity of a gastro-vascular canal, and ceases abruptly at about one-eighth of the entire length of the canal from the margin: they are the genital glands. At the junction of each alternate gastro-vascular canal with the circular marginal one is the bulb-like base of a marginal tentacle: these tentacles arise from ovate bulbs and gradually taper to a fine point. The bulbs are pale,

but the tentacle is tinged with violet. Opposite the intermediate canal there is a smaller bulb with a tentacle, hollow and containing corpuscles in its centre, and on each side, between it and the neighbouring tentacle, is a still smaller lobe-like body. Along the upper margin of the circular canal are very minute pedunculated organs that move to and fro. On the bulb at the base of the tentacula is a minute tongue-shaped process at the base of a depression; at its own base the ocellus or rudimentary eye is lodged. When seen laterally, the peculiar tissue of the base of the tentacles is observed to be set obliquely. Within the umbrella, from a line just opposite the tentacular circle, a short but rather broad veil with a simple edge is seen to depend; this veil is tinged with pale brown. A band of motor tissue, forming a sphincter to the umbrella, accompanies the circular vessel.

According to the size of the example, the number of genital glands and of tentacula varied: they increase with age. The smallest number of tentacula seen was sixteen, and there is reason to believe that they are never fewer.

To ascertain whether this beautiful animal be the *Medusa æquorea* of Linnæus and the naturalists who wrote during his time, it is necessary to inquire into the history of that species. The name just mentioned occurs first in the 'Iter Hispanicum' of Peter Loeffling, published in 1758. In his journal of observations on the 18th of April, at Cumana, he notices, along with *Medusa* (i. e. *Aurelia*) *aurita*, *Medusa pelagica* (*Pelagia cyanella*?), and *Velella*, another *Medusa*, which he styles *Æquorea*, and describes as "*orbicularis, planiuscula, tentaculis plurimis ex margine inflexo, branchiis nullis.*" This notice, which occurs at page 105 of the Swedish edition of his 'Travels,' is the entire original foundation for numerous references in after-authors. Linnæus, in the first instance, adopted Loeffling's name and brief record, which, when read with our present knowledge of *Acalephæ*, barely indicates the genus to which the animal observed probably belonged. In 1775, the descriptions and figures of animals observed during his journey to the East by the lamented Forskäl were published under the superintendence of Carsten Niebuhr. Among them was a representation and description of a *Medusa*, referred to the *æquorea* of Linnæus, both excellent, as indeed may be said of all that Forskäl did. In 1776 a *Medusa æquorea* was noticed, scarcely more than by name, in the 'Zoologiæ Danicæ Prodromus' of Otho Frederic Müller. In 1780, Otho Fabricius, in his excellent 'Fauna Groenlandica,' gives a shorter account than usual with him of a *Medusa*, which he refers to the *æquorea* of Linnæus. He speaks of it as a very simple animal, smaller and softer than *Medusa aurita*, convex above, concave beneath, with very much inflected margins and white marginal cilia. The two last-mentioned characters are opposed to the notion of *Medusa æquorea*, as represented and described by Forskäl, and the first of them to the slight idea of its shape that we gather from Loeffling. In 1791 Adolph Modeer commenced the work of hair-splitting by separating the animal of Forskäl, under the name of *Medusa patina*, from that of Loeffling, for which he reserved the

name *Medusa æquorea*. In 1809 Peron and Lesueur published in the 'Annales du Muséum d'Histoire Naturelle,' vol. xiv., their important classification and synopsis of all known Medusæ. In that paper, excellent though it be, they increase the confusion, by giving the name of *Æquorea atlantica* to Loeffling's animal, *Æq. danica* to Müller's, *Æq. grænländica* to that of Fabricius, *Æq. Forskalea* to that of Forskäl, and *Æq. stauroglyphæ* to a new species of their own, probably identical with all the others. In 1829 Eschscholtz, in his 'System der Acalephen,' attempted to rectify this confusion, by rejecting all these names excepting *Æq. Forskalina*, that alone having been sufficiently described. In 1843 Lesson published his History of Acalephæ in the 'Nouvelles Suites à Buffon,' and, to make confusion worse confounded, rejected all rectifications and restored all the names and imperfectly noticed individuals to full specific rank.

After attentively considering the notices more or less perfect that the various older observers have given, of what they call *Medusa æquorea*, I am led to the belief that in most instances one species, not several, was met with, and that the creature I now describe and figure as British is identical with the *Medusa æquorea* of Loeffling, Forskäl and Müller. Since Forskäl alone described and figured it in a comprehensible manner, the name *Æquorea Forskalea*, proposed by Peron, is peculiarly appropriate, the more so since that of *Medusa patina* of Modeer was proposed under a mistake. Forskäl expressly states that his species is common to the North Atlantic and the Mediterranean, and that it inhabits the Danish seas, where it is called "Vandmand," that is, Waterman.

It remains to be seen whether our species is related to the *Æquorea violacea* of Milne-Edwards, well described and beautifully figured in the 16th volume of the 2nd series of the 'Annales des Sciences Naturelles,' and observed by that eminent naturalist in the Mediterranean. From an examination of its anatomy he first showed the serious error committed by Eschscholtz in considering the *Æquoridae* as cryptocarpous. I am inclined to agree with Milne-Edwards in considering his species distinct from that of Forskäl. The genital glands are not prolonged nearly so close to the margin; the lips of the stomach are not furbelowed; the bases of the tentacles are not bulbous, and originate regularly *between* the gastro-vascular canals.

There were no eyes observed by the distinguished zoologist just quoted in the species he examined. In ours the eyes are evident, and a determination of their position and appearance is of consequence, since they confirm the affinity of *Æquorea* with the Naked-eyed Medusæ, whilst at the same time, in the little appendage or rudimentary lid projecting above them, they indicate an approach to the *Steganophthalmatous* type, such as is consistent with the general high organization and aspect of the *Æquorea* when compared with other *Gymnophthalmatous* forms.

It is interesting to remark that the *Æquorea ciliata* of Eschscholtz is a North Pacific species, beautifully representing, yet quite distinct from, *Æquorea Forskalea*.

2. DESCRIPTIONS OF NEW SPECIES OF EULIMA, TRIPHORIS, ETC.,
FROM THE COLLECTION OF HUGH CUMING, ESQ.

By ARTHUR ADAMS, F.L.S. ETC.

1. EULIMA MODICELLA, A. Adams. *E. testá subulato-pyramidalí, albá, subpellucidá, flexuosá; anfractibus 11, planulatis, varicibus lateralibus continuis impressis, instructis; anfractu ultimo, in medio, vix angulato; aperturá ovali; columellá anticè subrectá; labro anticè producto.*

Hab. Island of Zebu, sandy mud, 7 fathoms. Mus. Cuming.

2. EULIMA GRANDIS, A. Adams. *E. testá subulato-pyramidalí, albá, solidá, flexuosá, opacá; anfractibus 15, planulatis, varicibus lateribus continuis instructis; anfractu ultimo angulato; aperturá obliquá, oblongo-ovalí, labio anticè calloso; labro margine flexuoso, anticè subreflexo.*

Hab. Island of Burias, coral sand, 7 fathoms. Mus. Cuming.

3. EULIMA PORCELLANA, A. Adams. *E. testá subulatá, albá, solidá, opacá, apice subflexuoso; anfractibus 13-14, planulatis, varicibus impressis irregularibus lateralibus; aperturá oblongo-ovalí, labio anticè calloso, vix reflexo; labro margine, in medio, dilatato.*

Hab. —? Mus. Cuming.

4. EULIMA ACUTA, A. Adams. *E. testá aciculato-turritá, albidá, rectá, subopacá; anfractibus duodecim, planiusculis, ultimo rotundato; aperturá oblongá, anticè subreflexá, labio subincrassato; labro margine recto.*

Hab. Sual, province of Cangisanan, island of Luzon, sandy mud, 7 fathoms. Mus. Cuming.

5. EULIMA CUSPIDATA, A. Adams. *E. testá subulato-pyramidalí, albidá, solidá, rectá; anfractibus 12, convexiusculis, anfractu ultimo rotundato; aperturá oblongo-ovalí, labio anticè calloso, subrecto; labro acuto.*

Hab. Sibonga, island of Zebu, in loose coral under stones, low water. Mus. Cuming.

6. EULIMA OBESULA, A. Adams. *E. testá pyramidalí-ovatá, albá, solidá, nitidá, opacá; anfractibus sex, convexis, ultimo rotundato; aperturá oblongo-ovalí; labro margine incrassato, nec limbato vel reflexo.*

Hab. Gindulman, isle of Bohol, in soft mud, 8 fathoms. Mus. Cuming.

7. EULIMA TEINOSTOMA, A. Adams. *E. testá subulato-turritá, rectá, albidá, nitidá, subpellucidá; anfractibus 12, planulatis, lined impressá infra suturas; anfractu ultimo rotundato; aperturá oblongo-ovalí, anticè producto, labio subrecto, anticè reflexo; labro margine, in medio, dilatato.*

Hab. Feejee Islands, on coral reefs, in sand, low water. Mus. Cuming.

8. *EULIMA FLEXUOSA*, A. Adams. *E. testá subulato-turritá, albá, flexuosá, solidá, subopacá; anfractibus 15, planulatis, lined impressá subpellucidá ad suturas; anfractu ultimo rotundato; aperturá oblongá; labro margine flexuoso, in medio producto.*
Hab. —? Mus. Cuming.
9. *EULIMA ACLIS*, A. Adams. *E. testá subulato-turritá, albidd, solidá, subopacá; anfractibus 11, planulatis, ultimo rotundato, anticè subproducto; aperturá oblongá, labio anticè subreflexo.*
Hab. Singapore, coarse gravel and sand, 12 fathoms. Mus. Cuming.
10. *EULIMA PYRAMIDALIS*, A. Adams. *E. testá subulato-pyramidali, albá, nitidá, subpellucidá; anfractibus decem, planulatis, lined impressá prope suturas, anfractu ultimo subangulato; aperturá oblongo-ovali; labro margine, in medio, subproducto.*
Hab. Isle of Capul, on the reefs in sand, low water. Mus. Cuming.
11. *EULIMA POLYGYRA*, A. Adams. *E. testá subulato-pyramidali, albá, subopacá, apice tortuoso; anfractibus permultis, planulatis, ultimo angulato; aperturá obliquá, subtetragonali, labio anticè reflexo; labro, in medio, valdè dilatato.*
Hab. Cagayan, province of Misamis, isle of Mindanao, sandy mud, 50 fathoms. Mus. Cuming.
12. *EULIMA VITREA*, A. Adams. *E. testá subulatá, acutá, rectá, albidá, vitreá, pellucidá; anfractibus planulatis, lined impressá prope suturas; anfractu ultimo rotundato; aperturá oblongo-ovali, labio anticè recto, in medio subtortuoso; labro anticè subreflexo.*
Hab. Feejee Islands; from the stomach of a *Holothuria* (Captain Swain). Mus. Cuming.
13. *EULIMA GUILDINGII*, A. Adams. *E. testá subulatá, rectá, nitidissimá, albá, pellucidá; anfractibus planulatis, ultimo subrotundato, elongato; aperturá oblongo-ovali, labio vix tortuoso; labro margine flexuoso.*
Hab. St. Vincents, West Indies, sandy mud, deep water. (Rev. L. Guilding.) Mus. Cuming.
14. *EULIMA CUMINGII*, A. Adams. *E. testá subulato-turritá, albá, rectá, solidá, opacá; anfractibus 13, convexiusculis, varicibus irregularibus impressis instructis; anfractu ultimo rotundato; aperturá oblongo-ovali, labio anticè calloso, incrassato; labro margine recto.*
Hab. Lord Hood's Island, South Seas, on the *Avicula margaritifera*. Mus. Cuming.
15. *TRIPHORIS VARIEGATUS*, A. Adams. *T. testá subulato-pyramidali, in medio tumidá, albá, maculis triangularibus rufo-fuscis variegatá; anfractibus planulatis, triseriatim granulatis, granis equalibus, interstitiis punctatis, suturis impressis; canali brevi, apertá.*

Hab. St. John's. Mus. Cuming.

A large variegated species, somewhat resembling in general appearance *T. ornatus*, Desh.

16. **TRIPHORIS PULCHELLUS**, A. Adams. *T. testá subulato-pyramidalí, in medio tumidá, fuscá, serie moniliformi albo ornatá; anfractibus convexiusculis, triseriatim granuloso-carinatis, granorum serie inferiore prominulá, superiore multo minore; aperturá rotundatá, constrictá; canali brevi, recurvo.*

Hab. —? Mus. Cuming.

A handsome brown species, with a white series of bead-like granules at the lower part of each whorl.

17. **TRIPHORIS NIGRO-FUSCUS**, A. Adams. *T. testá pyramidalí, nigro-fuscá; anfractibus planis, triseriatim granulatis, granulis æqualibus, confertis, anfractuum suturis impressis, basi convexá.*

Hab. Sydney, low water, under stones (*Mr. Strange*).

A black-brown species, with three rows of regular, equal-sized granules on each whorl. Mus. Cuming.

18. **TRIPHORIS FESTIVUS**, A. Adams. *T. testá pyramidalí, basi planá fuscá, albidá, fasciis fuscis interruptis, transversis, ornatá; anfractibus planis, cingulis duabus granorum instructis; interstitiis valde punctatis.*

Hab. Port Lincoln. Mus. Cuming.

A small prettily-marked species, with two rows of granules on each whorl, and the interstices deeply punctured.

19. **TRIPHORIS SCITULUS**, A. Adams. *T. testá subulato-pyramidalí, albidá, nitidá, subpellucidá, suturis rufo-tinctis; anfractibus convexiusculis, cingulis tribus nodorum ornatis, cingulá medianá majore moniliformi, nodorum interstitiis fuscis, anfractu ultimo basi fusco; canali brevi, aperto.*

Hab. Port Lincoln. Mus. Cuming.

A semipellucid, white and brown species, with the middle row of nodules very prominent.

20. **TRIPHORIS ALBIDUS**, A. Adams. *T. testá subulato-pyramidalí, albidá, nitidá; anfractibus planulatis, subimbricatis, granoso-clathratis, granis oblongis, serie granorum inferiore prominulá, anfractu ultimo basi fulvo; canali brevi, subrecurvo.*

Hab. Honduras (*Dyson*). Mus. Cuming.

A solid, white, shining, pyramidal species, with oblong granules disposed in three series on each whorl.

21. **TRIPHORIS VESTALIS**, A. Adams. *T. testá turríto-subulatá, dextrorsá, albá, subnitidá; anfractibus 13, convexis, suturis impressis, triseriatim granulatis, interstitiis alveolatis.*

Hab. Honduras. Mus. Cuming.

A delicate and chaste right-handed species, with convex whorls, and pits between the granules.

22. **TRIPHORIS CINGULATUS**, A. Adams. *T. testá elongato-pyramidalí, cineréá; anfractibus sexdecim ad octodecim, spiraliter tricingulatis, cingulá medianá minore, interstitiis carinarum longitudinaliter valde striatis.*

Hab. Red Sea (Rüppell). Mus. Cuming.

An ashy-grey species, with three smooth keels on each whorl, and the interstices strongly striated: somewhat similar to the *T. corrugatus* of Hinds.

23. **TRIPHORIS LABIATUS**, A. Adams. *T. testá subulato-pyramidalí, nigro-fuscá, in medio tumidá, spirá apice obtuso; anfractibus 10, planulatis, triseriatim granuloso-carinatis, suturis concavo-impressis; labro reflexo, dilatato, albido; canali brevi, subrecurso.*

Hab. Sydney, under stones, low water (Mr. Strange). Mus. Cuming.

A small, nearly black shell, with the outer lip dirty white or pale fuscous.

24. **MESALIA STRIATA**, A. Adams. *M. testá subulato-turritá, fulvá; anfractibus 10-12, planulatis, superioribus longitudinaliter plicatis, inferioribus levibus, transversim striatis, striis impressis, subdistantibus; anfractu ultimo subangulato; aperturá ovali, labio subplanulato, anticè subreflexo; labro acuto, integro.*

Hab. Philippines. Mus. Cuming.

25. **MESALIA DECUSSATA**, A. Adams. *M. testá subulato-turritá, in medio subcylindraccá, pallidè rubro-fuscá; anfractibus novem, convexiusculis, plicis longitudinalibus confertis, et sulcis impressis, transversis, decussatim ornatis; aperturá semiovali, labio subcalloso, anticè subreflexo, integro; labro incrassato, margine integro.*

Hab. Masbate, Philippines. Mus. Cuming.

26. **RISSOINA SEMIGLABRATA**, A. Adams. *R. testá subulato-pyramidalí, albá, solidá, nitidá; anfractibus convexiusculis, supremis transversim striatis, inferioribus glabratis; aperturá semiovali, anticè subcanaliculatá, labio incrassato; labro dilatato, crasso, intus tuberculis parvis instructo, margine subreflexo.*

Hab. Deleguete, isle of Zebu, found under stones, low water. Mus. Cuming.

A species having very much the aspect of a *Eulima*. In this species there are two tubercles on the inner surface of the outer lip.

27. **RISSOINA EULIMOIDES**, A. Adams. *R. testá subulato-pyramidalí, albá, solidá, nitidá; anfractibus planiusculis, suturis impressis; aperturá semiovali, anticè subcanaliculatá, labio levigato, subincrassato; labro margine crasso, in medio dilatato, intus tuberculo minuto instructo.*

Hab. Island of Capul, on coral reefs in sand, at low water. Mus. Cuming.

A small polished *Eulima*-like species, with a single small tubercle on the inner surface of the outer lip.

December 9, 1851.

W. Yarrell, Esq., in the Chair.

The following papers were read :—

1. ON SOME BONES OF DIDUS. BY A. D. BARTLETT.

(Aves, Pl. XLV.)

The history of the Dodo having been recently the subject of so much inquiry, and the exertions made by Mr. Strickland, Dr. Melville and others, having succeeded in bringing together so many important facts, it might appear that there was little more to be said upon the subject ; this, however, I believe is far from being the case. A few facts established upon a subject which was before obscured in doubt and error will, I trust, always act as a charm, and induce us at every opportunity to investigate that subject still further, in the hope of learning the truth. On the present occasion I am desirous of calling attention to a few bones upon the table. In so doing I beg to say, that in the year 1830 a collection of bones arrived in Paris, which attracted the attention of the scientific world. These bones came from the island of Rodriguez, but on account of their being incrustated with stalagmite, little has been done with them ; they were, however, the cause of search being made for more in the same locality, and two collections were made in the year 1831 by the late Mr. Telfair. One of these collections was forwarded to the Andersonian Museum in Glasgow, the other to the collection of this Society, and at the evening meeting, March 12, 1833, the bones sent by Mr. Telfair were laid upon the table.

I will here read an extract from the Society's Proceedings :—“ Dr. Grant pointed out that they were the bones of the hinder extremity of a large bird, and the head of a humerus. With reference to the metatarsal bone, which was long and strong, Dr. Grant pointed out that it possessed the articulating surfaces for four toes, three directed forwards and one backwards, as in the foot of the Dodo preserved in the British Museum. to which it was also proportioned in magnitude and form.”

I beg now to read a paragraph from Mr. Strickland's book. At page 52 we find : “ The bones sent by Mr. Telfair in 1833 to the Zoological Society have met with some unfortunate fate. Three or four years ago, Mr. Fraser, the late Curator of that Society, made, at my request, a diligent search for these specimens, but all his endeavours to find them were fruitless : he found the identical box sent by Mr. Telfair, but, alas ! the bones of the Solitaire, apterous as it was, had flown away, and the only bones that remained belonged to tortoises.”

In the month of July last an opportunity was afforded me by the Secretary of renewing this search, and I had the good fortune to



Metatarsal bone of *Didus Nazareus* 2 of *Didus solitarius* 3 of *Didus ineptus*

find what I believe to be all the specimens sent to the Society by Mr. Telfair.

Upon my informing Mr. Mitchell of my success, that gentleman, knowing the trouble and interest I had taken to recover them, granted me permission to examine, compare, and describe them, and to bring the subject before the Society.

In the first place, we are led to believe (and I think without the slightest doubt) that these bones came originally from the island of Rodriguez. There cannot be any doubt, also, that Rodriguez and the neighbouring islands were at one period inhabited by several species of large birds. Whether any of the same species of these birds inhabited different islands, or whether each island was inhabited by distinct species, is a question to which I beg most particularly to call your attention: the most recent publication by Mr. Strickland and Dr. Melville would lead us to believe that the true Dodo (*Didus ineptus*) was solely confined to the island of Mauritius, and another species, known as the Solitaire, was said to be its representative on the island of Rodriguez. If this be true, I should have the pleasure of introducing to your notice the bones of at least two new species of birds from that island: I do not however myself feel justified in so doing, but believe some of the bones sent here by Mr. Telfair belong to the true Dodo (*Didus ineptus*). There are also in the collection (I think without doubt) bones of two other species, one of these of much larger size than the Dodo, the other considerably smaller. The bones in question having all the usual and well-known characteristics of those of adult birds, we cannot therefore suppose the differences which they present to be such as might arise from age; and on the other hand, you will perceive that the proportions are too dissimilar to allow of our regarding them as having belonged to different sexes of the same species. There often exists great difference of size in the bones of the opposite sex, but I have never noticed any very evident difference of proportion. These are to me satisfactory reasons for considering them specifically distinct. But to return to the question,—Was the Dodo found on the island of Rodriguez? Sir Thomas Herbert says *it was*; and his evidence appears to me of much importance, considering the number of years he spent travelling about, visiting these islands, and collecting rare and curious things; having also repeatedly described the Dodo, and very probably brought one to England. I am therefore inclined to regard the assertions made by Sir Thomas Herbert with more respect than they have elsewhere received. It may appear at first sight impossible that the same species of birds which were destitute of the power of *swimming* or *flying* could inhabit islands so far from each other; but, were these islands always in the state in which we find them? may they not at some distant period have been united and formed part of the same land? In endeavouring in this manner to account for the existence of the Dodo upon the island of Rodriguez as well as at Mauritius, it has been remarked that this argument would not hold good, as the islands in question were of volcanic origin: if this be the case, to account for its existence at either place appears to me equally difficult. I am

fully aware it has been the practice of late to consider the animals obtained from localities remote from each other specifically distinct ; they may be so ; but unless we have some certain means of distinguishing them, I do not think we ought to regard them as such.

I now venture to introduce to your notice what I believe to be the *tibia* of the Dodo (*Didus ineptus*) : its agreement with the foot in the British Museum struck me as being exceedingly remarkable and conclusive : its size and proportions, as compared with the metatarsal in question, are exactly what I should have expected upon the supposition of their belonging to the same species : they fit each other so perfectly, that one might think they belonged to the same individual. With this evidence before me, I cannot for one moment hesitate in considering the *Dodo of the Mauritius to be identical with the Dodo of Rodriguez*. There are also in this collection two other bones, which, from their size and form, I believe to belong to this species: the most remarkable is the head of the *humerus*, which would indicate by its magnitude and broad attachments that it belonged to a bird of large bulk, while the sudden reduction in the size of its shaft clearly indicates a bird with small wings. The great thickness and consequent weight is sufficient to cause us to suppose that this bird had not the power of flight.

The next bone to which I will call your attention is a right metatarsal, which appears to me to have belonged to a bird known to Leguat as the *Solitaire*, and described by him during his residence on the island of Rodriguez. I beg to read Leguat's description, in order to point out to you its near agreement in point of size and form with the Turkey, with which bird Leguat compared the bird he called the *Solitaire* :—

“Of all the birds in the island, the most remarkable is that which goes by the name of the *Solitary*, because it is very seldom seen in company, though there are abundance of them. The feathers of the male are of a brown-grey colour : the feet and beak are like a Turkey's, but a little more crooked. They have scarce any tail, but their hind part covered with feathers is roundish, like the crupper of a Horse ; they are taller than Turkeys. Their neck is straight, and a little longer in proportion than a Turkey's when it lifts up its head. Its eye is black and lively, and its head without comb or cop. They never fly, their wings are too little to support the weight of their bodies ; they serve only to beat themselves, and flutter when they call one another. They will whirl about for twenty or thirty times together on the same side, during the space of four or five minutes. The motion of their wings makes then a noise very like that of a rattle, and one may hear it two hundred paces off. The bone of their wing grows greater towards the extremity, and forms a little round mass under the feathers, as big as a musket-ball. That and its beak are the chief defence of this bird. 'Tis very hard to catch it in the woods, but easie in open places, because we run faster than they, and sometimes we approach them without much trouble. From March to September they are extremely fat, and taste admirably well,

especially while they are young ; some of the males weigh forty-five pounds.

“ The females are wonderfully beautiful, some fair, some brown ; I call them fair, because they are of the colour of fair hair. They have a sort of peak, like a widow’s, upon their breasts (*lege* beaks), which is of a dun colour. No one feather is straggling from the other all over their bodies, they being very careful to adjust themselves, and make them all even with their beaks. The feathers on their thighs are round like shells at the end, and being there very thick have an agreeable effect. They have two risings on their *craws*, and the feathers are whiter there than the rest, which livelyly represents the fine neck of a beautiful woman. They walk with so much stateliness and good grace, that one cannot help admiring and loving them ; by which means their fine mien often saves their lives.”—*Leguat’s Voyage to the East Indies*, 1708, p. 71.

You will perceive this bird was said to be larger and taller than a Turkey. A comparison of this metatarsal bone with the metatarsal bone of the Turkey I think will satisfactorily show the accuracy of Leguat’s description, and at the same time justify our conclusion that this metatarsal bone belonged to the Solitaire of Rodriguez, to which the name of *Didus solitarius* has been applied. I trust I shall be pardoned for avoiding the use of the new generic term adopted by the authors of ‘The Dodo and its kindred,’ for in a group so little known, and at present so limited in species, it seems to me so much to increase the trouble and difficulty of those who endeavour to study such subjects, that I cannot help expressing my belief that many of the new names so often introduced serve only to impede and embarrass us, and I therefore regard them as much worse than useless.

I have now remaining the bone of a bird which when alive was much *larger, heavier*, and more *powerful* than the *Dodo*. For further examples of this bird’s bones, I must refer to the plates in the work before alluded to, by Mr. Strickland and Dr. Melville : plate xv. fig. 2, the metatarsal bone of the large species in the Andersonian Museum, Glasgow ; fig. 3, a metatarsal bone in the Parisian collection. A glance at these specimens will, I imagine, convince any one that this bird was of gigantic size, and probably double the weight of the *Dodo*. I am sure it cannot be supposed (after what has been said) that Leguat was describing this great bird when he wrote his beautiful description of the Solitaire. Another important fact will, I think, set this question at rest. Leguat states, that some of the males of the Solitaire weigh *forty-five pounds*. Now we know the weight of the largest Turkeys to be considerably less, rarely reaching *thirty pounds*, while the weight of the *Dodo* is stated to have been at least *fifty pounds*. It cannot, therefore, be supposed, had Leguat seen birds nearly double the size of the *Dodo*, he could have made the statements or comparison he has made between the Solitaire and Turkey.

I have before expressed my great dislike to an unnecessary increase of names : I feel, however, the necessity of finding an appropriate

name for this large bird, and therefore propose one somewhat familiar to all who have paid any attention to the subject, and apply the name of *Didus Nazarenus* to this the largest species of the genus. In doing this, I may remark that Mr. Strickland, in his work before alluded to, has considered the *Didus Nazarenus* to be a phantom species, which he says has haunted our systems of ornithology from the days of Gmelin downwards.

The conclusions which I have arrived at from the examination of the bones to which I have just called your attention are these:—That there existed formerly three distinct species of Apterous birds in the island of Rodriguez; namely, one which is apparently identical with the *Dodo* (*Didus ineptus*) of the Mauritius; a second, which was well described under the name of *Solitaire*; and a third, which was much larger than either of the above.

12 College Street, Camden Town.

2. DESCRIPTION OF TWO NEW SPECIES OF MAMMALIA OF THE GENUS ANTECHINUS. BY JOHN GOULD, F.R.S. ETC.

One of these species is remarkable for being spotted on the under instead of on the upper surface, and the other for its very diminutive size: both rank among the smallest members of the genus. For the former I propose the specific appellation of *maculatus*; it may be thus described:—

ANTECHINUS MACULATUS.

Fur short, dense, and closely applied to the skin; general tint of the upper surface dark blackish brown, minutely grizzled with yellowish brown; lower part of the flanks and under surface of the body dark brownish slate-grey, ornamented with oblong spots of greyish white arranged in irregular rows in the direction of the body; down the centre of the throat a streak of white.

	inches.
Length from the tip of the nose to the base of the tail	$3\frac{1}{2}$
——— of the tail	$2\frac{1}{4}$
——— from the tip of the nose to the base of the ear	$\frac{1}{2}$
——— of the ear	$\frac{1}{4}$
——— of the tarsi and toes	$\frac{7}{16}$

Hab. Brushes of the river Clarence, on the east coast of Australia.

The other species I propose to name

ANTECHINUS MINUTISSIMUS.

Fur short, dense, and closely applied to the skin; upper surface and flanks brown, slightly grizzled with black; under surface pale buff, approaching to white on the throat; tail brown above, lighter beneath; feet buffy brown, toes covered with hairs of a somewhat lighter hue.

	inches.
Length from the tip of the nose to the base of the tail	$2\frac{3}{4}$
——— of the tail	$2\frac{1}{4}$
——— from the tip of the nose to the base of the ear	$\frac{7}{16}$
——— of the ear	$\frac{1}{4}$
——— of the tarsi and toes	$\frac{3}{8}$

Hab. Brushes of the east coasts of Australia.

3. DESCRIPTIONS OF A NEW SPECIES OF Ptilotis AND A NEW SPECIES OF Eöpsaltria. BY JOHN GOULD, F.R.S.

Mr. Gould also exhibited two new species of birds of the genera *Ptilotis* and *Eöpsaltria*, which he characterized as follows:—

Ptilotis fasciogularis.

All the upper surface, wings and tail olive-brown, the feathers of the head and back with darker centres, and the primaries and tail-feathers narrowly margined externally with greenish wax-yellow; lores and a streak down the side of the head from the posterior angle of the eye blackish brown; ear-coverts pale yellow; on each side of the neck a patch of yellowish white; feathers of the throat brownish black, each bordered with pale yellow, presenting a fasciated appearance; breast blackish brown; under surface striated with brown and buffy, becoming paler towards the vent; irides lead-colour; bill and feet black.

Total length, $7\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $3\frac{3}{4}$; tail, $3\frac{1}{2}$; tarsi, $1\frac{1}{8}$.

Hab. Mangrove Island, Moreton Bay.

Female.—Similar in colour, but of smaller size.

Eöpsaltria Capito.

Upper surface olive-green, inclining to brown on the head; wings and tail slaty brown, faintly margined with olive-green; ear-coverts grey; lores and a line descending in front of the eye and the throat greyish white; under surface yellow; irides hazel; bill black; feet brownish flesh-colour.

Total length, 5 inches; bill, $\frac{5}{8}$; wing, $3\frac{1}{8}$; tail, $2\frac{1}{4}$; tarsi, $\frac{7}{8}$.

Hab. Brushes of the River Brisbane, New South Wales.

Remarks.—Shorter and less elegantly formed than *E. Australis*, with a stout broad bill and a proportionately large and heavy head.

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ERRATA.

Page 125, Art. 3, for VANGANELLA read RESANIA.

„ „ for VANGANELLA TAYLORII read RESANIA TAYLORII.

Page 183, line 38, for CHLOROSTOMA TURBINATUM read C. FUSCUM.

REPTILIA, PLATE V.

has been cancelled.

PROCEEDINGS
OF THE
ZOOLOGICAL SOCIETY
OF LONDON.



PART XX.
1852.

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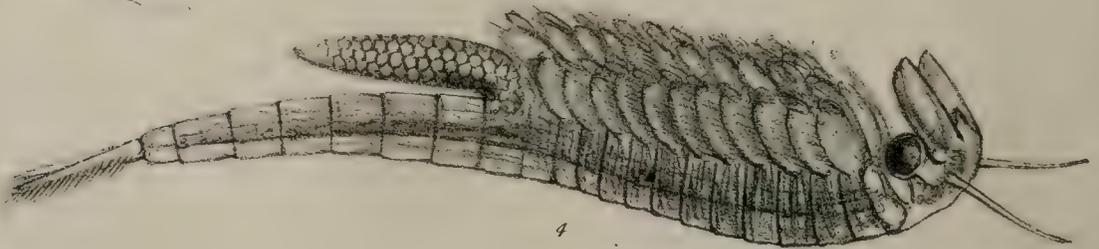
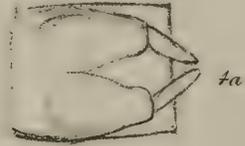
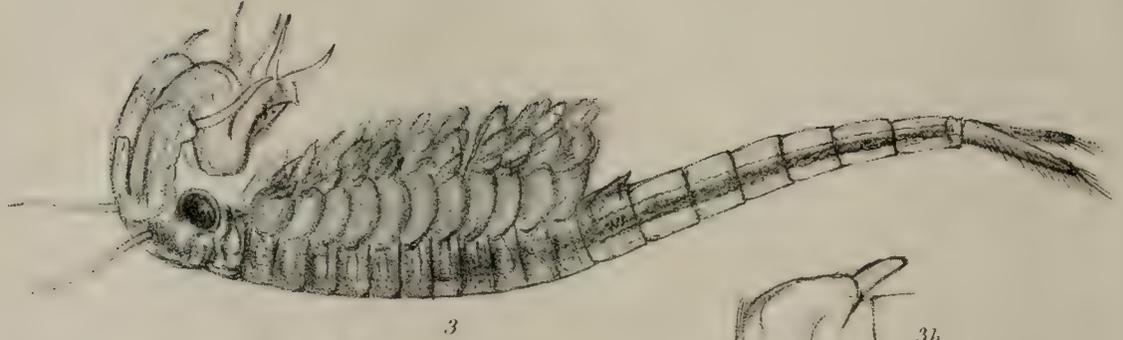
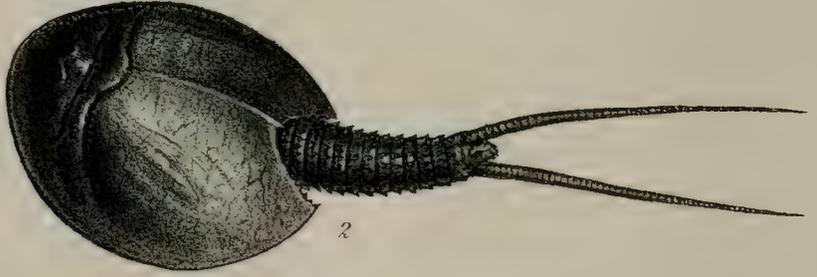
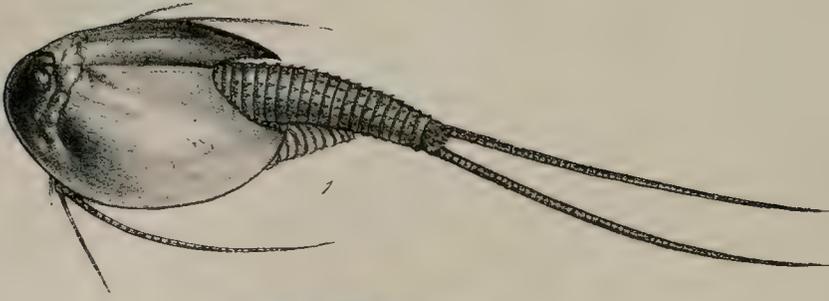
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1. *Apus domingensis*. 2. *Lepidurus glacialis*. 3. 4. *Streptocephalus similis*

PROCEEDINGS
OF THE
ZOOLOGICAL SOCIETY OF LONDON.

January 13, 1852.

W. Yarrell, Esq., in the Chair.

The following papers were read:—

1. MONOGRAPH OF THE FAMILY APODIDÆ, A FAMILY OF CRUSTACEANS BELONGING TO THE DIVISION ENTOMOSTRACA; WITH A DESCRIPTION OF A NEW SPECIES OF APUS, AND TWO SPECIES OF OSTRACODA BELONGING TO THE GENUS CYPRIIS. BY W. BAIRD, M.D., F.L.S. ETC.

(Annulosa, Pl. XXII. XXIII.)

IN drawing up this communication, one of the objects I had in view was to call the attention of the members of this Society to a group of animals which must be very numerous, especially in warm climates, but which nevertheless have been but little attended to. The animals to which I propose directing your attention belong to that very interesting division of the great class CRUSTACEA, called ENTOMOSTRACA. The chief interest attached to these creatures, most of which are very small, is derived from watching their gambols in their native element, and examining by the aid of the microscope the wonderful beauty of their various organs, especially their organs of motion and breathing. Unfortunately few naturalists, comparatively speaking, have paid much attention to them, and collectors of objects of Natural History have generally, perhaps from their minuteness, overlooked them almost entirely. Those however who have watched these little creatures, whether sporting in the freshwater ponds and lakes of the interior, or illuming the bosom of the ocean with their brilliant phosphorescent light, have not failed to be struck with the beauty and elegance of their forms,—a beauty and elegance which it is difficult to describe, and the attempt to do which has caused the grave naturalist Otho Fredericus Müller involuntarily to rise into the language of poetry.

No. CCXXXVIII.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.

The largest species of *Entomostraca* belong to the order *Phyllopoda*, and the beauty of their movements through the water and the symmetry of their various organs of motion are truly exquisite. The family *Apodidæ* contains the largest individuals, though as yet the number of species described is not great. One species of the family was known to Linnæus, who mentions, in the first edition of his 'Fauna Suecica' (1746), having seen a specimen in 1728 at the house of a naturalist in London, who told him he had received it from Prussia. Jacob Frisch * had, previously to the publication of the 'Fauna Suecica,' made known and figured a species, specimens of which he had received from Klein, then at Dantzic, who had found it in East Prussia. Specimens of this species were sent soon afterwards by Klein to London to Sir Hans Sloane, and at the very same time (1738) this species was found also in England in a pond on Bexley Heath by the Rev. Lyttleton Brown. Klein's notice, previously sent to Sir Hans Sloane, and Mr. Brown's description, were published simultaneously in the 'Philosophical Transactions' of that year. Several species have since then been discovered, natives of various parts of the globe and having a wide geographical range. They have been found in different parts of Europe, in North Africa, in North America, even as high as the borders of the Arctic Ocean, in the West Indies, and in Australia.

The Family *Apodidæ* (belonging to the Order *Phyllopoda*) may be thus characterized:—

Pedes branchiales, paribus sexaginta. Antennæ breves, styliformes, pari singulo. Oculi duo, sessiles. Corpus numerose articulatum, parte majore clypeo magno obtectum.

The feet, consisting of 60 pairs, are all formed for the purpose of breathing with, and not for locomotion, the first pair alone being provided, in addition to the branchial plates, with organs adapted for assisting the animal in swimming. The first pair are the largest, and after the second pair they become gradually smaller as they descend, until the last few pairs become almost obsolete. The animals generally swim on their back, and these branchial feet are in constant motion even when the animal is at rest. The body is cylindrical, elongated, consisting of numerous segments, and the upper half, or more in some species, is covered by a large shield-shaped carapace or buckler. This carapace protects the vital parts, and is furnished with a peculiar structure in its substance for increasing the extent of its branchial apparatus. The antennæ are small organs and in number only one pair, short and styliform. The eyes are two in number, compound, lunate-shaped, and are sessile, being placed on the upper and central portion of the carapace. The young have only one eye, which gradually disappears as moulting goes on, until the mark merely remains. This is generally described as a third eye, but according to Zaddach the two compound eyes only are provided with optic nerve, pigment and cornea. The caudal segment of the body gives off two long and very numerous articulated cylindrical setæ or filaments which are more or less provided with short hairs from each side.

* Insecten in Deutschland, 1732.

Only one genus of this family is recognized by M. Milne-Edwards in his work on the Crustacea, though Dr. Leach had many years ago established a second; the character upon which that genus was founded by Leach is not considered by M. Edwards as of generic importance; but having observed another character equally remarkable, which occurs in all the known species of the group which that genus represents, I consider Leach's genus ought to be adopted, and I now propose giving the characters of the two genera at greater length than they have yet been done.

Genus APUS, Scopoli.

Clypeus corneo-coriaceus. Corpus molle, cylindricum. Segmentum caudale lamina producta non instructum. Pedum primi paris appendices, aut rami, longissimi, flexibiles.

In the genus *Apus*, the tail-segment of the body is rounded, and has no plate or prolonged appendage between the two long setæ or filaments. The first pair of feet are very long, dividing into three cylindrical branches, the external one of which is very long, in some species equalling in length the whole body with the tail filaments included: they are very flexible, possess much motion, and are very conspicuous. These organs at once distinguish the genus, and they possess the same general character in all the species hitherto known. Four species have only as yet been described, and I now propose to add to that number a fifth.

1. *APUS CANCRIFORMIS*, Schæffer. *Clypeo corporis plusquam dimidiam partem tegente, ovato, olivaceo, corneo; ramo externo pedum primi paris longitudine clypeum æquante.*

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

Pro Synonymis vide "Baird's Nat. Hist. of the British Entomotraca, Ray Society's Publications, 1850."

Hab. In Europa; detecta in Anglia, Gallia, Borussia, &c. In Africa Septentrionali; detecta in Tunisia, collegit Dominus L. Frazer; in Algeria, collegit M. Lucas. Museum Britannicum.

The colour of this species is brownish yellow or olive clouded with marks of a deeper hue. The carapace is oval and extends over nearly two-thirds of the body of the animal. The keel which runs down the centre of the carapace is pretty strong, and the deep notch at the posterior extremity is lunated in shape and has its edges finely toothed. The external branch of the first pair of feet is about the length of the carapace, while the caudal setæ are nearly as long as the whole body, and are covered with numerous short hairs. The abdominal portion of the body not covered by the carapace is studded all over with circular rows of stout hooked spines of a dark brown colour.

2. *APUS GUILDINGII*, Thompson. *Clypeo corporis vix dimidiam partem tegente, quadrato, membranaceo, nigrescente; ramo externo pedum primi paris longissimo, totum corpus, filamentis caudalibus inclusis, excedente.*

Apus Guildingi, Thompson, Zoological Researches, Fasc. v. 108. t. 6. f. 3; M. Edwards's Hist. Nat. Crust. iii. 561.

Hab. In Insula "St. Vincent's," India Occidentali; *Rev. Lansdowne Guilding*.

Mr. Thompson in his 'Zoological Researches' remarks: "I received this species of *Apus* together with the *Artemis Guildingi* from the West Indies, and having as yet no details, must leave its history in the hands of its distinguished discoverer. It is of a light blackish colour, the clypeus translucent, almost membranous, and shorter in proportion than in any of the known species, with the extreme branch of the anterior member extremely long." Unfortunately we have no further history of this species from its discoverer the Rev. Lansdowne Guilding, but the short square-shaped carapace and the extreme length of the external branch of the first pair of feet sufficiently distinguish it.

3. *APUS LONGICAUDATUS*, Le Conte. *Clypeo corporis tertiam partem non multo magis tegente, rotundato, subfusco; ramo externo pedum primi paris longitudine clypeum excedente; corporis postica parte longissima, cylindrica.*

Long. toti corporis 1·5 poll., clypei ·65 poll.; lat. clypei ·7 poll.

Apus longicaudatus, Le Conte, Ann. Lyc. Nat. Hist. iv. 155. t. 9.

Hab. In America boreali. "In a shallow lake on the high plateau between Lodgepole Creek and Crow Creek, N.E. of Long's Peak" (*Le Conte*).

This species is readily distinguished by the extraordinary length of the abdominal portion of the body. The carapace is rounded, somewhat truncated at the anterior extremity, and having the two extremities of the fork terminating in a very sharp point. It does not cover much more than one-third of the body, and is thin in substance. The external branch of the first pair of feet is long, exceeding considerably the length of the carapace. The caudal filaments are about the length of the abdomen. Mr. Le Conte says that the species was found in immense numbers in a small shallow lake on the high plateau between Lodgepole Creek and Crow Creek, N.E. of Long's Peak, near the Rocky Mountains. "They were swimming about with great activity, plunging to the bottom and rising to the surface."

4. *APUS OBTUSUS*, James. *Species hæc reperta a Domino James in "Major Long's Expedition to the Rocky Mountains," non satis bene descripta necnon delineata est.*

Long. clypei ·3 poll.; lat. clypei ·4? poll.

Apus obtusus, James, Expedition to the Rocky Mountains, ii. 336.

Hab. In America boreali. "Rain-water puddles on the Platte river, near the Rocky Mountains" (*James*).

This species is very briefly described by Mr. James. "In rain-water puddles," he says, "we remarked a new species of Branchiopode belonging to the genus *Apus*; small crustaceous animals, which exhibit a miniature resemblance to the King or Horse-shoe Crab (*Limulus polyphemus*) of our own sea-coast, but which are furnished with about 60 pairs of feet, and swim upon their back. The basins of water which contained them had been very much diminished by

evaporation and infiltration, and were now crowded to excess, principally with the *Apus*, great numbers of which were dying upon the surrounding mud, whence the water had receded. This species is distinguished from the *productus* of Bosc and *Montagui* of Leach, by not having the dorsal carina prolonged in a point behind; and from *cancriformis* by the greater proportional width of the thorax, and more obtuse emargination behind. The length of the thorax along the middle is three-tenths of an inch and its greatest breadth somewhat more. It may be named *Apus obtusus*."—Note 7. p. 336.

5. *APUS DOMINGENSIS*, Baird, sp. nov. (Tab. XXII. fig. 1). *Clypeo corporis dimidiam partem tegente, rotundo, tenui, corneo; ramo externo pedum primi paris corpus æquante.*

Long. toti corporis 1 poll.; lat. clypei $\frac{3}{4}$ poll.

Hab. In Insula St. Domingo, India Occidentali. Collegit M. Sallé. Museum Britannicum.

Though a native of the West Indies, this species may be easily distinguished from *A. Guildingii* by its round-shaped carapace of a horny colour covering half the body of the animal, and its external branch of the first pair of feet only the length of the body, while in *A. Guildingii* it exceeds the whole body and caudal filaments included. The carina down the centre of the carapace, and the fork which it takes at the anterior extremity where the division into cephalic and thoracic portions takes place, are marked throughout their length with a deep brown colour, as are also the short stout spines on the abdominal portion of the body. These are straight, not hooked as in some of the other species. The caudal filaments are nearly the length of the body, and are covered with very numerous, extremely short setæ. The oviferous feet are present in all the specimens I have examined, but none contain any ova.

GENUS *LEPIDURUS*, Leach.

Clypeus corneo-coriaceus. Corpus molle, cylindricum. Segmentum caudale lamina producta instructum. Pedum primi paris appendices, aut rami, brevissimi.

In the genus *Lepidurus* the tail-segment of the body, which in *Apus* is rounded, is furnished with a flap or plate of considerable size extending to some distance between the long setæ or filaments. The first pair of feet, compared with those of *Apus*, are extremely short and comparatively inconspicuous. These two characters at once distinguish the genus, of which only three species have as yet been described. In other respects it resembles perfectly the genus *Apus*.

Schæffer is the first author who has distinctly described any species belonging to the genus *Lepidurus*. Linnæus's description of the "*Monoculus cauda biseta*" in the first edition of the 'Fauna Suecica,' will apply to either the *Apus* or *Lepidurus*. He quotes Frisch's figure, and states, as I have mentioned above, that he had seen a specimen in London. We might conclude from this that it was the *Apus cancriformis* he had in view; but in the second edition of the 'Fauna' (1761), he distinctly mentions, in his brief descrip-

tion, that the tail was furnished with two long setæ, with a *flap interposed between them*. As in this edition he continues to refer to Frisch's figure, and adds that of Klein, in the 'Philosophical Transactions,' it is evident he confounded two species together; and as the *Lepidurus productus* (the *Apus productus* of authors) is perhaps the more common species of the two on the Continent, it is most probable that he had it in view when he wrote, but erroneously referred to the species figured by Frisch and Klein as identical with it.

The three species which have been described are—

1. **LEPIDURUS PRODUCTUS**, Bosc. *Clypeo corporis magis quam tres partes tegente, ovato, elongato, olivaceo-viridi; setis caudæ pennatis; lamina caudali elongato-ovata, carinata, setis brevibus numerosis obsita.*

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

Pro Synonymis vide M. Edwards, Hist. Nat. Crust. iii. 560.

Hab. In Europa; detecta in Gallia, Suecia, Borussia, &c. Museum Britannicum.

This species is of an olive-green hue, and is smaller than the *Apus cancriformis*. The carapace is of an oval form and covers more than two-thirds of the body. The notch at its posterior part is less deeply lunated than in *Apus cancriformis*, and the keel which runs down its centre is well-marked. The flap of the caudal segment is of an elongated oval shape and has a keel running down its centre, which, as well as its edges, are finely serrated, or beset with numerous short setæ. The tail-setæ are also furnished on each side with numerous short hairs, which, when magnified, present a fine plumose appearance. The first pair of feet or rami are very small, and when the animal lies prone are indistinctly visible.

2. **LEPIDURUS GLACIALIS**, Kroyer (Tab. XXII. fig. 2). *Clypeo corporis tres partes tegente, rotundato, viridi; setis caudæ plumosis; lamina caudali abbreviata, subquadrata, denticulata.*

Long. toti corporis 1 poll.; lat. clypei .5 poll.

Apus glacialis, Kroyer, Voy. en Scandinavie, Lapponie, &c. t. 40. f. 1.

Hab. In America boreali; detecta ad "Cape Krusenstern" mense Augusti 1849. Collegit Dominus J. Rae. Museum Britannicum.

This species is smaller than the preceding, and of a green colour, having the carapace of a rounded form with a sharp keel running down the centre. It covers rather more than two-thirds of the body, and has the notch at its posterior extremity small and finely toothed on its edges. The spines on the body are small and of the same colour as the body itself. The first pair of feet or rami are very short, scarcely visible when the animal is in a prone position beyond the edge of the carapace. The tail-setæ are finely plumose, and the flap between them is of a somewhat square shape, short and toothed on its edges.

3. **LEPIDURUS VIRIDIS**, Baird. *Clypeo corporis magis quam dimidiam partem tegente, rotundato-ovali, viridi, valide carinata;*

setis caudæ brevi-pilosis ; lamina caudali ovali-lanceolata, carinata, denticulata.

Long. toti corporis 2 poll. ; lat. clypei 1 poll.

Lepidurus viridis, Baird, Proceedings of Zool. Soc. 1850, t. 17. f. 1.

Hab. "Van Diemen's Land." Museum Britannicum.

This species resembles considerably the *Lepidurus productus*. It is two inches long, and has the tail-setæ nearly as long as the body. The carapace and whole body are of a fine green colour ; the carapace of a rounded oval form and covering about two-thirds of the body. The edges of the notch in the posterior part of the carapace are strongly toothed, and those of the inferior half of the carapace are very finely serrated. The keel running down the centre is well marked and projects a short way beyond the edge of the notch. The tail-setæ are beset with very numerous short hairs, and the flap between them is of an oval lanceolate form, and has the keel beset with short sharp spines and the edges finely serrated. The first pair of feet or rami only slightly extend beyond the edge of the carapace.

Spurious Species.

Apus caudatus, De Kay, Nat. Hist. New York, Part 6, Crustacea, p. 61.

In the Journal of the Academy of Sciences of Philadelphia for 1818, vol. i., Mr. Say describes a parasitic Crustacean living on the *Calianassa major* (a malacostracous Crustacean), found on the coasts of the Southern States of N. America and of East Florida. He names it the *Binoculus caudatus* ; and in the Nat. Hist. of New York, Mr. De Kay refers this species to the order *Phyllopoda* and to the genus *Apus*, though he says, "I place it here with some hesitation." This animal being parasitic is no doubt referred by Say to the genus *Binoculus* of Geoffroy, (equivalent to the genus *Argulus*, and which must be placed in the order *Pæcilopoda*.) and not to the genus *Bino-culus* of Leach, as De Kay supposes, which is the *Apus* of authors.

Order OSTRACODA.

Family CYPRIDIDÆ.

Genus CYPRIS.

1. **CYPRIS BELCHERI**, Baird (Tab. XXIII. fig. 4). *Testa lucente, albida, elongata, stricta, supra arcuata, infra sinuata ; extremitate anteriore latiore, margine compressa, rugata ; extremitate posteriore mucronata.*

Long. $\frac{1}{10}$ poll. ; lat. 1 lin.

Hab. —? "From Sir E. Belcher's Collection, along with some freshwater shells from the islands of the Eastern seas." Museum Britannicum.

The carapace valves or shell is of an elongate and narrow form, having the anterior extremity considerably broader than the posterior, and flattened on the margin, which is marked with a good many raised-looking striæ, which give it a puckered appearance. The posterior extremity is pointed and acute. The upper margin of the carapace is

arched, while the under margin is sinuated. The valves of the carapace are convex in the centre and are of a shining white colour.

In form this species resembles considerably the *C. clavata*, Baird, Brit. Entomostraca, but is less club-shaped and more sharply pointed at posterior extremity.

2. **CYPRIS SCHOMBURGKII***, Baird. *Testa subviridi, hirsuta, puncturata, ovali; extremitate anteriore rotundata, margine subcompressa; extremitate inferiore oblique-truncata et mucronata, antennis pedibusque brevibus, setis plumosis.*
(Tab. XXIII. fig. 3.)

Long. $\frac{1}{6}$ poll.; lat. $\frac{1}{10}$ poll.

Hab. In insula St. Domingo, India Occidentali. Collegit M. Sallé. Museum Britannicum.

The carapace valves or shell is of an oval form, with the anterior extremity rounded in front and having its margin rather flattened or compressed, the posterior extremity being obliquely truncated above and terminating in a sharp point. The carapace is of a whitish green colour and covered all round the edges with rough coarse hairs. The valves are convex on the centre and have their surface dotted all over with small dots or punctures. The antennæ and legs are apparently very short, and the setæ of both are shortly plumose.

This is the largest species of the genus I have yet met with, being about $\frac{1}{8}$ th of an inch in length. Mr. James, in his account of the Expedition to the Rocky Mountains, mentions his finding a *Cypris* along with the *Apus obtusus* rather more than one-fifth of an inch in length.

2. ON THE GENUS THALURANIA. BY JOHN GOULD, F.R.S.

It is now some years since I proposed the generic name of *Thalurania* for the *Trochilus furcatus* and its near allies. This generic term having been adopted by the Prince of Canino and others, tends to show that the division is a good one, and hence a list of the species known up to the present time, with their native habitats, may not be uninteresting to the members at the present meeting. I would also take the present opportunity of laying before the Society a new and very beautiful species, which, as far as I am aware, is only to be seen in my own collection.

The species of this well-defined genus are—

THALURANIA FURCATA.

Hab. Cayenne, Demerara, and Brazil.

THAL. NIGROFASCIATA.

Hab. Woods on the banks of the Upper Amazon.

THAL. COLUMBIANA.

Hab. Temperate region in the neighbourhood of Bogota in Columbia.

* Named after Sir R. Schomburgk, British Consul in St. Domingo.



J. Wolf lith.

1 APTERYX MANTELLII 2 STERNA — 3 STERNA ALBA 4 GYGIS ALBA

M. & N. Hamhart, Imps

THAL. VENUSTA.

Inhabits Costa Rica and the southern portion of Mexico. The only species of the genus yet discovered to the north of Panama.

THAL. VIRIDIPECTUS.

A beautiful species lately sent to Europe from the Caraccas near to the Andes.

THAL. VERTICEPS.

A species found only in my own collection. It frequents the wooded regions on the west side of Pichincha in Ecuador. Sent to me by Mr. Jameson.

THAL. GLAUCOPIS.

Hab. South Brazil.

THAL. WATERTONI.

This is the largest species of the genus and a very beautiful bird.

Hab. Demerara.

THAL. WAGLERI.

Hab. The hilly regions of Brazil, particularly Minas Geraes.

THAL. ERIPHILE.

This species also inhabits Brazil, and is generally sent in collections from Rio.

THAL. REFULGENS, n. sp.

A species very like *furcatus* in colour, but nearly as large as *Watertoni*. The under tail-coverts are steel-black; crown of the head velvety black; breast and shoulders beautiful purplish blue; tail black and considerably forked; wings purplish brown; throat rich metallic green.

Hab. —?

January 27, 1852.

Professor Bell, F.R.S., in the Chair.

The following papers were read:—

1. NOTES ON THE EGGS AND YOUNG OF THE APTERYX, AND ON THE CASTS OF THE EGGS AND CERTAIN BONES OF *ÆPYORNIS* (ISID. GEOFFROY), RECENTLY TRANSMITTED TO THE ZOOLOGICAL SOCIETY OF LONDON. BY PROFESSOR OWEN, F.R.S., F.G.S., F.Z.S.

(Aves, Pl. XLVI.)

The Secretary placed upon the table casts of two eggs and of portions of the leg-bones of a gigantic bird of the Island of Madagascar, which had been presented by the Administration of the Garden of Plants in Paris to the Zoological Society of London, and on these Professor Owen made the following observations.

The casts were beautifully made and coloured, and were exact representations of the originals, which the Professor had examined during a visit to Paris in July last. These were received at the Garden of Plants in January last, and were described this day twelfth (January 27th) in a communication made by M. Isidore Geoffroy-St.-Hilaire to the Academy of Sciences*. They had been obtained by the master of a merchantman at the Island of Madagascar in 1850, from the natives, who stated that one of the eggs had been found, entire, in the bed of a torrent, amongst the debris of a land-slip: a second egg, with some fragments of bone, was subsequently found in a formation which is stated to be alluvial: a third egg, which the natives had perforated at one end, and used as a vessel, was also obtained. This egg was fractured in the carriage; the other two eggs arrived entire.

They are nearly of the same size, but differ in shape, one being shorter but a little thicker, and with more equal ends than the other. The following are admeasurements of these eggs and of an Ostrich's egg:—

	<i>Æpyornis.</i>		<i>Ostrich.</i>	
	Ovoid egg.	Ellipsoid egg.		
Greatest circumference:	ft.	in.	ft.	in.
Lengthwise	2	10 9	2	9 6
Breadthwise	2	4 3	2	5 6
Extreme length in a straight line	1	0 8	1	0 5
			0	6 4

M. Isidore Geoffroy estimates the larger of the two eggs to contain $10\frac{1}{3}$ quarts, or the contents of nearly 6 eggs of the Ostrich, or 16 of the Cassowary, or 148 of the Hen, or 50,000 of the Humming Bird. The portions of bones of which casts were exhibited consist of the lower end of the right and left metatarsal bones and the upper end of the right fibula. These are nearly equal in size to the corresponding parts of the skeleton of the *Dinornis*, as the following dimensions demonstrate:—

	<i>Æpyornis.</i>		<i>Dinornis giganteus.</i>		<i>Casuarius.</i>	
	in.	lin.	in.	lin.	in.	lin.
Extreme breadth across the trochlear condyles	5	0	5	6	2	3
Transverse diameter of shaft 6 in. above lower end† .	2	9	2	3	0	$11\frac{1}{2}$
Antero-posterior diameter of shaft 6 inches above lower end	1	3	1	5	0	7

In neither *Dinornis* nor *Æpyornis* is the metatarsus perforated, as in *Casuarius* and many other birds, above the interspace between the two outer condyles: that interspace is simply deeper, or curved higher in both. The outer trochlea, which is entire in both portions of the metatarsi in *Æpyornis*, is, in a marked degree, smaller than

* Comptes Rendus de l'Académie des Sciences, Jan. 27, 1851.

† One-third the length of the entire bone in *Dinornis giganteus*.

in *Dinornis*, as is also the inner trochlea, as far as one may judge from the posterior part which is preserved. The interspaces of the trochleæ are wider posteriorly in *Æpyornis*, and the outer one is more angular at its upper end. The middle portion of the posterior surface of the lower third of the shaft of the metatarsus in *Æpyornis* is more produced than in *Dinornis*, and a ridge is continued from it to each lateral trochlea, dividing the back part of the shaft above them into three surfaces; whereas the corresponding surface in *Dinornis* is simply flat from side to side. Above this part in *Æpyornis* the posterior surface on each side of the middle prominence is concave and meets the anterior surface at a ridge, which is narrowest at the outer border of the bone. In *Dinornis* both borders of the lower third of the shaft are thick and rounded.

The *Æpyornis* does not show any trace of the rough tract for attachment of a back toe, as in the *Palapteryx robustus*; in this respect it resembles the *Dinornis*.

At 6 inches from the lower end, the shaft begins to be concave along the middle of the fore part, the concavity deepening as it ascends; whereas in *Dinornis* the anterior median concavity of the shaft does not begin to appear until above the upper half of the bone. In this character the *Æpyornis* resembles the Cassowary; but it differs from the Cassowary in the much narrower or sharper lateral margins of the shaft of the metatarsus. Like the Cassowary, however, the breadth of the shaft is greater in proportion to that of the trochleæ than in the *Dinornis* or *Palapteryx*.

It would be hazardous to conclude as to the length of the entire metatarsus from the breadth of the distal end; for this is equal in *Dinornis giganteus* and *Palapteryx robustus*, whilst the length of the metatarsus is 1 foot 6 in. in the one and 1 foot 4 in. in the other. I think it more probable, however, that *Æpyornis* had a shorter than that it had a longer metatarsus than the *Dinornis giganteus*.

That its leg-bones were smaller is significantly indicated by the difference of size in the fibulæ.

	<i>Dinornis.</i>		<i>Æpyornis.</i>	
	in.	lin.	in.	lin.
The longest diameter of the upper end . .	2	11	2	9
The shortest diameter of the upper end . .	1	4	1	0

This bone in *Æpyornis* shows a flat, full, oval articular facet on its tibial side, of which there is no trace in *Dinornis*.

Upon the whole, therefore, Prof. Owen concluded that the *Æpyornis maximus* did not surpass in height or size the *Dinornis giganteus*, and that it was more probably a somewhat smaller bird.

From the obvious differences which M. Geoffroy found on comparing these fragments with the casts of the metatarsus of the *Dinornis giganteus*, he has inferred with much probability not only its specific but generic distribution, and has proposed for it the name of *Æpyornis maximus**. This distinction is illustrated not only by the metatarsal bones, but by the eggs themselves. Mr. Walter

* From *αἰπὺς* alta, *ὄρνις* avis. The trivial epithet is hazardous, to say the least, with the results of the comparison with the above recorded.

Mantell, of Wellington, New Zealand, has recorded his observation of an egg of a *Dinornis* found in the volcanic sand, of the magnitude of which he endeavours to give an idea by stating that his hat would have been but large enough to have served as an egg-cup for it.

The fragments of the egg of *Dinornis* or *Palapteryx*—of what species, of course, cannot be determined—show, after arriving approximatively at their size by the curve of the fragments, that the shell was not only absolutely thinner, but relatively much thinner than in the Ostrich, and *à fortiori* than in the *Æpyornis*. The air-pores, also, have a different form, being linear, not rounded; and the external surface is smoother.

In the smoothness and thinness of the shell, the egg of the *Dinornis* resembles that of the *Apteryx*: in the thickness of the shell and the comparative roughness of its exterior, the egg of the *Æpyornis* more resembles that of the Ostrich and Cassowary.

Such colour—a dull greyish yellow, as the *originals* of the eggs of the *Æpyornis* now at Paris show—may well have been derived from the recent alluvial soil in which it is stated that they were discovered: the darker stain on one part of the circumference of the larger egg seems to have been due to some accidental circumstance. Most probably they were originally white, like the eggs of the Ostrich, and like the fragments of the eggs of the *Dinornis*: whether an original green tint, like that of the egg of the Emu and Cassowary, would be wholly discharged by long continuance in the soil, may be a question.

It is most probable that the entire eggs of the *Æpyornis* were excluded in the usual fertile state, but had suffered such want or interruption of the heat requisite for their incubation as to have become addled.

How hazardous it is to judge of the size of a bird by that of its egg would appear, Prof. Owen observed, by the remarks which he should next proceed to offer on the eggs of the *Apteryx*. Of these the Professor exhibited one entire specimen, and a nearly fully incubated chick from a second egg, both of which had been most liberally transmitted to him by the Rev. Wm. Cotton, M.A., from the North Island of New Zealand.

Had it not been for the demonstration afforded by the chick itself, it might well have been doubted whether so small a bird could have excluded so large an egg. The following are the dimensions of the egg (*Aves*, Pl. XLVI.) :—

	Egg of <i>Apteryx</i> .		
	ft.	in.	lin.
Greatest longitudinal circumference	1	0	9
Greatest transverse circumference	0	10	0
Length	0	4	10
Breadth	0	3	2

The egg presents the usual long oval form, the colour a dull dirty greyish white; but this is partly due to grease stains from the decomposition of an incompletely hatched chick, with its yolk, within.

Viewed under a moderately magnifying power the surface presents a very fine fibrous, or spicular character; the raised lines, like spiculæ,

crossing in opposite directions, with air-pores scattered here and there and barely perceptible to the naked eye. The shell is not more than $\frac{1}{8}$ th of a line in thickness. Supposing, as is most probable, from the size of the bones of the *Æpyornis*, that it did not exceed the *Dinornis giganteus* in size, the egg of the *Æpyornis* is smaller in proportion to the bird itself than the egg of the *Apteryx* is in proportion to that bird.

The embryo *Apteryx*, which had been removed from its shell, had nearly reached the term of its incubation, the yolk-bag being reduced to a hernia-like appendage of an inch in length and half an inch in breadth, protruding about two lines in advance of the cloma, and covered by a continuation of the ordinary integument of the abdomen : the free end of the hernia was open, and exposed the ruptured ends of the allantoic vessels.

The whole body was clothed by down-fascicles, presenting the appearance of moderately thick cylindrical hairs, $1\frac{1}{2}$ inch in length, with a smooth, unbroken exterior, gradually tapering to a fine point. This smooth surface is due to an extremely delicate capsule, which when torn open exposes the down-tuft, consisting of a central stem with slender smooth barbs from 3 to 5 lines in length, diverging loosely from each side of the stem.

	in.	lin.
Length of the body from the base of the beak to the tail	4	0
Length of the beak	1	7
Length of the leg from the knee-joint	4	3
Length of the freely projecting part of the fore-limb from the elbow-joint	0	6

From these dimensions it will be seen that, with the characteristic large size of the unhatched young, in the genus *Apteryx*, the chief peculiarities of the remarkable external form of the bird had been acquired. The feet were very completely formed with well-developed claws, the small back claw presenting its characteristic proportions, and the integument of the naked part of the foot its well-marked dentations. The little wing-rudiments had their terminal hook. The tail presented the form of a short bifid prominence. The beak being comparatively soft, had become distorted and bent in the bottle of spirits in which the specimen was transmitted to the Professor, but it showed its characteristic shape, the terminal nostrils, and the slight terminal expansion, which forms the end of the crutch in the mature bird. The eyelids, with their cilia, and the orifice of the ear opening obliquely upwards, were rather larger in proportion than in the adult, according to the usual law of the precocious development of those organs of sense ; and the same remark applies to the entire cranium. The neck is relatively shorter and thicker.

The young bird must be excluded unusually well developed, with a complete clothing very like that of the parent, and capable of using its limbs and beak for its own safety and support.

February 10, 1852.

William Yarrell, Esq., in the Chair.

The Chairman exhibited a specimen of the *Echiodon Drummondii* of Mr. Thompson of Belfast, a very rare species of fish, of which only one example has been previously known. Dr. Drummond obtained the first specimen on the beach at Carnclough, near Glenarm in the county of Antrim, in June 1836, cast ashore probably by the tide of the preceding night, after a strong easterly wind. The species was considered new to ichthyology, and was first described and figured in the Transactions of this Society by Mr. Thompson, vol. ii. p. 207. pl. 38. Nothing that has transpired since the publication of Mr. Thompson's paper has induced a belief that this species had been previously known.

The specimen now exhibited was most liberally sent to Mr. Yarrell by Mrs. Blackburn of Valencia, in the county of Kerry, who was perfectly aware of the characters, the rarity, and the value of the fish. It was found by her daughter Helen on the shore of the harbour of Valencia, after a violent storm from the west, which occurred there on the 23rd of January last.

This example is smaller than the one noticed by Mr. Thompson, measuring only 8 inches in length, but quite perfect. Mr. Thompson's example measured 12 inches (Brit. Fishes, vol. ii. p. 417).

The following papers were then read:—

1. ON CYSTOSOMA SAUNDERSII, OF CURTIS AND WESTWOOD.

By A. W. SCOTT, M.A.

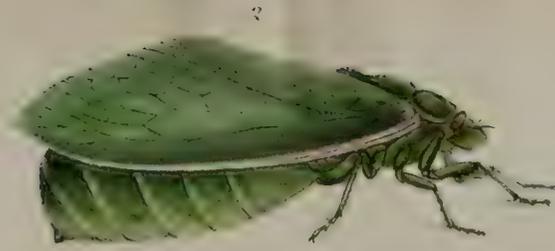
(Annulosa, Pl. XXI.)

Head small; sides of the thorax running in a straight line from the head to an acute angle behind; abdomen of the male deeply constricted immediately behind first segment; second joint of the antennæ distinct from the third, and not forming with it the tapering setæ which terminates them; upper wings destitute of a nervure running parallel to their inner margin.

The male (figs. 1 and 2) measures, in expanse of wings, nearly $4\frac{1}{4}$ inches; the female (fig. 3) $3\frac{3}{4}$ inches.

The antennæ (fig. 4, magnified) in both sexes are very short, 7-jointed, the two basal joints strong and thick, the remainder much finer and gradually terminating in a point.

The legs, anterior pair (fig. 5), with two minute spurs at the apex of tibia; the femora are robust, with their lower edges serrated; the second (fig. 6) and posterior (fig. 7) pairs longer than the anterior, with minute spurs on the ends of the tibiæ and setæ, placed in pairs and evenly distributed along the inner edge; the femora of these are slender and not serrated. The tarsi of all the legs 3-jointed, and terminated by two strongish claws, and fringed underneath by setæ.



Cystosoma Saundersii

From the base of each coxa of the second and posterior pairs there proceeds a large flexible spine.

The upper wings (fig. 8) are coriaceous, lanceolate and sharply pointed, with the cells of inner side open, and not shut in by a long marginal nervure as in the true *Cicada*. The under wings (fig. 9) are small, and furnished with very weak nervures.

The colour of the whole upper surface of both sexes is of a pale delicate green, with the exception of the posterior wings, which are transparent, possessing, however, a slight greenish tinge. The costæ of the fore-wings are white, with a pinkish hue running along the centre. The under portion of the base of the upper wing inclines to yellow, which colour extends round the thorax. The antennæ are black, and the eyes a bright, light reddish colour. In the preserved specimens, the beautiful delicate green, which constitutes the general colour, becomes duller and darker, and frequently assumes a hue of sickly yellow.

The drums of the male (fig. 10) are rounded, and marked by seven transverse furrows, slightly tinged with brown, in the middle, and different from those of the true *Cicada* in being more conspicuous on a dorsal view of the insect. Besides, the abdomen is deeply constricted immediately behind them, so that the first segment appears as it were to form part of the metathorax, and the abdomen seems merely composed of the seven last segments, which are here exceedingly inflated, as in the orthopterous genus *Pneumora*.

The abdomen of the female is of a size and form more corresponding to that of the female *Cicada*, but it is of a more cylindrical form and less angular at the sides. The dilated sides of the metasternum, which form the two plates covering the under sides of the drums in the male, are here comparatively small.

These insects are extremely numerous on Ash Island, principally inhabiting an orange grove of about 1200 trees, and we scarcely ever remember seeing one beyond a few rods of the limits of this garden, nor have we ever heard of or discovered a single specimen elsewhere, with the exception of the few brought by Sir Thomas Mitchell from the interior.

During the short twilight of this country, the male commences and ends his song, which resembles a loud deep guttural, R, continued incessantly, and with vibrations. So loud indeed is this sound, that when near to several insects it becomes even painful to the ear. It is, moreover, very unlike the shriller and harsher notes uttered by the common *Cicada*.

In this brief period after sunset the males and females occasionally fly from tree to tree, their flight being slow and steady, particularly that of the former. The only other time in which these insects are heard is immediately, in hot and sultry weather, before a thunder-storm, and then only at broken intervals. This habit was particularly noticed on our placing the males on a bunch of flowers in the drawing-room, where every evening they regaled us with their short-lived song, and at other periods occasionally predicted the coming storm.

The larvæ live underground upon the roots of plants, and in their

habits and transformations closely approximate to those of the common *Cicada*.

The perfect insects appear early in September, and are to be found until about February. They are extremely easily captured, the females being taken when in flight by a common butterfly net, and the males by going to the spot from where their voices proceed, and suddenly shaking the bough, which causes them to drop to the ground, when they may be picked up.

The male has been indifferently figured under the name of *Cystosoma Saundersii*, in the 'Arcana Entomologica,' in which Mr. Westwood mentions its affinity to *Hemidictya*, and gives good dissections. His description, however, is not correct, when he characterizes the insect as "pallide lutea," whereas the species is "læte viridis." The female, we believe, is not known in England.

Ash Island, Hunter River, New South Wales,
Nov. 6, 1851.

2. DESCRIPTION OF A NEW SPECIES OF ANOMALURUS, FROM FERNANDO PO. BY LOUIS FRASER, H.B.M. VICE-CONSUL FOR THE KINGDOM OF DAHOMEY, NATURALIST TO THE NIGER EXPEDITION IN 1841-42, LATE CURATOR TO THE ZOOLOGICAL SOCIETY OF LONDON, AND LATE TEMPORARY CONSERVATOR OF THE KNOWSLEY COLLECTION, ETC.

(Mammalia, Pl. XXXII.)

The Proceedings of this Society contain the description of a very interesting new form of Rodents, discovered by myself at Fernando Po, and to which the name *Anomalurus Fraseri* was given by Mr. Waterhouse. A second species of the genus has subsequently been found in Ashantee, by an enterprising collector sent out by the Directors of the Leyden Museum, and has been named after its discoverer, by M. Temminck, *Anomalurus Peltii*. I have now to submit to your notice a third species of the genus, which I propose to name after my friend and coadjutor, John Beecroft, Esq., H.M. Consul for the Bights of Benin and Biafra, also Spanish Governor of the island of Fernando Po, as a just tribute to one who has devoted upwards of twenty-three years to the cause of Western Africa and its inhabitants, and whose knowledge of both is unequalled. This extraordinary gentleman has entered all (or nearly all) the rivers on this coast, so fatal to Europeans, and after six weeks' search amongst the swamps and creeks, has discovered the junction of the Benin and Niger: this latter river he has navigated three or four times as high up as Rabba. He also ascended Clarence Peak.

The principal peculiarities of the three species of *Anomalurus* are as follows:—

ANOMALURUS FRASERI, Waterh.

General hue of the upper parts brown; the flank-membranes dusky or black; under parts dirty white, slightly washed with buff-yellow; a considerable area around the base of the ears black, as well as the



ANOMALUPUS BECCROFTI. Fraser

ong hairs on the basal part of those organs; cheeks deep brown; throat grey; feet and tail dusky.

Hab. Fernando Po.

ANOMALURUS BEECROFTI, Fraser (Mammalia, Pl. XXXII.).

Upper parts, including the greater portion of the flank-membranes, yellowish grey, slightly inclining to rufous on the mesial line of the back, especially on the fore part; under parts of a bright rust colour; cheeks and throat grey, excepting that the latter has a narrow rust-coloured mark in the middle; a white spot on the crown of the head (probably not constant), and a short white band on either side of the neck running on the shoulders; a dusky patch on the flank-membrane above, commencing on the margin of the membrane near the anterior part, and extending backwards and inwards rather less than half way along the flanks; tail dusky brown.

Hab. Fernando Po.

This species is rather larger than the *An. Fraseri*, and differs, moreover, in the upper parts of the body being yellow-grey, instead of brown; in having the greater portion of the flank-membranes as well as the feet grey, instead of dusky; in wanting the conspicuous black area around the base of the ears—the part in question being of the same general grey colour in *An. Beecrofti* as other parts; in having the cheeks hoary grey, instead of deep brown; and in having the under parts of a bright rusty red. There are differences likewise to be observed in the scales on the under side of the tail; they cover less space in the longitudinal direction, are broader, and have the projecting angles less prominent.

	in.	lin.
Length from tip of nose to root of tail	15	0
——— of tail	9	0
——— of the scaly portion beneath	3	3
——— from nose to ear	2	3
——— of ear	1	3
——— of fore foot and claws	1	11
——— of hind foot and claws	2	9

ANOMALURUS PELII, Temminck.

Larger than either of the foregoing. Black above; dirty white below; throat dusky; chin, upper surface of the nose, the region of the muffle (or naked portion of the nose), the long and soft hairs on the outer surface of the ears at the base, and the tail, white; the flank-membrane is broadly margined with white, and the hairs on the feet are for the most part white, but with an admixture of black or dusky; the long hairs springing from the base of the nails of the hinder feet are black.

Hab. Ashantee.

February 10, 1852.

W. Yarrell, Esq., in the Chair.

The following papers were read:—

1. MONOGRAPH OF THE FAMILY BRANCHIPODIDÆ, A FAMILY OF CRUSTACEANS BELONGING TO THE DIVISION ENTOMOSTRACA, WITH A DESCRIPTION OF A NEW GENUS AND SPECIES OF THE FAMILY, AND TWO NEW SPECIES BELONGING TO THE FAMILY LIMNADIADÆ. BY W. BAIRD, M.D., F.L.S. &c.

(Annulosa, Pl. XXII. XXIII.)

Next to the *Apodidæ*, the largest species of *Entomostraca* belong to the family *Branchipodidæ*. This family contains perhaps the most beautiful animals of the division, elegant in form and graceful in movement. The species are, geographically, widely extended, but those as yet described are few in number.

The Family may be thus characterized.

Order PHYLLOPODA.

Family BRANCHIPODIDÆ.

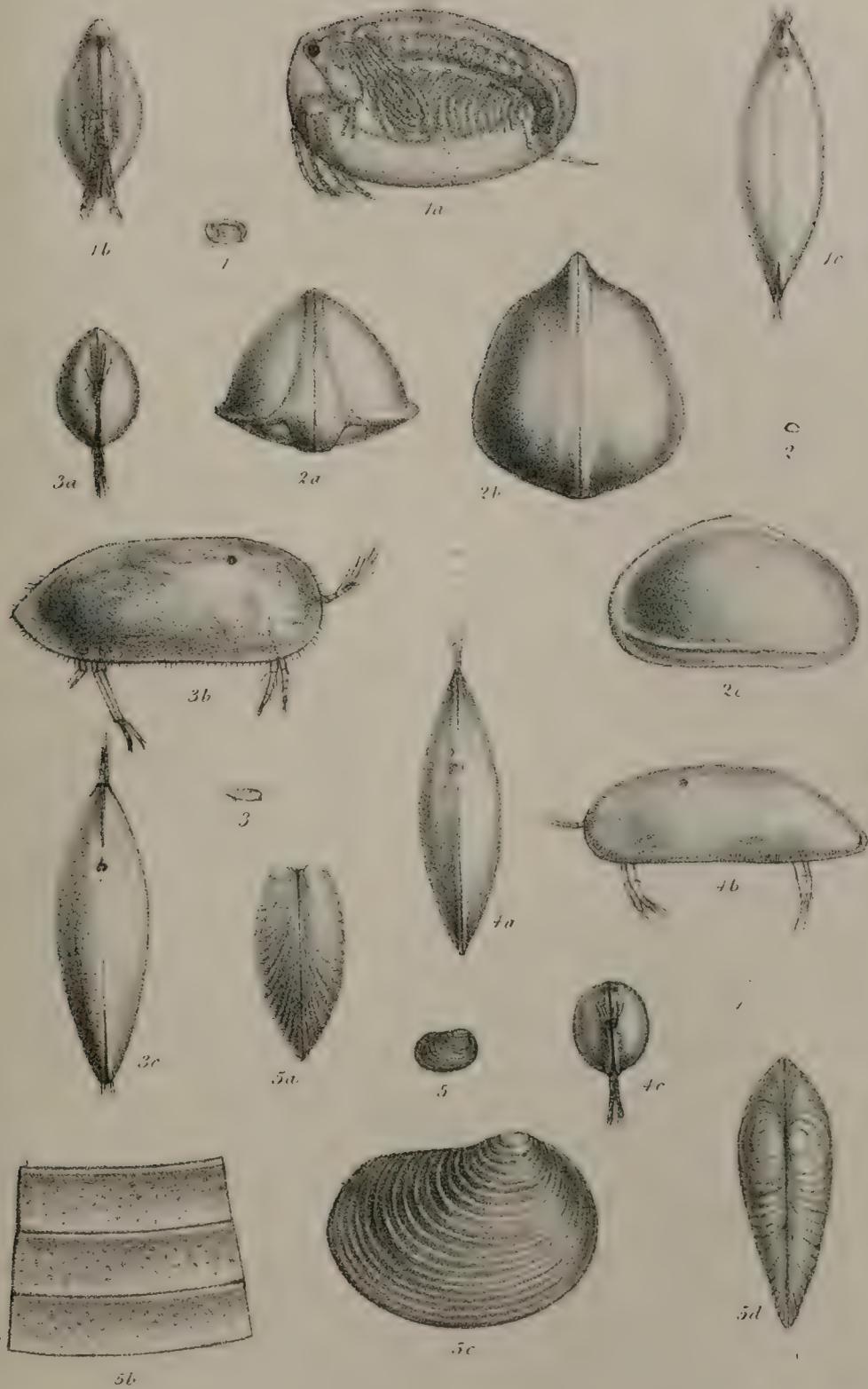
Pedes branchiales, paribus undecim ad novemdecim. Antennæ dissimiles, paribus duobus; par inferior in mare prehensilis. Oculi duo, pedunculati. Corpus cylindricum, nudum, clypeo nullo obtectum.

The feet are all branchial, being formed entirely for breathing with, and consist of 11 pairs, each pair gradually enlarging in size as they descend. They are in constant motion, and when so, present a very beautiful wavy appearance. Like the *Apodidæ* the animals of this family swim upon their backs. The body consists of a considerable number of segments, and is quite naked, having neither a shield-shaped carapace like the *Apodidæ*, nor a bivalve-shell-shaped carapace like the other families of the Order *Phyllopoda*. The antennæ are dissimilar in appearance in the male and female. The superior pair in both sexes are slender and filiform, but the inferior pair are much larger in the male than in the female, and serve the purpose of prehensile organs. The eyes are two in number, compound, oval-shaped, and are placed upon considerable-sized peduncles. Like the *Apodidæ*, the young *Branchipodidæ* have only one eye, which disappears in the process of moulting, but leaves a mark behind which remains visible in the adult.

The species included in this family are referable to five genera.

Genus BRANCHIPUS, Schæffer.

Corpus molle, cylindricum, segmentum caudale pinnis duabus ciliatis instructum. Pedes undecim. Antennæ inferiores maris magnæ, bi-articulatæ, cornibus similes, appendicibus duabus filiformibus, antenniformibus, armatæ.



1 *Limnadia antillarum*. 2 *Cypris cuneata* (?) 3 *Cypris Schomburgkii*
 4 *Cypris Belcheri* 5 *Estheria Dallasii*.

The body is soft, cylindrical in shape, and is composed of twenty-two segments. The head consists of two and the thorax of eleven, each of which gives attachment to a pair of branchial feet. The abdomen consists of nine, the caudal segment dividing into two broad flat appendages of some length, and plumose on their edges. The inferior antennæ, or "cephalic horns," in the male are large organs; they are composed of two articulations, which being cylindrical and curved at the apex give an appearance of a pair of horns, and they have springing from near their base a filiform appendage closely resembling in appearance the superior antennæ. The structure of these inferior antennæ, or cephalic horns as they are generally termed, and the filiform appendage at their base, which are frequently described as an additional pair of antennæ, sufficiently distinguish the genus.

Only two species of *Branchipus* have as yet been described.

1. *BRANCHIPUS PISCIFORMIS*, Schæffer. *Antennis inferioribus maris magnis, compressis, apice bifurcatis; appendicibus anten-niformibus filiformibus prælongis; fronte prolongato, bisulco.*

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

Syn. *Apus pisciformis*, Schæffer, Der Fisch-form. Kiefenfuss, etc. t. 5. f. 1-11 (1752).

Cancer stagnalis, Linnæus, Syst. Nat. edit. 10. 634 (1758); Faun. Suec. ed. 2. 497. No. 2043 (1761); Fabricius, Ent. Syst. ii. 518. No. 11; Mantiss. i. 335. No. 10; Müller, Zool. Dan. Prodrum. 2351; O. Fabricius, Faun. Grœnland. 247. No. 224.

Branchipus pisciformis, Schæffer, Element. Entomol. t. 29. f. 6, 7 (1766).

Gammarus stagnalis, Fabricius, Syst. Entom. 419. No. 5.

Cancer (Gammarellus) stagnalis, Herbst, Krabben und Krebse, ii. 121. No. 66. t. 35. f. 8-10 (1796).

Branchiopoda stagnalis, Lamarck, Syst. An. s. Vert. 161; Latreille, Hist. Nat. Crust. iv. 319. t. 36, 37; Gen. Crust. i. 22; Bosc, Man. d'Hist. Nat. Crust. ii. 234.

Branchipus stagnalis, Latreille, Enc. Méth. t. 336. f. 14-16; Règne Anim. iv. 174; Leach, Dict. Sc. Nat. xiv. 542; Edin. Encyc. vii. 384; Desmarest, Cons. gen. Crust. 389; Lamarck, Hist. An. s. Vert. v. 133; M. Edwards, Hist. Nat. Crust. iii. 367; Règn. An. ed. Crochart, t. 74. f. 2.

Branchipus Schæfferi, Fischer de Waldheim, Bull. Soc. Imp. Moscou, vii. (1834); Thompson, Zool. Research. fasc. v. t. 3. f. 1-3 (1834).

Branchipus melanurus? Koch, Deutsch. Crust. H. 35. t. 2.

Ino stagnalis? Oken, Lehrb. der Naturg. iii. 399.

Larva aquatica, Linn. Faun. Suec. ed. 1. 358. No. 1357.

Hab. In vicinitate urbis Ratisbonæ; Schæffer. In vicinitate urbis Paris; M. Edwards.

This species according to Schæffer's description is half an inch long, about the thickness of a straw, and semipellucid. The male is generally of a pale red or flesh colour, though sometimes varying between vermilion and orange. The female is of a dull green, with the

ovaries generally of a bright blue. The inferior antennæ of the male are large organs, somewhat flattened in shape, broad at the base, toothed at about two-thirds of their length on the external edge, and becoming narrower near the extremity, which presents an appearance as if somewhat bifurcated. Those of the female are much shorter, cylindrical, and pointed at the extremity. The two antenniform appendages arising from near the base of these organs in the male are of considerable length, longer than the antennæ themselves, and filiform. The front of the head is prolonged into a prominence which is cleft down the centre and forked. The feet are long, composed of three joints, all of which are nearly of equal size, and have their edges beset with numerous short hairs or setæ, which when magnified are finely plumose. The caudal fins are of considerable size, flat and plumose. The male organs are slender and rather long.

2. *BRANCHIPUS SPINOSUS*, M. Edwards. *Antennis inferioribus maris magnis, cylindricis, apice acuminatis; appendicibus antenniformibus curtis, crassis; abdominis segmentis infra spiniferis.*

Long. 1 poll. 2 lin.

Branchipus spinosus, M. Edwards, Hist. Nat. Crust. iii. 367.

Hab. In lacu salino "Hadjibé," in vicinitate urbis Odessæ; *M. Nordmann.*

This species, which was discovered by Professor Nordmann in a salt lake near Odessa, is upwards of an inch in length. The inferior antennæ of the male are large, cylindrical, the terminal articulation being sharp at the point. They possess no tooth or process, and the antenniform appendages are very short compared with those of the preceding species, and of a considerable degree of thickness. The front of the head has no prolongation. The feet are short. The segments of the abdomen are armed underneath with sharp spines, and the caudal fins are short and plumose. The male organs are short and obtuse.

Genus STREPTOCEPHALUS.

Corpus cylindricum, segmentum caudale pinnis duabus ciliatis instructum; pedes undecim; antennæ inferiores maris triarticulata, valde tortuosæ, ad apicem in ramos graciles divisæ, appendicibus antenniformibus armata.

In the structure of the body, abdomen, and feet, this genus resembles entirely the preceding. The inferior antennæ, or cephalic horns, in the male, however, are very different in structure; they are longer in proportion than the corresponding organs in the *Branchipus*, consist of three articulations, and are singularly twisted, and bent as it were into elbows. The terminal joint divides at the apex into two branches. They are inhabitants of fresh water. Only two species have as yet been described, and I now add a third to the number.

1. *STREPTOCEPHALUS TORVICORNIS*, Waga. *Antennis inferioribus maris validis, ramis terminalibus elongatis, serratis, interno*

longiore, processu triangulari brevi armato, appendicibus antenniformibus elongatis filiformibus; fronte prolongato, acuminato; ovario externo conico.

Long. maris 1 poll., fœminæ circa 14 lin.

Branchipus torvicornis, Waga, Ann. Soc. Ent. de France, xi. 261. t. 11. f. 1-4.

Hab. In vicinitate urbis "Warsaw;" *Krynicky*.

This species, which was discovered by M. Krynicky in a muddy stagnant piece of water near the town of Warsaw, is upwards of an inch in length, the female being longer than the male. The inferior antennæ or cephalic horns of the male are very large, when extended equalling in length the whole body. The basal joint is strong, and broad at its junction with the head; the second is short, and the third is divided at the apex into two branches, which are long, slender and serrated on their inner edges, the internal one being the longer, bent into the form of a hook, and having on its external edge a process of a triangular form and acuminated at the point. The first and second joints are armed with several minute teeth, and the antenniform appendages are straight, slender, but somewhat stouter than the superior antennæ. The front of the head is prolonged into a prominence which is pointed. The inferior antennæ in the female are flat, and obtusely rounded at the extremity. The ovarian bag is conical in shape and of a blue colour. The caudal fins are of considerable size and plumose on their edges.

2. *STREPTOCEPHALUS CAFER*, Lovén. *Antennis inferioribus maris longis, articulo basali intus appendice lacinulata brevi prædito, ramo terminali interno longo, flexuoso, inermi; fronte prolongato, in rostrum lunatum producto; ovario externo caligæformi.*

Long. 15 millim.

Branchipus cafer, Lovén, Kongl. Wet. Akad. Handl. 1845, 433. t. 5. f. 1-20.

Hab. In paludibus terræ Cafrorum Natalensium; *Wahlberg*.

This species was discovered by M. Wahlberg in some pools of fresh water in Port Natal, and is about 15 millimetres in length. The inferior antennæ or cephalic horns in the male are long stout organs and flexuose in shape. The basal joint is rather short, rounded, and is furnished at its base on the internal edge with a short appendage of a lanceolate form and toothed on its edge externally. The third joint divides at the apex into two branches, the internal one being long, slender and flexuose, the external being club-shaped and forked at the extremity, dividing into two other slender branches of unequal length. The antenniform appendages are filiform and flexuose. The front of the head is prolonged into a narrow deflected beak, which is forked at its extremity. The male organs are long and slender; they are composed of four articulations, the last of which is much the longest, is curved, and armed on each side with a numerous row of teeth and spines.

In the female the cephalic horns are broad, thick, and furnished

with a sharp hooked point at the extremities. The caudal fins are of considerable size and finely plumose. The oviferous sac is long and narrow, and resembles very much in shape a long stocking or boot. The ova are of a rosy colour.

3. *STREPTOCEPHALUS SIMILIS*, Baird (Tab. XXII. fig. 3, 4). *Antennis inferioribus maris longis, cylindricis, appendice lunulata destitutis, ramis terminalibus præcedenti similibus, appendicibus antenniformibus filiformibus elongatis; fronte prolongato, in rostrum bilobatum producto; ovario externo conico.*

Long. maris 8 lin., fœm. 6 lin.

Hab. In insula "St. Domingo," in India Occidentali. Collegit M. Sallé. Mus. Brit.

This species, which was found by M. Sallé in the island of St. Domingo in the West Indies, is of a slender and cylindrical form. The male is about $\frac{5}{8}$ ths of an inch in length, and the female half an inch. The inferior antennæ or cephalic horns in the male are large and tortuous; they are composed of three joints; the first or basal joint is the largest, is cylindrical, and extends for some distance straight forwards; the second, smaller than the basal, is also cylindrical, curves slightly at first, then bends suddenly backwards upon itself; the third or terminal joint bends as suddenly forwards and terminates in a club-shaped extremity, which divides into two branches, one longer than the other, terminating in a long filiform process; the other flatter, shorter, and dividing into two shorter filiform processes of unequal length. The antenniform appendage is long and cylindrical, rather stout, and springs from close to the extremity of basal joint. The basal joint is destitute of the lanceolate, toothed appendage on internal edge, which we see in the preceding species. The superior antennæ are long and slender, and consist of two joints, the basal one much shorter than the second. The male organs are rather long, cylindrical, and of a horny texture. The front of the head is prolonged into a beak, which is flat, rather broad and slightly lobed at the extremity. Feet short. Abdomen slender. Caudal appendages of moderate length, and beset on each side with numerous short and plumose setæ.

The cephalic horns in the female are short, thick, and terminate in a short spine at the extremity. The ovarian bag is conical, acute, and the ova are of an ochreous colour.

The chief differences between this species and *S. cafer* consist, in the male, in the shape of the front of the head, the organs of generation, and in the inferior antennæ having no lamina with teeth on the basal joint; in the female, in the shape of the external ovary.

GENUS CHIROCEPHALUS, Prevost.

Corpus molle, cylindricum; segmentum caudale pinnis duabus ciliatis instructum; pedes undecim; antennæ inferiores maris validæ, biarticulatæ, appendicibus digitiformibus flabelliformibusque armatæ.

This genus closely resembles the two preceding in the shape and

form of the body, having the same number of articulations, possessing the same number of feet, and having similar caudal fins. It is in the structure of the inferior antennæ or cephalic horns in the male, that the important difference between the two genera exists. These antennæ are very large, and are composed of two joints. At the base of the first joint a complicated apparatus arises, which when unfolded presents a very curious appearance. This consists of a long, flat, curved, very flexible body, somewhat tapering and toothed on its edges, and composed of numerous short articulations, which the animal can fold up upon itself like a ribbon. Springing from its external edge near the base are four rather long and flexible appendages strongly toothed on their internal edge, somewhat resembling long fingers, and in addition to these a large membranous triangular-shaped body, toothed on its edges all round, which when extended nearly covers the finger-like bodies, and can be folded and unfolded like a fan. When the animal is at rest these organs are folded up underneath the head in the same manner as a butterfly folds its proboscis, but when in pursuit of the female they become extended at full length and present a very beautiful appearance.

Five species of this genus have now been described.

1. *CHIROCEPHALUS DIAPHANUS*, Prevost. *Antennis inferioribus maris validis, cylindricis, apice acuminatis, processu dentato ad basin articuli secundi armatis; fronte rotundato.*

Long. maris 14 lin., fœminæ 1 poll.

Pro Synonymis vide "Baird's Nat. Hist. of the British Entomotraca, Ray Society, 1850."

Hab. In Anglia, Gallia, prope Genevam, &c. &c.

This species, which occurs in many places in England, as well as in France, Switzerland, &c., is very elegant in form, and (the male more especially) very beautiful in colour. It is upwards of an inch in length, slender, of a cylindrical form, and nearly transparent. In the male the inferior antennæ or cephalic horns are of a beautiful translucent bluish green colour, tipped at the extremity with a fine red hue. The caudal fins are of a bright red. The female has a strip of blue along the whole length of the back, and the ovarian bag when full of ova is conical in shape and of a reddish brown. The inferior antennæ of the male are very strong organs, divided into two joints; the basal joint is thick and fleshy, and the terminal joint is cylindrical and curved in the form of a horn, having at the base where it joins the first joint a flat plate attached to it, beset with several stout teeth. The apparatus which we find at the base of the first joint, consisting of the long, flat, somewhat tapering body with its digitiform and fan-shaped appendages, is of a very delicate transparent bluish green colour. The antennæ of the female are short, stout, pointed at the extremity, flexible, and slightly curved downwards.

2. *CHIROCEPHALUS LACUNÆ*, Guérin. *Antennis inferioribus maris validis, valde arcuatis, articulo basali magno, dentato, terminali cylindrico, ad apicem sinuato.*

Long. maris et foeminæ 12–15 millim.

Branchipus lacunæ, Guérin, Iconog. Règn. Anim. Crustacés, 39. t. 33. f. 4, 4a.

Hab. In stagnis prope "Fontainebleau;" *M. Guérin*.

This species, which is briefly described by M. Guérin in the 'Iconographie du Règne Animal,' is found in little pools of water near Fontainebleau. It is transparent, but is smaller than the preceding species, and is distinguished from it by the shape of the inferior antennæ or cephalic horns in the male. These organs are of two joints; the basal one large, and armed on its internal edge with several stout teeth or lobes; the second much smaller, cylindrical, bent suddenly back upon the first, and sinuated, or as it were slightly toothed at the apex. The long ribbon-like appendage which springs from the base of the first joint appears to have only two very short processes attached to it, instead of the four long finger-like bodies, and the fan-shaped body is not represented at all; but this part of the head is not sufficiently described by M. Guérin to enable me to satisfactorily ascertain its exact structure.

3. *CHIROCEPHALUS CLAVIGER*, Fischer. *Antennis inferioribus maris validis, articulo basali magno, terminali parvo, ad basin dentato, ad apicem clavato; antennis superioribus quadri-articulatis; fronte rotundato.*

Long. 8–10 lin.

Branchipus claviger, Seb. Fischer, Middendorff's Sibirische Reise, ii. Wirbellose, 149. t. 7. f. 1–11 (1851).

Hab. In fluvio Taimyr, in Siberia; *Middendorff*.

This species, which is about 8 or 10 lines long, was discovered by M. Middendorff in a pool of water by the river Taimyr in Siberia. The inferior antennæ of the male are strong organs; the basal joint being stout and fleshy and the terminal narrow, provided with about a dozen small teeth at its base, and ending in a club-shaped extremity. The digitiform appendages are more numerous apparently than in *C. diaphanus*. They arise from the extremity of the long riband-like appendage, instead of from its base, and each of them has several teeth on the sides and apex. In the female these antennæ are small, narrow and sharp-pointed. The superior antennæ are divided into four articulations.

4. *CHIROCEPHALUS BIROSTRATUS*, Fischer. *Antennis inferioribus maris validis, articulo basali magno, terminali mediocri, prope basin processu elongato armato, ad apicem uncinato.*

Long. 10–12 lin.

Branchipus birostratus, Seb. Fischer, Middendorff's Sibirische Reise, ii. t. 7. f. 12–16 (1851).

Hab. Prope urbem "Charkow" in Russia; *Fischer*.

This species is about 10 or 12 lines long, and was found by Fischer in the neighbourhood of the town of Charkow, in Russia. The inferior antennæ of the male are strong organs, the basal joint stout and fleshy, the terminal of moderate size, having, springing

from near its base, a somewhat elongated process armed with sharp teeth at its extremity, and ending in a sort of hooked point. The riband-like process appears similar to that of *C. diaphanus*.

5. **CHIROCEPHALUS MIDDENDORFFIANUS**, Fischer. *Antennis inferioribus maris validis, articulo basali magno, longissimo, numerose dentato, terminali cylindrico, acuto; antennis superioribus quadri-articulatis; fronte quadrangulari.*

Long. 7-9 lin.

Branchipus Middendorffianus, Seb. Fischer, Middendorff's Sibirische Reise, ii. 153. t. 7. f. 17-23 (1851).

Hab. In fluviis "Taimyr et Boganida" in Siberia; prope "Tri-Ostrowa" in Lapponia; *Middendorff*.

This species, which is only from 7 to 9 lines in length, was found by Middendorff in pools on the banks of the rivers Taimyr and Boganida in Siberia, and in Lapland near Tri-Ostrowa. The inferior antennæ in the male are stout organs, the basal joint being very long and fleshy and armed along the inner edge with a long row of many teeth, the terminal being cylindrical in shape and pointed at the extremity. The superior antennæ are four-jointed, and the front of the head is of a quadrangular shape. The ovarian sac in the female is long and rather slender, and appears to be notched at the base.

GENUS ARTEMIA, Leach.

Corpus molle, gracile; segmentum caudale pinnis nullis instructum; pedes undecim; antennæ inferiores maris magnæ, biarticulatae, compressæ, appendicibus nullis armatae.

Syn. *Cancer*, Linnæus.—*Gammarus*, Fabricius.—*Eulimene*, Latreille et auctorum.—*Artemia*, Leach et auctorum.—*Branchipus*, Latreille, Fischer, &c.—*Artemisus*, Lamarck.—*Artemis*, Thompson.

The body in this genus consists of the same number of segments as in the three preceding, is soft and without covering, but is more slender in shape, and has the caudal segment simply bilobed at the extremity, instead of being armed with two large plumose fins. The inferior antennæ in the male are large, flat-shaped, broad, and divided into two articulations. The basal joint has neither the antenniform appendage of *Branchipus* and *Streptocephalus*, nor the complicated digitiform and fan-shaped apparatus of *Chirocephalus*. They inhabit salt water, frequently even in water which is very highly charged with salt. They swim upon their backs.

The genus *Eulimene* was founded by Latreille in 1817, in Cuv. Règn. An. 1st edit. iii. 68; that of *Artemia* by Leach in 1819, in the Dict. Sc. Nat. xiv. The term *Eulimene*, however, had been previously used by Peron for a genus of *Acalepha*, and though the name *Artemia* is liable to objections from its construction (*Artemia* for *Artemis*), I prefer adopting it to burdening the nomenclature with another synonym.

Five species have been described.

1. **ARTEMIA SALINA**, Leach. *Antennis inferioribus maris validis,*

compressis, articulo secundo lato apice acuminato, basali unidentato; segmento caudali setigero; ovario quadrilaterali.

Long. 6 lin.

Pro Synonymis vide "Baird's British Entomostraca," et adde:—

Eulimene albida, Latreille, Nouv. Dict. d'Hist. Nat. x. 535; Cuv. Règn. An. 2nd edit. iv. 178; Desmarest, Cons. gen. Crust. 394; Risso, Hist. Nat. Eur. Mérid. v. 165; Lamarek, Hist. Nat. An. s. Vert. 2nd edit. v. 199 (note); M. Edwards, Hist. Nat. Crust. iii. 371; White, Catalogue of Crustacea, Brit. Mus.

Artemia Eulimene, Leach, Dict. Sc. Nat. xiv. 543.

Hab. In salinis ad "Lymington," in Anglia; prope "Montpellier," in Gallia; in Mediterraneo, prope "Nice," &c.

This species, which seems to have been first observed by M. Schlosser, in the salt-pans at Lymington, is nearly white, slender, and about half an inch in length. The abdomen is long, fully as long as the body, and the caudal segment is simply divided into two small lobes, which give origin to several short setæ. The inferior antennæ in the male are divided into two articulations, the basal one of which has on its inner edge at about half of its length, a short, stout, conical tooth. The terminal joint is broad, bends nearly at a right angle about the middle of its length, and terminates in a sharp point. In the female these organs resemble closely those of the preceding genus. The ovarian bag is large, of a quadrilateral shape, somewhat pointed at the two sides, and opens at both sides to allow the ova to escape.

The genus *Eulimene* was founded by Latreille to receive a small crustacean which was found by M. Cuvier amongst some marine animals which he had received from Nice. The chief character by which he distinguished the genus was the extreme shortness of the abdomen, which he considered terminated almost immediately after the last pair of feet in a swollen, semiglobular lobe filled with a blackish matter, and having springing from it a long thread-like body, of a dark colour also, and which he conjectured might be an oviduct. In the British Museum are many specimens of this little animal, received by Dr. Leach from M. Cuvier, and labelled by Dr. Leach himself, "*Artemia Eulimene*, from Nice, given by M. Cuvier." From a careful examination of this species I consider it specifically identical with the *Cancer salinus* of Linnæus, the *Artemia salina* of Leach. The specimens in the Museum are all females, and upon comparing them with specimens of *Artemia salina* from Lymington, no difference is perceptible, except that the specimens from Nice are rather whiter in colour and have the ovarian bag and abdomen of a darker hue. It is undoubtedly this dark-coloured ovarian bag that was mistaken by Latreille for the termination of the body, and the "long filament like an oviduct" which springs from it, is in reality the abdomen. The difference in colour evidently depends upon the food of the animal, the alimentary canal of the specimens from Nice being filled with a dark-coloured matter, thus giving the abdomen a blackish hue, while those from Lymington have the canal filled with matter of a brownish tint. In the second edition of the 'Règne Animal,'

in his notice of the *Artemia salina*, Latreille says, it is a species, "sur lequel nous n'avons encore que des renseignements très imparfaits." From this it would appear that he had never seen that species, and as most probably the specimens he had received from Cuvier were a little injured from having been preserved in spirits, it is not at all surprising that he did not observe the identity of the two.

2. ARTEMIA MILHAUSENII, Fischer. *Antennis inferioribus maris gracilibus, articulo secundo angusto; segmentis duobus cephalicis longis, segmento caudali bilobato, non setigero.*

Long. 5 lin.

Branchipus Milhausenii, Fischer, Bull. de la Soc. Imp. Nat. Moscou, vii. 1834.

Artemia Mulhausenii, M. Edwards, Hist. Nat. Crust. iii. 370.

Artemia salina, Rathke, Faun. der Krym. 395. t. 6. f. 14-21.

Hab. In lacu salino "Loak" in Crimea; *M. Milhausen*.

This species, which was found by M. Milhausen in the salt-water lake of Loak in the Crimea, is about 5 lines in length and of a brown colour. The inferior antennæ of the male are much more slender than in the preceding species. The basal joint has no tooth and the terminal joint is cylindrical and pointed. The superior antennæ, according to Fischer, have the first joint very short and of an obconical form, and the two cephalic segments are considerably elongated. The abdomen is slender, shorter than the body, and is terminated by a simple bilobed process not furnished with setæ. The feet are rather long, and the terminal joint is armed with long filaments.

In the month of July these animals abound in great numbers; they fill the lake and give the water a brick-red colour.

3. ARTEMIA GUILDINGII, Thompson. *Species hæc, reperta in India Occidentali, delineata est a Domino Thompson in 'Zoological Researches,' sed non descripta, necnon satis accurate delineata est.*

Artemis Guildingi, Thompson, Zool. Research. Fasc. v. t. 1. f. 11.

Hab. In insula "St. Vincent's," in India Occidentali; *Rev. L. Guilding*.

This species is figured by Mr. Thompson, but not sufficiently described to enable me to give a good diagnosis of it. It was found at St. Vincent's in the West Indies by the Rev. Lansdowne Guilding, by whom its natural history was intended to have been more fully detailed. The body seems to be thick and the abdomen shorter than the body and stout. The caudal segment does not appear to be lobed nor setigerous. The cephalic segment is conical in shape, and the superior antennæ, according to Mr. Thompson's figure, consist each of four joints. The ovarian sac consists, according to the same authority, of two articulations.

4. ARTEMIA ARIETINA, Fischer. *Antennis inferioribus maris validis, articulo secundo latissimo, basali unidentato; antennis superioribus apice furcatis, setigeris; segmento caudali bilobato, lobis setigeris.*

Long. 4-6 lin.

Artemia arietina, Fischer, Middendorff's Sibirische Reise, ii. 156. t. 7. f. 31–35 (1851).

Hab. In vicinitate urbis Odessæ; *Middendorff*.

This species, which was found by Middendorff in the neighbourhood of the town of Odessa, is about from 4 to 6 lines in length. It approaches very near to the *Artemia salina*. The inferior antennæ in the male have the second joint very broad and flat and sharp-pointed. The superior antennæ are forked at the extremity, the forks unequal, each having two terminal setæ. The eye is very large and the caudal segment is bilobed, each lobe terminating in three pretty long setæ.

5. ARTEMIA KOPPENIANA, Fischer. *Antennis duabus ut in præcedente; segmento caudali non lobato nec setigero.*

Long. $2\frac{1}{4}$ –3 lin.

Artemia Koppeniana, Fischer, Middendorff's Sibirische Reise, ii. 157. t. 7. f. 36–37 (1851).

Hab. In Russia Australi; *Koppen*.

This species was found in Southern Russia by M. Koppen, and is only from $2\frac{1}{4}$ to 3 lines in length. Its principal difference consists in the form of the caudal segment, which is not lobed at the extremity, but is simply squared off and has no setæ springing from it.

Genus POLYARTEMIA, Fischer.

Corpus molle, gracile; segmentum caudale pinnis nullis instructum; pedes branchiales, paribus novemdecim. Antennæ inferiores maris bi-articulatæ, articuli terminales in ramos duos divisi et dentibus numerosis instructi; articuli basales appendicibus tenuibus armati.

Polyartemia, Fischer, Middendorff's Sibirische Reise, ii. 154 (1851).

This genus was founded by Sebastian Fischer to receive a species of the family *Branchipodidæ*, which differs in some respects from any of the genera of the family. It is furnished with appendages to the male inferior antennæ, which are two-jointed, approaching in this respect to the genus *Chirocephalus*—and it is destitute of caudal fins, resembling in this structure the genus *Artemia*—but the number of feet is nineteen pairs, and the male inferior antennæ have each of the terminal joints divided into two broad, flat branches, the one overlying the other like the branches of a pair of scissors. These branches are furnished on their edges with three or four rows of sharp teeth. The basal joint has a rounded process at about half its length armed with short setæ. The appendages attached to these organs are conical in form, thin, and apparently not provided with digitiform or flabelliform appendages. The abdominal portion of the body is shorter in proportion than in any of the other genera, and the ovarian sac of the female is moderately large and lies close upon the abdomen, seeming when viewed from above to be amalgamated with it. The male organ is cylindrical, four-jointed, and is contained in a sheath which is serrated on one side.

Polyartemia forcipata, Fischer, Middendorff's Sibirische Reise, ii. 154. t. 7. f. 24-28.

As this is the only species yet known, the generic characters given above will suffice.

Hab. In fluviis "Trundra, Taimyr et Boganida" in Siberia; et prope "Tri-Ostrowa" in Lapponia; *Middendorff*.

Species hujus familiæ, incertæ sedis aut quæ dubiæ sunt—

GENUS BRANCHIPUS?

1. *Branchipus ferox*, M. Edwards, Hist. Nat. Crust. iii. 369.

This species, according to M. Milne-Edwards, has neither the antenniform appendage attached to the inferior antennæ of the male of *Branchipus*, nor the complicated apparatus of *Chirocephalus*. They are pointed at the extremity, and thus differ also from these organs in *Streptocephalus*. The description given of this species by M. Edwards is so short, that it is difficult to say to what genus it may belong. His description is as follows:—"Cornes céphaliques sans appendice près du côté interne de leur base, pointues au bout et sans dent sur le bord externe. Abdomen lisse, nageoires caudales longues et étroites. Longueur environ 15 lignes. Habite les eaux douces aux environs d'Odessa."

2. *Cancer paludosus*, Müller, Zool. Dan. ii. 10. t. 48. f. 1-8; Herbst, Krabben, ii. 118. t. 35. f. 3-5.

Most authors have assumed this species to be the same as the *Chirocephalus diaphanus*. As M. Milne-Edwards very properly observes, however, the figure of this species given by Müller shows no appearance of the complicated apparatus belonging to the male antennæ of *Chirocephalus*. There does not appear either to be any antenniform appendage belonging to them, as in the genus *Branchipus*, and the structure of the antennæ themselves removes it also from the genus *Streptocephalus*.

3. Some fragments of a species of Branchipode were brought by Sir John Richardson from Cape Krusenstern in N. America, collected there by Mr. J. Rae in August 1849, along with the *Apus glacialis*. They consist of portions of two males and two females. The male antennæ are two-jointed; the basal joint is thick, and has at its lower part near its junction with the second a row of small teeth; the second joint is cylindrical and pointed. The female horns or antennæ are flat apparently, and have a short hooked spine at the extremity. The caudal fins are rather long and fringed with long cilia. In some respects this species resembles the figure of the *Cancer paludosus* of Müller, but the fragments are too much decayed in the spirits to enable me further to describe it. It does not appear to have either antenniform appendages or any apparatus attached to the antennæ of the male.

Should these three species prove to be distinct, they may form another genus of this family, characterized by the want of these appendages and the toothed or serrated basal joint of the male cephalic horns.

Genus STREPTOCEPHALUS ?

4. A figure of a species of Branchipode was exhibited at a meeting of the Zoological Society by Dr. Nicholson in February 1851. The figure was not sufficiently accurately made to enable the species or genus to be made out. In all probability, however, it may prove to be a species of *Streptocephalus*. It is a native of India and inhabits freshwater ponds.

Genus ARTEMIA ?

M. Audouin, in the Ann. de la Soc. Ent. de la France, v. Bull. 61, 1836, mentions a species of *Artemia* closely allied to *Art. salina*, as inhabiting the salt lakes of Egypt. In the Ann. des Sc. Nat. 2nd ser. vi. 230, he again mentions the fact, that numbers of *Artemiæ* have been found in the "lacs de natron" in Egypt; but no further description has ever been given of them.

Family LIMNADIADÆ.

Genus LIMNADIA.

Sp. LIMNADIA ANTILLARUM, nov. sp. (Tab. XXIII. fig. 1).

Carapace valves of a rounded oval shape, and of a transparent whitish colour; prominent on dorsal margin where the muscular attachment of the body takes place, sloping from thence rather suddenly towards anterior extremity where it forms a somewhat blunt point, and more gradually to posterior extremity, which, as well as ventral margin, is rounded. Antennules bluntly serrated or crenulated on their upper edge, rather shorter than the peduncles of large antennæ, which are stout and not half the length of the body. They consist of nine articulations, each having one or two long plumose setæ springing from the under edge, and one short stout spine at each joint on the upper edge. Caudal lamellæ of considerable length, and beset on upper edge with long plumose setæ to within a short distance of the tip, which is somewhat curved, sharp-pointed and slightly serrated on upper edge. Feet 18 pairs.

The structure of the carapace is the same as in *Limnadia Hermannii*, the surface being covered with minute dots or puncturations.

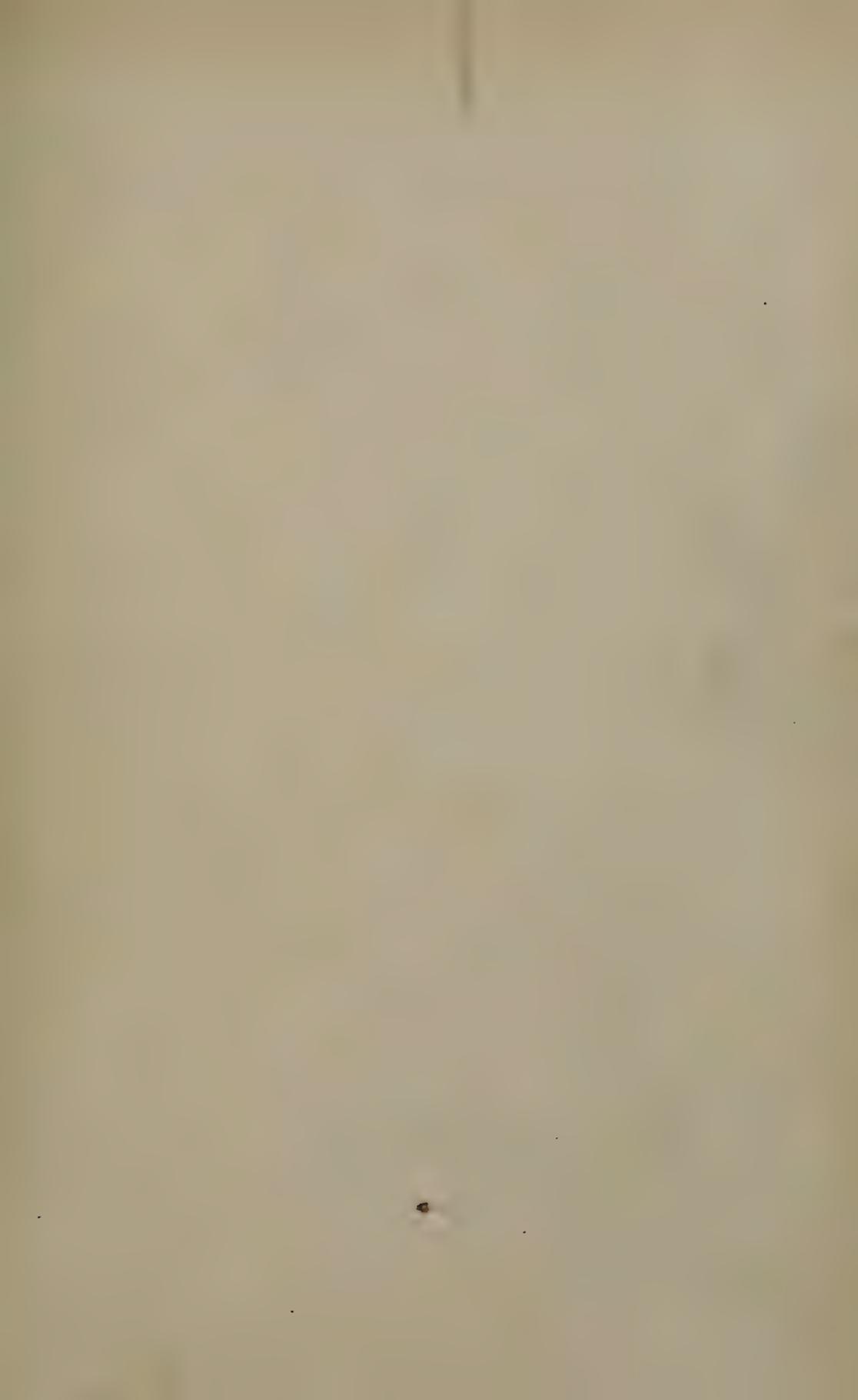
This species differs from the two others in the shape of the carapace and in having the setæ of antennæ and tail plumose.

Hab. St. Domingo, West Indies; *M. Sallé.* Mus. Brit.

Genus ESTHERIA.

Sp. ESTHERIA DALLASII, nov. sp. (Tab. XXIII. fig. 5).

Carapace valves shortly obovate and flat, upper margin from the beaks to two-thirds of its length almost straight; anterior extremity rather broader than posterior. Beaks prominent and situated near anterior extremity. The shell is of a light horny colour and very thin and translucent. Ribs elevated, smooth and numerous, about 20 in number. The intermediate spaces are concave and are covered all over with rough-looking spots of an irregular size and appearance, approaching





N H Baily

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Fig. 1. *Cyclostoma Bairdii*. Pfr. Fig. 6. *Cataulus Layardi*. Gray.
 2. C. *nobile*. " Fig. 7. *Cylindrella Menkeana*. Pfr.
 3. C. *magnificum* Sallé. " Fig. 8. C. *flammulata*. "
 4. *Cataulus pyramidatus*. Pfr. Fig. 9. *Cyclostoma bicolor*. "
 5. C. *eurytrema*. " Fig. 10. *Achatina Richardi*. "
 Fig. 11. *Helix Launcestonensis*. Reeve.

somewhat in structure to that of *brasiliensis*. It differs from that species however in size and in being of a more rounded oval shape.

Hab. Brazil? I am indebted for this species to Mr. Dallas, who found it in a collection of insects chiefly from Brazil. Mus. Brit.

February 24, 1852.

W. J. Broderip, Esq., F.R.S., V.P., in the Chair.

The following papers were read:—

1. DESCRIPTION OF A NEW SPECIES OF *HELIX* FROM VAN DIEMEN'S LAND. BY LOVELL REEVE, F.L.S. ETC.

(Mollusca, Pl. XIII.)

HELIX LAUNCESTONENSIS. *Hel. testá umbilicatá, abbreviato-conoideá, trochiformi, supernè rugosá et ferrugineá, quasi epidermide indutá, infra lævigatá, nitente, intensè nigrá, fasciá distinctá luteá cingulatá; spirá obtusá; anfractibus sex, supernè convexis, medio concavis, carinis lineisque gemmulatis undique cingulatis, peripheriá acutè carinatá, basi convexá; umbilico mediocri, pervio, subprofundo; aperturá obliquè lunari, peristomate tenui, vix reflexo, margine columellari breviter dilatato.*

Hab. Launceston, Van Diemen's Land.

This very characteristic new species of *Helix* has just been received from Van Diemen's Land, where it was collected last summer by Mr. Ronald Gunn in a dense beech forest, north-east of Launceston. It differs materially from any of vast numbers of *Helices* now known to conchologists, especially in the different character of the upper and lower parts of the shell. The upper portion of the whorls has a rough rusty surface encircled by numerous finely beaded lines and keels; the lower surface is smooth and shining, jet-black, encircled by a distinct yellow band.

2. ON THE HABITS OF *STRIGOPS HABROPTILUS* OR *KAKAPO*. BY DAVID LYALL, M.D., R.N., LATE SURGEON TO H.M.S. ACHERON.

(Aves, Pl. XLVI.)

Although the *Kakapo* is said to be still found occasionally on some parts of the high mountains in the interior of the north island of New Zealand, the only place where we met with it, during our circumnavigation and exploration of the coasts of the islands in H.M.S. Acheron, was at the S.W. end of the middle island. There, in the deep sounds which intersect that part of the island, it is still found in considerable numbers, inhabiting the dry spurs of hills or flats near the banks of rivers, where the trees are high, and the forest comparatively free from fern or underwood.

The first place where it was obtained was on a hill nearly 4000 feet above the level of the sea. It was also found living in communities on flats near the mouths of rivers close to the sea. In these places its tracks were to be seen resembling footpaths made by man, and leading us at first to imagine that there must be natives in the neighbourhood. The tracks are about a foot wide, regularly pressed down to the edges, which are two or three inches deep amongst the moss, and cross each other usually at right-angles.

The *Kakapo* lives in holes under the roots of trees, and is also occasionally found under shelving rocks. The roots of many New Zealand trees growing partly above ground, holes are common under them; but where the *Kakapo* is found many of the holes appeared to have been enlarged, although no earth was ever found thrown out near them. There were frequently two openings to these holes, and occasionally, though rarely, the trees over them were hollow for some distance up.

The only occasion on which the *Kakapo* was seen to fly was when it got up one of these hollow trees and was driven to an exit higher up. The flight was very short, the wings being scarcely moved; and the bird alighted on a tree at a lower level than the place from whence it had come, but soon got higher up by climbing, using its tail to assist it.

Except when driven from its holes, the *Kakapo* is never seen during the day, and it was only by the assistance of dogs that we were enabled to find it.

Before dogs became common, and when the bird was plentiful in inhabited parts of the islands, the natives were in the habit of catching it at night, using torches to confuse it. It offers a formidable resistance to a dog, and sometimes inflicts severe wounds with its powerful claws and beak. At a very recent period it was common all over the west coast of the Middle Island, but there is now a race of wild dogs said to have overrun all the northern part of this shore, and to have almost extirpated the *Kakapos* wherever they have reached. Their range is said to be at present confined by a river or some such physical obstruction, and it is to be feared that if they once succeed in gaining the stronghold of the *Kakapo* (the S.W. end of the island) the bird may soon become extinct.

During the latter half of February and the first half of March, whilst we were amongst the haunts of these birds, we found young ones in many of the holes, frequently only one, never more than two, in the same hole. In one case where there were two young ones I found also an addled egg. There was usually, but not always, an old bird in the same hole with the young ones.

They build no nest, but simply scrape a slight hollow amongst the dry dust formed of decayed wood. The young were of different ages, some being nearly fully fledged, and others covered only with down. The egg is white and about the size of a pigeon's. (*Aves*, Pl. XLVI.)

The cry of the *Kakapo* is a hoarse croak, varied occasionally by a discordant shriek when irritated or hungry. The Maories say that during winter they assemble together in large numbers in caves, and

at the times of meeting, and, again before dispersing to their summer haunts, that the noise they make is perfectly deafening.

A good many young ones were brought on board the ship alive. Most of them died a few days afterwards, probably from want of sufficient care; some died after being kept a month or two, and the legs of others became deformed after they had been a few weeks in captivity. The cause of the deformity was supposed to be the want of proper food, and too close confinement. They were fed chiefly on soaked bread, oatmeal and water, and boiled potatoes. When let loose in a garden they would eat lettuces, cabbages and grass, and would taste almost every green leaf that they came across. One, which I brought within six hundred miles of England (when it was accidentally killed), whilst at Sydney, ate eagerly of the leaves of a *Banksia* and several species of *Eucalyptus*, as well as grass, appearing to prefer them all to its usual diet of bread and water. It was also very fond of nuts and almonds, and during the latter part of the homeward voyage lived almost entirely on Brazilian ground-nuts.

On several occasions the bird took sullen fits, during which it would eat nothing for two or three days at a time, screaming and defending itself with its beak when any one attempted to touch it. It was at all times of an uncertain temper, sometimes biting severely when such a thing was least expected. It appeared to be always in the best humour when first taken out of its box in the morning, hooking on eagerly with its upper mandible to the finger held down to lift it out. As soon as it was placed on the deck it would attack the first object which attracted its attention—sometimes the leg of my trowsers, sometimes a slipper or a boot. Of the latter it was particularly fond: it would nestle down upon it, flapping its wings and showing every symptom of pleasure. It would then get up, rub against it with its sides, and roll upon it on its back, striking out with its feet whilst in this position.

One of these birds, sent on shore by Capt. Stokes to the care of Major Murray of the 65th Regiment at Wellington, was allowed to run about his garden, where it was fond of the society of the children, following them like a dog wherever they went.

Nearly all the adult Kakapos which I skinned were exceedingly fat, having a thick layer of oily fat or blubber on the breast which it was very difficult to separate from the skin. Their stomachs contained a pale green, sometimes almost white, homogeneous mass, without any trace of fibre in it.

There can be little doubt but that their food consists partly of roots (their beaks are usually more or less covered with indurated mud), and partly of the leaves and tender shoots of various plants. At one place where the birds were numerous we observed that the young shoots of a leguminous shrub growing by the banks of a river were all nipped off, and this was said by our pilot, who had frequented these places for many years in a whaling vessel, to be the work of the Kakapo.

Their flesh is white, and is generally esteemed good eating.

3. ON TWO NEW SPECIES OF SOUTH AMERICAN BIRDS.
BY PHILIP LUTLEY SCLATER.

(Aves, Pl. XLVII. XLVIII.)

1. *CULICIVORA BOLIVIANA*, Sclater. *C. supra plumbea; infrà alba plumbeo paululum tincta; ventre niveo; fronte regione oculari et genis nigris; alis nigricantibus, tectricibus et secundariis latè, primariis strictissimè albo limbatis; caudâ nigrâ lateralibus reetricibus albo terminatis 4; extimis ferè omninò albis—rostro et pedibus nigris.*

Long. tota $4\frac{3}{4}$; alæ $2\frac{1}{8}$; caudæ $2\frac{1}{4}$.

Hab. Bolivia (Bridges), D'Orbigny.

The present bird is the fifth of this interesting genus, of which the best known are the *C. cærulea* (Linn.) of the United States, and the *C. dumicola* (Vieill.) of Brazil and Paraguay. The Prince of Canino notices two other previously unrecognized species in his 'Conspectus Avium,' p. 316. These I have never seen; but his fifth species, the *C. budytoides*, De la Fresnaye, of which I have examined the type, belongs, I believe, more properly to another genus. There are specimens of the present species in the British and Paris Museums, and in the fine collection of the Baron de la Fresnaye at La Fresnaye near Falaise.

2. *PIPRA FLAVO-TINCTA*, Sclater. *P. alba, flavo pallidè tincta; pileo alis caudâque cum dorso inferiore nigris; uropygio cum ventre viridescente-cinereis; rostro nigro; pedibus flavis.*

Long. tota $3\frac{1}{2}$; alæ $1\frac{7}{8}$; caudæ $1\frac{1}{8}$.

Hab. S^{te} Fe de Bogota.

This species is very like the common *Pipra manacus*, but is smaller, and has the white parts of its plumage tinged with yellow and much less black on the back. There are examples in the Museum of the Jardin des Plantes at Paris and of the Baron de la Fresnaye.

March 9, 1852.

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

The following papers were read:—

1. DESCRIPTIONS OF NEW SPECIES OF CLERIDÆ, FROM ASIA, AFRICA AND AUSTRALIA.

BY J. O. WESTWOOD, F.L.S., PRÉS. ENT. SOC. ETC.

(Annulosa, Pl. XXIV. XXV. XXVI. XXVII.)

The fine illustrated memoirs on the family *Cleridæ* lately published by Dr. Klug and the Marquis Spinola, and the Catalogue of the same family still more recently issued by the British Museum, from the



J. Wolf lith.

M. & N. Hanhart Imp^t

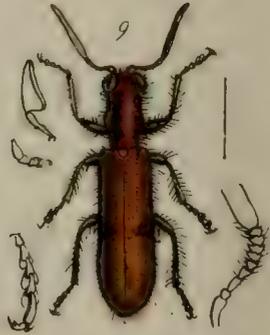
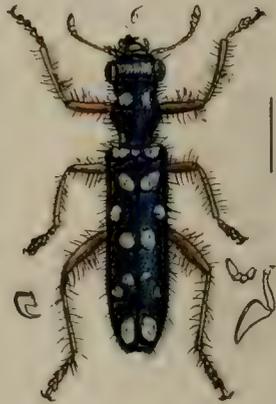
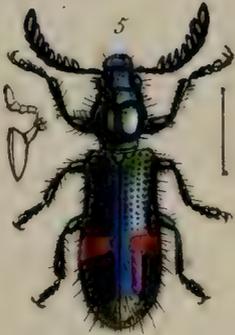
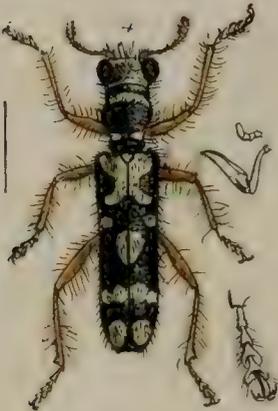
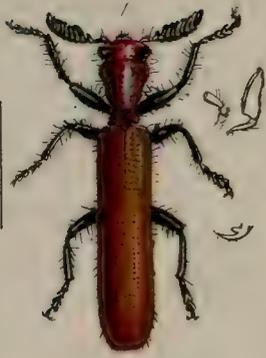
CULICIVORA BOLIVIANA, *Sclater*.

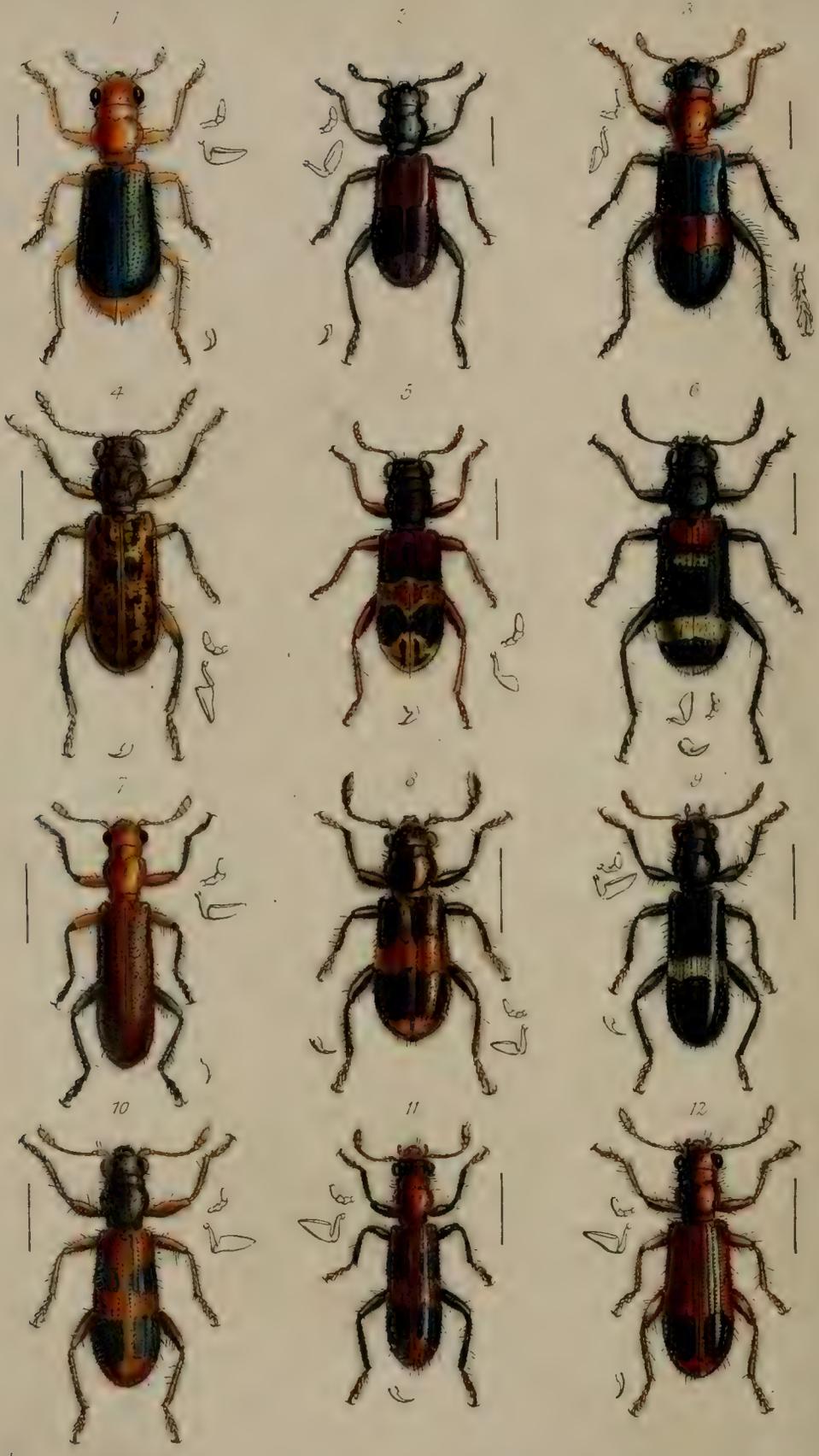


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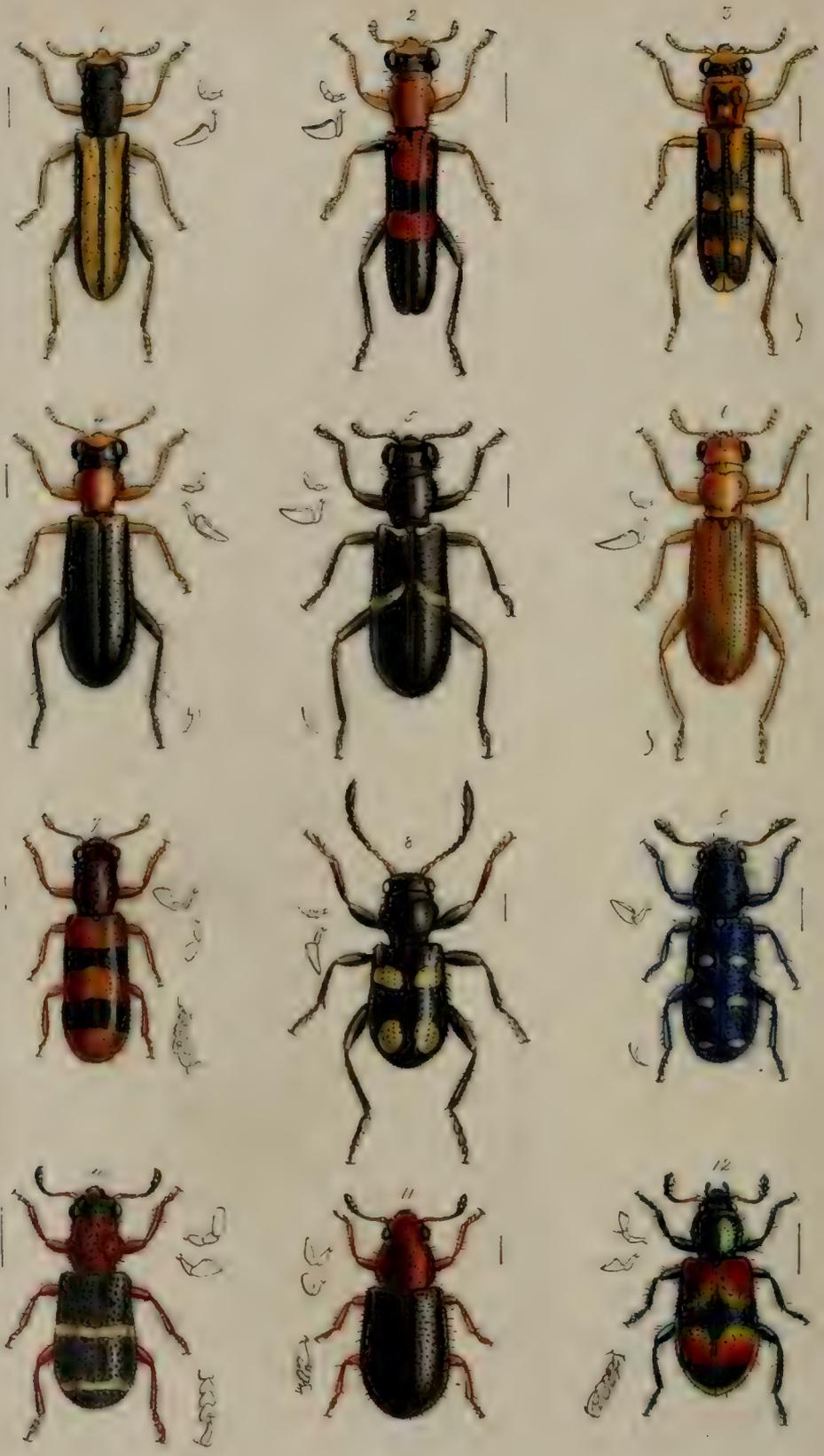
1851

PLATE 11









pen of Mr. Adam White, have made us acquainted with a great number of exotic species belonging to this interesting family; but, as might be supposed to be the case, the two former works contain but few species from Australia, India and Western Africa, in which our private and public collections are very rich; whilst, on the contrary, they abound in American species, in which, as a whole, our collections have been hitherto comparatively poor, our collectors in South America having for the most part confined their attention to the Lepidoptera, in which order we now I believe rival any of the continental museums. I have therefore thought it would be serviceable, by way of Supplement to the works above-mentioned, to give descriptions of fifty-two additional species, which I have selected from the collections of the Rev. F. W. Hope, Captain Parry and my own; offering to those two gentlemen my best thanks for the use of their collections so unrestrictedly permitted to me. The major part of these species are represented in the four accompanying plates, the majority being illustrated by details representing the 4-jointed maxillary and the 3-jointed labial palpi, and the tarsi or tarsal ungues. Short characters of fifteen of the species were published from my notes by Mr. A. White in his List of the *Cleridæ*. I have added a figure of his brilliantly coloured *Necrobia eximia*, as well as the description and figure of a remarkable insect, under the name of *Enoplum pustuliferum*, from New Zealand, recently obtained for the British Museum Cabinet, which is especially interesting on account of its geographical position, the species of the group to which it appears to belong being only hitherto known as natives of Europe and America.

A. AFRICAN SPECIES*.

1. *ERYMANTHUS HORRIDUS*, Hope MS. (Pl. XXIV. fig. 12.)
Totus niger nitidus, sparsim setosus, thorace et elytris variegatione, his postice dilatatis tuberculisque variis rufo-piceis rufosetulosus instructis; femoribus anticis clavatis.—Long. corp. lin. 11.

Hab. Cape Palmas (*D. Savage*).

Corpus elongatum subdepressum, totum nigrum nitidum. Caput ante oculos utrinque oblique impressum, vertice tuberculo parum elevato, rotundato, impressione parva antica notato. Antennæ nigræ articulis intermediis piceis. Mandibulæ nigræ. Os piceum; palpi maxillares articulo ultimo mediocriter, palpi labiales articulo ultimo valde securiformi. Pronotum valde irregulare, utrinque tuberculis duobus latis transversis, fossula media longitudinali, separatis, læve, vix punctulatum, et paulo ante apicem constrictum. Scutellum parvum, in medio impressione rotunda notatum. Elytra postice rotundato-dilatata, dorso irregularia, singulo inter humeros et medium carina obliqua elevata, tuberculis numerosis, parvis, elevatis, singuloque puncto profundo impresso, tuberculis pone medium elytrorum sim-

* Captain Boheman has published the descriptions of thirty-one new species from South Africa in his 'Insecta Caffrariæ,' part 2, 1851.

plicibus, nonnullis vero majoribus, piceo-rufis quorum duo pone medium elytrorum majora et rufo-setulosa. Pedes nigri, tarsis piceis quasi 4-articulatis, articulis intermediis subtus profunde bilobatis, unguibus simplicibus; femoribus anticis magnis clavatis tibiisque curvatis, intus linea setarum brevium instructis. Corpus subtus nigrum nitidum parce setosum.

2. CLERUS SANGUINALIS, Westw. (Pl. XXV. fig. 7.) *Elongatus, subcylindricus, fulvus, elytris sanguineis immaculatis, antennarum articulis intermediis, femoribus 4 anticis apice, tibiis tarsisque, pedibusque posticis nigris.*—Long. corp. lin. 5.

Hab. in Natalia. In Mus. Hope.

Caput mediocre, convexum, læve, impressionibus duabus parvis rotundatis inter oculos. Antennæ graciles dimidio pronoti parum longiores, nigræ articulis quatuor basalibus ultimoque lutescentibus, tribus ultimis sensim majoribus, ultimo apice conico. Mandibulæ parvæ nigræ. Os fulvum; palpi maxillares, breves, graciles, labiales majores, articulo ultimo valde securiformi. Prothorax capite paulo lator, convexus, lævis, nitidus, parce punctatus et setosus, prope marginem anticum et posticum transversim impressus, lateribus in medio sensim rotundatis. Elytra elongata, angusta, subcylindrica, undique punctatissima punctis minutis, sanguinea, immaculata. Corpus infra fulvum abdomine magis sanguineo nitido; pedes graciles cum trochanteribus omnibus femoribusque quatuor anticis fulvis, his apice nigris; tibiis tarsisque 4-anticis, pedibusque posticis nigris, tarsis 5-articulatis, articulo 1mo infero, intermediis profunde bilobatis, unguibus simplicibus.

3. CLERUS (STIGMATIUS) NEBULIFER, Westw. (Pl. XXVI. fig. 4.) *Piceus, irregulariter cinereo-sericans, macula magna communi pone medium elytrorum, apiceque suturæ pallide sericeis, elytris elongatis subdepressis dimidiatim striato-punctatis, pone medium sensim angustatis.*—Long. corp. lin. 5.

Hab. in Natalia. In Mus. Westw.

Caput nigro-piceum tenuissime punctatum, setis cinereo-griseis sericeis obsitum. Antennæ graciles rufo-piceæ articulis basalibus elongatis, terminalibus mutilis. Mandibulæ nigræ. Os cum palpis rufo-testaceum; palpi maxillares parvæ articulo ultimo brevi attenuato. Palpi labiales articulo ultimo magno securiformi. Pronotum piceum antice magis rufescens, antice et postice linea transversa impressa, lateribus in medio rotundatis, postice parum angustius, subconvexum, tenuissime punctatum et setosum. Elytra elongata, subdepressa, sub lente punctis minimis undique impressa, picea; basi, sutura et medio magis rufescentibus, dimidio basali irregulariter cinereo-setoso et punctato striato; striis præsertim internis prope medium evanescentibus; dimidio apicali plaga magna seu fascia pone medium cum sutura et apice setosa; linea punctorum majorum distantium prope suturam. Pedes longi, rufo-picei, femoribus anticis obscurioribus. Tarsi 5-articulati articulo basali parvo, subtus producto. Ungues simplices basi latiores. Corpus infra castaneum.

4. CLERUS (STIGMATIUS) DORSIGER, Westw. (Pl. XXVI. fig. 8.)
Rufo-piceus griseo-setosus, elytris subelongatis subconvexis e medio ad apicem sensim attenuatis, striato-punctatis supra disco nigricante plaga magna communi media grisea, lateribus et apice griseis.—Long. corp. lin. $3\frac{1}{2}$.

Hab. apud Sierram Leonum (D. Afzelius, Schönherr). In Mus. Hope.

Præcedenti brevior, latior et magis convexus. Caput et prothorax ut in præcedente, at magis castanea; palpis flavescentibus labialibus longis. Antennæ modice elongatæ, graciles, castaneæ, articulis 5–11 sensim latoribus compressis subovalibus. Elytra sub lente tenuissime punctata, e basi ad apicem striato-punctata punctis striarum versus basin elytrorum majoribus, piceo-rufa, disco nigricanti, setis cinereis irregulariter, præsertim ad latera, obiecta; plaga magna communi media grisea, gutta parva subapicali, apicibusque cinereo-setosis. Pedes castanei griseo-setosi. Corpus infra pallide castaneum.

5. TILLUS (MACROTELUS, Klug; MONOPHYLLA, Spin.) UNIFORMIS, Westw. (Pl. XXIV. fig. 9.) *Castaneus, angustus, subcylindricus, antennis tibiis tarsisque nigricantibus, elytrorum lateribus in medio macula parva triangulari apiceque obscuris.*
 —Long. corp. lin. 4.

Hab. apud ripas fluvii Gambiæ. In Mus. Hope.

Corpus elongatum subcylindricum tenuissime et rugose punctatum. Caput pronoto latius, oculis magnis nigris. Antennæ articulis 1–9 brevibus, 1mo castaneo, reliquis nigricantibus, 6–9 paullo latoribus, ultimo (10mo) pronoto parum longiori, compresso, ensiformi. Palpi flavescentes, maxillares parvi tenues, labiales longiores articulo ultimo valde securiformi. Prothorax angustus, cylindricus, medio parum lator, lateribus paullo rotundatis, valde setosis, disco transverse tenue ruguloso, striola tenui transversa impressa prope basin. Elytra elongata, nitida, subcylindrica, capitis latitudine, e basi ad medium striato-punctata; dimidio apicali tenuissime ruguloso-punctata, macula parva triangulari in medio lateris apiceque piceis. Pedes pallide castanei, femoribus apice tibiisque obscurioribus. Tarsorum unguibus bifidis basique angulato-dilatatis.

Obs. *Tillus compressicornis*, Kl. Mon. pl. 2. fig. 3. fœmina speciei huic proxima videtur.

6. TILLUS (MACROTELUS?) SUBNOTATUS, Westw. *Elongatus, subcylindricus; totus castaneo-rufus, elytris punctato-striatis, dimidio apicali fere lævi, fasciæque pallida fere obsoleta mediana ad suturam interrupta, antennis nigris articulis 5–10 sensim serrato-dilatatis, pedibus rufo-castaneis.*—Long. corp. lin. 3.

Hab. apud Promont. Bonæ Spei. In Mus. Westwood.

Till. compressicorni, Kl., affinis et forsitan fœmina *Macroteli*, statura *T. uniformis*, at brevior. Caput et pronotum sub lente punctata, punctis transverse confluentibus. Mandibulæ castaneæ apice nigræ. Palpi pallide fulvi, hujus generis. Antennæ piceæ articulis

4 basalibus tenuibus, 5–10 sensim majoribus compressis intus dilatatis, serratis, 11mo tribus præcedentibus fere æquali, oblongo-ovali. Prothorax subcylindricus, lateribus in medio parum rotundatis dorso transverse rugosus. Elytra elongata versus apicem paullo latiora, dimidio basali striato, punctato, apicali fere lævi, tenuissime punctato, lateribus in medio macula conica pallida vix distincta, ad suturam haud extensa, notata. Pedes pallide rufo-castanei. Ungues subtus dente acuto basique dilatato armati.

7. *TILLUS AFZELII*, Westw. (Pl. XXIV. fig. 7.) *Læte cyaneus, nitidus, punctatus, longe setosus, antennis luteo-piceis articulis apicalibus multo latioribus, pedibus apiceque elytrorum fulvoluteis.*—Long. corp. lin. 2.

Hab. apud Sierram Leonum (*D. Afzelius, Schönherr*). In Mus. Hope.

Caput convexum, tenue punctatum, cyaneum, oculi magni. Antennæ longitudine pronoti 11-articulatæ articulis 1–4 gracilibus, 5–10 sensim dilatatis, compressis, apice interno acuto, 11mo longitudine trium præcedentium, oblongo-ovato compresso. Labrum luteum. Mandibulæ castaneæ apice nigræ. Palpi lutei hujus generis. Prothorax elongatus, longe setosus, vage punctatus, lateribus in medio rotundato-dilatatis. Elytra prothorace latiora, subparallela, læte cyanea, apicibus late luteis; striato-punctatis, punctis magnis at paullo pone medium oblitteratis. Pedes fulvi tibiis tarsisque obscurioribus, unguibus ut in *T. uniformi* formatis. Caput et thorax subtus nitida, cyaneo-iridida. Abdomen læte fulvum.

8. *THANASIMUS CAPICOLA*, Westw. *Niger, subnitidus, rude punctatus, antennis fulvis gracilibus, elytris nigris basi rufis, fascia media, alteraque subapicali albidis.*—Long. corp. fere lin. 2.

Hab. apud Promont. Bonæ Spei. In Mus. Hope.

Depressus, niger, capite et pronoto rude punctatis, labro palpis et antennis fulvis, his gracilibus, brevibus, articulis tribus apicalibus dilatatis, compressis. Palpi maxillares filiformes minuti, labiales majores securiformes. Elytra punctato-striata albido-setosa, punctis in parte rufa majoribus, pone medium magis irregularibus et minus determinatis, tertia parte basali rufa, parte colorata in utroque elytro oblique truncata; parte relicta elytrorum nigra, purpureo parum tincta, fascia media communi alteraque subapicali (in medio interrupta) albidis. Pedes nigricantes albido-setosi, tarsi piceis.

9. *THANASIMUS IRREGULARIS*, Westw. (Pl. XXV. fig. 4.) *Piceus, elytris luteis fusco irregulariter tessellatis, punctatis; antennis pallide castaneis, femoribus fulvis apice nigris, tibiis apicibus, tarsisque fulvis.*—Long. corp. lin. $4\frac{1}{2}$.

Hab. apud Promont. Bonæ Spei. In Mus. Parry.

Oblongus, subdepressus, parum nitidus, mediocriter setosus. Caput piceum tenuissime punctatissimum, labrum luteum, mandibulæ piceæ; antennæ castaneæ, graciles, articulis tribus ultimis sensim at paullo majoribus, ultimo apice acuminato. Palpi lutei, maxillares filiformes

minuti, labiales valde securiformes. Prothorax brevis fere truncato-cordatus punctis minutis undique impressus, disco in lobos vel areas subrotundas divisus. Elytra mediocriter elongata, subdepressa, subparallela, lutea, fusco irregulariter maculatis maculis ad suturam et latera confluentibus, grosse punctata punctis in lineas longitudinales subregulares dispositis. Pedes fulvi, femorum apice extremo et tibi-
arum basi nigri, ungues tarsorum simplices. Caput et thorax subtus castanei, abdomen luteum.

B. INDIAN SPECIES.

10. *CLADISCUS LONGIPENNIS*, Westw. (Pl. XXIV. fig. 1.) (White, App. Cat. Cleridæ, p. 52.) *Elongatus, cylindricus, niger, nitidus, nigro-setosus, capite et pronoto sanguineis, antennarum nigrarum articulis 3-10 latis serratis; prothorace postice attenuato et constricto; elytris fulvis longissimis, profunde striato-punctatis.*—Long. corp. lin. $6\frac{1}{2}$.

Hab. in Himalaya. In Mus. Westwood.

Caput valde convexum, fere glabrum, sanguineum, clypeo carina longa recta transversa marginato. Oculi parvi subreniformes, mandibulæ, antennæ et palpi nigri. Antennæ latæ, profunde serratæ compressæ. Palpi maxillares breves, filiformes; labiales longi, securiformes. Prothorax obconicus vel postice attenuatus, et prope basin profunde constrictus, lobis duobus elevatis in medio marginis basalis. Elytra cylindrica, angusta, profunde striato-punctata, striis 10 in singulo elytro. Pedes nigri, graciles, longe setosi, tarsis 5-articulatis, articulo basali pedum posticorum 2^{do} parum longiore, 3^{tio} et 4^{to} subtus magis dilatatis; ungues valde curvati, acuti, intus basi late et acute producto.

11. *CLADISCUS PARRIANUS*, Westw. (Pl. XXIV. fig. 2.) *Angustus, cylindricus, rufus, pallide setosus, mandibulis, antennis, pedibus, apiceque lato elytrorum nigris, his striato-punctatis punctis versus apicem obsoletis.*—Long. corp. lin. 5.

Hab. in India orientali. In Mus. Parry.

Omnino statura præcedentis, differt colore corporis, elytrorum apice nigro sublævi, palpisque fulvis. Caput sanguineum fere læve, nitidum. Mandibulæ et antennæ nigræ, hæc subbreves, articulis 3-10 dilatato-serratis fere triangularibus, 1^{mo} brevi ovali. Os cum palpis pallide fulvum. Prothorax sublævis, obconicus, prope basin valde constrictus. Elytra elongata, cylindrica, striato-punctata; punctis ante apicem obsoletis, apice ipso paullo rugoso et transversim truncato; rufo-fulva, tertia parte apicali nigra. Pedes nigri coxis fulvis, ungues lati, basi interne in dentem latum acutum producto. Corpus subtus fulvum, nitidum, metasterno sanguineo. *Cl. gracili* similis; forsitan foemina.

12. *CLADISCUS BIPECTINATUS*, Westw. (Pl. XXIV. fig. 3.) *Angustus, cylindricus, fulvo-rufus, punctatus; antennis, oculis, pedibus, apiceque elytrorum late nigris, antennarum articulis 4-10 longe bipectinatis, prothorace ante et pone medium con-*

stricto; postice vix angustiori; elytris striato-punctatis et costatis.—Long. corp. lin. 5.

Hab. in Malabaria. In Mus. Melly.

E præcedentibus differt antennis bipectinatis elytrisque costatis. Caput prothorace latius, rufo-fulvum, antennæ nigræ, articulo 3tio intus producto, 4to ad 10um ramos duos longos emittentibus, 11mo elongato. Prothorax elongatus, sublævis, rufo-fulvus, ante et pone medium mediocriter constrictus, lateribus in medio rotundatis. Elytra elongata, subcylindrica, fulva, apice lato nigro, singulo costis tribus elevatis longitudinalibus, inter costas striis duabus punctorum; pedes nigri longe setosi; tarsi articulis 4 basalibus subtus lobatis.

13. CLERUS (XYLOBIUS?) ALBO-VARIUS, Westw. (Pl. XXIV. fig. 4.) *Elongatus, gracilis subdepressus, niger, punctatissimus, capite inter oculos, fascia antica transversa et punctis duobus lateralibus posticis pronoti, lunulis duabus humeralibus maculisque septem (3tia majori communi) elytrorum albo-squamosis; horum apicibus truncatis; antennis brevissimis pedibusque pallide fulvis.*—Long. corp. lin. 5:

Hab. in Himalaya. In Mus. Westwood.

Caput latum, oculis magnis, punctatissimum antice albo-sericans. Labrum et mandibulæ ad basin fulvescentes. Antennæ capite vix longiores, gracillimæ, articulis tribus ultimis evidenter latoribus. Palpi pallide fulvescentes, maxillares minuti filiformes, labiales elongati, articulo ultimo longe securiformi. Prothorax oblongus, punctatissimus, æneo-niger, versus marginem anticum et basin paullo constrictus, fascia antica maculis duabus lateralibus conicis posticis albo sericantibus. Elytra elongata, undique punctatissima, apice extremo truncato lateribus subparallelis, dorso purpureo parum tincto, lunulis duabus basalibus (scutellum includentibus) punctis duobus parvis ante medium, macula magna rotundata communi; duabus obliquis pone medium alterisque duabus ad apicem albo squamosis. Pedes graciles, fulvi, femoribus posticis supra, tibiisque extus piceis, his prope apicem in angulum productis; tarsi 5 articulati, articulis 3tio et 4to infra magis lobatis. Ungues acuti, basi in dentem latum producti. Corpus infra nigrum, lateribus thoracis et segmentorum abdominalium albo notatis.

14. CLERUS (XYLOBIUS?) DULCIS, Westw. (Pl. XXIV. fig. 6.) *Angustus, cyaneus, punctatissimus, labro albido, antennis, palpis, pedibusque pallide fulvis, capite inter oculos, pronoti maculis 4, scutello, elytrisque maculis 14 albo squamosis.*—Long. corp. lin. 4.

Hab. in insula Java. In Mus. Parry.

Caput pronoto latius, oculis magnis; vertice inter oculos albo squamoso; labrum luteum parvum. Mandibulæ nigræ. Antennæ brevissimæ, fulvescentes, articulis 4to, 5to, 6to obscurioribus; tribus ultiris sensim latoribus: palpi pallide fulvescentes. Prothorax ante et pone medium constrictus, lateribus in medio valde rotundatis, maculis duabus ante medium, alterisque duabus prope angulos posticos albo squamosis; scutellum album; elytra maculis 14 albo squamosis,

magnitudine fere æqualibus. Pedes longi, graciles, fulvescentes, longe setosi. Corpus infra chalybeum lateribus albo notatis.

15. TILLUS (TILLICERUS) CHALYBEUS, Westw. (Pl. XXIV. fig. 5.) (White, App. Cat. Cleridæ, p. 51.) *Valde convexus, elytris postice latioribus, cyaneus, nitidus, nigro-setosus, pronoto subgloboso pone medium valde constricto, elytris dimidio basali striato-punctatis, singulo pone medium gutta obliqua elevata purpurea (vel coccinea) glabra, apicibus lævibus griseo-setosis.*—Long. corp. lin. 5.

Hab. Tenasserim. In Mus. Brit. et Westwood.

Caput parvum glabrum, mandibulæ parvæ, antennæ, et palpi nigri; palpi maxillares minuti, cylindrici, labiales mediocres, articulo ultimo elongato-triangulari. Antennæ fere prothoracis longitudine, articulis 1-10 intus serrato-dilatatis, subæqualibus, 11mo majori ovali. Prothorax subglobosus, lævis, nitidus, canali curvato transverso ante medium; postice valde constrictus. Elytra convexa, pone medium paullo latiora, cyanea, nitida; e basi fere ad medium striato-punctata punctis ad basin majoribus, dimidio apicali fere lævi, nigro-setoso; singulo gutta obliqua laterali mediana, elevata, glabra, purpurea vel coccinea, apiceque late griseo, setoso. Pedes breves, nigri; unguis bifidi, basique dilatato.

16. CLERUS BENGALA, Westw. (Pl. XXV. fig. 11.) *Angustus, subdepressus, longe griseo-setosus, punctatissimus, rufo-testaceus; capite, mandibulis, femoribus, tibiis, et maculis 4 elytrorum nigris.*—Long. corp. lin. $4\frac{1}{2}$.

Hab. in Bengalia. In Mus. Ent. Soc. Lond.; (Kirby), Hope.

Caput nigrum prothoracis latitudine, convexum, punctatum; clypeus cum labro bilobo et palpis testaceus: antennæ graciles, longitudine mediocres, castaneæ, articulis tribus ultimis sensim majoribus; palpi maxillares minuti filiformes; labiales valde securiformes. Prothorax subovalis, subdepressus, prope marginem anticum et posticum constrictum; rufus tenuissime punctatus. Elytra rufo-testacea, punctatissima, et e basi paullo pone medium punctato-striata maculis duabus magnis semicircularibus, lateralibus, ante medium alterisque duabus magnis subquadratis pone medium. Pedes sat longi, nigri, tarsi pallide piceis 5-articulatis, articulo basali infero, unguibus simplicibus; corpus infra rufo-testaceum, metasterno castaneo.

17. CLERUS SUBFASCIATUS, Westw. (Pl. XXV. fig. 10.) (White, Suppl. Cat. Cleridæ, p. 56.) *Subdepressus, punctatissimus, piceus, elytris fulvis, nitidis, striato-punctatis; maculis duabus semicircularibus lateralibus ante medium, fasciaque lata pone medium (ad suturam interrupta), nigro-piceis; pedibus castaneo-fulvis, femoribus obscurioribus.*—Long. corp. lin. 4.

Hab. in India orientali. In Mus. Brit. et Westw.

Præcedenti proximus, at major, robustior et aliter coloratus. Caput piceum, fere læve, supra clypeum bi-impressum. Labrum subalbidum, mandibulæ piceæ apice nigræ; antennæ graciles, pallide castaneæ, articulis tribus apicalibus paullo crassioribus; palpi lutei labiales valde

securiformes; prothorax piceus, impressione curvata transversa prope marginem anticum, alteraque fere ad basin, lateribus in medio rotundatis; scutellum piceum. Elytra oblonga, nitida, punctatissima, fulva, e basi ad apicem striato-punctatis punctis ad basin elytrorum majoribus, 4 maculatis, maculis fere ut in specie præcedente dispositis. Pedes castaneo-fulvi, femoribus (nisi ad basin) piceis, unguibus simplicibus. Corpus infra piceum.

18. *THANASIMUS SELLATUS*, Westw. (Pl. XXV. fig. 8.) *Latior subdepressus, nigro-piceus nitidus, luteo-setosus, punctatissimus, elytris vix striato-punctatis, macula magna lutea irregulari transversa ante medium, alteraque parva communi subapicali, fulvis.*—Long. corp. lin. $5\frac{1}{3}$.

Hab. in India orientali. In Mus. Ent. Soc. Lond. (Kirby) et Hope. (Schönherr, Schneider.)

Caput piceo-nigrum, punctatissimum. Labrum luteum, mandibulæ nigræ, palpi castanei, maxillares parvi filiformes, labiales valde securiformes. Antennæ piceæ, articulis tribus apicalibus sensim majoribus, ultimo ovali, apice curvato acuto. Prothorax brevis, latus, lateribus rotundatis crebre punctatus, impressione transversa curvata ante medium, alteraque recta basali. Elytra picea crebre punctata, punctis in discum strias nonnullas indeterminatas formantibus, fascia lata irregulari dentata ante medium, maculaque transversa ovali subapicali, fulvis. Pedes robusti, picei, tarsorum unguibus simplicibus. Corpus infra piceo-castaneum, abdomine fulvo.

19. *CLERUS POSTICALIS*, Westw. (Pl. XXV. fig. 12.) *Totus fulvus, elytris fascia lata postica (ad suturam interrupta) nigra.*—Long. corp. lin. $4\frac{1}{2}$.

Hab. in India orientali. In Mus. Parry.

Crebre punctatus, luteo-setosus. Caput prothoracis latitudine rufo-fulvum, mandibulæ nigræ. Palpi fulvi, maxillares minuti filiformes, labiales valde securiformes. Antennæ graciles fulvo-castaneæ, articulis tribus apicalibus sensim majoribus. Prothorax lateribus rotundatis, ante medium et ad basin transversim impressus, fulvo-rufus, punctatissimus. Elytra fulva, fascia lata nigra ad suturam interrupta, pone medium punctatissima; e basi pone medium punctato-striata, punctis versus basin majoribus. Pedes fulvi, femoribus posticis pone medium tibiisque castaneis, tarsis 5-articulatis, articulo basali infero; unguibus simplicibus. Corpus subtus fulvum, margine postico segmentorum abdominalium luteo.

20. *OPILUS SORDIDUS*, Westw. (Pl. XXVI. fig. 9.) *Elongatus, depressus, piceus, elytris luteo-albidis, strigis duabus obliquis postice convergentibus ante medium, maculaque magna irregulari communi pone medium, piceis; pedibus luteo-albidis, apice femorum piceo.*—Long. corp. lin. $4\frac{1}{4}$ –7.

Hab. in India Orientali. In Mus. Parry.

Caput piceo-castaneum, punctatissimum, oculis magnis. Mandibulæ castaneæ apice piceæ. Antennæ pallide castaneæ, graciles, articulis tribus apicalibus sensim majoribus; palpi lutescentes, omnes

articulo apicali securiformi. Prothorax elongatus, subcylindricus, ante et pone medium subconstrictus, castaneo-piceus, antice magis rufescens, punctatissimus, luteo-setosus. Elytra elongata, depressa, pone medium paullo latiora, pallide albido-lutea, nitida, impresso-striata, striis e basi longe pone medium rude punctatis, strigis duabus gracilibus ante medium disci postice convergentibus, suturaque fere ad apicem castaneis, plagaque magna subovali communi pone medium, macula parva discoidali utrinque connexa. Corpus infra castaneum, lateribus metasterni nigris. Pedes lutei, luteo-setosi; apice femorum nigro.

21. CLERUS ZEBRATUS, Westw. (Pl. XXVI. fig. 11.) *Elongatus, depressus, piceus, breviter setosus, elytris rufescenti-albidis maculis duabus parvis basalibus, fascia angusta dentata ante medium, altera latiori submediana, antice tridentata, tertiaque angusta, acuta, denticulata, subapicali, fuscis; pedibus fusco albidoque annulatis.*—Long. corp. lin. 7.

Hab. in India Orientali. In Mus. Parry.

Caput parvum, punctatissimum, piceum, oculis magnis, orbita interna pallida. Labrum pallidum. Mandibulæ nigræ, palpi pallidi, articulo ultimo obscuro, maxillares parvæ filiformes, labiales elongato-securiformes; antennæ tenues piceæ basi rufescente, articulo ultimo magno compresso-ovali, apice acuto paullo curvato. Prothorax elongatus, subcylindricus, piceus, ante medium et prope basin parum constrictus, carina dorsali in parte postica. Elytra elongata, depressa, opaca, fulvo-albida, basi rufo-tincta, breviter sericeo-setosa, singula costis duabus parum elevatis, e basi vix ad medium extensis, utrinque serie punctorum marginalium, maculis duabus rotundatis prope scutellum, fascia tenui dentata ante medium, altera lata submediana, antice tridentata, tertiaque tenui acute dentata ante apicem fuscis, opacis. Pedes alternatim fusco albidoque annulati, unguibus simplicibus. Corpus infra piceo-castaneum, abdomine pallidiori.

22. THANASIMUS ANTHICOIDES, Westw. (Pl. XXVII. fig. 8.) (White, Suppl. Cat. Cleridæ, p. 59.) *Niger, nitidus, elytris purpureo-piceis, maculis 4 magnis, subrotundatis, duabus ante medium, alterisque duabus subapicalibus albidis, antennis pallide castaneis, articulis 4 apicalibus nigris.*—Long. corp. lin. 1½.

Hab. in insula Ceylon. In Mus. Templeton.

Parvus, brevis, latus, subdepressus, nitidus, capite et prothorace leviter punctatis; elytris vix striato-punctatis. Caput latum convexum. Antennæ elongatæ, articulis 4 apicalibus sensim incrassatis, ultimo ovali apice acuto, articulis basalibus flavescentibus, intermediis castaneis, apicalibus nigris. Palpi lutescentes, maxillares breves, filiformes, labiales elongato-securiformes. Prothorax brevis, cyaneo-niger, latus, lateribus rotundatis, ante medium impressione curvata, alteraque prope basin. Elytra lata, subdepressa, lateribus in medio parum latioribus, nitida, ad humeros subangulata, sutura parum elevata, punctata punctis vix strias regulares formantibus et ante apicem desinentibus, maculis duabus subrotundatis, transversis,

ante medium, alterisque duabus subovalibus, subapicalibus, albidis. Pedes elongati, satis robusti, picei, tibiis posticis longe setosis, geniculis tarsisque castaneis, tarsis posticis articulo 2do longo compresso, unguibus simplicibus.

23. CLERUS (OMADIUS) MEDIOFASCIATUS, Westw. (Pl. XXVI. fig. 1.) *Niger, luteo-sericans, elytris fulvo-cinereis, fascia lata submedia, punctis 4 ante medium, alterisque duabus parvis subapicalibus nigris.*—Long. corp. lin. $5\frac{1}{2}$.

Hab. in India Orientali, Khasyah Hills. In Mus. Hope.

Elongatus, subcylindricus, haud nitidus. Caput parvum, oculis magnis antice fere conjunctis, setis luteis sericans. Antennæ breves piceæ, articulis 5–10 sensim majoribus, intus angulato-serratis setosis, ultimo magno ovali compresso apice acuto. Palpi maxillares picei, filiformes; labiales longi, articulo ultimo mediocriter securiformi, lutescentes, apice picei. Prothorax elongatus lateribus fere rectis; postice sensim paullo angustior, antice transversim rugulosus, in medio rugosus, carina media angusta longitudinali polita, ante medium, et fere ad basin transversim impressus. Elytra obscure cervina, setis auratis brevibus dense obsita, dimidio basali vix distincte punctato-striato, macula parva humerali, alterisque duabus ante medium, lateribusque singuli nigricantibus, fascia lata submedia punctisque duobus subapicalibus nigris. Pedes nigri femoribus posticis basi fulvescentibus; ungues longi acuti, basi in dentem obtusum dilatato. Corpus subtus fulvo-castaneum, prosterno nigro.

24. CLERUS (OMADIUS) OLIVACEUS, Westw. (Pl. XXVI. fig. 3.)

Gracilis, pallide fuscus, setis aureo-olivaceis sericans, oculis magnis nigris, elytris maculis duabus indeterminatis ante medium, fascia dentata pone medium, alteraque subapicali, fuscis; pedibus lutescentibus fusco variis.—Long. corp. lin. $3\frac{3}{4}$.

Hab. Prince of Wales Island (D. Cantor). In Mus. Hope.

Parvus, elongatus, præcedentis forma; punctis minutis distantibus impressus. Caput convexum sericans, antennæ pallide castaneæ, basi flavescentes, articulis apicalibus latis fuscis. Palpi fulvescentes, labiales elongato-securiformes. Prothorax subcylindricus, postice parum angustatus, sericans, ante medium constrictus et transverse impressus, basi que linea impressa. Elytra sericantia dimidiatim punctato-striata, macula indeterminata ante medium singuli; fascia pone medium dentata, alteraque, subapicali, fuscis. Pedes pallide lutescentes, femoribus in medio, tibiisque basi et in medio tarsisque fuscis. Corpus infra castaneum.

25. THANASIMUS SUBSCUTELLARIS, Westw. (Pl. XXV. fig. 6.)

Niger, opacus, setosus, elytris macula parva transversa scutellum includente læte fulva, striga transversa ante medium fere obsoleta, fascia recta pone medium, apiceque griseis.—Long. corp. lin. $3\frac{1}{2}$.

Hab. in India Orientali. In Mus. Parry.

Depressus, niger opacus, setosus. Caput vix prothoracis latitudine, convexum, transversum. Mandibulæ, palpi et antennæ nigræ,

palpi maxillares filiformes breves, labiales securiformes. Antennæ graciles articulis 6-11 sensim crassioribus. Prothorax brevis lateribus rotundatis, ante medium et ad basin transverse impressus. Elytra oblonga in medio vix latiora, opaca, nigro-setosa, e basi ultra medium punctato-striata, macula parva transversa (scutellum includente) fulva; setis nonnullis griseis strigam simulantibus ante medium, fascia transversa recta pone medium, apiceque ipso griseis. Pedes longi, nigri, coxis posticis pallidis, unguibus acutis longis, basi in dentem obtusum dilatato. Corpus infra nigrum, metasterno rufo-castaneo abdomineque fulvo.

26. CLERUS (STIGMATIUS) RUFIVENTRIS, Westw. (White, App. Cat. Cleridæ, p. 52.) (Pl. XXVI. fig. 5.) *Brevis, niger, valde setosus, capite et pronoto sub lente punctatissimis, elytris ad basin scabrosis, punctato-striatis, fascia irregulari ante, altera pone medium, apiceque ipso albido-setosis; antennis gracilibus; metasterno abdomineque testaceis.*—Long. corp. lin. 4.

Hab. Assam (D. Jenkins). In Mus. Westwood.

Caput et pronotum sub lente punctatissima. Caput breve latum, oculis magnis, antice cinereo-setosum. Mandibulæ nigræ; palpi picei, maxillares subfiliformes, labiales elongato-securiformes. Antennæ elongatæ articulis apicalibus vix incrassatis. Prothorax niger, lateribus rotundatis ante medium impressione curvata alteraque basi proxima. Elytra brevia depressa nigra, basi ad costam purpureo-castanea, valde rugosa seu granulosa et punctato-striata, punctis longe ante apicem obsoletis, fascia angusta irregulari ante medium, altera dentata pone medium, apiceque albido-setosis. Pedes piceo-nigri valde setosi, unguibus tarsorum longis acutis, basi intus in dentem obtusum dilatatis. Metasternum et abdomen testacea.

27. CLERUS (STIGMATIUS) ELAPHROIDES, Westw. (White, App. Cat. Cleridæ, p. 54.) (Pl. XXVI. fig. 6.) *Fuscus, aureo-sericans, nigro setosus; antennis gracillimis, pronoto postice bimaculato, elytris e basi ad medium punctato-striatis; pone medium fasciis duabus valde irregularibus piceis.*—Long. corp. lin. 3.

Hab. in insula Ceylon. In Mus. D. Templeton.

Brevis, capite et prothorace fere æqualibus, elytris medio latioribus, postice sensim attenuatis, supra totus setulis aureis sericans, setisque nigris e punctis distinctis emissis. Caput breve convexum. Palpi albi, labiales elongati securiformes. Antennæ longæ gracillimæ, longe setosæ, articulis longitudine fere æqualibus apicalibus vix crassioribus, basi subtus flavescentes, reliquis articulis fuscis apice pallidis. Prothorax brevis latus lateribus rotundatis, ante medium et ad basin transversim impressus, disco postico maculis duabus oblongis fuscis. Elytra elongata, in medio latiora, postice sensim attenuata, aureo-sericantia, e basi longe ultra medium striato-punctata, nigroque setosa; fasciis duabus fuscis valde irregularibus inter medium et apicem. Pedes albido-fulvescentes longe setosi, femoribus basi late albidis, et ante apicem fascia fusca, tibiis basi obscurioribus. Corpus infra castaneum nitidum lateribus nigrum.

28. *OPETIOPALPUS OBESUS*, Westw. (Pl. XXVII. fig. 11.) (White, App. Cat. Cleridæ, p. 63.) *Parvus, crassus, convexus, subnitidus, punctatus, nigro-setosus; capite et pronoto obscure sanguineis, elytris nigris immaculatis, antennis pedibusque fulvis, illarum clava picea.*—Long. corp. lin. $1\frac{1}{2}$.

Hab. in India Orientali (D. Hearsey). In Mus. Westwood.

Caput obscure sanguineum, punctatum, medio faciei inter antenas læve. Antennæ fulvæ fere pronoti longitudine, articulis tribus ultimis crassis piceis. Palpi fulvi; maxillares articulo ultimo longo acutissimo fusco, labiales articulo ultimo ovali, apice truncato. Prothorax integer, punctatus, convexus lateribus rotundatis, capite latior. Elytra brevia, convexa, subovalia, nigra, profunde punctata, punctis versus basin strias vix regulares formantibus, apicibus lævioribus. Pedes breves fulvi, unguibus simplicibus. Corpus infra piceum, griseo-setosum.

C. AUSTRALIAN SPECIES.

29. *CLERUS (XYLOTRETUS) EXCAVATUS*, Westw. (Pl. XXIV. fig. 10.) *Niger, punctatissimus, subopacus, guttis duabus ante oculos, maculis lateralibus pronoti scutelloque albo-setosis, elytrorum disco excavato-punctato, antennarum articulo apicali profunde emarginato.*—Long. corp. lin. 7.

Hab. in Australia Occidentali. In Mus. Hope.

Caput nigrum, convexum, punctatum, postice subcupreum, emarginatura antica oculorum albo setosa, facie antice elongata, griseo-setosa. Mandibulæ, palpi et antennæ nigræ, palpi maxillares medio-criter elongato-filiformes, labiales articulo ultimo triangulari. Antennæ articulis 6 ultimis sensim latioribus, ultimo interne producto, apice emarginato. Prothorax capite latior, punctatissimus, versus basin paullo constrictus, utrinque necnon ad angulos laterales posticos, setis albis ornatus. Scutellum rotundatum, album. Elytra e humeris ad apicem sensim angustata, nigra opaca punctatissima, punctis mediæ disci magnis, profundis et valde contiguis, apex minus punctatus, subnitidus, podex niger stria media alba. Pedes purpureo-nigri, femoribus versus basin tibiisque albo setosis: corpus infra nigrum, metasterni lateribus, abdominis basi et lateribus, albo maculatis.

30. *TILLUS DUX*, Westw. (Pl. XXIV. fig. 11.) *Magnus, elongatus, cylindricus, fusco-nigricans, setosus, pubescentia aurea obsitus, antennarum articulis 6 ultimis sensim latioribus serratis, unguibus tarsorum bifidis.*—Long. corp. lin. $13\frac{1}{2}$.

Hab. in Nova Hollandia apud Fluvium Cygnorum. In Mus. Melly.

Caput prothorace paullo latius, breve. Antennæ mediocres, articulis 5–10 sensim latioribus, intus angulatis, serratis, ultimo ovali apice subacuto et curvato. Palpi maxillares parum, labiales valde securiformes. Prothorax elongatus, subcylindricus, elytris multo angustior, antice parum latior, ante et pone medium paullo constrictus. Elytra elongata, subcylindrica, punctata, nubila seu fascia

indistincta ante medium obscura. Pedes mediocres, concolores, unguibus tarsorum bifidis.

Obs. Generi *Tillo* congruit antennarum articulis 6 apicalibus dilatatis, unguibusque tarsorum denticulatis; *Opilo* vero palpis maxillaribus, subsecuriformibus.

31. CLERUS (LEMIDIUS) FESTIVUS, Hope MS. (Pl. XXV. fig. 3.)

Nigro-cyaneus, nitidus, rugose punctatus, pronoto, striola tenui humerali fasciæque transversa media elytrorum læte rubris.—

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

Hab. in Australia Occidentali. In Mus. Hope.

Caput breve, transversum, facie concava (clypei margine elevato), subrugosa, linea media parum elevata; vertice in medio lævi. Antennæ breves, tenues, brunneæ, articulis tribus apicalibus dilatatis. Palpi maxillares parvi, filiformes, brunnei, labiales elongato-securiformes, obscure lutei. Prothorax lateribus convexus, prope marginem anticum et posticum transversim impressus, dorso fere lævi nitido, utrinque impressione parva ovali. Scutellum triangulare, nigrum. Elytra elongata, pone medium latiora, nigro-setosa, rugoso-punctata; stria tenui transversa, humerali, fasciæque lata media transversa, læte rufis. Pedes nigri, femoribus 4 anticis subtus, geniculis tarsisque piceis. Corpus infra nigrum, nitidum, abdomine rufo, apice cyaneo-nigro.

32. CLERUS (LEMIDIUS) CORALLIPENNIS, Westw. (*Clerus? hilaris*, Newm. Zool. p. cxix, nec Westw. in White, App. Cat. Cleridæ, p. 48.) (Pl. XXV. fig. 2.) *Cyaneo-niger, nitidus, parum punctatus, depressus, elytris corallinis, fascia latissima, purpurea, apiceque tenuissime nigro, metasterno abdomineque testaceis.*—Long. corp. lin. $2\frac{3}{4}$.

Hab. Hunter's River, Australia?, New Zealand? In Mus. Parry.

Niger, nitidus, parce punctatus, longe nigro-setosus, pronoto cyaneo parum tincto. Caput prothorace parum latius, oculis magnis, facie inter oculos impressionibus duabus rotundatis punctatis. Antennæ breves, articulis tribus apicalibus majoribus. Palpi nigri, maxillares breves, subfiliformes, labiales læte securiformes. Prothorax elytris angustior, lateribus in medio valde rotundatis, parte antica et postica angustis. Scutellum parvum, nigrum. Elytra lata, pone medium paulo dilatata, lævia, nitida, corallina, fascia latissima marginibus rectis, purpurea, apiceque nigro marginato. Pedes nigri, longe setosi, unguibus tarsorum simplicibus, metasternum et abdomen infra rufo-testacea, nitida.

33. CLERUS (HYDROCERUS) BELLUS, Westw. (Pl. XXVII.

fig. 2.) *Elongatus, niger nitidus, capite et pronoto lævibus, illo nigro facie flavida, hoc fulvo, elytris rude punctato-striatis, striola transversa humerali, cum macula magna, communi, rotunda, connexa, fasciæque submedia, albido-carnea, pedibus anticis flavescens, posticis nigris.*—Long. corp. lin. 3.

Hab. apud Adelaidam, Australasiæ (*D. Fortnum*). In Mus. Hope. Elongatus, elytris parallelis, griseo-setosus. Caput læve nigrum,

facie cum ore et antennis flavidis. Antennæ breves, articulis tribus apicalibus incrassatis. Mandibulæ apice piceæ. Palpi maxillares minuti, filiformes, labiales longe securiformes. Prothorax longior quam latus, lævis, fulvus, ante et pone medium constrictus, lateribus in medio rotundatis, nigris. Scutellum rotundatum, nigrum. Elytra longa, capite vix latiora, subdepressa, nitida, rude punctato-striata, striis ad apicem fasciæ submediæ extensis, singula striola transversa humerali, macula magna, rotundata, communi basali connexa, fasciæque submediana, albido-carnea, tertia parte apicali subrugosa, apicibus rotundatis. Pedes antici pallide flavescentes, intermedii femoribus in medio tibiisque, linea supra fuscis, postici nigri coxis geniculisque flavescensibus.

34. CLERUS (HYDROCERUS) EXILIS, Westw. (Pl. XXVII. fig. 4.)
Subelongatus, niger nitidus, facie antennisque flavis, pronoto (margine antico excepto) fulvo, strigaque transversa humerali elytrorum flava, pedibus anticis flavis, posticis piceis.—Long. corp. lin. 2.

Hab. apud Adelaidam Novæ Hollandiæ. In Mus. Hope.

Præcedenti brevior, elytrisque pone medium paullo latioribus. Caput breve, nigrum, læve nitidum, facie, ore et antennis flavis; antennæ breves articulis tribus ultimis latioribus. Palpi maxillares parvi, cylindrici, labiales longe securiformes. Caput infra flavum jugulo nigro. Prothorax lævis, nitidus, fulvus, margine antico nigro, lateribus in medio rotundatis; ante medium et ad basin subconstrictus. Elytra nitida irregulariter punctata, nigra, striola humerali transversa flava. Corpus infra nigrum nitidum. Pedes 4 antici, femoribusque posticis basi flavis, pedibus posticis piceis.

35. CLERUS (HYDROCERUS) V-REVERSUS, Westw. (Pl. XXVII. fig. 5.)
Subelongatus, niger nitidus, antennis pedibusque piceis, elytrorum singulo striola humerali transversa, striaque obliqua submedia, albis.—Long. corp. lin. $1\frac{2}{3}$.

Hab. apud Adelaidam Novæ Hollandiæ (*D. Fortnum*). In Mus. Hope.

Præcedenti proximus, niger nitidus, parce griseo-setosus. Caput prothorace paullo latius, facie punctata, os cum palpis et antennis piceis. Pronotum nigrum nitidum, lateribus subrotundatis parum rugosis, prope marginem anticum, et ante basin striola transversa impressum. Elytra pone medium parum latiora, nigra, rude punctata, singulo striola basali transversa, ad scutellum parum dilatata, fasciolaque obliqua e medio lateris versus basin suturæ extensa, alba. Corpus infra nigrum, pedibus 4 anticis piceis, femoribus pedibusque posticis nigricantibus.

36. CLERUS (HYDROCERUS?) FLAVO-LINEATUS, Westw. (White, App. Cat. Cleridæ, p. 62.) (Pl. XXVII. fig. 1.)
Chalybeo-niger, dense griseo-setosus, facie labroque flavidis; antennis subfiliformibus luteis; elytris valde elongatis, punctatis, disco singuli striga longitudinali pallide flava notato, pedibus subfulvis, femoribus supra nigris.—Long. corp. lin. 2.

Hab. in Australia meridionali. In Mus. Westwood.

Caput prothorace paullo latius, sparsim punctatum, facie, labro, ore et basi antennarum pallide flavis. Antennæ brevissimæ, serratæ, articulis apicalibus vix præcedentibus latioribus, fulvescentibus. Palpi flavescentes; maxillares breves filiformes; labiales latissime securiformes. Pronotum subdepressum, sparsim punctatum, lateribus parum rotundatis, striola transversa impressa prope marginem anticum, impressione nulla postica. Elytra valde elongata, punctata, subparallela, singuli disco toto humerisque flavidis. Corpus infra nigrum, lateribus abdominis margineque postico segmentorum abdominalium flavidis. Pedes 4 antici subfulvi, femoribus supra nigris, femoribus posticis nigris, tibiaram apice, tarsisque piceis, unguibus acutis, basi subtus in dentem latum producto.

37. CLERUS (HYDROCERUS?) FLAVO-VARIUS, Westw. (White, App. Cat. Cleridæ, p. 62.) (Pl. XXVII. fig. 3.) *Piceo-niger, facie, antennis subfiliformibus, ore palpisque flavis, pronoto flavo, ferreo-equino piceo dorsali notato; elytris nigris, maculis 8 flavis notatis.*—Long. corp. lin. $2\frac{1}{2}$.

Hab. King George's Sound. In Mus. Westwood.

Præcedenti proximus, et antennis et prothorace similiter formatis; longe griseo-setosus. Caput vertice nigro sparsim punctato, facie, ore, palpis et antennis pallide flavis; mandibulæ apice piceæ. Pronotum flavum, latitudine capitis, lateribus ante medium subrotundatis, postice fere rectis, disco macula ferream equinum simulante picea notato. Elytra valde elongata, rugose punctata, singula striola humerali transversa cum macula oblonga basali connexa, macula rotundata fere media, alteraque inter medium et apicem, apiceque ipso flavo. Corpus infra nigrum. Pedes flavi, femoribus et tibiis posticis apice, tarsisque nigris.

38. CLERUS (HYDROCERUS) PECTORALIS, Westw. (White, App. Cat. Cleridæ, p. 61.) (Pl. XXVII. fig. 6.) *Totus pallide fulvus, nitidus, thorace subtus oculisque nigris, elytris grosse punctatis, antennisque clavatis.*—Long. corp. lin. $2\frac{1}{2}$.

Hab. in Australia meridionali. In Mus. Westwood.

Præcedentibus duobus affinis, at brevior, latior et minus parallelus; caput longius, fere læve, facie inter oculos impressionibus binis ovalibus. Palpi maxillares subfiliformes, labiales late securiformes. Antennæ breves articulis tribus apicalibus incrassatis. Prothorax fere lævis, nitidus, lateribus rotundatis prope marginem anticum constrictus, et transversim impressus. Elytra pone medium parum latiora, grosse punctato-striata, punctis versus apicem paullo majoribus. Pedes toti fulvescentes, tarsorum articulis latis, unguibus brevibus basi intus dilatatis.

39. CLERUS NOVEM-GUTTATUS, Westw. (Pl. XXVII. fig. 9.) *Purpureus, punctatissimus, dense nigro-setosus, antennis nigris basi rufescentibus, prothorace postice latiore, scutello maculisque parvis rotundatis 8 elytrorum albo-hirtis.*—Long. corp. lin. 2.

Hab. Nova Hollandia prope Hunter's River. In Mus. Westwood.
No. CCXLI.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.

Parvus, elegans, convexus, caput convexum, punctatissimum, antennæ breves, clavatæ articulis 4 apicalibus sensim incrassatis, articulis basalibus rufescentibus. Palpi maxillares cylindrici, breves, labiales articulo ultimo triangulari. Prothorax brevis, punctatissimus, pone medium lateribus rotundatis et capite latoribus, prope marginem posticum transversim impressus. Elytra convexa, pone medium parum latiora, rude punctata, singula macula parva rotundata ante medium disci, 2nda laterali submedia, 3tia pone medium, 4taque subapicali albo-hirtis. Pedes breves, cyanei, unguibus simplicibus.

40. *OPILUS HILARIS*, Westw. (White, App. Cat. Cleridæ, p. 48, *Tillus h. nec Tillus h.* Newm.) (Pl. XXVI. fig. 12.) *Elongatus, subcylindricus, nitidus, castaneo-rufus, punctatissimus; antennis palpisque rufo-fulvis; elytris tertia parte basali testacea, reliqua parte nigra, fascia angusta submedia, recta, alba, punctato-striatis apicibus sublævibus.*—Long. corp. lin. 2.

Hab. in Terra Van Diemenii (*D. Ewing*). In Mus. Westwood.

O. caro, Newm., affinis. Caput punctatissimum, castaneo-rufum; antennæ vix prothoracis longitudine fulvæ, articulis 9 et 10 elongatis, crassioribus, 11mo longiori ovato. Palpi fulvi. Prothorax castaneo-rufus rude punctatus, antice nigricans, subcylindricus, ante marginem posticum angustatus. Elytra cylindrica, rude punctato-striata, striis longe ante apicem obliteratis, apice lævi nitido, tertia parte basali fulvo colore utrinque oblique terminato, parte relicta nigra, fascia recta angusta transversa, media alba. Corpus subtus cum pedibus rufum; abdomine nigro.

41. *OPILUS MÆRENS*, Westw. (White, App. Cat. Cleridæ, p. 57, *Notoxus m.*) (Pl. XXVI. fig. 10.) *Niger, punctatissimus, subcylindricus, cinereo-setosus, pedibus antennisque piceis, his basi rufescentibus; elytris punctato-striatis, apicibus lævibus, fascia transversa medio albida.*—Long. corp. lin. 2½.

Hab. apud Adelaidam Novæ Hollandiæ. In Mus. Westwood.

Op. picipenni, Westw. (White, *op. cit.* p. 48) proximus. Caput antice valde convexum, præsertim postice punctatissimum. Palpi picei omnes mediocriter securiformes. Antennæ piceæ, basi rufescentes, articulis tribus ultimis dilatatis. Prothorax cylindricus capitis latitudine, postice parum angustatus, punctatus, in medio disci impressione oblonga parum notatus, marginibus impressionis irregularibus lævibus. Elytra elongata, subcylindrica, e basi paullo pone medium rude punctato-striata, apicibus fere lævibus, fascia transversa recta media alba, sutura tenui nigricante. Corpus infra nigrum, tenue punctatum, nitidum. Pedes nigri, coxis castaneis; tibiis tarsisque piceis.

42. *CLERUS (XYLOTRETUS) CHRYSIDEUS*, Westw. *Elongatus, angustus, punctatissimus, nitidus, depressus, facie linea tenuissima media elevata; antennis articulo ultimo apice emarginato; prothorace subcylindrico dorso transversim striolato, scutello albo hirtis; elytris rude punctatis; corpore subtus albo setoso.*—Long. corp. lin. 3½.

Hab. King George's Sound, Novæ Hollandiæ. In Mus. Westwood.

Var. α . Totus supra læte igneo-cupreus, capite et pronoto aureo tinctis. Antennæ et palpi fulvescentes; illæ articulis 4 apicalibus sensim latioribus, ultimo apice emarginato. Palpi maxillares cylindrici; labiales mediocriter securiformes. Prothorax elongatus, subcylindricus, capite paullo angustior, ante et pone medium paullo constrictus, scutellum parvum albo setosum. Elytra elongata, depressa, rude punctata. Corpus infra aureo-viride, femora purpurea, tibiæ rufo-castaneæ, tarsi picei.

Var. β . (*Cl. atricornis*, Westw.) Supra totus cupreo-purpurascens, nigro setosus, antennis, palpis, pedibusque nigris, purpurascens tinctis; corpore infra nigro metallice paullo tincto.

Var. γ . (*Cl. æruginosus*, Westw.) Supra totus læte viridis, antennis palpisque fulvis, illorum articulis tribus apicalibus nigris; corpore infra viridi, nitido; pedibus, ut in var. α . coloratis.

43. CLERUS VENTRALIS, Westw. *Niger nitidus, capite opaco, facie plana, labro, antennis, palpis, tibiis tarsisque 4 anticis fulvescentibus, elytris dimidio basali valde rugoso, apicali lævissimo, tuberculis duobus prope scutellum, fascia tenui media transversa, apiceque albo hirtis.*—Long. corp. lin. 4.

Hab. Hunter's River, Nova Hollandia. In Mus. Parry, Westwood.

Caput nigrum, opacum, punctis minutis omnino obiectum. Labrum et antennæ rufescentes, hæ articulis tribus ultimis majoribus, ultimo ovali. Palpi fulvescentes; maxillares filiformes, labiales articulo ultimo triangulari. Prothorax brevis, capite paullo latior, lateribus rotundatis, postice angustior, rugose punctatus, impressione transversa curvata ante medium, alteraque transversa basali. Elytra lata, depressa, angulis humeralibus prominulis, tuberculis duobus basalibus prope scutellum, nigra nitida, dimidio basali valde rugoso, apicali lævissimo nitido, fascia transversa angusta media, apiceque late griseo-albo hirtis. Pedes nigri, tibiæ et tarsi 4 antici castanei. Corpus infra nigro-cyaneum, abdomine purpureo nitidissimo, metathorace utrinque albo hirtis.

44. OPILUS 6-NOTATUS, Westw. (White, App. Cat. Cleridæ, p. 57.) (Pl. XXVI. fig. 7.) *Elongatus, angustus, pedibus valde elongatis, supra cyaneus, elytris rude punctatis, dimidio apicali lævi, maculis duabus ovalibus ante medium, fascia transversa submedia, maculisque duabus subobliquis apicalibus flavidis.*—Long. corp. lin. $3\frac{1}{4}$ – $6\frac{1}{2}$.

Hab. in Terra Van Diemenii (*D. Ewing*). In Mus. Brit. et Westw. Var. *Notoxus pulcher*, White, *op. cit.* p. 58.

Caput cyaneum, punctis minutis subrugosum, latitudine prothoracis. Antennæ elongatæ, fulvæ, articulis tribus ultimis majoribus. Palpi fulvi, omnes securiformes. Labrum fulvum. Prothorax cyaneus lateribus rotundatis, postice angustatus, ante medium impressione angulata, lineaque media longitudinali abbreviata dorsali, alteraque transversa basali impressus. Elytra cyanea, apice magis purpureo, dimidio basali striato-punctato; apicali lævi, maculis duabus parvis ovalibus ante medium, fascia interrupta mediana, maculisque duabus

subobliquis apicalibus flavidis. Corpus infra cyaneum. Pedes nigri, trochanteribus femoribusque basi apiceque tibiarum, tarsisque fulvis.

45. CLERUS SEPULCRALIS, Westw. (Pl. XXV. fig. 9.) *Niger nitidus, griseo-setosus, elytris fascia communi paullo curvata, media alba.*—Long. corp. lin. $4\frac{2}{3}$.

Hab. in Nova Hollandia. In Mus. Parry.

Niger nitidus, capite et pronoto fere lævibus, elytris punctatissimis, punctis vix in lineas longitudinales dispositis, apicibus late lævibus. Caput convexum, nigrum. Labrum pallide fuscum. Antennæ nigræ, articulis tribus ultimis sensim et paullo latioribus. Palpi picei, maxillares breves filiformes, labiales longe securiformes. Prothorax postice angustior, lateribus rotundatis, ante medium impressione curvata alteraque recta prope basin. Elytra elongata, depressa, nigra, nitida, fascia media communi curvata alba. Pedes nigri, griseo-setosi, tarsi picei, unguibus simplicibus. Corpus infra nigrum, abdomine piceo.

46. NECROBIA PINGUIS, Westw. (White, App. Cat. Cleridæ, p. 63.) (Pl. XXVII. fig. 10.) *Brevis, crassa, rufo-castanea, punctatissima, subopaca, capite, antennarum apice, elytrisque nigris; his fascia tenui transversa media, alteraque subapicali albis.*—Long. corp. lin. $3\frac{1}{4}$.

Hab. in Terra Van Diemenii (*D. Hooker*). In Mus. Westwood.

Brevis, crassa, subopaca, punctatissima. Caput parvum, nigrum, punctatissimum. Antennæ nigræ, articulis basalibus rufis, tribus apicalibus dilatatis. Labrum et palpi fulvo-castanei. Prothorax capite multo latior, lateribus in medio utrinque in tuberculum rotundatum dilatatis, punctatissimus; scutellum castaneo-rufum. Elytra nigra, subopaca, grosse punctata, fascia tenui fere recta media, alteraque subapicali albidis. Corpus subtus cum pedibus rufo-testaceum.

47. CLERUS (HOPLOCLERUS) BIACULEATUS, Westw. (White, App. Cat. Cleridæ, p. 61.) (Pl. XXV. fig. 1.) *Læte testaceus, oculis nigris, elytris nitide cyaneis, humeris apicibusque testaceis, his in spinis duabus suturalibus productis, corpore infra testaceo, meso- et metasterno cyaneis.*—Long. corp. lin. 3.

Hab. in Australia meridionali. In Mus. Westwood.

Subdepressus, lævis, nitidus, elytris irregulariter punctatis, postice latioribus. Caput thoracis latitudine, fere læve. Antennæ breves, fulvæ, articulis tribus ultimis crassioribus. Palpi fulvi, maxillares filiformes minuti, labiales valde securiformes. Prothorax fulvus, lateribus in medio rotundatis, prope marginem anticum transverse impressus, postice angustatus. Elytra lata, postice latiora, cyanea, punctatissima, humeris angustis apicibusque fulvis, his ad suturam in spinas duas productis. Corpus infra testaceum, meso- et metasterno cyaneis, nitidissimis. Pedes testacei, tarsi 4 posticis, obscuris, unguibus simplicibus.

48. ENOPLIUM PUSTULIFERUM, Westw. (Pl. XXIV. fig. 8.) *Piceum, setosum, subnitidum, parce punctatum; antennis et pronoto luteis, elytrorum disco tuberculis minutis instructo, sin-*

guloque pone medium plaga irregulari obscure albida notato.

—Long. corp. lin. 3.

Hab. in Nova Zealanda. In Mus. Brit.

Elongatum, piceum, subtus nitidum, supra vix nitidum. Caput minutissime punctatum, faciei disco semiovali, nigro, carina tenui marginato. Mandibulæ breves, luteæ, apice nigræ. Palpi subfulvi, omnes articulo ultimo parvo securiformi. Oculi interne incisi. Antennæ dimidio corporis paullo longiores, graciles, luteo-fulvæ, articulis tribus apicalibus valde elongatis. Pronotum fulvum, nitidum, vix punctatum, dorso valde irregulari, tuberculis duobus ante, alterisque duobus pone medium minoribus, glabris, lateribus antice fere rectis, medio rotundato-dilatatis, basique constricto. Elytra obscure picea, dorso valde irregulari punctata et pustulosa, tuberculis duobus elevatis prope basin, alterisque duobus ante medium, e præcedentibus canali obliqua separatis, disco singuli pone medium plaga irregulari lutea, tuberculisque duobus magnis ante apicem. Pedes luteo piceoque alternatim variegati.

49. CLERUS (OMADIUS) PRASINUS, *Westw.* (Pl. XXVI. fig. 2.)

Elongatus, parum depressus, obscure prasinus, aureo-sericans, elytris nigro maculatis, maculis aureis sericanti marginatis, pedibus fulvis, femoribus tibiisque in medio fusco-annulatis.—

Long. corp. lin. 6.

Hab. Moreton Bay, Novæ Hollandiæ. In Mus. Brit. et Westwood.

Caput thoracis latitudine, oculi magni, nigri, in medio faciei approximati, subtus pro receptione antennarum, profunde emarginati. Clypeus setosus, labrum bilobum luteum, palpi maxillares graciles breves apice fuscis, labiales elongati articulo ultimo longe securiformi, lutei. Antennæ graciles fuscæ, articulis duobus basalibus stramineis, articulis 8, 9, 10 obconicis sensim majoribus, 11 magno subovali compresso apice intus subacuto, vertex et pronotum sub lente tenuissime granulata, sericantia, hoc antice et postice constricto, lineaque media longitudinali elevata in parte postica. Elytra elongata, prothorace latiora subparallela, pone medium parum attenuata, longitudinaliter sulcata, sulcis punctatis, basique profundius punctato; maculis irregularibus nigris (singula margine tenui aureo-sericanti) fascias tres formantibus, 1ma ante, 2nda paullo pone (valde undulata), 3tia subapicali. Pedes luteo-fulvi, femoribus et tibiis in medio fusco fasciatis, tibiis et tarsis basi etiam fuscis, unguibus ad basin profunde incisus. Corpus infra pallide lutescens.

50. THANASIMUS CURSORIUS, *Westw.* (Pl. XXV. fig. 5.)

Niger cupreo-fusco parum tinctus, elytris basi nigris plaga magna sanguinea, fascia submedia, dentata pallidius rufa; macula magna ovali nigra in singulo, apiceque aureo sericanti; pedibus castaneis, tarsis fuscis.—Long. corp. lin. $3\frac{1}{2}$.

Hab. Adelaidam Novæ Hollandiæ (*D. Fortnum*), sole radianti volans et supra arbores sedens et velocissime cursitans. In Mus. Hope.

Caput nigrum subcupreum, tenuissime punctatum. Clypeus cas-

taneus; mandibulæ et palpi maxillares nigri, labiales castanei, elongati, articulo ultimo obconico. Antennæ mediocres articulis 5–11 fere æqualibus nigris; præcedentibus castaneis. Prothorax latitudine capitis convexus antice et prope basin constrictus, disco tenuissime punctato longe setoso. Elytra modice elongata, prothorace latiora, parum convexa, scabra et profunde punctato-striata, striis versus apicem minus distinctis; basi nigra macula magna humerali in singulo castanea; fascia submedia antice dentata, postice ad suturam elongata castaneo-rufa, macula magna subovali pone fasciam nigra in singulo apicibusque fusco-luteis aureo-sericantibus. Pedes castanei, tarsis fuscis, unguibus ad basin profunde incisus.

51. *CORYNETES COMPACTUS*, Westw. (Pl. XXVII. fig. 7.)

Castaneus punctatissimus; antennis pedibus et elytris fulvis, his nitidis rude punctatis nigro-bifasciatis.—Long. corp. lin. 2.

Hab. in Nova Hollandia? India Orientali? In Mus. Hope.

Species parva, setosa. Caput vix latitudine prothoracis, castaneum punctatissimum. Oculi minuti, laterales. Antennæ fulvæ, breves, articulis tribus ultimis majoribus, 11mo multo majori, breve ovali. Palpi breves, fulvi, omnes articulo ultimo securiformi. Prothorax castaneus haud nitidus punctatissimus, lateribus in medio paullo rotundato-dilatatis, ante basin vix constrictus, disco utrinque prope marginem anticum tuberculo parum elevato glabro. Elytra prothorace multo latiora, apice rotundata, disco subconvexo, glabra, rude punctato-striata, punctis paullo pone medium oblitteratis, fulva setosa, fascia recta nigra ante medium, alteraque latiori pone medium, nigris. Pedes breves, fulvi, tarsis anticis articulo basali (præsertim in anticis) minuto, infero; 2ndo et 3tio subtus lobatis, 4to minuto, unguibus integris.

52. *NECROBIA EXIMIA*, White, in Append. Cat. Cleridæ, p. 63.

(Pl. XXVII. fig. 12.) *Metallicus, capite et pronoto nigro-viridibus nitidissimis æneo parum tinctis; antennis palpisque piceis, elytris igneo flavo viridique nitidis fasciaque media purpurea.*—Long. corp. lin. $2\frac{3}{4}$.

Hab. Hunter's River, Australia Occidentali. In Mus. Brit., Parry, et Westwood.

Caput parvum. Antennæ rufo-piceæ, articulis tribus ultimis magnis nigris, 11mo rotundato, apice acuto. Palpi maxillares articulo ultimo paullo crassiori apice oblique truncato, labiales ultimo articulo distincte securiformi. Prothorax ovalis, antice et postice truncatus, lateribus rotundatis, impressione curvata parum impressa ante medium. Elytra latissima, tenuissime punctata. Pedes nigro-cyanei, nigro-setosi, tarsis articulo basali 2ndo paullo minori, hoc cum 3tio et 4to æqualibus subtus lobatis. Corpus infra flavo-viride.

Varietatem possideo corpore supra omnino læte aureo-viridi nitidissimo.

Differt hæc species e *Necrobiis* genuinis magnitudine articuli 4ti tarsorum. An potius *Cleris* adsociandus?

DESCRIPTION OF THE PLATES.

Obs. The lines at the sides of the different insects indicate their respective lengths, and the adjoining outlines represent the 4-jointed maxillary and 3-jointed labial palpi and the tarsi or tarsal ungues.

Pl. XXIV.

- Fig. 1. *Cladiscus longipennis*, *Westw.* No. 10. Himalaya.
- Fig. 2. *Cladiscus Parrianus*, *Westw.* No. 11. India Orientali.
- Fig. 3. *Cladiscus bipectinatus*, *Westw.* No. 12. Malabar.
- Fig. 4. *Clerus (Xylobius) albo-varius*, *Westw.* No. 13. Himalaya.
- Fig. 5. *Tillus (Tillicerus) chalybæus*, *Westw.* No. 15. Tenasserim.
- Fig. 6. *Clerus (Xylobius?) dulcis*, *Westw.* No. 14. Java.
- Fig. 7. *Tillus Afzelii*, *Westw.* No. 7. Sierra Leone.
- Fig. 8. *Enoplium pustuliferum*, *Westw.* No. 48. New Zealand.
- Fig. 9. *Tillus (Macrotelus) uniformis*, *Westw.* No. 5. Gambia.
- Fig. 10. *Clerus (Xylotretus) excavatus*, *Westw.* No. 29. West Australia.
- Fig. 11. *Tillus Dux*, *Westw.* No. 30. Swan River.
- Fig. 12. *Erymanthus horridus*, *Hope, MS.* No. 1. Cape Palmas.

Pl. XXV.

- Fig. 1. *Clerus (Hoplocerus) biaculeatus*, *Westw.* No. 47. South Australia.
- Fig. 2. *Clerus (Lemidius) corallipennis*, *Westw.* No. 32. Hunter's River.
- Fig. 3. *Clerus (Lemidius) festivus*, *Hope, MS.* No. 31. West Australia.
- Fig. 4. *Thanasimus irregularis*, *Westw.* No. 9. Cape of Good Hope.
- Fig. 5. *Thanasimus cursorius*, *Westw.* No. 50. Adelaide.
- Fig. 6. *Thanasimus subscutellaris*, *Westw.* No. 25. India orientali.
- Fig. 7. *Clerus sanguinalis*, *Westw.* No. 2. Natal.
- Fig. 8. *Thanasimus sellatus*, *Westw.* No. 18. India Orientali.
- Fig. 9. *Clerus sepulchralis*, *Westw.* No. 45. New Holland.
- Fig. 10. *Clerus subfasciatus*, *Westw.* No. 17. India Orientali.
- Fig. 11. *Clerus Bengala*, *Westw.* No. 16. Bengal.
- Fig. 12. *Clerus posticalis*, *Westw.* No. 19. India Orientali.

Pl. XXVI.

- Fig. 1. *Clerus (Omadius) medio-fasciatus*, *Westw.* No. 23. Khasyah Hills.
- Fig. 2. *Clerus (Omadius) prasinus*, *Westw.* No. 49. Moreton Bay, New Holland.
- Fig. 3. *Clerus (Omadius) olivaceus*, *Westw.* No. 24. Prince of Wales Island.
- Fig. 4. *Clerus (Stigmatius) nebulifer*, *Westw.* No. 3. Natal.
- Fig. 5. *Clerus (Stigmatius) rufiventris*, *Westw.* No. 26. Assam.
- Fig. 6. *Clerus (Stigmatius) Elaphroides*, *Westw.* No. 27. Ceylon.
- Fig. 7. *Opilus 6-notatus*, *Westw.* No. 44. Van Diemen's Land.
- Fig. 8. *Clerus (Stigmatius) dorsiger*, *Westw.* No. 4. Sierra Leone.
- Fig. 9. *Opilus sordidus*, *Westw.* No. 20. India Orientali.
- Fig. 10. *Opilus mœrens*, *Westw.* No. 41. Adelaide.
- Fig. 11. *Clerus zebratus*, *Westw.* No. 21. India Orientali.
- Fig. 12. *Opilus hilaris*, *Westw.* No. 40. Van Diemen's Land.

Pl. XXVII.

- Fig. 1. *Clerus (Hydnocerus?) flavo-lineatus*, *Westw.* No. 36. South Australia.
- Fig. 2. *Clerus (Hydnocerus) bellus*, *Westw.* No. 33. Adelaide.
- Fig. 3. *Clerus (Hydnocerus?) flavo-varius*, *Westw.* No. 37. K. George's Sound.
- Fig. 4. *Clerus (Hydnocerus) exilis*, *Westw.* No. 34. Adelaide.
- Fig. 5. *Clerus (Hydnocerus) V-reversus*, *Westw.* No. 35. Adelaide.
- Fig. 6. *Clerus (Hydnocerus) pectoralis*, *Westw.* No. 38. South Australia.
- Fig. 7. *Corynetes compactus*, *Westw.* No. 51. India? or New Holland?
- Fig. 8. *Thanasimus Anthicoides*, *Westw.* No. 22. Ceylon.
- Fig. 9. *Clerus 9-guttatus*, *Westw.* No. 39. Hunter's River.
- Fig. 10. *Necrobia pinguis*, *Westw.* No. 46. Van Diemen's Land.
- Fig. 11. *Opetiopalpus obesus*, *Westw.* No. 28. India Orientali.
- Fig. 12. *Necrobia eximia*, *White.* No. 52. Hunter's River.

Obs. The species numbered 6, 8, 42 and 43 are not figured.

2. DESCRIPTIONS OF SIXTY-SIX NEW LAND SHELLS, FROM
THE COLLECTION OF H. CUMING, ESQ.
BY DR. L. PFEIFFER.

1. VITRINA MILLIGANI, Pfr. *V. testa imperforata, depresso ovata, solidula, lævigata, nitidissima, olivaceo-nigricante; spira convexa; anfractibus 3 rapide crescentibus, penultimo convexo, ultimo depresso-rotundato, subtus latiusculo; apertura per-obliqua, lunato-ovali, intus concolore; peristomate simplice, subinflexo, margine dextro antrorsum dilatato, columellari leviter arcuato.*

Diam. maj. $22\frac{1}{2}$, min. 16, alt. $10\frac{1}{2}$ mill.

Hab. in insula parvula in Macquarie Harbour, Van Diemen's Land (Milligan).

2. VITRINA CASTANEA, Pfr. *V. testa depressa, ambitu ovali, striatula, nitidissima, castanea; spira plana; anfractibus 3 vix convexiusculis, ultimo magno, basi late membranaceo-marginato; apertura parum obliqua, lunari-ovali; peristomate luteo-limbato, margine membranaceo.*

Diam. maj. 9, min. 7, alt. 5 mill.

Hab. in Australia.

3. VITRINA DIMIDIATA, Pfr. *V. testa depressissima, ambitu ovali, tenuissima, subtiliter arcuato-striata, sericina, pallide cornea; spira subplana; anfractibus $2\frac{1}{4}$ subtus apertis, vix membranaceo-marginatis; apertura horizontali, totam testam occupante; peristomate simplice, marginibus regulariter arcuatis.*

Diam. maj. $5\frac{1}{2}$, min. 4, alt. $1\frac{1}{3}$ mill.

Hab. in Nova Seelandia.

4. HELIX OMEGA, Pfr. *H. testa imperforata, depressa, sublævigata, epidermide fulvo-cornea induta; spira vix elevatiuscula, vertice rubella; anfractibus 4 planiusculis, celeriter accrescentibus, ultimo depresso, basi vix convexiore, medio impresso; apertura obliqua, lunato-ovali; peristomate simplice, recto, margine basali levissime arcuato, superne reflexo, in regione umbilicali adnato.*

Diam. maj. $9\frac{1}{2}$, min. 7, alt. 4 mill.

Hab. in Nova Seelandia.

5. HELIX AULICA, Pfr. *H. testa perforata, tenui, radiatim striatula et plerumque superne spiraliter hinc inde leviter sulcata, diaphana, nitida, coloribus varia; spira brevissime elevata, obtuse conoidea; anfractibus $4\frac{1}{2}$ convexiusculis, rapide accrescentibus, ultimo depresso, periphæria obsolete angulato, basi convexiore; apertura permagna, obliqua, multo latiore quam alta, truncato-ovali; peristomate simplice, recto, margine supero lente descendente, columellari arcuato, superne breviter reflexo.*

Diam. maj. 48, min. 41, alt. 23 mill.

Hab. in insulis Moluccis.

This species has been generally confounded with *H. vitrina*, L.

6. **HELIX IOTA**, Pfr. *H. testa perforata, subdepressa, tenui, confertim costata, haud nitente, corneo-lutescente, rufo-maculata et reticulata; spira breviter conoidea, acutiuscula; anfractibus 5 convexiusculis, sensim accrescentibus, ultimo non descendente, rotundato; apertura parum obliqua, rotundato-lunari; peristomate simplice, recto, marginibus distantibus, columellari arcuatim ascendente, superne subdilatato, patente.*

Diam. maj. 4, min. $3\frac{2}{3}$, alt. $2\frac{1}{2}$ mill.

Hab. in Nova Seelandia.

7. **HELIX LAMBDA**, Pfr. *H. testa umbilicata, subconoideo-depressa, tenui, sublævigata, striis spiralibus interdum sculpta, parum nitida, diaphana, fulva, castaneo maculata; spira subconoidea, obtusula; anfractibus 5 convexiusculis, ultimo non descendente, periphæria obsolete angulato, basi convexo; umbilico mediocri, conico; apertura obliqua, lunato-rotundata, intus nitida; peristomate simplice, recto, marginibus conniventibus, columellari superne subdilatato, patente.*

Diam. maj. 13, min. 11, alt. 7 mill.

Hab. in Nova Seelandia.

8. **HELIX EPSILON**, Pfr. *H. testa umbilicata, depressa, tenui, superne oblique et confertim plicata, pallide cornea; spira convexiuscula; anfractibus $3\frac{1}{2}$ convexiusculis, ultimo non descendente, basi sublævigato; umbilico angusto, pervio; apertura parum obliqua, rotundato-lunari; peristomate simplice, recto, marginibus conniventibus.*

Diam. maj. $1\frac{3}{4}$, min. $1\frac{1}{2}$, alt. $\frac{2}{3}$ mill.

Hab. in Nova Seelandia.

9. **HELIX GAMMA**, Pfr. *H. testa umbilicata, depressa, tenuiuscula, confertissime costulato-striata, diaphana, pallide cornea, rufulo-nebulata; spira vix convexiuscula; sutura impressa; anfractibus 5 convexiusculis, lente crescentibus, ultimo non descendente, subtus convexo; umbilico latiusculo, conico; apertura subverticali, rotundato-lunari; peristomate simplice, recto, marginibus subconniventibus, regulariter arcuatis.*

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

Hab. in Nova Seelandia.

10. **HELIX ETA**, Pfr. *H. testa umbilicata, depressa, subtiliter costulato-striata, sericea, cerea; spira planiuscula; sutura impressa; anfractibus 4 vix convexiusculis, ultimo latiore, non descendente, depresso; umbilico latiusculo, perspectivo; apertura parum obliqua, lunato-subcirculari; peristomate simplice, recto, marginibus conniventibus.*

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

Hab. in Nova Seelandia.

11. **HELIX ZETA**, Pfr. *H. testa latissime umbilicata, depressa, subdiscoidea, solidiuscula, subconfertim valide plicata, non nitente, pallide flavescente, maculis magnis castaneis tessellata; spira plana, medio subimmersa; sutura profunda; anfractibus $5\frac{1}{2}$ angustissimis, convexis, turgidulis, ultimo descendente, tertiussculo, subtus plicis subtilioribus munito; apertura parum obliqua, parvula, lunato-circulari; peristomate simplice, recto, marginibus conniventibus.*
 Diam. $3\frac{2}{3}$, alt. $1\frac{1}{2}$ mill.
Hab. in Nova Seelandia.
12. **HELIX ALPHA**, Pfr. *H. testa umbilicata, conica, carinata, oblique striatula et distanter lamellato-costata, strigis brunneis et luteis variegata; spira convexiusculo-conica, apice obtusula; anfractibus $5\frac{1}{2}$ vix convexiusculis, ultimo non descendente, acute dentato-carinato, basi plano, ad umbilicum medio-crem pervium subangulato; apertura diagonali, subsecuriformi; peristomate simplice, recto, margine supero brevi, basali arcuato, ad columellam subverticaliter ascendente.*
 Diam. maj. $4\frac{1}{3}$, min. 4, alt. 3 mill.
Hab. in Nova Seelandia.
13. **HELIX BETA**, Pfr. *H. testa umbilicata, trochiformi, carinata, tenui, arcuatim valide plicata, fulva, castaneo late maculata; spira elevata, convexo-conica, acutiuscula; sutura marginata; anfractibus 7 angustis, planiusculis, ultimo subrecedente, non descendente, ad carinam ciliato, basi vix convexiusculo; umbilico angusto; apertura obliqua, angulato-lunari; peristomate simplice, recto, margine basali regulariter arcuato.*
 Diam. et alt. $3\frac{1}{3}$ mill.
Hab. — ?
14. **HELIX KAPPA**, Pfr. *H. testa umbilicata, depressa, confertim capillaceo-costata, non nitida, cornea, rufo obsolete variegata; spira brevissima, convexiuscula; sutura impressa; anfractibus 5 convexiusculis, sensim accrescentibus, ultimo non descendente, rotundato; umbilico angusto, pervio; apertura verticali, depressa, lunari; peristomate subsimplice, marginibus remotis, dextro recto, basali breviter reflexo, columellari oblique ascendente.*
 Diam. maj. $5\frac{1}{3}$, min. 5, alt. 3 mill.
Hab. in Nova Seelandia.
15. **BULIMUS CARDINALIS**, Pfr. *B. testa subperforata, ovata, solida, præter strias incrementi lineis impressis confertissimis longitudinalibus, spiralibus et obliquis sculpta, olivaceo-castanea, nitida, lineis undulatis rufis superne, maculisque nigricantibus sparsis ornata; spira inflato-conica, obtusula; anfractibus 4 convexis, ultimo $\frac{4}{4}$ longitudinis æquante, inflato, basi subcompresso; columella fere verticali, superne subplicata; apertura parum obliqua, ovali; peristomate lilaceo, margini-*

bus callo crassiusculo junctis, dextro expanso-reflexo, columellari dilatato-patente.

Long. 50, diam. 28 mill.

Hab. Quito.

16. **BULIMUS AULACOSTYLUS**, Pfr. *B. testa umbilicata, acuminato-ovata, tenuiuscula, subtiliter striata et submalleata, vix nitente, quasi pruinosa, diaphana, rufa vel fulva, maculis castaneis irregulariter aspersa; spira brevi, convexo-conica, acutiuscula; anfractibus 5 parum convexis, ultimo $\frac{2}{5}$ longitudinis subæquante, basi rotundato; columella compresso-plicata, sulco profundo, arcuatim ascendente ab anfractu penultimo sejuncta; apertura parum obliqua, oblongo-ovali, intus margaritacea; peristomate fusco-purpureo, undique breviter expanso, reflexiusculo, margine dextro levissime arcuato, columellari dilatato, patente.*

Long. 37, diam. 18 mill.

Hab. in insula St. Lucia Indiæ occidentalis (Hartwig).

17. **BULIMUS PERVARIABILIS**, Pfr. *B. testa umbilicata, ovato-conica, tenuiuscula, subtilissime decussatula, lutescenti-albida, plerumque fasciis 5 subinterruptis ornata; spira conica, acuta; anfractibus $6\frac{1}{2}$ vix convexiusculis, ultimo spiram paulo superante, basi subinflato; columella leviter arcuata; apertura vix obliqua, ovali-oblonga; peristomate simplice, albo vel lutescente, expanso, margine columellari fornicatim dilatato, patente.*

Long. 33, diam. $14\frac{1}{2}$ mill.

β. *Gracilior, rubellus, fusco-substrigatus, B. roseato Reeve similis, sed late umbilicatus.*

Hab. in Columbia.

18. **BULIMUS MERCURIUS**, Pfr. *B. testa perforata, ovato-conica, solida, nitida (sub lente minutissime decussatula), fulvido-alba, fasciis latis castaneis ornata; spira turrito-conica, acutiuscula; anfractibus $6\frac{1}{2}$ vix convexiusculis, ultimo $\frac{3}{7}$ longitudinis subæquante, basi rotundato; columella substricta; apertura parum obliqua, truncato-ovali; peristomate simplice, breviter expanso, margine columellari fornicato-reflexo.*

Long. 36, diam. 18 mill.

Hab. — ?

19. **BULIMUS LOXOSTOMUS**, Pfr. *B. testa imperforata, oblonga, solida, irregulariter striata et confertim malleata, sub epidermide virenti-castanea fulva, rufo undulatim strigata et maculata; spira convexo-conica, obtusiuscula; sutura submarginata; anfractibus $5\frac{1}{2}$ convexiusculis, ultimo spira paulo brevior; columella arcuata, superne subplicata, pallide aurantiaca; apertura obliqua, ovali; peristomate recto, incrassato.*

Long. 71, diam. 34 mill.

Hab. in Andibus Novæ Granadæ.

20. *BULIMUS ACUS*, Pfr. *B. testa minima, subimperforata, aciculari, sub lente plicato-striata, hyalina; spira subulata, apice obtusiuscula; anfractibus 7-8 convexis, ultimo $\frac{1}{4}$ longitudinis non æquante, basi rotundato; columella subplicata; apertura parum obliqua, oblonga; peristomate simplice, recto, margine columellari brevissime reflexo.*

Long. $3\frac{3}{4}$, diam. $\frac{3}{4}$ mill.

Hab. prope Sevilla Hispaniæ.

21. *BULIMUS PLANOSPIRUS*, Pfr. *B. testa imperforata, turrita, solida, confertim ruguloso-striata, lineis impressis obsolete decussatula, sub epidermide decidua, fulvescente, alabastrino-albida; spira elongata, apice in conum obtusulum terminata; sutura impressa; anfractibus 13 subplanis, ultimo $\frac{1}{5}$ longitudinis subæquante, infra medium obsolete angulato; columella strictiuscula, callosa; apertura obliqua, truncato-oblonga; peristomate simplice, recto.*

Long. 84, diam. 17 mill.

Hab. ———?

22. *BULIMUS SUBFASCIATUS*, Pfr. *B. testa subperforata, oblongo-ovata, solidula, longitudinaliter rugoso-striata et irregulariter decussato-granulata, fulvida, fasciis 2-3 fuscis obsolete cincta; spira convexo-conica, apice obtusa; anfractibus 6 convexiusculis, ultimo spiram æquante, basi rotundato; columella verticali; apertura subverticali, oblonga, intus alba, nitida; peristomate recto, subincrassato, margine dextro superne repando, columellari superne dilatato, albo, reflexo, fere adnato.*

Long. 32, diam. 14 mill.

Hab. in monte Anthisana reipublicæ Æquatoris (Bourcier).

23. *BULIMUS NUCULA*, Pfr. *B. testa anguste umbilicata, ovato-conica, solidiuscula, subtilissime ruguloso-striata, fusco-cornea, plerumque pallide uni-cingulata; spira convexo-conica, acuta; anfractibus $6\frac{1}{2}$ vix convexiusculis, ultimo spira paulo brevior, basi compressiusculo; columella stricta, basi oblique subtruncata; apertura parum obliqua, subsemiovali, basi angulata; peristomate simplice, recto, margine dextro superne perarcuato, columellari reflexo, patente.*

Long. $11\frac{1}{2}$, diam. 6 mill.

Hab. in insulis Gallapagos.

24. *BULIMUS HEBRAICUS*, Pfr. *B. testa rimato-perforata, oblongo-turrita, solida, nitidula, carnea, strigis saturatoribus picta; spira elongata, acutiuscula; anfractibus 7 planiusculis, supremis subtilissime pliculato-striatis, maculis corneis irregularibus inscriptis, ultimo $\frac{3}{7}$ longitudinis subæquante, basi rotundato; columella vix plicata, parum recedente; apertura parum obliqua, ovali; peristomate recto, intus labiato, margine columellari dilatato, plano, patente.*

Long. 29, diam. $12\frac{1}{2}$ mill.

Hab. ———?

25. *BULIMUS BARBADENSIS*, Pfr. *B. testa subperforata, ovato-conica, solidiuscula, ruguloso-striata et obsolete granulata, fusco-cornea; spira conica, acutiuscula; anfractibus 6 vix convexiusculis, ultimo ventrosiore, spiram subaequante; columella vix arcuata; apertura parum obliqua, oblonga; peristomate simplice, recto, margine columellari sursum dilatato, reflexo, subappresso.*

Long. 21, diam. 10 mill.

Hab. in insula Barbados.

26. *CYCLOSTOMA PlicOSUM (OMPHALOTROPIS)*, Pfr. *C. testa perforata, ovato-conica, tenui, longitudinaliter confertim plicata, sericea, rubello-cornea; spira conica, acuta; anfractibus 5 convexiusculis, ad suturam crenulatis, ultimo spiram subaequante, rotundato, circa perforationem angustam compresse subcarinato; apertura vix obliqua, ovali; peristomate simplice, recto, marginibus approximatis, columellari reflexiusculo.*

Long. 6, diam. 4 mill.

Hab. — ?

27. *CYCLOSTOMA? PATERA*, Pfr. *C. testa latissime umbilicata, solidula, discoidea, liris latis granulatis, interpositis linearibus sculpta, epidermide olivaceo-fusca obducta; spira plana; sutura subcanaliculata; anfractibus $4\frac{1}{2}$ planulatis, ultimo medio carina filiformi munito, basi convexo, circa umbilicum pteræformem subangulato; apertura verticali, subangulato-rotundata; peristomate simplice, recto, marginibus approximatis.*

Diam. maj. 10, min. 8, alt. $2\frac{1}{2}$ mill.—Operculum ?

Hab. — ?

Solarii quasi faciem offert; an revera Cyclostomaceis adnumerandum ?

28. *CYCLOSTOMA QUITENSE (CYCLOTUS)*, Pfr. *C. testa umbilicata, depressa, solida, superne striatula, nitida, saturate castanea; spira brevi, conoideo-elevata; sutura profunda; anfractibus $4\frac{1}{2}$ convexis, rapide accrescentibus, ultimo ad suturam depresso, rugato, peripheria cingulo angusto lutescente et fascia latu nigricante ornato, basi fusco-virente, circa umbilicum infundibuliformem confertim radiato-plicato; apertura parum obliqua, irregulariter ovali, dextrorsum producta, intus lirescente; peristomate recto, subincrassato, continuo, marginibus superne angulatim junctis, sinistro ad anfractum penultimum breviter appresso.*

Diam. maj. 37, min. 27, alt. 15 mill.—Operculum Cycloti.

Hab. Quito.

29. *CYCLOSTOMA APPENDICULATUM (CYCLOPHORUS)*, Pfr. *C. testa umbilicata, depressa, solida, lineis spiralibus elevatis, confertis (4–5 paulo majoribus) sculpta, albida, fusculo-marmorata, prope suturam canaliculatam maculis magnis, subquadrangularibus, castaneis et supra peripheriam subcarinatam, castaneo-articulatam fascia pallida signata; spira brevissime conoidea, apice cornea, obtusula; anfractibus $4\frac{1}{2}$ rapide accrescentibus, ultimo ad suturam*

late depresso; umbilico magno, perspectivo; apertura obliqua, circulari; peristomate continuo, breviter adnato, albo, undique æqualiter expanso, margine sinistro in appendicem linguæformem, patentem dilatato.

Diam. maj. 34, min. 27, alt. 15 mill.

Hab. in insulis Philippinis.

30. *CYCLOSTOMA IBYATENSE* (CYCLOPHORUS), Pfr. *C. testa umbilicata, turbinato-depressa, solida, lævigata, subtiliter striatula, nitida, castanea, albido maculata et fasciata; spira turbinata, vertice acutiusculo, corneo; anfractibus 5 modice convexis, ultimo ad suturam subdepresso, maculis magnis subquadratis vel triangularibus albis picto, periphæria obsoletissime angulato, circa umbilicum mediocrem, infundibuliformem albo; apertura parum obliqua, subcirculari; peristomate subincrassato, expansiusculo, marginibus approximatis, callo continuo junctis.*

Diam. maj. 23, min. 18, alt. 14 mill.

Hab. in insula Ibyat "Bashee group."

31. *CYCLOSTOMA AMÆNUM* (CYCLOPHORUS), Pfr. *C. testa umbilicata, depresso-turbinata, solida, lævigata, alba, lineis castaneo-fulvis crebris, maculis sagittiformibus interruptis amænissime picta; spira conoidea, obtusa; anfractibus 4½ modice convexis, ultimo superne turgido, periphæria carina subcompressa et infra eam fascia saturatiore signato, basi convexo, circa umbilicum angustum, infundibuliformem albo; apertura parum obliqua, subcirculari; peristomate duplice, interno continuo, stricte, porrecto, externo crasso, patente, ad anfractum penultimum vix exciso.*

Diam. maj. 30, min. 24, alt. 18 mill.

Hab. —?

32. *CYCLOSTOMA PICTURATUM* (CYCLOPHORUS), Pfr. *C. testa umbilicata, turbinato-depressa, solida, sublævigata, albida, strigis et flammis reticulatis castaneis picta; spira breviter conoidea, obtusa; anfractibus 4½ modice convexis, ultimo superne costis nonnullis obtusis spiraliter munito, infra periphæriam rotundatam fascia serrata ornato, circa umbilicum mediocrem, profundum albo; apertura parum obliqua, subcirculari; peristomate subsimplice, crasso, longe protracto, continuo, breviter adnato, margine sinistro dilatato, patente.*

Diam. maj. 29, min. 23, alt. 16 mill.

Hab. —?

33. *CYCLOSTOMA DENSELINEATUM* (CYCLOPHORUS), Pfr. *C. testa umbilicata, globoso-turbinata, solida, lineis spiralibus impressis et obliquis minutissime decussata, vix nitidula, pallide fulva, maculis et fasciis interruptis fuscis picta; spira turbinata, sursum nigricante, apice acuta; anfractibus 5, parum convexis, ultimo superne convexiore, infra medium obtuse carinato, basi planiusculo, circa umbilicum angustum, pervium pal-*

lido; apertura parum obliqua, subcirculari, transverse dilatata; peristomate incrassato, vix expanso, marginibus approximatatis, callo junctis, columellari reflexiusculo.

Diam. maj. $23\frac{1}{2}$, min. 20, alt. 16 mill.

Hab. — ?

34. *CYCLOSTOMA LURIDUM (CYCLOPHORUS)*, Pfr. *C. testa umbilicata, depresso-turbinata, tenuiuscula, confertim spiraliter striata et costis sub-5 obtusis superne munita, nitida, fusco-fulvida; spira turbinata, apice livida, acutiuscula; anfractibus 5, modice convexis, ultimo ad peripheriam obtuse angulato et albofasciato, basi pallidiore, obsolete fasciato; umbilico angusto, pervio; apertura magna, parum obliqua, subangulato-circulari; peristomate simplice, tenui, marginibus disjunctis, dextro breviter expanso, sinistro subdilato, fornicato-patente.*

Diam. maj. 27, min. 23, alt. 19 mill.

Hab. — ?

35. *CYCLOSTOMA FULGURATUM (CYCLOPHORUS)*, Pfr. *C. testa umbilicata, depresso-turbinata, solida, oblique striatula, sub lente confertissime decussata, alba, strigis fulguratis, castaneis superne elegantissime picta; spira turbinata, apice obtusula, cornea; anfractibus 5, convexis, ultimo rotundato, ad peripheriam fascia alba et infra eam, nigricanti-castanea ornato, circa umbilicum angustum, vix pervium albo; apertura parum obliqua, subcirculari, intus livescente, nitida; peristomate simplice, fulvido, interrupto, marginibus callo tenui junctis, dextro et basali æqualiter expansis, columellari supra umbilicum dilatato, patente.*

Diam. maj. 29, min. 23, alt. 19 mill.

Hab. — ?

36. *CYCLOSTOMA BORNII (LICINA?)*, Pfr. *C. testa umbilicata, oblongo-turrita, solida, spiraliter confertim striata, lineis longitudinalibus distantioribus granulato-decussata, nitida, luteo-albida, strigis angustis, fulguratis, rufis ornata; spira convexo-turrita, breviter truncata; sutura subcanaliculata, crenulata; anfractibus $4\frac{1}{2}$, perconvexis, ultimo terete; umbilico infundibuliformi, subpervio; apertura parum obliqua, oblongo-rotundata, parvula, intus alba; peristomate duplicato interno expanso, continuo, incumbente, externo anfractui penultimo breviter adnato, lateribus perdilato, concentricè striato.*

Long. 36, diam. 19 mill.

Hab. — ?

37. *CYCLOSTOMA MITE (CHOANOPOMA)*, Pfr. *C. testa umbilicata, turbinato-globosa, breviter truncata, liris obtusis spirali-bus munita, costulis membranaceis confertissimis decussata, unicolore corneo-albida; spira convexa, brevi; anfractibus $3\frac{1}{2}$, convexis, ultimo terete, circa umbilicum mediocrem, pervium, distinctius spiraliter lirato; apertura verticali, circulari; peristomate duplici, interno vix porrecto, externo undique æqualiter dilatato,*

patente, obsolete undulato, concentrice striato, superne subangulato, ad anfractum penultimum submarginato.

Diam. maj. 13, min. 10, alt. 9 mill.

Hab. in insula Jamaica.

38. *CYCLOSTOMA VITELLINUM* (OTOPOMA?), Pfr. *C. testa umbilicata, globoso-conica, solida, striis incrementi confertis et liris confertissimis scabre decussata, flavido-rubella, pallidius irregulariter strigata; spira elevato-conica, apice nigrescente, obtusula; anfractibus 5, convexis, ultimo rotundato, infra medium sublævigato, in umbilico angusto, pervio, spiraliter sulcato, apertura vix obliqua, ovali-rotundata; peristomate simplice, marginibus approximatis, callo junctis, dextro subrepando, recto, sinistro medio dilatato, patente.*

Diam. maj. 19, min. 17, alt. 17 mill.

Hab. in insula Madagascar.

39. *CYCLOSTOMA LIRATUM* (TROPIDOPHORA), Pfr. *C. testa late et perspective umbilicata, solidula, radiatim striata, superne et basi confertim et acute lirata, non nitida, livido-carnea; spira vix elevata, vertice papillari; sutura profunda; anfractibus 4 vix convexis, ultimo ad suturam depresso, ad peripheriam carinis 5-6, distantioribus, majoribus munito, antice descendente; apertura perobliqua, oblongo-circulari; peristomate duplice, interno continuo, obtuse prominente, externo dilatato, expanso-inflexo, latere sinistro angustissimo.*

Diam. maj. 18, min. $14\frac{1}{2}$, alt. 7-8 mill.

Hab. — ?

40. *CYCLOSTOMA KRAUSSIANUM* (TROPIDOPHORA), Pfr. *C. testa umbilicata, globoso-conica, solidula, striatula, liris cariniformibus permultis, alternis minoribus sculpta, opaca, livido-cinerea, obsolete subfasciata; spira turbinata, acutiuscula; anfractibus 5, convexis, ultimo peripheria distinctius carinato, basi parum convexo; umbilico mediocri, pervio; apertura parum obliqua, intus fulvo-cinerea; peristomate albo, tenui, undique expanso, ad anfractum penultimum breviter interrupto.*

Diam. maj. $14\frac{1}{2}$, min. 12, alt. 12 mill.

Hab. Cape Natal.

41. *CYCLOSTOMA INSULARE* (CYCLOSTOMUS?), Pfr. *C. testa perforata, globoso-conica, solidiuscula, spiraliter et obtuse crebri-lirata, lineis confertissimis longitudinalibus subscabra, non nitente, sordide albida, fasciis nonnullis pallide violaceis picta; spira breviter turbinata, obtusula; anfractibus 5, convexis, ad suturam minutissime crenulatis, ultimo basi liris elevatioribus sculpto; apertura vix obliqua, subangulato-circulari; peristomate tenui, undique expanso, reflexiusculo, marginibus approximatis, callo submarginato junctis, supero repando, sinistro angustiori.*

Diam. maj. 17, min. $13\frac{1}{2}$, alt. $13\frac{1}{2}$ mill.

Hab. Isle de France.

42. *CYCLOSTOMA CAROLINENSE* (*CYCLOSTOMUS*?), Pfr. *C. testa umbilicata, turrito-conica, tenuiuscula, superne leviter et confer-tim spiraliter lirata, nitidula, alba; spira elongata, apice obtusula; anfractibus 6, convexis, ultimo rotundato, infra medium lævigato; umbilico angusto, non pervio; apertura vix obliqua, subcirculari; peristomate simplice, acuto, marginibus approxi-matis, dextro recto, columellari medio dilatato, subreflexo.*

Diam. maj. 12, min. 10, alt. 12 mill.

Hab. in insulis Carolinis.

43. *CYCLOSTOMA SUBLIRATUM* (*CYCLOSTOMUS*?), Pfr. *C. testa angustissime umbilicata, globoso-conica, tenui, spiraliter lirata, haud nitente, pallide rubello-cornea; spira elevato-turbinata, apice obtusula; anfractibus 5, convexis, ultimo rotundato, obsoletius lirato; apertura parum obliqua, oblongato-rotunda; pe-ristomate simplice, tenui, vix expansiusculo, marginibus fere contiguïs, callo junctis.*

Diam. maj. 10, min. 8, alt. 9 mill.

Hab. — ?

44. *CYCLOSTOMA LINEATUM* (*CYCLOSTOMUS*?), Pfr. *C. testa umbilicata, globoso-conica, tenuiuscula, lævigata, diaphana, ni-tidula, fulva, lineis castaneis, alternis subtilioribus, subinter-ruptis, picta; spira turbinata, acutiuscula; anfractibus 5½, con-vexis, ultimo rotundato, infra peripheriam fascia latiore ornato, in umbilico angusto, vix pervio spiraliter confertim sulcato; apertura vix obliqua, subangulato-circulari; peristomate sim-plice, recto, albo, marginibus approximatis, callo submarginato junctis.*

Diam. maj. 15, min. 13, alt. 13 mill.

Hab. — ?

45. *CYCLOSTOMA SACCATUM* (*CYCLOSTOMUS*?), Pfr. *C. testa profunde rimata, vix perforata, ovato-oblonga, breviter trun-cata, tenui, longitudinaliter confertim filoso-costata, diaphana, pallide cornea, maculis castaneis seriatis ornata; sutura pro-funda, sub lente spinulosa; anfractibus 3½, convexis, ultimo an-tice subascendente, breviter soluto, basi saccato; apertura sub-circulari, basi axin excedente; peristomate simplice, continuo, vix expansiusculo.—Operc.?*

Long. 12, diam. 8 mill.

Hab. — ?

46. *CYCLOSTOMA FALLAX* (*CISTULA*?), Pfr. *C. testa rimata, oblongo-turrita, truncata, tenui, spiraliter obtuse lirata, lineis longitudinalibus confertioribus (octava vel decima quavis sub lente validioribus) decussata, non scabra, vix nitidula, albida, lineis flexuosis, interruptis, fulvis picta; spira subconvexo-tur-rita; anfractibus 4-4½, convexiusculis, ultimo rotundato, infra medium fascia fulva ornato, antice longe soluto, circa rimam umbilicalem vix spiraliter sulcato; apertura subverticali, ovali;*

peristomate albo, duplici: interno expansiusculo, incumbente, externo brevi, undique subæqualiter patente, superne angulato.—Operc.?

Long. 24, diam. $6\frac{1}{2}$ mill.

Hab. —?

47. *CYCLOSTOMA JUCUNDUM (CHONDROPOMA?)*, Pfr. *C. testa rimata, oblongo-turrita, tenui, lineis spiralibus et longitudinalibus chordæformibus anguste reticulata, subscabra, vix nitidula, aurantio-rubicunda; spira turrita, vix truncatula; sutura confertim denticulata; anfractibus 6–7, modice convexis, sensim accrescentibus, ultimo circa perforationem liris nonnullis validioribus munito; apertura parum obliqua, irregulariter ovali, intus concolore, nitida; peristomate duplici: interno expansiusculo, incumbente, latere sinistro levissime arcuato; externo continuo, horizontaliter patente, anfractui penultimo breviter adnato, infra perforationem angustato.—Operc.?*

Long. 18, diam. $8\frac{1}{2}$ mill.

Hab. —?

48. *CYCLOSTOMA ROSTRATUM*, Pfr. *C. testa perforata, ovato-turrita, truncata, tenui, longitudinaliter confertim filoso-plicata (plicis singulis irregulariter positis validioribus, interstitiis subtiliter decussatis), corneo-albida, lineolis longitudinalibus undulatis fuscis picta; sutura levi, denticulata; anfractibus superstitibus $4\frac{1}{2}$, parum convexis, ultimo antice breviter soluto; apertura verticali, angulato-ovali; peristomate duplici: interno continuo, expansiusculo, externo dilatato, juxta anfractum penultimum subexciso, superne in auriculam recurvatam producto, cæterum rectangule patente.—Operc.?*

Long. 18, diam. $8\frac{2}{3}$ mill.

Hab. —?

49. *ACHATINA GRANULATA*, Pfr. *A. testa fusiformi-ovata, tenui, longitudinaliter confertim rugulosa, lineis impressis spiralibus distincte granulata, fulva, strigis castaneis undatis et angulatis picta; spira conica, obtusa; sutura levi, ruditer crenulata; anfractibus $7\frac{1}{2}$, convexiusculis, ultimo spiram paullo superante, infra medium remotius spiraliter sulcato; columella perarcuata, tenui, basi abrupte truncata; apertura parum obliqua, ovali, intus cærulescente; peristomate simplice, recto, fusco-limbato.*

Long. 105, diam. 49 mill.

Hab. Natal Africæ meridionalis.

50. *ACHATINA FULIGINEA*, Pfr. *A. testa ovato-turrita, solida, ruditer striata, nitida, nigricanti-fuliginea; spira turrita, apice acuta; anfractibus $6\frac{1}{2}$, convexis, ultimo $\frac{2}{3}$ longitudinis subæquante, infra medium obsoletissime angulato; columella arcuata, ad basin verticaliter truncata; apertura parum obliqua, subrhombæo-ovali; peristomate simplice, acuto.*

Long. 36, diam. 16 mill.

Hab. —?

51. *ACHATINA CONSPERSA*, Pfr. *A. testa subfusiformi-oblonga, tenuiuscula, longitudinaliter striata, striis transversis basin versus obsoletioribus decussata, nitida, fusca, maculis albidis conspersa; spira elongato-conica, apice obtusula; sutura dentibus validis, albidis crenata; anfractibus 6, vix convexiusculis, ultimo spira paulo brevior, basi subattenuato; columella substriata, supra basin aperturæ fere verticali, sinuato-semiovali late et abrupte truncata; peristomate simplice, acuto.*

Long. 60, diam. 23 mill.

Hab. — ?

52. *ACHATINA FUSCA*, Pfr. *A. testa oblongo-turrita, tenui, confertissime capillaceo-striata (striis singulis validioribus, variciformibus), sericina, fusca; spira vix curvilineari, apice obtusa; sutura marginata, subtilissime denticulata; anfractibus 7, convexis, ultimo $\frac{3}{7}$ longitudinis æquante, basi rotundato; columella albo-callosa, leviter arcuata, abrupte breviter truncata; apertura verticali, sinuato-semiovali; peristomate simplice, recto.*

Long. 22, diam. 9 mill.

Hab. — ?

53. *BULIMUS MARCIDUS*, Pfr. *B. testa subperforata, ovato-oblonga, tenuissima, striatula, lineis impressis concentricis decussata, vix nitida, pellucida, sordide cornea; spira oblongo-conica, obtusiuscula; anfractibus 6, vix convexis, ultimo spiram æquante, basi subattenuato; columella superne recedente, tum verticali; apertura obliqua, ovali; peristomate simplice, vix expansiusculo, margine columellari reflexiusculo, subappresso.*

Long. 20, diam. 8 mill.

Hab. in Brasilia.

54. *BULIMUS DENTICULATUS*, Pfr. *B. testa sinistrorsa, rimata, cylindraceo-turrita, solidula, oblique striatula, oleoso-micante, cornea; spira elongata, sursum attenuata, acutiuscula; anfractibus 10, angustis, convexiusculis, ultimo $\frac{2}{7}$ longitudinis æquante, basi subcristato; apertura obliqua, semiovali, denticulis 4 munita: 1 juxta insertionem marginis sinistri, 1 profundo parietali, 1 ad basin columellæ arcuato-callosæ, quarto in margine externo; peristomate albo-callosa reflexiusculo.*

Long. 7, diam. $2\frac{1}{3}$ mill.

Hab. Harmanjiæ.

55. *BALEA NEWCOMBI*, Pfr. *B. testa sinistrorsa, brevissime rimata, turrita, tenui, striatula, nitida, pellucida, pallide cornea, fascia 1 rufa ornata; spira elongata, acuta; anfractibus 7, planiusculis, ultimo $\frac{1}{3}$ longitudinis subæquante, ad parietem aperturalem lamella obliqua munita, basi rotundato; columella subtorto-plicata; apertura obliqua, semiovali; peristomate tenui, expansiusculo, margine columellari superne dilatato, reflexo.*

Long. 7, diam. 3 mill.

Hab. in insulis Sandwich (Newcomb).

56. *TORNATELLINA ACHATINOIDES*, Pfr. *T. oblonga*, subcylindracea, solidula, levigata, pallide cornea; spira elongata, sursum attenuata, acutiuscula; sutura submarginata; anfractibus 7, planiusculis, ultimo $\frac{2}{5}$ longitudinis æquante; lamella parietali parvula, profunda; columella bituberculata, subtruncata; apertura subverticali, rhombeo-semiovali; peristomate simplice, obtuso.

Long. 12, diam. 4 mill.

Hab. in insulis Gambier.

57. *CYLINDRELLA CARINATA*, Pfr. *C. testa vix rimata*, subcylindracea, sursum attenuata, truncata, oblique striata, sericina, carneo-fulvida; anfractibus superstitibus 12, planiusculis, ultimo breviter soluto, basi compresse carinato; apertura obliqua, ovali, basi angulata; peristomate undique breviter expanso.

Long. 22, diam. 4 mill.

Hab. — ?

58. *CYLINDRELLA ZEBRINA*, Pfr. *C. testa subrimata*, fusiformi-oblonga, truncata, solida, striatula, nitida, albida, strigis spadiceis irregulariter picta; anfractibus superstitibus 8, vix convexiusculis, ultimo distincte costulato-striato, basi compresso-carinato, pone aperturam nigro-cingulato; apertura vix obliqua, ovali, basi canaliculata; peristomate expanso, tenui, albo, marginibus non contiguis, dextro subrepando.

Long. 21, diam. 6 mill.

Hab. in insula Jamaica.

59. *CYLINDRELLA BLANDIANA*, Pfr. *C. testa brevissime rimata*, oblongo-turrita, truncata, solida, undique oblique costulato-striata, nitida, saturate castanea, apice nigricante; anfractibus superstitibus 8, convexiusculis, ultimo nigricante, late albo-fasciato, basi leviter carinato; apertura vix obliqua, lunari-rotundata; peristomate crasso, expanso, margine dextro superne repando, columellari superne noduloso.

Long. 19, diam. 7 mill.

β. *Robustior*, virenti-albida, peristomate albo.

Hab. in Jamaica.

60. *PUPA CUMINGIANA*, Pfr. *P. testa profunde rimata*, ovato-oblonga, solidula, irregulariter filoso-striata, alba, maculis fusco-corneis superne subtessellata; spira convexa, sursum sensim attenuata, apice corneo acutiuscula; sutura lineari; anfractibus 9, subplanis, ultimo $\frac{1}{3}$ longitudinis paulo superante, antice ascendente, basi juxta rimam subcompressa; columella profunde dentato-plicata; pariete aperturali plica mediocri intrante munito; apertura verticali, truncato-ovalis; peristomate calloso, undique breviter expanso, marginibus conniventibus, callo tenui junctis, dextro arcuato, columellari subdilato.

Long. 17, diam. $7\frac{1}{2}$ mill.

Hab. — ?

61. PUPA KÜSTERI, Pfr. *P. testa profunde et breviter rimata, ovato-conica, solida, plicis subconfertis longitudinalibus, ad suturam incrassatis, regulariter munita, albida, pallide corneo-strigata et marmorata; spira medio turgida, tum in conum obtusulum regulariter attenuata; anfractibus $8\frac{1}{2}$, planiusculis, ultimo $\frac{2}{5}$ longitudinis subæquante antice subascendente, basi vix compressiusculo; apertura vix obliqua, semiovali, plica parietali et columellari profunde coarctata; peristomate incrassato, breviter expanso, marginibus callo tenui junctis.*

Long. 12, diam. supra medium 6 mill.

Hab. — ?

62. PUPA NEWCOMBI, Pfr. *P. testa subperforata, ovata, tenui, longitudinaliter costata, haud nitente, diaphana, saturate fusca; spira inflata, apice acutiuscula; anfractibus 4, convexis, ultimo $\frac{2}{5}$ longitudinis subæquante, basi rotundato; apertura obliqua, semicirculari; peristomate tenui, vix expansiusculo, margine columellari subreflexo.*

Long. 2, diam. 1 mill.

Hab. in insulis Sandwich (Newcomb).

63. PUPA OBLONGA, Pfr. *P. testa subperforata, oblonga, tenui, sublævigata, parum nitida, pellucida, corneo-lutescente; spira convexa, sursum sensim attenuata, apice obtusula; anfractibus $5\frac{1}{2}$, convexis, ultimo $\frac{1}{3}$ longitudinis vix æquante, basi rotundato; columella obsolete plicata; apertura obliqua, truncato-ovali; pariete aperturali plica unica dentiformi munito; peristomate tenui, margine dextro superne valde curvato, expansiusculo, columellari subdilatatato, patente.*

Long. $2\frac{2}{3}$, diam. $1\frac{1}{3}$ mill.

Hab. — ?

64. PUPA BARBADENSIS, Pfr. *P. testa subperforata, ovato-oblonga, tenui, sublævigata, pellucida, lutescenti-hyalina; spira convexiuscula, sensim attenuata, apice obtusula; anfractibus $5\frac{1}{2}$, rotundatis, ultimo $\frac{1}{3}$ longitudinis vix æquante; pariete aperturali plica valida, subangulari munito; columella profunde dentatoplicata; apertura obliqua, lunato-rotundata; peristomate simplice, expansiusculo, margine basali intus denticulo unico armato.*

Long. $2\frac{3}{4}$, diam. $\frac{3}{4}$ mill.

Hab. in insula Barbadoes.

65. PUPA STRANGEI, Pfr. *P. testa sinistrorsa, rimata, oblongo-conica, striatula, nitida, hyalina; spira convexo-turrita, apice acutiuscula; anfractibus 5, convexiusculis, ultimo $\frac{2}{5}$ longitudinis subæquante, antice costato, basi subgibboso-compresso; apertura subverticali, magna, truncato-ovali, sub-7-dentata; plicis 2, approximatis, in pariete aperturali, 2 in columella, dentibus 3, profundis, in margine externo et basali; peristomate albo-callosa, undique expanso.*

Long. 3, diam. $1\frac{1}{3}$ mill.

Hab. Gordon Island, Port Jackson (Strange).

66. PUPA CONOIDEA, Newcomb MSS. *P. testa perforata, globoso-conica, tenui, striatula, diaphana, parum nitida, fusca; spira conoidea, apice obtusa; anfractibus $4\frac{1}{2}$, convexis, ultimo $\frac{1}{3}$ longitudinalinis æquante, basi rotundato; apertura parum obliqua, semicirculari, edentula; peristomate simplice, expansiusculo, margine columnellari subdilatato, patente.*

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

Hab. in Demerara (Newcomb).

3. ON A NEW SPECIES OF SUTHORA FROM CHINA.

BY G. R. GRAY, F.L.S., F.Z.S. ETC.

SUTHORA WEBBIANA. (Aves, Pl. XLIX.)

Crown of the head and back of the neck sandy red, passing into the olive tint of the back and upper surface generally; tail of the same colour, but of a shade darker than the back; primaries strongly edged with bright rufous; throat and breast light buff, washed with a rosy tint; abdomen inclined to olive; bill light brown, washed with rosy pink; legs either yellow or fleshy white.

Hab. China (Shang Hai).

A single specimen, collected by Mr. Webb, was presented by that gentleman to the British Museum. It is much larger than *S. nipalensis* and *fulvifrons*, and is figured of the natural size in the plate.

March 23, 1852.

Professor Owen, F.R.S., Vice-President, in the Chair.

Mr. Broderip communicated an account of a picture in his possession, which he exhibited, containing an original study of the Dodo from life, by Rolandt Savery*.

The following papers were read:—

1. ON THE SPECIES OF THE GENUS SERICINUS.

BY G. R. GRAY, F.L.S., F.Z.S. ETC.

In the Transactions of the Entomological Society of London for 1851 (p. 173), Mr. Westwood established a Lepidopterous genus under the name of *Sericinus*, which he founded on bad specimens of an insect sent from Shanghai by Mr. R. Fortune, and then supposed to comprise "both sexes" of the insect figured by Donovan in his 'Insects of China,' pl. 27. f. 1, under the appellation of *Papilio Telamon*, no specimen of which, as Mr. Westwood justly observed, was then known to exist "in any continental or British collections."

* A portion of this Picture will be engraved in the Transactions.



SUTHORA WEBBIANA G.R. Gray

Lately Mr. Fortune has returned to this country, bringing with him many specimens of the same insect in a more perfect state, which enables me to take up the genus and endeavour to define the species and give characters for each. I should state, however, that I think I shall be able to point out that these "two sexes" are, in fact, distinct species of the genus.

I think it best, first, to give a description of the species figured by Donovan under the name of *Papilio Telamon*, but which will now stand under that of

SERICINUS TELAMON, Westw.

The fore wings yellowish white, with the anterior and most of the exterior margins rather broadly edged with black; an abbreviated line in the middle, another at the anterior part of the costal area, and then a curved line of irregular spots, which ends towards the posterior angle, and with two small spots at the anterior angle near the outer margin, also one spot on the inner margin, black. The hind wings yellowish white, with the anal angle black, which apparently extends towards the anterior margin by two oblong spots of the same colour; the anal angle is ornamented by a crimson line that reaches to the third nervure from the inner margin; there are also three pale blue lunes. The under surface of the fore wings is very similar to the upper side, except that the black which surrounds the anterior and part of the exterior margins is not apparent. The under surface of the hind wings is also similar to the upper side, except that the spot of the anterior margin is ornamented by a crimson centre.

Donovan informs us that the only specimen brought to Europe was taken near Pekin, by a gentleman in the suite of Earl Macartney, and was at that time, when Donovan figured it, in the possession of Mr. Francillon.

Having thus recorded the peculiarities of the species which must be considered the type of this genus, I shall now point out how one series of specimens brought by Mr. Fortune differ from it, though in general they are very similar to the one just described. Yet the uniformity of all the specimens of the series, which comes nearest to Donovan's figure, induces me, provisionally at least, to form it into a separate species, under the name of

SERICINUS MONTELA*. (Cat. of Lepid. B. M. i. 78. pl. 13. fig. 1, 2.)

Like the preceding; but the fore wings have a large subtriangular black spot very near the base, which is divided into three spots by the nervures. The anterior margin is slightly edged, and the exterior margin is, for most part, broadly margined with black. The hind wings have a broad band obliquely across the costal area, and the crimson band at the anal angle appears broader in this species.

* *Sericinus Telamon*, Westw. & Hewits. Gen. Diurnal Lep. p. 530 suppl. pl. 1. fig. 1.

The species is always, as Mr. Fortune has kindly informed me, found in the valleys among the hills.

*SERICINUS FORTUNEI**. (Cat. Lep. B. M. i. pl. 13. fig. 5.)

The fore wings are yellowish white, with many irregular black spots which vary in size, some of them so placed that they apparently form five bands across the wing; the external margin is also black. The hind wings also yellowish white, with a basal band and three irregular curved bands of black spots; the second band from the base is broadest at the anterior angle, and marked with a small crimson spot; while that portion towards the anal angle is margined exteriorly by an irregular crimson band, which extends from the angle to the fifth nervure; the third or marginal band is ornamented on the deep black below the crimson by a series of pale blue lunes. The under surfaces of all the wings are less prominently marked, otherwise they are similar to the upper side, except that on the fore wings there are two crimson spots, one on the band near the costal area and the other on the posterior margin.

This species is found, according to Mr. Fortune, on the sides of the hills.

Mr. Wilson Saunders has obliged me by the loan of a specimen for examination, which presents several differences from those previously noticed. It is rather smaller and the caudal appendages are shorter than in the other three species; the latter being only about half an inch in length. These with other characters induce me to form it into a species under the name of

SERICINUS TELMONA†. (Cat. Lep. B. M. i. pl. 13. fig. 3.)

The fore wings ochraceous, with the base black, and the other black markings placed as in *S. Montela*, though not quite so prominent, but the short band which crosses the wing just beyond the costal area and the spot on the posterior margin are both ornamented with a small crimson spot. The hind wings have the inner margin black, and are without the basal spot in the costal area; the crimson band at the anal angle extends, as in *S. Fortunei*, to the fifth nervure, and like it also the spot on the anterior margin is ornamented by a crimson mark, which is more equally placed with the commencement of the crimson band that advances to the anal angle, than in the other species; the black space at the anal angle is less in size, but is furnished with blue lunes. The under surface of the fore wings is marked like the upper side. That of the hind wings is also similar to the upper side, but the black spots on the anterior margin are both ornamented with crimson; the lengthened crimson band is marked between the second and third nervures from the anal

* *Sericinus fasciatus*, Brem. & Grey, Beitr. Schm. des Nörd. China, p. 5. Since this paper was read, Mr. Fortune has sent a series of specimens which show that this is the female of the preceding.

† The female of this species is described as *Sericinus Greyi*, Brem. & Grey, Beitr. Schm. des Nörd. China, p. 6.

angle with a white lune, and there is also a less quantity of black at the anal angle.

This species (male) was also brought to this country with the others by Mr. Fortune, through whose exertions we are thus enabled to describe three additional species of a division which had been hitherto only known by the one figured by Donovan.

2. NOTES ON THE DISSECTION OF A SPECIES OF GALAGO. BY W. H. FLOWER, CURATOR TO THE MIDDLESEX HOSPITAL MUSEUM.

Having recently had an opportunity of examining the body of a Galago which died in the Society's Gardens, and which I believe to be an undescribed species, I proceed, at the request of the Secretary, to lay before the Society some notes on its anatomy made during the dissection.

The animal was a male. When I received it the skin was removed, and its dimensions were as follows:—

	in.	lin.
Length of the head and body	9½	0
——— of the tail	13½	0
——— of the head	2	7
Breadth of the head (at the widest part, viz. the malar bones)	1	9
Length of the humerus	2	3
——— of the fore-arm	2	7
——— of the hand	1	0
——— of the femur	3	0
——— of the tibia	3	0
——— of the foot	3	0
Dentition:—inc. $\frac{4}{6}$; can. $\frac{1-1}{1-1}$; mol. $\frac{5-5}{5-5}$ = 34.		

The upper incisors very small, placed vertically, a considerable space existing between the two middle ones. The lower incisors long, very narrow, projecting horizontally, and closely approximated.

The stomach was simple, almost globular in form; the œsophagus entered far to the right, the cardiac orifice very nearly approaching the pyloric, so that while the greater curvature measured $6\frac{1}{2}$ inches, the lesser was but $\frac{3}{4}$ of an inch. The small intestines were wide, 46 inches in length. The cæcum was nearly 5 inches long, wider near its commencement than any part of the intestine, and slightly sacculated, but tapering and becoming smooth towards the extremity. The ileum entered the colon at a very obtuse angle, and there was scarcely any difference in the calibre of these two parts of the intestine. The colon was without sacculations and peculiar in form, being widest at the upper end, then gradually contracting till it became narrower than any part of the intestine, and dilating again into the rectum; and this appeared not to be the result of muscular contraction, as it

retained this form after macerating in water several days and then inflating. The length of this part of the intestine, from the ileo-cæcal valve to the anus, was 18 inches.

The liver presented three very distinct lobes: the left one was entire; the middle cleft into three by two fissures on its under surface, in one of which (that most to the right) the gall-bladder was placed; the right lobe was entire, but on its under surface was placed the lobulus Spigelii.

The gall-bladder was pyriform; the duct, 3 lines in length, joining the hepatic duct, formed the common gall-duct, which was half an inch long and entered the duodenum one inch from the pylorus.

The spleen was long, narrow and flattened, half an inch wide at the broadest part, and $2\frac{1}{2}$ inches in length.

The kidneys, simple, large and oval, were 1 inch long and 8 lines broad; the right one situated nearly the whole length of the kidney higher than the left.

The penis was 3 inches in length, containing a bone 11 lines long. The skin of the glans covered with minute spines or tubercles, which, when examined microscopically, were found to be tooth-like bodies, most having two points, some one, others three or more, all directed backwards.

The testes were oval, 8 lines long, 5 broad.

The vesiculæ seminales consisted of two large simple culs-de-sac, 7 lines in length.

On opening the thorax the left lung was found to have two lobes, the right four.

The heart presented nothing unusual. From the arch of the aorta two large vessels arose, the first giving rise to the innominate and left carotid; the second being the left subclavian.

On examining the brachial and femoral arteries, no division into smaller trunks, forming a rete mirabile, as is observed in several animals belonging to this family, was discovered. The brachial artery perforated the humerus near its lower extremity.

The tongue was long and narrow, $2\frac{1}{2}$ inches long from the root of the epiglottis to the tip, and 5 lines broad. Its dorsal surface was covered with small papillæ, and at the posterior part were three large or circumvallated papillæ, arranged as the points of the letter V. On the under surface is a curious body, 7 lines long and 3 wide, the tip of which is free, flat and pectinated, the rest free at the sides and attached in the middle. From the form, position and size of this singular organ, one cannot help conjecturing that the pectinated end may act as a brush to free the inferior incisor teeth from adherent particles of the insect food on which the animal subsists.

The submaxillary and parotid glands were very large, particularly the former.

The masseter and temporal muscles were largely developed, and the whole muscles of the upper extremity very powerful.

The cerebral hemispheres were large, and extending some way back over the cerebellum, but their surface was remarkably smooth



Davidson, del. et lith.

Ford & West, Lithographers, 54, Malton, Canada.

1.3. TEREBRATULA GRAYI 4.6 TEREBRATULLA BOUCHARDII 7.9 TEVANSII
 10.11. TEREBRATULA BOUCHARDII 12.13. TEREBRATULA BOUCHARDII
 14.15. TEREBRATULA BOUCHARDII 16.17. TEREBRATULA BOUCHARDII
 18.19. TEREBRATULA BOUCHARDII 20.21. TEREBRATULA BOUCHARDII
 22.23. TEREBRATULA BOUCHARDII 24.25. ARGIOPE NEAPOLITANA 26. A DECOLLATA 27. A CUREATA
 28. A TEREBRATULA BOUCHARDII 29. TEREBRATULA BOUCHARDII 30. TEREBRATULA BOUCHARDII
 31. TEREBRATULA BOUCHARDII 32. TEREBRATULA BOUCHARDII 33. TEREBRATULA BOUCHARDII
 34. TEREBRATULA BOUCHARDII 35. TEREBRATULA BOUCHARDII 36. TEREBRATULA BOUCHARDII
 37. TEREBRATULA BOUCHARDII

and almost free from convolutions, resembling in this respect the brain of Cheiroptera, to which order the Lemurs present several points of affinity.

April 27, 1852.

W. J. Broderip, Esq., F.R.S., Vice-President, in the Chair.

Mr. Strickland read a paper "On some Bones of Birds allied to the Dodo, in the collection of the Society;" which will appear in the Society's Transactions.

May 25, 1852.

J. Gould, Esq., F.R.S., Vice-President, in the Chair.

The following papers were read:—

1. DESCRIPTIONS OF A FEW NEW RECENT SPECIES OF BRACHIOPODA. BY TH. DAVIDSON, F.G.S., MEMBER OF THE GEOL. SOC. OF FRANCE, ETC.

(Mollusca, Pl. XIV.)

In the valuable collection of recent Brachiopoda assembled by Mr. Cuming, some species seem new, and undescribed in Mr. Sowerby's Monograph; and it is at that gentleman's request that I have prepared the following descriptions and illustrations, which will complete, with one exception, the *Ter. septigera* of Lovén (still unfigured), all the new recent forms which have hitherto come under my observation.

In a paper lately published in the 'Annals and Mag. of Nat. Hist.' for May 1852, I endeavoured to class all the recent species according to their internal organization, into *four families* and *thirteen genera*, or *sections*, as it is evident that these, as well as the fossil forms, must be comprised in the proposed subdivisions introduced within the last few years with more or less success into the nomenclature; and singular enough, notwithstanding the greater facilities of examining both the internal arrangements as well as the animal in recent forms, these important characters have not yet been made use of by malacologists, who still place nearly all these Terebratuliform shells in one genus, *Terebratula*; while palæontologists, working under much greater difficulties, have by dint of perseverance and trouble discovered the

organization of a multitude of extinct forms, filled by the hardest matrix : and I have no doubt but that before very many years the internal details of all the fossil species will be as well known as if they were in the recent state.

Much, however, remains to be done before the proposed classifications can be decidedly and definitely adopted, and many modifications will be considered requisite, as it is evident, from our present knowledge, that some genera or sections are more or less closely related, and that certain species possess characters common to more than one genus, but these examples are few and exceptional in comparison to those presenting a similar organization : thus all forms with a free, simply attached loop, as in *Ter. Australis*, *Ter. Californiana*, &c., must be placed in the same section ; all those with the loop affixed to the hinge plate and to a central more or less elevated septum, such as *Ter. dorsata*, *Ter. rubicunda*, &c., into another group ; those also in which the calcareous appendages consist of only two central diverging lamellæ, such as *Ter. rubra*, *Ter. pisum*, and others, must necessarily be placed close to each other, &c. The arrangement of the species is, therefore, not a matter of indifference, but ought to partake of those rules, followed for the other classes of Mollusca, wherein genera are often admitted on far less important differences.

A complete monograph of the recent species thus framed, with figures, synonyms, dates, &c., is still a desideratum, and I hope ere long that the science of Conchology will be enriched by such a valuable and necessary contribution.

The only object of this short paper is to describe some unfigured forms, to which I have added some remarks on a few species not hitherto completely understood.

1. TEREBRATULA GRAYII, Dav. 1852. (Pl. XIV. fig. 1-3.)

Diagnosis.—Shell irregularly pentagonal, rather broader than long ; valves unequally convex (the perforated being gibbous and the smaller valve rather flattened) ; beak not much produced, truncated by a very large emarginate foramen—the deltidial plates are disunited, a small portion of the aperture being completed by the umbo ; hinge-line straight ; beak-ridges sharply defined, leaving between them and the hinge-margin a wide, almost flat area ; surface ornamented by a great number of irregular and unequal radiating costæ, augmenting rapidly from numerous bifurcations and intercalations of smaller plaits between the larger costæ ; colour partly yellow and red, this last becoming more vivid as it approaches the concentric lines of growth ; structure punctate ; internal appendages consisting of a simply attached loop, the riband-shaped lamella extending to about four-fifths of the length of the shell before bending back on itself. Dimensions variable : length 14, width 15, depth 9 lines.

Hab. Coast of Korea. Coll. Cuming.

Obs.—This fine species has been known to me for several years, but unobserved by other collectors, who erroneously supposed it to be the *Ter. rubra* of Pallas, to which it bears some external resemblance,

but is essentially different in its internal arrangements; the loop of our new form being similar to that of *Ter. australis* or *Ter. lenticularis*, &c., while the appendages of *Ter. rubra*, which is the type of my lately proposed genus *Kraussia*, consist only of two central diverging branches, somewhat spread out at their extremities. *Ter. Grayii* is also distinct from *Terebratella Zelandica*, the loop of this last being doubly attached, as in all the species of that section.

2. *TEREBRATELLA BOUCHARDII*, Dav. 1852. (Pl. XIV. fig. 4-6.)

Diagnosis.—Shell of a suborbicular or trapezoidal form, longer than wide, or broader than long; perforated valve most convex, laterally compressed and keeled, the imperforated valve presenting a longitudinal depression extending from about the middle of the valve to the front; beak produced, recurved and truncated by a large circular and entire foramen; deltidium in two pieces, meeting at the umbo; beak-ridges defined, leaving between them and the hinge-margin a slight concave false area; surface smooth, interrupted only by a few concentric lines of growth; colour light yellow; internal calcareous lamellæ fixed first to the crural base, and again to the longitudinal mesial septum, before attaining their greatest length and bending back on themselves to form the loop; structure punctate. Length 14, width 13, depth 8 lines.

Hab. Unknown. Coll. of Mr. Cuming.

Obs.—This species seems to differ from *Terebratella Coreanica* of Adams and Reeves principally in the form of its beak and in its coloration; the Corean form is beautifully strigated with vivid red, while *Ter. Bouchardii* is of a uniform light yellow colour; the details of the loop seem likewise to differ a little.

3. *TEREBRATELLA EVANSII*, Dav. 1852. (Pl. XIV. fig. 7-9.)

Diagnosis.—Shell subovate, longer than wide; perforated valve most convex, smaller one rather compressed; beak tapering, not much recurved, and obliquely truncated by an emarginate foramen; deltidia small; beak-ridges well defined, leaving between them and the hinge-margin a false area; surface ornamented by a few unequal bifurcated and intercalated costæ; colour pale red; structure punctate; apophysary system composed of a central longitudinal septum, not exceeding half the length of the valve, arising rapidly in the form of a narrow elevated plate, almost reaching the centre of the perforated valve, to the middle of which, and to the crural base, are doubly attached the calcareous riband-shaped lamellæ forming the loop. Length 4, width $3\frac{1}{2}$, depth $1\frac{1}{2}$ lines.

Hab. New Zealand. Coll. Cuming.

Obs.—On first inspection, I thought this shell, of which Mr. Cuming has two examples, might be the young of *Terebratella Zelandica*; but on examining the calcareous appendages, I found great dissimilarity in their respective details. In *Ter. Zelandica* the loop is first fixed to the hinge plate, and again, by a transverse shelly horizontal process, to the extremity of a slightly elevated mesial septum; the lamella proceeding again before bending back, as in all *Terebratellæ*: but in the

interesting little form under notice the mesial septum forms a narrow elevated plate, extending as far and further than the greatest length of the lamellæ, which last are fixed to the middle portion of the septum. The remarkable deviation from the general details of the arrangements in this *Terebratella* has prompted me to examine with care a multitude of specimens of different species belonging to the genus, and I was not a little surprised to find that some few other forms presented a similar arrangement, such as *Ter. crenulata*, *Ter. Cumingii*, &c., thus forming a passage into *Magas*, which last, although generically distinct, can no longer constitute a separate family from the *Terebratulidæ*.

4. TEREBRATELLA? CUMINGII, Dav. 1852. (Pl. XIV. fig. 10, 16.)

Diagnosis.—Shell very thick, ovato-oblong; larger valve most convex, slightly keeled; imperforated one rather depressed; beak produced, tapering, not much recurved, and truncated by a small oval foramen, beginning at the summit of the beak, and directing itself on the opposite side to the area; no visible deltidium; a concave triangular area; surface smooth, strongly marked by concentric lines of growth; colour white, or slightly tinged with red; shell articulating by means of two strong teeth in the larger and corresponding sockets in the smaller valve; apophysary system very complicated, composed of a mesial longitudinal elevated triangular septum extending to about two-thirds of the length of the smaller valve, and which arising from under the cardinal process and crural base, by a gentle curve reaches and touches the larger valve near to its anterior portion, from whence it descends by an almost perpendicular line to the bottom of the valve; the calcareous riband-shaped lamellæ first proceed from the socket walls, directing themselves by a gentle curve to the anterior portion of the septum, to which they become attached before bending on themselves to form a loop; the arms are of a brilliant red colour. Length 5, width 4, depth $2\frac{1}{2}$ lines.

Hab. New Zealand. Coll. Cuming.

Obs.—Two specimens of this remarkable shell have been obtained by Mr. Cuming, and it is one of the most interesting among the recent forms, presenting great difficulties from an assemblage of characters peculiar to more than one of the proposed sections. In outward shape, character of its foramen, and interior of perforated valve, it much resembles *Bouchardia rosea*; its foramen is likewise very similar in position to that presented by several species of *Trigonosemus*; the shape and position of its central elevated septum, which touches a portion of the centre of the larger valve, relates it to *Magas*, and the disposition of the lamellæ to *Terebratella*. I therefore do not feel certain in what genus this curious shell should be placed: it is not a true *Terebratella*, but there I have placed it for the present, on account of the form of the loop.

5. TEREBRATELLA SPITZBERGENSIS, Dav. 1852.

Diagnosis.—Shell ovate, slightly pentagonal, longer than wide; valves almost equally convex; beak produced, recurved, and truncated

by a middle-sized foramen; deltidium in two pieces, partly surrounding the aperture; beak-ridges not very sharply defined; smaller valve slightly depressed near the front; surface smooth, strongly punctate, and marked by a few concentric lines of growth; colour light yellow; apophysary system composed of a central longitudinal septum, extending to a little beyond half the length of the shell, in the form of a narrow plate somewhat elevated at its extremity, to which and to the hinge plate are attached the calcified riband-shaped lamellæ forming the loop. Length 4, width 3, depth 2 lines.

Hab. Spitzbergen.

Obs.—This small *Terebratella* seems distinguishable from all the other recent forms of the genus, by its dimensions, regular ovate shape, thinness of shell, and comparatively short, doubly-attached loop, which does not exceed half the length of the valve. I have hitherto been able to examine but one specimen, from the collection of Robert M'Andrew, Esq., and Mr. Cuming.

6. *TEREBRATULINA CUMINGII*, Dav. 1852. (Pl. XIV. fig. 17-19.)

Diagnosis.—Shell ovate, somewhat pentagonal, nearly as wide as long; valves almost equally convex; beak small, obliquely truncated by a circular emarginate foramen; deltidial plates disunited, a small portion of the aperture being completed by the umbo; auricular expansions on either side of the umbo very small; surface ornamented by a great number of minute radiating elevated striæ, augmenting rapidly by the intercalation of smaller costæ at variable distances between the larger ones; the front margin of the larger valve indents the smaller one; colour white, tinged with yellow; structure punctate; internal apophysary supports short and annelliform. Length $3\frac{1}{2}$, width 3, depth 2 lines.

Hab. Chinese Seas. Coll. Cuming.

Obs.—This little *Terebratulina* may be easily distinguished from all the other recent species of the genus by its size and relative width and length, being much more convex and globular.

7. *MORRISIA ANOMIOIDES*, Scacchi, sp. 1843. (Pl. XIV. fig. 29.)

Orthis anomioides, Scacchi in Phil. Moll. Sicil. ii.

Terebratula appressa, Forbes, Report on the Mollusca and Radiata of the Ægean Sea, 1843.

Diagnosis.—Shell minute, circular, depressed; foramen large, round, encroaching equally on both valves; larger valve with a straight hinge-area; deltidial plates minute, widely separated; smaller valve deeply notched at the umbo; apophysary system consisting of two branches originating at the base of the dental sockets, and united to a small elevated process arising from the centre of the valve.

Animal furnished with two subspiral or *sigmoid* arms fringed with comparatively large cilia; the shell is of a green colour, with bright orange ovaries contrasting with the brilliant white of the ciliated arms; structure punctate. Length 1, width $1\frac{1}{2}$, depth $\frac{1}{2}$ line.

Hab. Mediterranean; depth 95 fathoms (Forbes).

Obs.—Some of Philippi's figures of *Ter. seminulum* are so like specimens of *T. appressa* (Forbes), that I at first imagined they might belong to the same type; and in my paper published in the 'Ann. and Mag. of Nat. Hist.' for May 1852, I placed *Ter. appressa* of Forbes as a synonym of Philippi's species: but since that period I have had reasons to believe this to be an error, and that in reality the Italian author's type does not belong to the same species nor even genus, but would be a synonym of *Argiope* (*Ter.*) *Neapolitana* of Scacchi. I have also ascertained that the shell and animal of this species are figured by Philippi, in the second volume of his 'Sicilian Mollusca.'

8. *KRAUSSIA LAMARCKIANA*, Dav. 1852. (Pl. XIV. fig. 22, 23.)

Diagnosis.—Shell of a somewhat tetragonal form, flattish, with a moderately deep longitudinal depression in the smaller valve and a corresponding keel in the larger one; hinge-line nearly straight; beak truncated by a large emarginate foramen, completed by two small deltidial plates, and by a portion of the umbo of the smaller valve; hinge-area flat, well defined; surface ornamented by a number of small costæ, augmenting here and there by bifurcation and intercalation at various intervals; apophysary system consisting of two short, central, diverging branches, bifurcated at their extremities; structure punctate; colour light yellow. Length 3, width 3, depth $1\frac{1}{2}$ line.

Hab. Sydney and New Zealand.

Obs.—This species is found near Sydney, living in company with *Ter. Australis*, as may be seen by the specimen in the British Museum; it is distinct from *K. pisum* and *K. Deshayesii*, by its somewhat tetragonal shape, stronger and fewer costæ, as well as by the details of its loop, relating it more than any of the other species of *Kraussia* to the section *Megerlia*; its colour is likewise of a uniform yellowish tint, while the above-mentioned species are differently tinged with red.

9. *KRAUSSIA DESHAYESII*, Dav. 1852. (Pl. XIV. fig. 20, 21.)

Terebratula Capensis, Adams and Reeve, Voyage of the Samarang, p. 70. pl. 21. f. 4, 1850 (non *T. Capensis*, Gmel.).

Diagnosis.—Shell subovate, generally rather longer than wide; valves nearly equally convex, a deep longitudinal depression extending from near the umbo to the front in the smaller valve, with a corresponding keel in the perforated one; beak produced, and truncated by a large emarginate foramen; deltidia small, nearly triangular, a portion of the circumference being completed by the umbo; surface ornamented by a great number of small raised costæ, augmenting rapidly by bifurcation and intercalation of smaller plaits at variable distances from the beak and umbo; structure punctate; colour light yellow, with stripes of red; apophysary system consisting of two short, central, diverging lamellæ expanded at their extremities. Length 6, width 4, depth 2 lines.

Hab. Korea. Coll. Cuming.

10. *ARGIOPE NEAPOLITANA*, Scacchi, sp. (Pl. XIV. fig. 24, 25.)

Terebratula Neapolitana, Scacchi, Oss. Zool. ii. p. 18.

Terebratula seminulum, Philippi, En. Moll. Siciliæ, 1836; Sow. Th. Conch. pl. 71. f. 85, 88.

Argiope Forbesii, Dav. Ann. and Mag. of Nat. Hist. May 1852.

Diagnosis.—Shell small, suborbicular, nearly as long as wide, compressed, emarginated in front; valves unequal, slightly convex, almost smooth or ornamented by a few rounded and nearly obsolete radiating costæ; a longitudinal depression extending along the centre of the smaller valve; beak produced; foramen large, with a small, lateral, deltidial plate, and an area on either side; hinge-line straight; apophysary system consisting of a small longitudinal mesial septum, with a complete two-lobed loop; colour light yellow; structure largely punctate. Length $1\frac{1}{2}$, width $1\frac{1}{2}$, depth $\frac{1}{2}$ line.

Hab. Naples, and different parts of the Mediterranean, in from 60 to 105 fathoms (Forbes).

Obs.—Since the publication of my paper in the ‘Annals,’ May 1852, I have, through the kindness of Mr. Hanley, been enabled to examine two specimens, said to be the types of Scacchi’s *Ter. Neapolitana*, and, according to Küster, the *Ter. seminulum* of Philippi would be a synonym; although the last-named author’s species, from his illustration presenting a deep notch in the umbo (a character never seen in any *Argiope*), had led me erroneously to believe *T. seminulum* the same as Prof. Forbes’s *T. appressa*. The figures of *Ter. Neapolitana* given both by Scacchi, Philippi, and Küster, do not represent the characters of the species under notice,—so much so that I believed it new, and gave to it the name of *Argiope Forbesii*, which must now be considered only a synonym: and Sowerby’s figure correctly illustrates the species. In my plate I have also added a figure of the apophysary system of *A. decollata*, Chem. (fig. 26), and that of *T. Neapolitana* (fig. 25), to show the difference in the lobes of the loop in these two species; the arms in the first being four-lobed, whilst in the other recent forms, such as *Argiope Neapolitana* (fig. 25), *A. cistellula* (fig. 28), and *A. cuneata* (fig. 27), there exist only two lobes to the arms.

11. *RHYNCHONELLA NIGRICANS*, Sow. sp. 1846. (Pl. XIV. fig. 30, 31.)

Diagnosis.—Shell inequivalve, irregularly tetrahedral, wider than long; beak acute, and slightly recurved; foramen not entirely surrounded by the deltidial plates, a portion being completed by the umbo; beak-ridges well defined, leaving between them and the hinge-line a false area, not indenting much the smaller valve; surface ornamented by a variable number of sharp plaits, about twenty-five on each valve, a few of which are due to intercalation; mesial fold not prominent, but defined, with a corresponding shallow sinus in the larger valve; apophysary system consisting of two short curved lamellæ; colour bluish black; structure impunctate. Length 8, width 9, depth 4 lines.

Hab. Five miles east of Ruapuke Island, New Zealand; dredged by Mr. Evans, R.N., in 19 fathoms off coral and rock. Coll. Cuming.

Obs.—When Sowerby described this interesting shell, only one small young specimen, without locality, was known; since then Mr. Evans has dredged several, some of which exceeded the dimensions above given. I therefore thought it advisable to redescribe and figure the species; more especially, as it is scarcely distinguishable from half-grown specimens of *R. concinna*, Sow.

12. ORBICULA EVANSII, Dav. 1852. (Pl. XIV. fig. 32–34.)

Diagnosis.—Shell irregularly circular, nearly as wide as long, very thick; both valves almost equally orbicular or suborbicular; apex subcentral; the unattached valve is ornamented by numerous strong, radiating, elevated striæ, which augment rapidly by the intercalation of numerous smaller costæ at variable distances from the apex; these are intersected by numerous concentric laminæ of growth; attached valve very deep; disk of adhesion small, almost central; fissure minute, elongated; surface covered by concentric raised laminæ, with longitudinal striæ all round and near the edge; colour yellow; texture horny. Length $5\frac{1}{2}$, width 6, depth 4 lines.

Hab. Bodegas. Coll. Cuming.

Obs.—Mr. Cuming has three specimens of this *Orbicula*, all similar in appearance, and distinguishable from *O. Cumingii* and *O. strigata* by the great convexity of the attached valve, which is flat in the two above-mentioned species; the disk of adhesion is likewise much smaller in *O. Evansii*, and the striation stronger.

EXPLANATION OF THE PLATE.

- Fig. 1, 2. *Terebratula Grayii*, Dav.; natural size.
 Fig. 3. *Terebratula Grayii*, Dav.; interior of smaller valve.
 Fig. 4, 5. *Terebratella Bouchardii*, Dav.; natural size.
 Fig. 6. *Terebratella Bouchardii*, Dav.; interior of smaller valve.
 Fig. 7. *Terebratella Evansii*, Dav.; enlarged.
 Fig. 8, 9. *Terebratella Evansii*, Dav.; interior of smaller valve.
 Fig. 10–12. *Terebratella* ? *Cumingii*, Dav.; enlarged.
 Fig. 13. *Terebratella Cumingii*, Dav.; back of the beak, showing the foramen.
 Fig. 14. *Terebratella Cumingii*, Dav.; interior of smaller valve.
 Fig. 15. *Terebratella Cumingii*, Dav.; section of the interior of both valves, showing the position of the septum.
 Fig. 16. *Terebratella Cumingii*, Dav.; interior of smaller valve, much enlarged, showing the fringed arms: A, A, the cardinal muscles; B, the adductor ones; C, the pedicle muscles.
 Fig. 17–19. *Terebratulina Cumingii*, Dav.; enlarged.
 Fig. 20, 21. *Kraussia Deshayesii*, Dav.; enlarged.
 Fig. 22, 23. *Kraussia Lamarckiana*, Dav.; enlarged.
 Fig. 24. *Argiope Neapolitana*, Scacchi; enlarged.
 Fig. 25. *Argiope Neapolitana*, Scacchi; showing the two-lobed loop.
 Fig. 26. *Argiope decollata*, Chem.; interior of smaller valve, enlarged to show the four-lobed disposition of the loop.
 Fig. 27. *Argiope cuneata*, Risso; greatly enlarged, showing the interior as seen in the dried specimens: D, the mouth, fringed arms and two-lobed

- loop; C, the pedicle muscles; B, the adductor ones; A, the cardinal muscles.
- Fig. 28. *Argiope cistellula*, Wood; interior of both valves as seen in dried specimens (much enlarged); A, the retractor and pedicle muscles. The position of the arms and mouth is the same as in *A. cuneata*, &c.
- Fig. 29. *Morrisia anomoides* (Scacchi, sp.); enlarged: o, the ovaries seen through the transparency of the shell.
- Fig. 30, 31. *Rhynchonella nigricans*, Sow. sp.; natural size.
- Fig. 32-34. *Orbicula Evansii*, Dav.; enlarged.

2. DESCRIPTIONS OF EIGHTEEN NEW SPECIES OF LAND SHELLS, FROM THE COLLECTION OF H. CUMING, ESQ.

BY DR. L. PFEIFFER.

1. **HELIX AVUS**, Pfr. *H. testá umbilicatá, depressá, solidá, obliquè striatulá, nitidulá, pallide fulvá; spirá convexá, brevi; suturá levi; anfractibus 4 vix convexiusculis, sensim accrescentibus, ultimo carinato, utrinque convexiore, fascia fusca ad suturam, pallidaque ad carinam ornato, basi pallido, circa umbilicum mediocrem, pervium subcompresso; aperturá vix obliquá, subtriangulari-lunari; peristomate crasso, albo, expanso et reflexo, marginibus remotis, callo crasso junctis.*

Diam. maj. 37, min. 31, alt. 18 mill.

Hab. in insulis Philippinis.

2. **HELIX EMILIANA**, Pfr. *H. testá perforatá, conoideo-lenticulari, solidulá, supernè confertim costulatá, lineis impressis spiralibus subregulariter granulatá, opacá, lutescenti-fuscá; spirá conoideá, vertice elevato, obtusiusculo; anfractibus 6 convexiusculis, lente accrescentibus, ultimo non descendente, compresso carinato, basi convexo, radiatim striatulo, nitidulo; aperturá obliquá, angulato-lunari; peristomate simplice, recto, margine columellari ad perforationem reflexiusculo.*

Diam. maj. 16, min. 15, alt. 8 mill.

Hab. in insula Ceylon.

3. **HELIX REDFIELDI**, Pfr. *H. testá umbilicatá, conoideo-globosá, tenui, irregulariter striatá et obsoletissimè decussatá, diaphaná, nitidá, fulvo-corneá; spirá conoideá, obtusulá; anfractibus 5½ convexis, regulariter accrescentibus, ultimo inflato, non descendente; aperturá parum obliquá, lunato-rotundatá, altiore quam latá, intus margaritacéá; peristomate simplice, recto, acuto, marginibus remotis, columellari subverticali, sursum dilatato, umbilicum angustum semitegente.*

Diam. maj. 17, min. 15, alt. 14 mill.

Hab. Shang Hai, Chinæ (Mr. Fortune).

4. **HELIX NUDA**, Pfr. *H. testá vix perforatá, conoideo-depressá, tenui, radiatim striatulá, pellucidá, pallide fulvo-corneá; spirá conoideá, acutiusculá; suturá impressá, albo-submarginatá; anfractibus 6 convexiusculis, ultimo majore, inflato, non descen-*

dente; aperturá ferè diagonali, rotundato lunari, latiore quam altá; peristomate simplice, recto, marginibus subconniventibus, dextro arcuatim antrorsum dilatato, columellari subrecedente, arcuato, supernè dilatato, reflexo.

Diam. maj. 11, min. $9\frac{2}{3}$, alt. 7 mill.

Hab. in Himalayah (Mr. Fortune).

5. **HELIX MINERVA**, Pfr. *H. testá umbilicatá, sublenticulari, solidá, subtiliter et confertim striatá, carinatá, nitidulá, luteá, fasciis 2 nigro-castaneis supra et infra carinam ornatá; spirá brevi, convexá, obtusá; suturá lineari; anfractibus 4 sensim accrescentibus, vix convexiusculis, ultimo non descendente, basi, præsertim antice, convexo, circa umbilicum angustum, conicum, subcompresso; aperturá diagonali, rotundato-lunari, intus submargaritaceá; peristomate simplice, recto, marginibus remotis, supero antrorsum subarcuato, columellari subverticali, sursum dilatato, patente.*

Diam. maj. 25, min. $22\frac{1}{2}$, alt. 12 mill.

Hab. in insulâ Celebes?

6. **HELIX REHBEINI**, Pfr. *H. testá imperforatá, globosá, solidá, minutissimè striatulá, sub epidermide non nitente, virenti-luteá albá, plerumque fasciis saturatè castaneis pluribus latis cinctá; spirá conoideo-semiglobosá, obtusulá; anfractibus $4\frac{1}{2}$ modicè convexis, rapidè crescentibus, ultimo rotundato, anticè breviter descendente, circa columellam vix declivem, latam, albam, subexcavatam nigricante; aperturá diagonali, lunato-rotundatá, intus albidá; peristomate albo, expanso-reflexiusculo, intus subincrassato.*

Diam. maj. 27, min. 23, alt. 20 mill.

Hab. in insulis Philippinis.

7. **HELIX EVA**, Pfr. *H. testá imperforatá, trochiformi, solidá, subtiliter et confertim striatá, vix nitidulá, carneá, sursum fasciá fusco-violaceá ornatá vel omnino fusculá; spirá conicá, acutiussculá; suturá impressá; anfractibus 5 vix convexis, ultimo non descendente, acutè carinato, basi convexiusculo, medio impresso; aperturá perobliquá, lunato-rhombed; peristomate fusco-limbato, marginibus subparallelis, supero expansiusculo, basali arcuato, medio angulum obsoletum formante, incrassato, breviter reflexo.*

Diam. maj. 14, min. 12, alt. 9 mill.

Hab. in insulis Novis Hebridibus.

8. **HELIX ISODON**, Pfr. *H. testá angustè umbilicatá, conoideo-lenticulari, solidá, undique minutè granulatá, castaneo-fuscá; spirá latè conoideá, obtusulá; anfractibus 5 vix convexiusculis, lentè accrescentibus, ultimo carinato, anticè perdeflexo, strangulato et scrobiculato, basi convexo; aperturá ferè horizontali, auriformi; peristomate fusculo, subincrassato, reflexo, marginibus callo alte elevato flexuoso, medio laminam linguæ-*

formem emittente junctis, dextro valdè curvato, bidentato, basali declivi, unidentato, dentibus subæqualibus, validis.

Diam. maj. 19, min. 17 $\frac{1}{2}$, alt. 10 $\frac{2}{3}$ mill.

Hab. in Columbiâ occidentali.

9. **BULIMUS JANUS**, Pfr. *B. testâ imperforatâ, dextrorsâ vel sinistrorsâ, subfusiformi-oblongâ, solidâ, vix nitidulâ, luteâ-fasciis 3 extus opace viridibus, intus nitide atro-castaneis, peristoma non attingentibus, basali latissimâ, varicibusque castaneis sparsis ornatâ; spirâ conicâ, acutiusculâ; anfractibus 6-7 convexiusculis, ultimo $\frac{2}{5}$ longitudinis subæquante, basi attenuato; columellâ verticali, strictâ; aperturâ obliquâ, semi-ovali, basi subangulatâ; peristomate subincrassato, breviter reflexo, albo, marginibus callo nigro-castaneo junctis.*

Long. 47, diam. 20 mill.

Hab. in Novis Hebridibus.

10. **BULIMUS FULIGINEUS**, Pfr. *B. testâ imperforatâ, oblongâ, solidâ, longitudinaliter striatâ et concentricè irregulariter subsulcatâ, fuliginèâ; spirâ convexo-conicâ, obtusulâ; suturâ profundâ, pallidâ; anfractibus 5 modicè convexis, rapidè accrescentibus, ultimo $\frac{3}{5}$ longitudinis æquante, basi attenuato; columellâ carnèâ, subtortâ, basi subtruncatâ; aperturâ vix obliquâ, elongato-auriformi, intus lividâ; peristomate undique expansiusculo, margine dextro medio impresso, intus subdentato.*

Long. 38, diam. 16 mill.

Hab. in Novis Hebridibus.

11. **BULIMUS BLANDI**, Pfr. *B. testâ perviè et angustè umbilicatâ, turratâ, tenuiusculâ, obliquè confertim filoso-striatâ, opacâ, calcared; spirâ elongatâ, infra apicem latum, obtusum attenuatâ; suturâ vix impressâ; anfractibus 17 planis, ultimo subangulato, $\frac{1}{7}$ longitudinis subæquante; aperturâ vix obliquâ, subtetragonâ; peristomate simplice, recto, margine columellari supernè reflexiusculo.*

Long. 22, diam. 7 mill.

Hab. Baranguilla in Andibus Columbianis (*Bland*).

12. **PARTULA GLUTINOSA**, Pfr. *P. testâ subumbilicatâ, subpyramidatâ, solidâ, lævigatâ (sub lente vix decussatulâ), epidermide fulvâ, nitidâ, quasi glutinosâ obductâ; spirâ elevato-conicâ, apice acutâ; suturâ lævi; anfractibus 5, superis planis, ultimo spiram subæquante, convexiore, basi quasi saccato; columellâ leviter arcuatâ, supernè vix plicatâ; aperturâ ferè verticali, oblongâ, obliquè protractâ; peristomate lato, intus calloso, violaceo-fusco limbato, marginibus subparallelis.*

Long. 19, diam. 10 mill.

Hab. — ?

13. **PARTULA DENTIFERA**, Pfr. *P. testâ subumbilicatâ, ovato-conicâ, solidâ, sublævigatâ, parum nitidâ, pallide stramineâ; spirâ conicâ, apice acutiusculâ; suturâ marginatâ; anfractibus*

5½, summis planis, penultimo convexiore, ultimo spirá vix brevior, convexo, anticè medio impresso; columellá subverticali, vix plicatá; aperturá vix obliquá, angustá, obversè auriformi; peristomate valdè incrassato, albo, patente, marginibus subparallelis, dextro supernè valdè curvato, medio tuberculum acutum, dentiforme gerente.

Long. 21½, diam. 10 mill.

Hab. — ?

14. *ACHATINA IOSTOMA*, Pfr. *A. testá fusiformi-ovatá, tenui, undique æqualiter granulatá, parum nitidá, fulvá, strigis obscuris, latis, subangulatis, castaneis ornatá; spirá conicá, supernè attenuatá, pallidá, apice obtusá; suturá suberenatá; anfractibus 7½ vix convexiusculis, ultimo spiram paulò superante, basi subattenuato; columellá leviter tortá, basi obliquè et breviter truncatá; aperturá verticali, angustè semiovali, intus pallide lilaciná, nitidá; peristomate simplice, margine dextro regulariter arcuato.*

Long. 128, diam. 56 mill.

Hab. Fernando Po (Fraser).

15. *ACHATINA GLUTINOSA*, Pfr. *A. testá ovato-conicá, tenuiusculá, longitudinaliter striatá, subunicolore fulvá; spirá conicá, sursum attenuatá, apice obtusiusculá; anfractibus 7½, mediis lineis spiralibus subdecussatis, ad suturam submarginatam profundè striatis, ultimo spiram paulò superante, sublævigato, glutinoso-nitente; columellá plicato-tortá, basi abruptè truncatá; aperturá obliquá, ferè ovali, intus lilaced, margaritaced; peristomate simplice, fusco-limbato, margine basali arcuato.*

Long. 98, diam. 45 mill.

Hab. in Africâ occidentali (Fraser).

16. *ACHATINA DESHAYESI*, Pfr. *A. testá turrito-ovatá, tenuiusculá, sublævigatá, nitidá, corneo-fuscá; spirá elongatá, convexá, apice obtusulá; suturá simplice, subprofundá; anfractibus 7 convexis, ultimo ⅔ longitudinis subæquante, basi rotundato; columellá subtortá, latè et obliquè truncatá; aperturá vix obliquá, rhombeo-semiovali; peristomate simplice, obtuso, margine dextro subrepando.*

Long. 11, diam. 5 mill.

Hab. in insulâ Ceylon.

17. *ACHATINA CERA*, Pfr. *A. testá oblongo-turritá, tenui, subtiliter et regulariter striatá, nitidá, pellucidá, pallide cereá; spirá rectilineari, apice obtusá; suturá mediocri, minutè crenulatá; anfractibus 8 vix convexis, ultimo ¼ longitudinis vix superante, infra médium subangulato; columellá curvatá, abruptè truncatá; aperturá obliquá, oblongá; peristomate simplice, recto, margine dextro leviter arcuato.*

Long. 14, diam. 4⅔ mill.

Hab. Fernando Po (Fraser).

18. *HELICINA SUBLÆVIGATA*, Pfr. *H. testá conoideo-depressá, solidulá, sublævigatá, nitidulá, unicolore rubellá vel albídá, subtus violaceo zonatá; spirá breviter conoidea, vertice obtusulo; anfractibus 5 vix convexiusculis, ultimo latiore, peripheriá obsolete angulato; aperturá diagonali, subsemiovali; columellá brevi, simplice, callum crassiusculum, circumscriptum retrorsum emittente; peristomate simplice, breviter expanso, margine basali ferè rectilineari, ad columellam subdentato. Operculum tenue, corneum.*

Diam. maj. 8, min. $6\frac{1}{2}$ alt. 5 mill.

Hab. in Novis Hebridibus.

3. NOTES ON THE DIDUNCULUS, A SPECIES OF PIGEON SUPPOSED TO BE PECULIAR TO THE NAVIGATOR'S ISLANDS. BY LIEUT. THE HON. F. WALPOLE, R.N. COMMUNICATED BY J. H. GURNEY, ESQ., F.Z.S.

May 25.

Lieut. Walpole always saw this bird (when in its natural state) either perching on trees or flying about them,—feeding by day and roosting by night among the branches. He never saw them on the ground, though he has seen places where they appeared to have been scratching, either for roots or for other food. The crops of the specimens which he examined were, however, generally filled with green berries, which grew in clusters on a species of ash. The number of specimens so examined was considerable, as the birds formed Lieut. Walpole's principal food while on these islands. He found the flesh most excellent, though in colour darker even than that of the English wood-pigeon. The flight of the *Didunculus* is mostly limited to a transit from wood to wood, as they rarely attempt to pass from one island to another,—the distance between the islands varying from ten to eighty nautical miles.

Though their flight appears to be inferior to that of most pigeons, it is of the same swooping and continuous character.

They retire late to roost, but are not nocturnal.

They are generally seen either in pairs or in small flocks. The largest flock seen by Lieut. Walpole consisted of nine.

In the breeding season they pair and retire to the interior of the islands, where they nest amongst the rocks.

Lieut. Walpole does not know the colour or number of the eggs, but states that the young are naked and helpless.

The male bird is superior to the female in size, colour, and carriage, but does not attain his full plumage until the second year.

The natives of the Samoan Islands are fond of keeping the *Didunculi* tame as pets, either taking them from the nest, or, when older, with bird-lime.

They attach the bird by a long string fastened round one leg to a stick about two feet in length, with a fork at the end, which is stuck generally in the wall inside the hut, but sometimes in the ground outside.

The natives, when they walk, often carry with them these sticks with the birds attached, and train the birds to leave the stick occasionally and hover above it till it is again presented for the bird to perch on,—the line by which it is attached being long enough to admit of this operation.

June 8, 1852.

G. R. Waterhouse, Esq. in the Chair.

The following paper was read :—

ON THE CLASSIFICATION OF THE STRIGIDÆ. BY DR. KAUP.

This paper will appear in the Transactions of the Society.

July 27, 1852.

G. R. Waterhouse, Esq., in the Chair.

The following papers were read :—

1. NOTE ON THE INDIAN WEAVER-BIRD (*PLOCEUS PHILIPPENSIS*).
BY LIEUT. BURGESS.

The dimensions of the male are as follows :—Length $6\frac{1}{2}$ inches ; from the carpal joint to the end of the longest quill-feather, $2\frac{6}{8}$ inches. Irides dark brown ; beak bluish black ; base of the lower mandible dull yellow on the underside ; legs, feet and claws pale flesh-coloured brown.

Length $6\frac{1}{4}$ inches ; from the carpal joint to the end of the longest quill-feather, $2\frac{6}{8}$ inches. Beak yellowish horn colour ; base of both mandibles, especially that of the lower, dull brownish orange ; legs, feet and claws as in the male.

These pretty little birds are sociable in their habits, building several nests on the same tree. The nests are of beautiful construction, shaped like a ball, with a long pendent tube. They are generally formed of a species of strong wiry grass, but in places where the date-palm grows, they are made with fine fibres, split by these little architects out of the small spiked side-leafflets of the branches. Both male and female work, though the male appears to prefer looking on and squabbling with his neighbours to building. When a blade of grass or fibre has been brought to the nest, considerable time is required to work it into the growing fabric, the builder weaving both

on the outside and inside. The entrance tube is a most beautiful piece of workmanship, and in many nests is nearly a foot long. When these birds commence building, they almost invariably fix upon a thorny tree, or one growing over a stream or old well. In places where date trees are growing on the banks of a stream they appear to prefer them, but I do not recollect having seen nests away from water. Having selected their situation, they begin by weaving a stem of grass or fibre of date leaf, attaching to it a ring of the same materials; on one side of this ring is worked the body of the nest, on the other the entrance tube. A very slender drooping bough is generally selected; the upper portion of the ball of the nest, as it is being worked, is strengthened with lumps of mud.

In one or two instances I have seen an upper room over the nest, between it and the bough. This appears to be the abode of the male. On one occasion, when watching a colony of these birds building, I observed a nest with an upper story, in which the male was lazily sitting whilst the female was working at the room below; and the natives who assisted me in getting some of the nests assured me that the upper is the male's abode. The upper room is made by widening the stem of the nest, and adding a penthouse to it. When the nest is finished, which takes place about the middle of August (the height of the monsoon), the eggs, six or eight in number and of a pure white, are laid. During the breeding season the male employs himself alternately in helping his mate and fighting with all others of his kind that approach his nest. His song, often repeated, is simple and very sweet.

It is a very curious fact, that out of some fifty nests not more than one or two have the upper room attached. If this penthouse is put up to keep off the monsoon rains, why should so few males have them?

The claws of these birds are remarkably long, enabling them to hang securely to their nests when building them. Their food consists of seeds. In the month of April I shot two or three in the hedge round a stackyard. They were males, in the same plumage as the adult female. The adult male loses, I believe, his bright golden plumage after the breeding season.

2. ON THE HABITS OF THE MUNGOOS (*HERPESTES GRISEUS*). BY LIEUT. PEGUS.

In this communication the author gives an account of a combat which he witnessed at Pondicherry, between a Mungoos and a Cobra (*Naja tripudians*). The snake was brought in a trap to the Travellers' Bungalow, which is enclosed by stone walls, and on being liberated and seeing the Mungoos it endeavoured to make its escape. The latter, however, attacked it immediately with much fury, and a battle ensued, which lasted about five minutes, when the snake was observed to dart upon its assailant and wound it with its fangs.

The Mungoos on this rolled over and lay for some little time as if

dead, with a black foam at its mouth; it then suddenly started up and darted off into the bush. In about twenty minutes it returned, when the mouth was observed to be marked with green from some herb it had been eating. It appeared quite recovered, and immediately attacked the snake with even more fury than before. This combat lasted about six minutes, when the Mungoos got the snake by the neck, killed it, and severed its head from its body. The snake was upwards of five feet long.

3. DESCRIPTIONS OF NEW SHELLS, FROM THE CUMINGIAN COLLECTION. BY ARTHUR ADAMS, F.L.S. ETC.

(Mollusca, Pl. XV. XVI.)

1. *MYOCHAMA STUTCHBURYI*, A. Adams (Pl. XV. fig. 4). *M. testa inæquivalvi, subæquilaterali, rosea; valva dextra affixa, sinistra convexiuscula, apice acuto, antice recurvo, longitudinaliter costata, transverse oblique plicata; costis squammulato-nodosis; latere antico rotundato, postico oblique truncato.*

Hab. Australia.

This species, named in honour of the founder of the genus, differs from the type *M. anomioides* in being longitudinally ribbed radiately from the apex, and in the apex of the umbones being sharp, produced, and flattened.

2. *MYOCHAMA KEPELLIANA*, A. Adams (Pl. XV. fig. 1). *M. testa inæquivalvi, æquilaterali, carnea; valva dextra affixa, sinistra convexa, apice producto, acuto, inflexo, longitudinaliter radiatim costata; costis nonnullis dichotomis, squammulis rotundatis, arcuatis, confertis, ornatis; latere postico oblique truncato, antico rotundato.*

Hab. Bass's Straits, deep water.

This species, found by the Hon. Captain Keppell, differs from the type in the ribs radiating regularly from the apex and not being nodosely wrinkled, but furnished with regular rounded arcuated scaly tubercles.

3. *CRASSATELLA OBESA*, A. Adams (Pl. XVI. fig. 2). *C. testa æquivalvi, inæquilaterali, crassa, gibbosa, epidermide rufo-fusca sericea obtecta, transverse valde plicata, plicis prominentibus, ad marginem ventralem evanidis; lunula impressa lanceolata; latere postico subproducto, angulato, margine truncato; latere antico gibboso, margine rotundato.*

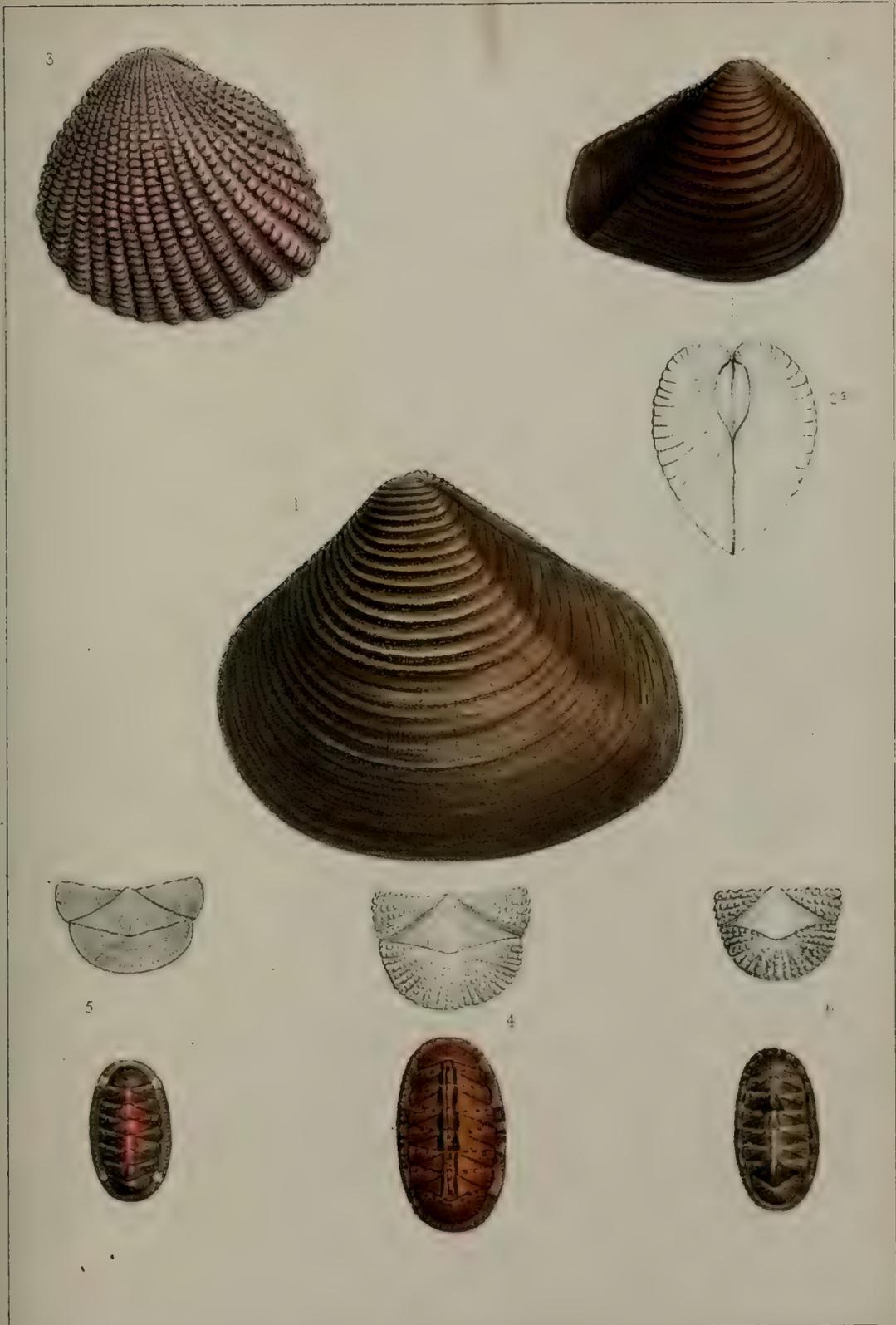
Hab. New Zealand, deep water (*Mr. Strange*).

This species somewhat resembles *C. lapidea*, Reeve, but it is not rayed, nor beaked so strongly posteriorly, and the valves are much more gibbous and very strongly transversely plicate.

4. *CRASSATELLA CUMINGII*, A. Adams (Pl. XVI. fig. 1). *C. testa æquivalvi, inæquilaterali, subtrigonalis, epidermide fusca radiatim striata obtecta, transverse concentricè valde plicata,*



Fig: 1. *Myochama Keppelliana* A. Adams
 2. " *Strangei* "
 3. " *transversa* "
 4. " *Stutchburyi* "
 5. *Aspergillum Strangei* "



W H Baily

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Fig 1 Crassatella Canaliculata Adams
 2 " " " " " "
 3 Trigonia Strangei " "
 4 Chiton insculptus " "
 5 " versicolor " "
 6 " muricatus " "

plicis crassis, elevatis, ad marginem ventralem evanidis; latere antico rotundato, postico subrostrato, margine oblique truncato.

Hab. Moreton Bay, East Australia, deep water (*Mr. Strange*).

This large species is near *C. pulchra*, Reeve, but differs in being more gibbose, less beaked posteriorly, in the plicæ being stronger, and in wanting the coloured rays.

5. *ASPERGILLUM STRANGEI*, A. Adams (Pl. XV. fig. 5). *A. testa æquivalvi, subæquilaterali, alba, transversim sulcosa, umbonibus prominulis. Tubo inferne clauso, disco terminali basi adhærente, adlatera expansiusculo, margine tubulis minimis ornato, postice subcarinato, producto, tubulis curtis instructo; superne elongato, tortuoso, carinis obtusis quatuor longitudinalibus, ornato, margine simplice recto.*

Hab. Seas of Australia (*Mr. Strange*).

Two specimens of this curious form were collected, one attached to a stone, and the other to the valve of a *Mytilus*. They were found at Sydney, in shoal water. The fact of the tube being nothing more than the valves greatly expanded and modified, is well shown in one of the specimens.

6. *TRIGONIA STRANGEI*, A. Adams (Pl. XVI. fig. 3). *T. testa æquivalvi, inæquilaterali, subtrigona, fusca, longitudinaliter valde costata; costis antice confertis, postice magis distantibus, squamis nodiformibus, transversis, imbricatis, confertis, ornatis; interstitiis transverse crebre striatis; latere antico rotundato, postico oblique subtruncato.*

Hab. Sydney, deep water (*Mr. Strange*).

This species is larger than *T. margaritacea*, and somewhat resembles in the style of sculpture *T. uniophora*, Gray. The form of the scales on the ribs at once distinguishes it, however; the shape of the shell, especially the outline of the hind slope, is also very different.

7. *CHITON INSCULPTUS*, A. Adams (Pl. XVI. fig. 4). *C. testa oblonga, valde elevata, valvis terminalibus cæterarumque areis lateralibus radiatim costatis, costis granatis, granis transversis, subconfertis, ad marginem obsolete; umbonibus carinatis; valva terminali antice umbonata; areis centralibus longitudinaliter valde liratis; liris obsolete rugoso-granulatis. Coccineus areis centralibus lineis nigro-fuscis duabus ornatis; ligamento luteo-fusco fuscoque articulato squammulato, squammulis lævis, nitidis, convexis.*

Hab. New Zealand, on dead shells, deep water (*Mr. Strange*).

A beautifully sculptured species of a red colour, with two dark parallel lines down the centre of the valves.

8. *CHITON MURICATUS*, A. Adams (Pl. XVI. fig. 6). *C. testa oblonga, in medio valde elevata, nigro-fusco alboque variegata, valvis terminalibus cæterarumque areis lateralibus radiatim costatis; costis granis elevatis acutis ornatis; valva ter-*

minali in medio umbonata; areis centralibus longitudinaliter valde liratis, umbonibus lævibus, elevatis, subproductis; ligamento squammulato; squammulis mucronatis, imbricatis, apicibus suberectis.

Hab. Sydney, under stones, low water (*Mr. Strange*).

This species is remarkable for the somewhat triangular imbricate scales of the ligament ending in sharp pointed mucrones; the ligament is tessellated with pale fuscous and dark brown; the ribs on the lateral areas are four, muricated with sharp granules.

9. *CHITON VERSICOLOR*, A. Adams (Pl. XVI. fig. 5). *C. testa oblongo-ovali, elevatiuscula, rufo, albo, fuscoque varie picta; valvis obtusis, in medio longitudinaliter sulcosis, umbonibus acutis subrostratis, apicibus deflexis; valva terminali in medio umbonata; ligamento tenuiter granoso-coriaceo rufo-fusco, maculis albis quinque ornato.*

Hab. Sydney, under stones, low water (*Mr. Strange*).

A prettily variegated species, with the scales on the ligament minute, imbedded and not imbricate, and the entire upper surface of the valves delicately shagreened.

November 9, 1852.

J. S. Bowerbank, Esq., F.R.S., in the Chair.

The following papers were read:—

1. DESCRIPTIONS OF A NEW GENUS, AND OF SEVERAL NEW SPECIES, OF MOLLUSCA, FROM THE CUMINGIAN COLLECTION.
BY ARTHUR ADAMS, F.L.S. ETC.

Family SOLENELLIDÆ.

Animal oblong. Mantle open in the entire length; margin double, outer edge fimbriated; hind outer edge ending in two calous conical processes immediately below the respiratory orifice. Respiratory orifice continuous with the opening of the mantle, the margin fringed; anal siphon simple-edged, tubular, elongate, muscular, produced beyond the fringed mantle-margin which surrounds its base. Gill single on each side, attached the whole length. Labial palps elongate, fringed at their margins, and surrounded at their base by a thin dilated membrane. Foot large, compressed, geniculate, ending anteriorly in a folded ovate disc with crenate margins.

Shell thin, not pearly within. Hinge-margin with comb-like teeth. Ligament external.

Genus NEILO, A. Adams.

Testa transversa æquivalvis, inæquilateralis, epidermide fusco tenui induta, latere postico hians. Dentibus cardinalibus, nullis, lateribus anticis et posticis plurimis in serie rectiuscula dispositis; dentibus parvis acutis; impressionibus muscularibus subdistantibus, impressione pallii sinu magno; ligamento externo elongato.

This genus differs from *Solenella*, not only in its Leda-like form, but in the hinge-margin having as many teeth anteriorly as posteriorly. In *Solenella* the series of teeth is confined to the fulcrum to which the external ligament is attached;—in this genus the teeth extend along the entire hinge-margin.

NEILO CUMINGII, A. Adams. *N. testa transversa, æquivalvi inæquilaterali, epidermide tenui viridi-fusco obtecta, transverse concentricè sulcata; latere antica clauso, rotundato, postico, longiore, subangulato, hiante, margine truncato flexuoso, superne auriculato.*

From the circumstance of the hind margin gaping considerably and being divided as if for two siphons, the anal and branchial tubes in this animal are probably distinct and elongated, as in *Leda*. The genus *Neilo*, in fact, will represent *Leda*, of the family *Nuculidæ*, in a distinct family, *Solenellidæ*, characterized by the external ligament of the hinge. It is from the shores of New Zealand.

CONCHOLEPAS (CORALLIOBIA) FIMBRIATA, A. Adams. *C. testa ovata alba, longitudinaliter radiatim costata, transverse lamellosa, lamellis pulcherrime fimbriatis; spira minuta, anfractu ultimo amplo; apertura ovali antice attenuata, subcanaliculata; labio excavato incurvato, margine externo dilatato et valde reflexo; labro acuto, margine late dilatato et eleganter fimbriato.*

Hab. Cagayan, province of Misamis, island of Mindanao, Philippines. On the coral reefs at low water (*H. C.*). Mus. Cuming.

Externally this curious shell resembles *Concholepas*, but the absence of the two teeth on the fore part of the outer lip prevents it being strictly referred to that genus. In the character of the inner lip, and in its place of habitation on coral reefs, it approaches *Lepticonchus*, and perhaps it has affinities also with *Pedicularia*. I have thought it best, until the animal is known, to regard it as a subgenus of *Concholepas*, under the name of *Coralliobia*.

PAXILLUS MINOR, A. Adams. *P. testa dextrorsa, ovali, tenui, epidermide fusca obtecta; anfractibus septem convexis, longitudinaliter confertim costellatis vel valde striatis; apertura suborbiculari, ascendente, antice subproducta; peristomate duplici, externo reflexo, dilatato; labio plica dentiformi valida instructo.*

Hab. — ?

I believe the little shell described above to be a dextral species of

the genus *Paxillus*, described by my brother and myself in the 'Annals' a few months ago. We there considered the genus to belong, possibly to *Auriculidæ*; but an examination of this species, and a better knowledge of the locality where the shells have been found, lead us to place them amongst the *Helicidæ*.

DIPLOMMATINA BENSONI, A. Adams. *D. testa minima vix rimata sinistrorsa, cylindrico-ovata, costellata, costulis distantibus obliquis regularibus; anfractibus sex, convexis, apice subobtusos; apertura rotundata; peristomate duplicato, externo expanso reflexo, interno recto, margine flexuoso.*

Hab. On the banks of a river, Moreton Bay, E. Australia (Mr. Strange).

This very pretty little shell agrees in all its characters with the genus *Diplommatina* of Mr. Benson, after whom I have named it. There is some difficulty in the location of this genus. Mr. Benson says distinctly that the eyes are "on the posterior part of the tentacula, at their base," but he says there is no operculum. Mr. Gray, on the other hand, has described the operculum. The true position is probably in *Truncatellidæ*.

CRASSATELLA SPECIOSA, A. Adams. *C. testa transverse ovata subæquilaterali, pallida, epidermide tenui fusca induta, concentricè plicata; plicis confertis regularibus; latere postico rotundato, antico acuminato subrostrato, angulato, margine ventrali convexo, antice sinuato.*

Hab. Bay of Campeachy. Mus. Cuming.

The beaks in this species are acute and close together, and rather more deeply plicate than the rest of the surface of the valves; there is an obtuse oblique and angular ridge extending from the umbones to the ventral margin.

CRASSATELLA LÆVIS, A. Adams. *C. testa ovato-transversa crassa, tumida, subæquilaterali, castanea, lævigata, concentricè striata, natibus subsulcatis; latere postico rotundato, antico producto subrostrato, margine oblique truncato, carina obtusa a natibus ad basin decurrente instructo, posteriori sulcato, margine ventrali convexo antice sinuato.*

Hab. La Guayra (*M. Le Marie, French Navy*). Mus. Cuming.

A large smooth pale chestnut shell beaked anteriorly and with a prominent obtuse keel extending from the beaks to the fore part of the ventral margin, and a broad shallow groove behind it; the lunule is ovate lanceolate, and the beaks are transversely sulcate.

CRASSATELLA OBSCURA, A. Adams. *C. testa ovato-trigonalis, transversa, subæquilaterali, compressa, nigro-fusca, apicibus transverse corrugata, ad umbonem plicata; latere antico rotundato, postico subtruncato; margine valvarum intus crenulato.*

Hab. China Seas, deep water. Mus. Cuming.

A small brown-black species, with the valves only plicate near the beaks and their inner margins finely crenulated.

CRASSATELLA BELLULA, A. Adams. *C. testa ovato-trigonalis, subæquilaterali, carneo-fulva, immaculata, transverse concentricè plicata; plicis obtusis subconfertis regularibus, antice undulatis, subevanidis (sub lente rugulosis); latere postico rotundato, antico vix truncato; umbonibus acutis parvis approximatiss.*

Hab. New Zealand (Mr. Hart). Mus. Cuming.

A beautiful pinkish yellow species, without any spots or markings, with the plicæ on the fore part undulated and rugulose under the lens.

CRASSATELLA TRUNCATA, A. Adams. *C. testa ovata, compressa, carnea, pallidiori ad partem anticam, radiis angustis inconspicuis ornata, inæquilaterali, latere antico breviori et rotundato, postico dilatato et truncato, linea elevata e umbonibus ad marginem ventralem; transversim valde costata, costis acutis subimbricatis.*

Hab. China Sea, deep water (A. Adams).

This is a small pale pink or flesh-coloured species, strongly ribbed, the ribs being sharp, prominent and imbricated; the posterior side is dilated and truncate, and the surface of the valves is marked with faint linear radiating lines.

CRASSATELLA COMPTA, A. Adams. *C. testa ovato-trigonalis, subæquilaterali, apicibus antrorsum curvatis, rufescenti, transverse concentricè plicata; plicis validis, regularibus subdistantibus; latere antico angustiori, postico latiori rotundato, interne purpurascente.*

Hab. China Sea, deep water (A. Adams).

This is a small red species, with prominent curved beaks, strongly plicate transversely, and of a purplish pink colour in the interior of the valves.

CRASSATELLA CONCINNA, A. Adams. *C. testa ovato-transversa subæquilaterali, epidermide tenui fusca obtecta, utrinque rotundata, concentricè plicata, plicis validis regularibus rufofusco articulatis; interstitiis creberrime longitudinaliter striatis; umbonibus acutis confertis.*

Hab. China Sea, deep water (A. Adams).

A small fuscous species, of an ovate form, rounded at both ends, with the transverse plicæ strongly produced and prettily articulated with brownish red.

November 23, 1852.

Dr. Gray, F.R.S., Vice-President, in the Chair.

The following papers were read :—

1. NOTE ON THE GOUWA (*BOS FRONTALIS*) OF WESTERN INDIA,
CALLED "THE BISON" BY ENGLISH RESIDENTS.
BY CAPT. J. WYCLIFFE THOMPSON.

Eliot Vale, Blackheath, Kent,
20th Nov. 1852.

THE size of the beast I cannot state with any exactness, having had no means of judging beyond forming an estimate by the eye of the carcase as it lay on the ground before me. The common report amongst Indian sportsmen is, that the old bull stands 19 hands (6 feet 4 inches) at the shoulder. Upon what grounds this estimate rests I cannot say, but it is in some degree confirmed by my own impression, that an old bull was pretty nearly equal in height and bulk to one of the very largest of the London Dray-horses. The colour is chocolate-brown, deepening in shade on the belly; the lower part of the leg is of a dirty yellow-brownish white from the foot upwards to a little above the knee in the fore and the hock in the hind leg, the line of demarcation between the white and the chocolate being abrupt, as in a 'white-stockinged' horse. The profile of the face is decidedly curved, the part of the forehead between the horns is excessively raised in a kind of ridge, of which traces are to be seen in the skulls, though in these it is much less strongly marked than in the live animal. The shoulder is raised, not in a hump like that of the Brahminee bull or common Indian ox, but in a kind of ridge, giving the idea that the spine, beginning at the shoulder, had been unnaturally raised, and carried at that elevation some way to the rear, and then allowed suddenly to drop into the ordinary level of the back. The forehead, including the high ridge between the horns, inclines to ash-colour; the tail is small and short.

The only part of the country in which I have met with these animals is on the "Suhyadri" mountains or "Western Ghauts," a narrow belt of wild, broken, and thickly-wooded country dividing the high lands of the Deccan or Maratha country from the low land of the Concan or country bordering the margin of the sea. This Ghaut country is of most peculiar appearance: anything that can be called a *plain* does not exist in it; it is a succession of the most rugged hills and of the most wild, deep ravines; the whole, with the exception of here and there a bare ridge of hill, covered with a dense mass of bushes, brushwood, tall ferns and flowering plants, so thick that it is frequently necessary to clear a road with bill-hooks; imbedded in this mass of vegetation lie broken crags of brown rock; above all this rise clumps of forest trees, and above these again rises some rugged hill-side crowned by a bare perpendicular scarp of black rock.

This line of country, which in every part that I have visited forms a line of demarcation between the Concan and the Deccan, and consequently stretches in point of length over a wide extent, is in point of breadth inconsiderable, occupying no larger space than must necessarily be covered by a mountain range with broken and irregular spurs. As you will perceive from my description, it is a country which one would scarcely think adapted to huge cattle like the Bison, but they *do* inhabit it, and hold to it most rigorously, as I never saw or heard of one either in the Concan or the Deccan. Occasionally they make their appearance on the borders of this country, and do great damage to the small fields of corn which the natives cultivate on the very verge of the forest; choosing, as I gather from the natives, the night for their operations; but their usual abode is in the depths of the Ghaut country, as not only are they invariably, when sought for by sportsmen, found in the very depth of the thick forest, but constant traces of them may there be met with; as for instance, crossing a little open glade in the forest, covered, as is sometimes the case, with nothing but a long thin dry grass, it is not unusual to see half a dozen patches where the squashed and flattened grass shows where the Bison has been sleeping; and the natives frequently point out a bed of a greener and more delicate kind of grass, and show where it has been cropped by the grazing Bison.

The usual method of hunting these beasts is to take up a post commanding some narrow pass, and throwing from fifty to a hundred beaters into the forest, to form them into a *cordon*, which driving the Bison before it, contracts as it approaches the pass and forces them through it under the fire of the hunters. The Bison, when stirred but not as yet much alarmed by the distant line of beaters, are usually seen plodding along with a slow heavy gait, and with their heads carried low. When under these circumstances I have been able to obtain a clear view of them, they have struck me by a resemblance in general figure to the North American Bison, of which I have seen specimens in England: they have a heavy, compact, short-necked, thick-headed look, which distinguishes them most strongly from the long-faced dolorous-visaged tame buffalo of India. When disturbed by the closer approach of the beaters, they break into a heavy lumbering trot, which under circumstances of violent alarm, they exchange for a furious rush, in which they go straight through the jungle as a horse might burst through standing corn, making the forest ring again with the sound of crashing boughs; and, as they cleave their way through the dense masses of bush, making their progress visible by a long track of waving branches tossing above them, like the wake of a ship at sea. I have been posted on the ridge of a hill so far away from the Bison that they looked, when I caught occasional glimpses of them, no bigger than terrier dogs, and yet have heard the incessant crashing of the jungle quite loud as the game moved to and fro.

They have a great reputation for ferocity amongst both the English sportsmen and the native hunters; and this reputation is in some degree borne out by the fact, that within no very great number of

years, and within a limited extent of country, two English officers have been killed by them. Nevertheless, although I do not at all doubt that they can be on occasion savage and dangerous, I can say from experience that their ferocity is much exaggerated. I have seen a good many Bison, but never yet saw one that did not show a strong desire to avoid me if it possibly could. That when wounded or finding their line of retreat blocked up, they will charge, there is no kind of doubt; but excepting these extreme cases, they will usually, on catching sight of a man, give a start with a little back-jump, much as an antelope does when catching sight of a startling object, and then plunging into the thickest forest, hold their course in the direction which will carry them the farthest and soonest out of the neighbourhood of human beings.

They usually go in small herds of four or five, though I have I think seen as many as seven or eight together. Though, from its great size, the Bison is not a difficult animal to hit, it is by no means an easy animal to bring down. One shot, accurately placed behind the shoulder, will bring him down never to rise again; but you might as well fire into a hay-stack as hit him anywhere else. And even when brought down and brought to the last gasp by a well-directed shot, the tenacity with which he holds on to the small remains of life is wonderful. I have fired at a fallen Bison with the muzzle of the gun within a foot of his head, and yet he kicked, and before dying rolled himself quite over; I remember once putting my gun so close to the back of the head, just behind the horns, that the hair smoked from the flash of the powder, and still the animal breathed for some time.

The natives, though they hold the ferocity of the Bison in considerable respect, yet do not seem to consider him an animal of very acute perception. I remember a "shikarry" or native huntsman pointing out to me a patch of long thin grass lying close by the side of a small path across a hill top, and affording nothing that I should have considered very good concealment, and telling me that I might safely on emergency lie down in it and let the Bison pass along the path. I forget whether it was at this very spot, or at one precisely like it, that one of my beaters put this stratagem into practice and allowed the animal to pass close beside him.

The flesh is I think the finest beef I ever tasted. The natives of "Caste," holding the Bison in reverence as a species of Cow, refuse to eat him, and even in some cases refuse to show him to the hunter, though their reluctance to this last may generally be overcome by money. The out-caste tribes, those whom people in England call "Pariahs," have no such scruples, and the instant that a Bison is killed light a fire by the carcass and sit down and gorge themselves.

When I was in India I tried to get one or more Bison Calves for the Zoological Society, and offered the natives what to them were large sums of money if they would bring me one. They never succeeded; partly from the real difficulty of the undertaking, still more I fancy from the unwillingness of the Hindoo to do anything unusual or contrary to "custom;" they reflected, I do not doubt, that their



J. Wolf lith.

M & N Hanhart Imp^r

HYRAX DORSALIS, *Fraser*.

fathers had never been requested to catch a Bison calf, and could not comprehend why *they* should. I myself twice surrounded a calf with a circle of beaters, but in both instances it broke the line and escaped. Calves sometimes fall into the hands of the natives by accident, and I have seen a young one so caught, which unfortunately died in the possession of an English officer, who had bought it from its captors.

All the natives with whom I have spoken on the subject are firmly persuaded that there are two distinct species of Bison. To these two species they give the name of "Gouwa" in common, but distinguish them as the "Myse Gouwa" and the "Gae Gouwa." "Myse" signifies the common domestic buffalo; "Gae" the domestic cow. I never succeeded in getting any man to give me a clear explanation of what he imagined to be the difference, but I have found the belief so universally spread amongst those natives who have the best opportunities of knowing, that I do not think it altogether to be discredited.

J. WYCLIFF THOMPSON,
Capt. 10th Royal Hussars.

D. W. Mitchell, Esq., Sec. Zool. Soc.

2. DESCRIPTION OF A NEW SPECIES OF HYRAX FROM FERNANDO
Po. BY LOUIS FRASER, H.M. CONSUL AT WHIDAH.

(Mammalia, Pl. XXXIII.)

HYRAX DORSALIS, Fraser.

Adult male. General colour grizzled brown, becoming darker towards the back, where the hairs are annulated with black; a line of yellowish white, about four inches long, commencing over the short ribs and running hindways; muzzle naked and of a brown colour; eyes light hazel.

Length of head $4\frac{1}{2}$ in.; neck and body about 18 in.; hind feet, from heel to toe, 3 in.

Hab. Island of Fernando Po.

Its native name is 'Naybar'; it is nocturnal in its habits, and is no doubt common, as its loud cry of ccurr-ccurr-ccurr may be heard every evening after dark, during the commencement of the rains.

The Boobies say, it sleeps in the trees all day, and feeds upon leaves at night, but is very difficult to find.

Mr. Waterhouse, in a letter to Mr. Cuming, writes as follows respecting this *Hyrax*:—

"The *Hyrax* is certainly distinct from the two species which I am acquainted with, viz. *H. Capensis* and *H. Syriacus*, and upon comparing the skin with the description of *H. arboreus*, the only other described species, I find several discrepancies which lead me to believe it will prove distinct. I allude more especially to the texture of the fur. In Mr. Fraser's Fernando Po animal the fur is coarse, whilst in *H. arboreus* it is said to be soft. This latter animal moreover has a transverse black stripe about the middle of the lower jaw which does not exist in Mr. Fraser's species."

3. DESCRIPTIONS OF TWENTY NEW SPECIES OF THE GENUS *CARDITA*, FROM THE COLLECTION OF HUGH CUMING, ESQ.

BY G. P. DESHAYES.

(Mollusca, Pl. XVII.)

1. *CARDITA PURPURATA*, Desh. (Pl. XVII. fig. 12, 13.) *C. testa ovato-transversa, subtrigona, inæquilaterali, antice brevior, obtusa, depressiuscula, radiatim sulcata, albo-flavescente postice rufescente; umbonibus obliquis prominentibus; lunula minima, profunda, plana, lævigata; costis transverse breviter squamosis, sex et viginti, posticalibus angustis, scabriusculis, una inter alias prominentiore; valvis intus pallide purpureis, ad margines vivide purpureo-radiatis.*

Hab. New Zealand. Coll. Cuming.

2. *CARDITA ESSINGTONENSIS*, Desh. *C. testa elongato-angusta, transversa, maxime inæquilaterali, antice angusta, truncata, inferne sinuosa, postice latiore subspathulata, alba, ad apices fusco-punctata, radiatim inæqualiter costata, in interstitiis costula minore interjecta; costis in latere antico angustis, alteris sensim latioribus et crassioribus, medianis et posterioribus squamosis; umbonibus minimis fulvo-tinctis; lunula parva, profunda, subcirculari, fusca; valvis intus postice superneque fusco-tinctis.*

Hab. Port Essington, Australia. Coll. Cuming.

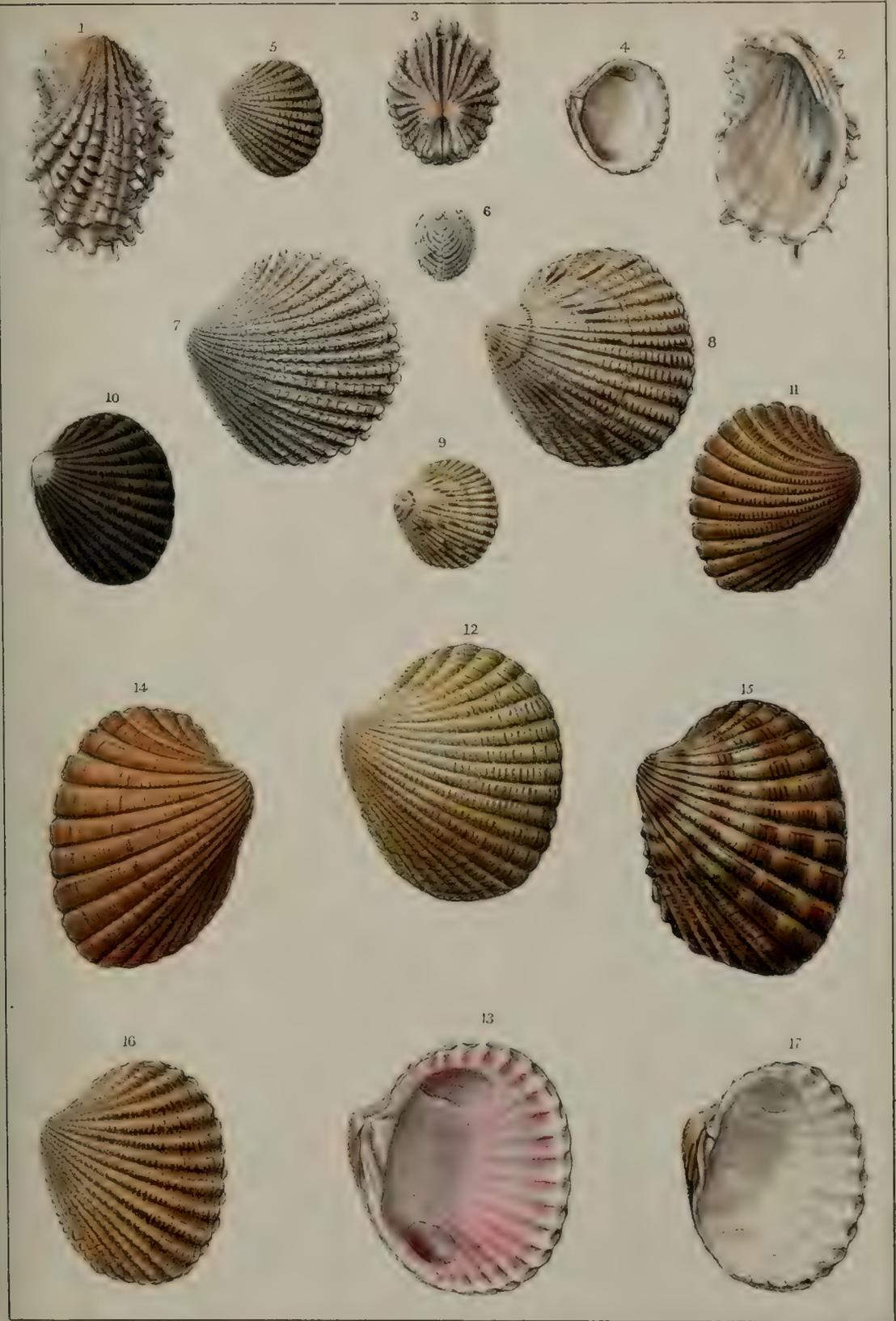
3. *CARDITA CALIFORNICA*, Desh. *C. testa elongato-transversa, lateraliter compressa, inæquilaterali, antice pallide fusca, posteriorius castanea, radiatim costata, costis inæqualibus quatuordecim ad sexdecim, transverse irregulariter striatis, striis antice appressis; costis in latere antico planis, depressis, latis, in medio quatuor vel quinque angulatis, squamis obliquis numerosis imbricatis, posticis inæqualibus, ultima majore squamis majoribus sæpius albidis exasperata; latere antico brevi, obtuso, postico dilatato, oblique truncato; valvis intus atrofuscis, antice pallidioribus.*

Hab. Gulf of California. Coll. Cuming.

4. *CARDITA EXCAVATA*, Desh. (Pl. XVII. fig. 1, 2, 3.) *C. testa elongato-transversa, maxime inæquilaterali, antice brevissima, subtruncata, postice dilatata, inferne sinuosa et hiant, longitudinaliter et radiatim costata, alba, costis posticis roseo-flavis vel squalide fuscis; umbonibus minimis, compressis, approximatis, perobliquis; lunula angusta, profundissima; costis inæqualibus, primis in latere antico angustioribus, alteris sensim latioribus et crassioribus squamis prælongis armatis.*

Hab. Sydney. Coll. Cuming.

5. *CARDITA UMBILICATA*, Desh. *C. testa elongato-transversa, maxime inæquilaterali, lateraliter compressa, radiatim costata; latere antico brevissimo, angusto, truncato, postico latiore, dilatato, obtuso; umbonibus minimis, obliquis; lunula angusta, profunda, umbiliciformi; costis octodecim, primis in latere antico angustis, crenulato-squamosis, sequentibus medianis sensim latiori-*



W.H. Barry

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Fig 1, 2, 3.	CARDITA EXCAVATA.	Desh.	Fig 11.	CARDITA CASTANEA.	Desh.
4, 5.	BIMACULATA.	12, 13.		PURPURATA.	
6, 7.	ELEGANTULA.	14.		JUKESI.	
8, 9.	AMABILIS.	15.		CUMINGII.	
10.	VESTITA.	16, 17.		DIFFICILIS.	



bus, longitudinaliter striatis, apice squamosis, alteris convexis, squamis majoribus armatis; valvis albis, atro-fusco irregulariter maculatis præcipue in latere postico.

Var. β . *Testa majore, compressiuscula, costis in medio et postice castaneo-fuscis, linea albicante separatis.*

Hab. Port Cunningham and Sydney, Australia. Coll. Cuming.

6. *CARDITA GUNNII*, Desh. *C. testa cordata, inflata, minima, alba, suborbiculari, longitudinaliter costata, costis sexdecim, inæqualibus, posticis angustis, nodose squamosis; umbonibus prominentibus, acutis, recurvis; lunula depressa, cordiformi.*

Hab. Van Diemen's Land. Coll. Cuming.

7. *CARDITA ELEGANTULA*, Desh. (Pl. XVII. fig. 6, 7.) *C. testa orbiculato-globosa, cordiformi, alba, fusco pallido maculata, longitudinaliter tenue costata, costis 20, elevatis, angustis, squamulis erectis, dilatatis, regularibus exasperatis; in latere postico costis angustioribus; lunula magna, cordata, lævigata, explanata; umbonibus tumidis, suboppositis.*

Hab. Chinese Seas. Coll. Cuming.

8. *CARDITA BELCHERI*, Desh. *C. testa ovato-transversa, alba, inæquilaterali, turgida, obliqua; latere antico brevi, postico subdilato; costis longitudinalibus 18 angustis prominentibus, regulariter squamoso-asperatis; lunula parva, vix fossa plana.*

Hab. Philippines (Cubras). Coll. Cuming.

9. *CARDITA ZELANDICA*, Desh. *C. testa minima, orbiculato-subtrigona, depressiuscula, longitudinaliter quatuordecim-costata, subæquilaterali, pallide fusca; costis regularibus, aliquantisper sub-squamosis, interstitiis æquantibus; umbonibus minimis, acutis, suboppositis; lunula parum profunda, fusca, lanceolata.*

Hab. New Zealand. Coll. Cuming.

10. *CARDITA COREENSIS*, Desh. *C. testa ovato-transversa, inæquilaterali, compressiuscula, albo-grisea, longitudinaliter multico-stata; costis depressis, lineis angustis separatis, 20-21, liris transversis, regularibus, approximatis ornatis, posticis quatuor angustioribus; lunula elongato-lanceolata, lævigata, in medio excavata; cardine brevi; valvulæ dextræ dente cardinali trigono, pyramidali.*

Hab. Corea. Coll. Cuming

11. *CARDITA JUKESI*, Desh. (Pl. XVII. fig. 14.) *C. testa ovato-transversa, inæquilaterali, tumida, oblique cordiformi, castanea, aliquantisper ad apices albo variegata, radiatim costata; latere antico brevi, obtuso, postico angustiore, oblique truncato; costis in plerisque simplicibus, planulatis, latis, posticis tribus quatuorve angustioribus; lunula perparva, angustissima, transversa, profundissima.*

Var. α . *Testa costis angustioribus in medio crenulatis.*

Var. β . *Testa subtrigona, costis antice posticeque crenulatis.*

Hab. Australia. Coll. Cuming.

12. *CARDITA BIMACULATA*, Desh. (Pl. XVII. fig. 4, 5.) *C. testa ovato-subtrigona, inæquilaterali, depressiuscula, utroque latere obtusa, sub epidermide squalide fusca albo-grisea, radiatim costata; costis 17-19 angustis, æqualibus, interstitia non superantibus, squamulis regularibus erectis, exasperatis, postice angustioribus; apicibus acutis; lunula profunda, ovato-lanceolata; valvis intus albis, utroque latere fusco maculatis.*
Hab. New Zealand. Coll. Cuming.
13. *CARDITA CRENULATA*, Desh. *C. testa ovato-transversa, oblique cordiformi, turgida, inæquilaterali, radiatim costata, albo-lutescente, fusco maculata vel marmorata; latere antico brevi, angusto, postico latiore oblique subtruncato; costis crassis, æqualibus, nodoso-squamosis; nodulis transversis, obtusis, approximatis; lunula depressa, lævigata, cordata, fuscescente.*
Hab. Borneo. Coll. Cuming.
14. *CARDITA VESTITA*, Desh. (Pl. XVII. fig. 10.) *C. testa ovato-transversa, inæquilaterali, compressa, radiatim costata, epidermide fusca spissa vestita; costis 20 planis ad margines evanescentibus, in latere postico quinque angustioribus; lunula minima, profunda, lanceolata.*
Hab. Greenland. Coll. Cuming.
15. *CARDITA AMABILIS*, Desh. (Pl. XVII. fig. 8, 9.) *C. testa suborbiculari, lateraliter compressa, subæquilaterali, radiatim tenue costata, albo-flavicante pallide fusco irregulariter maculata; umbonibus parvis oppositis; lunula plana, vix excavata, lævigata, ovata; costis octo et viginti regularibus, interstitia parum superantibus, eleganter et regulariter crenato-nodosis; cardine incrassato, in valvula dextra unidentato, in sinistra bidentato, dente valvæ dextræ triangulari magno; valvis intus albis.*
Hab. New Zealand. Coll. Cuming.
16. *CARDITA CASTANEA*, Desh. (Pl. XVII. fig. 11.) *C. testa ovato-globosa, subtransversa, inæquilaterali, fusco-castanea, radiatim costata; costis latis, depressis, 22-24, septem in latere postico angustioribus, crenulatis, interstitiis sæpius albis, angustioribus; umbonibus tumidis, obliquis; lunula parva, transversa, profundissima; valvis intus pallide rufescentibus.*
Hab. Australia. Coll. Cuming.
17. *CARDITA CUMINGII*, Desh. (Pl. XVII. fig. 15.) *C. testa ovato-transversa, subtrapeziformi, crassa, solida, tumida, antice cordiformi, radiatim costata, sub epidermide fuscescente tenue striata, albo-flavicante, fusco eleganter maculata et variegata, aliquantisper transverse zonata; costis crassis, planis, ad apices anticeque crenulatis, posticis angustioribus squamis crassis, paucis, irregulariter sparsis, exasperatis; umbonibus magnis, oblique spiralibus; lunula profundissima, angusta.*
Hab. Borneo. Coll. Cuming.

18. *CARDITA SOWERBYI*, Desh. *C. testa ovato-transversa, valde inæquilaterali, crassa, solida, tumida, subcuneiformi, alba vel flavicante, rufo aliquantisper maculata, intus candida; latere antico brevissimo, postico obtuso; sexdecim costata; costis latis, convexis, inæqualibus, medianis latioribus, tuberculis irregularibus exasperatis, in latere superiore tribus quatuorve angustioribus; lunula lata, cordiformi, profundissima.*

Var. β . *Testa minore, roseo-flavicante tincta, lunula paulo minore.*

Hab. Swan River, W. Australia. Coll. Cuming.

19. *CARDITA QUOYI*, Desh. *C. testa ovato-transversa, subæquilaterali, turgida, utroque latere obtusa, rotundata, longitudinaliter costata; costis quatuor et viginti, latis, convexiusculis, postice angustioribus, multo latioribus quam interstitiis, squamis brevissimis, obtusis, numerosis, asperatis, posticis eminentioribus; umbonibus minimis, oppositis; lunula minima, profunda, cordata; valvis intus albo-roseis; impressione musculari postica fuscescente.*

Cardita Australis, Quoy & Gaim. Voy. de l'Astr. pl. 80. f. 4 (non Lamk.).

Hab. New Holland. Coll. Cuming.

20. *CARDITA DIFFICILIS*, Desh. (Pl. XVII. fig. 16, 17.) *C. testa ovato-transversa, inæquilaterali, tumida, solida, ad margines convexiuscula, alba, sub epidermide squalide fuscescente immaculata, radiatim costata; umbonibus obliquis, oppositis; lunula parvissima profunda, levigata, plana; costis subangulatis, squamoso-crenatis, asperis, præcipue ad umbones et in latere postico; interstitiis costulas subæquantibus; valvis intus candidissimis; cardine angusto.*

Hab. New Zealand. Coll. Cuming.

December 14, 1852.

Dr. Gray, F.R.S., Vice-President, in the Chair.

The following papers were read:—

I. NOTES ON THE ANATOMY OF THE TREE-KANGAROO
(*DENDROLAGUS INUSTUS*, GOULD).

BY PROFESSOR OWEN, F.R.S., V.P.Z.S., ETC.

The specimen of the above rare species, the first that had been exhibited alive in Europe, was a full-grown and somewhat aged female, having lived in the Society's Menagerie since the 8th of October, 1848. It had suffered from a disease in the tail, for which more than half of that organ had been amputated, and the stump was well-healed. I am not aware what symptoms preceded the animal's death, which took place on the 13th of October, 1852; the

dissection did not bring to light any well-marked morbid appearances.

The external characters of the animal have been so well described and illustrated by the learned Dutch naturalists, MM. Müller and Schlegel, that further remarks on them may be here dispensed with: the chief modifications of the Kangaroo-form which adapt the herbivorous marsupials of the present subgenus to their singular sphere of existence, are a reduction of the length of the hind-limbs to a more near equality with the fore-limbs, which are proportionally longer and stronger than in the land-Kangaroos: the claws of the principal toes in both limbs are longer, stronger, and more curved than in other *Macropodidæ*; they are, in fact, the chief instruments enabling the Tree-Kangaroos to maintain a firm hold on the branches of the trees in which they habitually reside.

As the bones of the animal dissected are still in maceration, any remarks that the osteology of the *Dendrolagus* may require, will be communicated at a future meeting.

Before commencing the dissection the weight of the animal was taken, which was 16 lbs. avoirdupois.

The length of the animal, from the muzzle to the end of the tail, was 2 feet 1 inch; the length of the head was 4 inches 9 lines; the length of the fore-limb, from the head of the humerus, was 12 inches; that of the hind-limb, from the head of the femur, 1 foot 6 inches.

The dental formula was:— $i \frac{3-3}{1-1}$, $c \frac{1-1}{0-0}$, $p \frac{1-1}{1-1}$, $m \frac{4-4}{4-4} = 30$. The canines, confined as above indicated, to the upper jaw, were much smaller than in the Potoroos, indicative of a closer affinity to the Kangaroo family, which affinity was further manifested by the form and structure of the stomach. The premolars presented the great antero-posterior extent characteristic of the subgenus *Dendrolagus*: they are trenchant, with many minute vertical grooves; they play upon each other like the blades of scissors, and must perform an important part in cutting off the leaves or fruit, or dividing after they are detached, the natural objects of food of the Tree-Kangaroos: the true molars are double-ridged transversely, as in the *Macropodidæ* generally.

The tongue is long, narrow, depressed, with a smooth and even dorsum, showing three fossulate papillæ at its base, arranged in a triangle with the base turned forwards: the *Macropus major* has a single fossulate papilla near the base of the tongue. The epiglottis is broad and large, slightly emarginate at its middle part.

The œsophagus is suspended to the bodies of the dorsal vertebræ by a broad fold of the pleural membranes: it is continued into the abdomen for about 3 inches before terminating in the stomach. The diameter of the tube in a state of contraction is only 3 lines, until within an inch of its termination, when it begins gradually to expand.

A series of well-marked fasciculi of muscular fibres come off from an oblique tract of the external surface of the termination of the œsophagus and diverge in oblique curves which partly surround that termination before the fasciculi spread upon the stomach itself. The

œsophagus terminates 4 inches from the cardiac end of this bag, which is formed by one of the pouches of the sacculated part of the stomach, the sacculated structure being continued through five-sixths of the extent of the organ.

The length of the stomach, measured along the greater curvature when fully distended, is 3 feet 8 inches; the circumference at the middle of the sacculated part is 11 inches. The sacculi are formed chiefly by two longitudinal bands, one along the front, the other along the back part of the stomach, and by a third of narrower extent along the greater curvature, from which the epiploon is continued. The principal sacculi are about fifteen in number; the terminal part of the organ, which has the form of a simple digestive stomach, measures about 6 inches along the greater curvature. The circumference of the pylorus is 2 inches 9 lines. The duodenum expands at its commencement. The epithelium is continued from the œsophagus for a breadth of 2 inches down the posterior surface of the stomach, and of $1\frac{1}{2}$ inch down the anterior surface, and thence is continued slightly diminishing in breadth 3 inches towards the pyloric end of the stomach, and $2\frac{1}{2}$ inches towards the cardiac end. The rest of the cavity is lined with the usual gastric vascular membrane, the surface of which is diversified by patches of follicular apertures along the upper curvature of the stomach, which patches increase in breadth as they approach the true digestive portion. At the cardiac orifice two parallel longitudinal ridges extend along the lesser curvature to the pyloric end of the stomach, $2\frac{1}{2}$ lines in breadth and 7 lines apart, forming a channel of that width leading from the cardiac towards the pyloric orifice; both the muscular and the mucous coats of the stomach increase in thickness towards the pylorus, which is defended by an oblique ridge.

In the great Kangaroo the cardiac end of the sacculated stomach is bifid, and the epithelium lines one of the culs-de-sac: in the rock Kangaroo (*Macr. penicillatus*) the cardiac end terminates, as in the Tree-Kangaroo, in a single cul-de-sac. In the *Hypsiprymni* the whole of the sacculated structure of the stomach is on the left side of the termination of the œsophagus, whereas in the *Dendrolagus*, as in the true Kangaroos, the major part of that structure is to the right of the cardiac orifice.

The intestines were 9 feet in length, the small intestines being 6 feet, the large 3 feet.

The circumference of the cæcum is 5 inches, the length the same. It is simple, and terminates obtusely without diminishing in diameter. The ileo-cæcal aperture is in the form of a narrow transverse slit, 4 lines in extent, with a tumid margin opening upon a fold, which partially denotes the boundary between the cæcum and colon. There is a patch of agminated glands at the beginning of the colon, and smaller patches in other parts of that intestine.

The parotid gland is of large size, and extends far down upon the neck.

The liver is relatively small, and was situated in the right hypochondrium: it consists of a right and left lobe, the former subdivided

and the latter giving off the Spigelian lobe. The large gall-bladder was loosely suspended in a deep cleft of the right lobe. The coats of the ductus choledochus are thickened before the termination of the duct, in common with that of the pancreas, in the duodenum. The spleen, as in the Great Kangaroo, is T-shaped.

The heart showed the usual marsupial structure in the presence of the two distinct superior venæ cavæ, and the absence of the 'fossa' and 'annulus ovalis.' Both right and left lungs were cleft at their anterior margin, and a large azygos lobe was developed from the former, and occupied the part of the posterior mediastinum between the pericardium and diaphragm.

The larynx agreed in structure with that of the Great Kangaroo: the glottis being widely open, and the chordæ vocales very short and rudimentary at the fore part of the 'rima.'

The kidneys presented the usual simple conglobate structure. The ureters passing through the vaginal loops terminate close together 14 lines from the communication of the urethra, or neck of the bladder, with the uro-genital canal.

The ovaria, about 8 lines by 4 lines in size, presented a wrinkled cerebriform surface. A cyst of near an inch in diameter was developed from the left ovary. The oviducts, about $1\frac{1}{2}$ inch in length, terminate each in a subcompressed elongated uterus 1 inch by 3 lines. Each uterus opens by a distinct os tinæ into the fundus of a vagina, with a median cul-de-sac, extending 1 inch 3 lines beyond the commencement of the lateral bent vaginal canals. These canals are about 3 inches in length: they presented a finely longitudinally plicated inner surface, with a semilunar valvular fold 5 lines before their termination in the uro-genital canal: the length of this canal is 2 inches: it then opens, with the rectum, into a short and wide common cloacal vestibule, closed by a strong sphincter muscle. The lateral bent vaginal canals are shorter in proportion than in the *Macropus major*: but the median vaginal cul-de-sac was closed, as in that species.

In a specimen of the *Macropus Bennettii* which I dissected in 1845, I detected a natural aperture of communication between the median cul-de-sac and the urogenital canal. I had the pleasure of showing the specimen to Dr. Poelman, during a recent visit of that eminent Comparative Anatomist to the Hunterian Museum, and of thus confirming the observation which he had, independently, made of a similar modification of the female generative organs in a specimen of the *Macropus Bennettii* dissected by him at the University of Gand*.

The brain of the *Dendrolagus inustus* weighed 6 drachms.

The cerebral lobes were smooth, and showed only a short linear indentation above the anterior part of each. There was no trace of supra-ventricular commissure (corpus callosum), and in all particulars save the more simple external surface the structure of the brain corresponded with that of the Great Kangaroo as described in the 'Philosophical Transactions' for 1837. The proportion of the weight of the brain to that of the body is as 1 to 230; in the *Ma-*

* Bulletin de l'Académie Royale de Belgique, tom. xviii. p. 599.

cropus major it is as 1 to 800, the comparison being made on the body of a large old male. The difference between the large and small species of Kangaroo depends on the brain not increasing in proportion to the increase in the bulk of the entire animal. The smaller species in any natural family of Mammalia, resemble the fœtus of the larger species in the greater proportional size of both the brain and the eyes.

2. ON THE MONKEYS OF THE AMAZON.

BY ALFRED R. WALLACE.

The great valley of the Amazon is rich in species of Monkeys, and during my residence there I had many opportunities of becoming acquainted with their habits and distribution. The few observations I have to make will apply principally to the latter particular. I have myself seen twenty-one species; seven with prehensile and fourteen with non-prehensile tails, as shown in the following list:—

- 3 Howlers, viz.—*Mycetes ursinus*, *M. caraya?* and *M. Beelzebub*;
- 1 Spider Monkey,—*Ateles paniscus*;
- 1 Big-bellied Monkey (*Barrigudo* of the Brazilians),—*Lagothrix Humboldtii*;
- 2 Sapajou,—*Cebus gracilis* (Spix) and *C. apella?*;
- 4 Short-tailed Monkeys,—*Brachyurus couxiu*, *B. ouakari* (Spix), *B. rubicundus* (? *Calvus*, B. M.), and a new species;
- 2 Sloth Monkeys,—*Pithecia irrorata* and an undescribed species;
- 3 Squirrel Monkeys,—*Callithrix sciureus*, *C. personatus* and *C. torquatus*;
- 2 Nocturnal Monkeys,—*Nyctipithecus trivirgatus* and *N. felinus*;
- and
- 3 Marmoset Monkeys,—*Jacchus bicolor*, *J. tamarin* and a new species.

The Howling Monkeys are generally abundant; the different species, however, are found in separate localities; *Mycetes Beelzebub* being apparently confined to the Lower Amazon, in the vicinity of Para; a black species, *M. caraya?*, to the Upper Amazon; and a red species, *M. ursinus*, to the Rio Negro and Upper Amazon. Much confusion seems to exist with regard to the species of Howlers, owing to the difference of colour in the sexes of some species. The red and the black species of the Amazon, however, are of the same colour in both sexes. The species of this genus are seminocturnal in their habits, uttering their cries late in the evening and before sunrise, and also on the approach of rain. Humboldt observes, that the tremendous noise they make can only be accounted for by the great numbers of individuals that unite in its production. My own observations, and the unanimous testimony of the Indians, prove this not to be the case. One individual only makes the howling, which is certainly of a remarkable depth and volume and curiously modulated; but on closely remarking the suddenness with which it ceases and

again commences, it is evident that it is produced by one animal, which is generally a full-grown male. On dissecting the throat, much of our wonder at the noise ceases; for besides the bony vessel formed by the expanded "os hyoides," there is a strong muscular apparatus which seems to act as a bellows in forcing a body of air through the reverberating bony cavity.

Of the genus *Ateles*, the four-fingered Spider Monkeys, one species is found only in the Guiana district, north of the Amazon and Rio Negro. Another, probably *Ateles ater*, inhabits the West Brazil district on the river Purus. These monkeys are slow in their motions, but make great use of their prehensile tail, by which they swing themselves from bough to bough; and I have been informed that two have been seen to join together by their hands and prehensile tails, to form a bridge for their young ones to pass over. The Indians also say, that this animal generally moves suspended beneath the boughs, not walking on them.

The next genus, *Lagothrix*, is a very interesting one, being quite unknown in Guiana and Eastern Brazil. The species I am acquainted with (*L. Humboldtii*) is found in the district south-west of the Rio Negro, towards the Andes, which I call the Ecuador district of the Amazon. They are remarkable for their thick woolly grey fur, their long prehensile tails, and very mild disposition. In the upper Amazon they are the species most frequently seen tame, and are great favourites, from their grave countenances, more resembling the human face than those of any other Monkeys, their quiet manners, and the great affection and docility they exhibit. I had three of them for several months before leaving Brazil, and they were on board with me at the time the ship was burnt, when, with their companions, they all perished.

The Sapajou Monkeys, forming the genus *Cebus*, appear to be more generally distributed, and the species have a wider range. They are also frequently domesticated, but offer a remarkable contrast to the species of the last genus, in their constant activity and restlessness, and they have the character of being the most mischievous monkeys in the country.

Each species of the genus *Brachyurus* appears to be confined to a particular district. The *B. couxiu* is a native of Guiana, and does not pass the Rio Negro on the west, or the Amazon on the south. The *B. ouakari* is found on the Upper Rio Negro; the *B. rubicundus* on the Upper Amazon, called the Solimoes; and another species, apparently undescribed, is found on the lower part of the same river.

The Sloth Monkeys, forming the genus *Pithecia*, have an extensive range as regards the genus, but the separate species seem each confined in a limited space. Of the two species inhabiting the Amazon district, one, the *P. irrorata*, is found on the south bank of the Upper Amazon; and another, apparently undescribed and rendered remarkable by a bright red beard round the face and under the chin, occurs only to the south-west of the Rio Negro.

Of the little Squirrel Monkeys, one, the *Callithrix sciureus*, a spe-

cimen of which is now in the Society's Gardens, has an extensive range, being found on both banks of the Amazon and Rio Negro. The *C. torquatus*, a white-collared species, is found only on the Upper Rio Negro, and the *C. personatus* on the Upper Amazon.

Of the curious Nocturnal Monkeys forming the genus *Nyctipithecus* there are two species in this district; one, which appears to be the *N. trivirgatus* of Humboldt, is found in the district of Ecuador, west of the Upper Rio Negro; the other, closely allied, probably the *N. felinus*, on the Upper Amazon. Their large eyes, cat-like faces, soft woolly hair and nocturnal habits render them a very interesting group. They are called "devil monkeys" by the Indians, and are said to sleep during the day and to roam about only at night. I have had specimens of them alive, but they are very delicate and soon die.

Of the Marmozet Monkeys there are three species, though none of them have the characteristic tufts of hair on the head. Each species seems to be confined to a very limited tract of country. The *Jacchus tamarin* is found only in the district of Para, where it is abundant. The *J. bicolor*, a pretty grey and white species, I have only seen on the Guiana side of the Rio Negro near the city of Barra. Another species entirely black, with the face of bare white skin, inhabits the district of the Upper Rio Negro. It appears to be quite new.

The last three genera appear to be to a great extent insectivorous, and I am inclined to think they also devour small birds and mammalia. At least those I have had alive would attempt to pull into their cages any of my small birds which passed near. The little black *Jacchus* last mentioned was particularly savage. He once seized a large parrot by the neck, pulled him into his cage, and bit out a large piece from his bill, and would probably have destroyed it, had I not opportunely come to the rescue. Two other small birds which approached too near his cage he seized and completely devoured.

I will now make a few remarks on the geographical distribution of these animals.

In the various works on natural history and in our museums, we have generally but the vaguest statements of locality. S. America, Brazil, Guiana, Peru, are among the most common; and if we have "River Amazon" or "Quito" attached to a specimen, we may think ourselves fortunate to get anything so definite: though both are on the boundary of two distinct zoological districts, and we have nothing to tell us whether the one came from the north or south of the Amazon, or the other from the east or the west of the Andes. Owing to this uncertainty of locality, and the additional confusion created by mistaking allied species from distant countries, there is scarcely an animal whose exact geographical limits we can mark out on the map.

On this accurate determination of an animal's range many interesting questions depend. Are very closely allied species ever separated by a wide interval of country? What physical features determine

the boundaries of species and of genera? Do the isothermal lines ever accurately bound the range of species, or are they altogether independent of them? What are the circumstances which render certain rivers and certain mountain ranges the limits of numerous species, while others are not? None of these questions can be satisfactorily answered till we have the range of numerous species accurately determined.

During my residence in the Amazon district I took every opportunity of determining the limits of species, and I soon found that the Amazon, the Rio Negro and the Madeira formed the limits beyond which certain species never passed. The native hunters are perfectly acquainted with this fact, and always cross over the river when they want to procure particular animals, which are found even on the river's bank on one side, but never by any chance on the other. On approaching the sources of the rivers they cease to be a boundary, and most of the species are found on both sides of them. Thus several Guiana species come up to the Rio Negro and Amazon, but do not pass them; Brazilian species on the contrary reach but do not pass the Amazon to the north. Several Ecuador species from the east of the Andes reach down into the tongue of land between the Rio Negro and Upper Amazon, but pass neither of those rivers, and others from Peru are bounded on the north by the Upper Amazon, and on the east by the Madeira. Thus there are four districts, the Guiana, the Ecuador, the Peru and the Brazil districts, whose boundaries on one side are determined by the rivers I have mentioned.

In going up the Rio Negro the difference in the two sides of the river is very remarkable.

In the lower part of the river you will find on the north the *Jacchus bicolor* and the *Brachyurus Couxiu*, and on the south the red-whiskered *Pithecia*. Higher up you will find on the north the *Ateles paniscus*, and on the south the new black *Jacchus* and the *Lagothrix Humboldtii*.

Spix, in his work on the monkeys of Brazil, frequently gives, "banks of the river Amazon" as a locality, not being aware apparently that the species found on one side very often do not occur on the other, though the fact is generally known to the natives. In these observations I have only referred to the monkeys, but the same phenomena occur both with birds and insects, as I have observed in many instances.

3. ON THE ANATOMY AND DEVELOPMENT OF ECHINOCOCCUS VETERINORUM. BY THOMAS HUXLEY, F.R.S.

(Annulosa, Pl. XXVIII. XXIX.)

On the 25th of November, 1852, a fine female Zebra, whilst at play within its paddock, accidentally broke its neck. The animal had always appeared to be quite healthy, and it was in perfectly good condition—but, upon examination, its liver was found to be one mass





Fig. 6

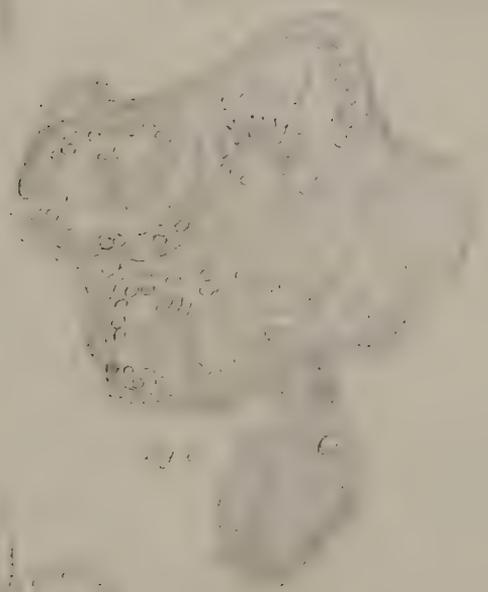
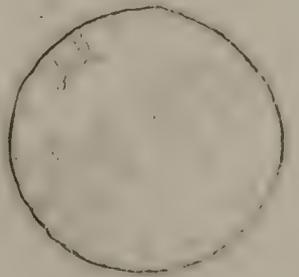
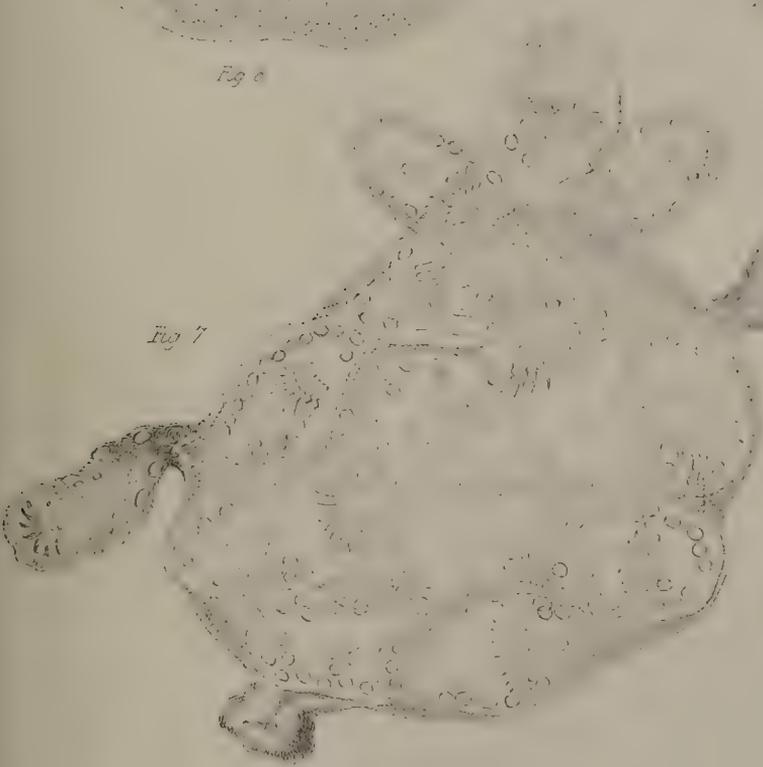


Fig. 7



Development of Echinococcus

of cysts, varying in size from a child's head downwards. The liver was taken out of the body on the day succeeding the animal's death*—and on the 27th I proceeded to examine the contents of one of the largest cysts (with a portion of its wall) and one of the smaller cysts.

It was at once obvious that the cysts contained the *Echinococcus veterinorum*, and I may here mention that the *Echinococci* were in full life, and remained so for three days, until, in fact, the fluid in which they were contained had become slightly offensive.

It will conduce to clearness perhaps, if I state in successive order I. What I saw myself. II. The theory of the formation of the *Echinococcus*-cysts, and of their relation to other forms of Entozoa, which I have to offer. III. What has been done hitherto.

I. The cysts are nearly spherical vesicles having a very elastic proper wall; so elastic, in fact, as to exercise a continual tension upon the contained fluid, which, if the cyst be pierced, spurts out in a jet, for some time.

The outermost layer of the cyst is an adventitious membrane, formed by the infested animal around the *Echinococcus*-cyst, as it would be developed round any other foreign body; with this I have nothing to do. Within this, and in nowise adherent to it, follows the proper wall of the *Echinococcus*-cyst, which must be carefully distinguished into two portions. The outer is thick, yellowish and constituted by a great number of delicate, structureless laminae composed of a substance closely resembling Chitin. It is to this laminated membrane that the elasticity of the cysts is due—and it must be regarded as precisely analogous to those structureless cysts which surround the pupa forms of *Distomata* imbedded in the body of snails, or to those similarly structureless cysts which enclose the encysted *Tetrahynchi*, and which Van Beneden saw in course of formation by a process of exudation, around the Scolex form of those worms. The innermost layer of this, which, for distinction's sake, I will call the *Ectocyst*, is whiter and softer than the others, and appears to be in course of formation.

The inner portion of the wall of the *Echinococcus*-cyst is closely adherent to the last described layer of the ectocyst, but may, with great care, be separated from it, when it is at once evident that there is no organic connexion between the two; this layer may be very conveniently termed the *endocyst*—it is the only active living part of the whole wall of the cyst, and represents the proper body-wall of the animal. It is very pale and delicate, and not more than $\frac{1}{2000}$ of an inch thick (Pl. XXVIII. fig. 5). It is composed of very delicate cells $\frac{1}{5000}$ of an inch in diameter, without obvious nuclei, but often containing clear, strongly refracting corpuscles, generally a single one only, in a cell. These corpuscles appear to be solid, but by the action of dilute acetic acid, the interior generally clears up very rapidly, and a hollow vesicle is left of the same size as the original

* I beg here to express my obligations to the Secretary of the Zoological Society, without whose kind recollection of a wish to examine fresh Entozoa, which I had expressed, I should not have had the opportunity of making the observations contained in the present paper.

corpuscle. *No gas is developed during this process*, and sometimes the corpuscles are not acted upon at all by the acid, appearing then to be of a fatty nature. A strong solution of caustic ammonia produces a concentrically laminated or fissured appearance in them. Under pressure, and with commencing putrefaction, a number of them sometimes flow together into an irregular or rounded mass.

The inner surface of the endocyst is sometimes irregularly papillated like a glandular epithelium in consequence of the prominence of separate cells (Pl. XXVIII. fig. 5), or its surface presents an even contour, from the presence of a structureless membrane, which varies in thickness, and seems to represent the inner portion of the blastema, elsewhere slightly granular, in which the cells are imbedded (Pl. XXVIII. fig. 2).

Solitary hooks are scattered over the inner surface of the endocyst. I thought at first that they had fallen from the *Echinococci*; but it is with some difficulty that, even by the aid of pressure, the hooks can be so detached from them; and furthermore the hooks in question had generally the appearance of those forms found in the younger *Echinococci*, from which there is still greater difficulty in detaching them. I conclude then that these hooks are developed where they are found, and that they represent a sort of attempt to develop an *Echinococcus* which has gone no further. Within the substance of the endocyst one may see here and there traces of clear delicate vessels, such as those which will be described in the secondary cysts; but probably in consequence of the granular nature of the membrane, they are rarely visible.

In describing the development of the *Echinococci*, it will be necessary to return to this endocyst—at present I pass to the contents of the cyst. This is a clear, colourless, serous liquid, in which two kinds of bodies are found floating, *a. Echinococci*, and *b. secondary cysts*.

a. Echinococci (Pl. XXVIII. fig. 1). To avoid circumlocution, I restrict this term in the present place to what are commonly called the *Echinococcus*-heads.

The *Echinococci* are minute, oval bodies, varying, according to the state of contraction in which they are found, from $\frac{1}{200}$ — $\frac{1}{80}$ th of an inch in their long diameter.

When fully extended, the *Echinococci* are divided by a constriction into two portions; an anterior somewhat conical part, and a posterior oval portion, notched at the extremity; attached to the posterior section, and, as it were, sunk in the notch, there is a small appendage of variable form, which usually appears to be clear and somewhat oval or pyriform, with an irregular ragged extremity.

The body of the *Echinococcus* consists of a very clear transparent substance, slightly granular or dotted internally, and limited externally by a well-marked structureless layer. Forming a circle round the conical anterior extremity there are from twenty to thirty strong hooks, which sometimes appeared to be in a single, sometimes in a double row. In the latter case the hooks of the upper row alternated with those of the lower. A delicate longitudinal striation, as if pro-

duced by muscular fibres, extends from the circlet of hooks through the anterior portion, becoming spread out and lost in the posterior.

The hooks (fig. 3) were about $\frac{1}{700}$ th of an inch in diameter. Their outer half was formed by a strong, curved, conical claw, the inner half by a somewhat crooked process with a blunt end. From the posterior surface of the junction of these two portions a strong rounded spur passed backwards and gave the hook additional firmness in its place. The hook contained a cavity, a process of which passed into each of its portions. Altogether it was not unlike the thickened liber-cell of of a plant.

Behind the circlet of hooks, the shape of a transverse section of the body is quadrilateral, and at each of the four corners a large rounded disc with a more or less flat surface is to be seen,—the sucker. In structure, when unaltered, the suckers appear to be homogeneous, with granules and two or three of the peculiar corpuscles to be described immediately, imbedded in their substance. Under the action of acetic acid, however, a radiated fibrillation frequently became visible.

Scattered through the substance of the *Echinococcus*, and giving it a very peculiar dotted appearance under a low power, a number of oval, strongly refracting corpuscles may be observed. They are very uniform in size, and have a long diameter of about $\frac{1}{2500}$ th of an inch. They are what have been called the *calcareous corpuscles* of the *Echinococcus*;—inasmuch, as in the *Cysticerci* and other cystic worms they have been observed to be converted into carbonate of lime; but I believe that this is entirely a result of that peculiar degeneration to which the cystic Entozoa are so liable, and that, in the young and normal adult state, these peculiar corpuscles (which are found in all the *Cestoidea* and *Cystica*) are never calcareous, but are composed of an albuminous substance.

The mistake has arisen, I think, from two causes. In the first place, in old cystic worms these corpuscles are frequently converted into a calcareous substance, although they retain their transparency and strongly refracting powers; and secondly, because when acid is added to a number of *Echinococci*, gas is very commonly developed from calcareous substances contained either in them or in the fluid in which they swim; at the same time the action of the acid rapidly causes the corpuscles to become clear vesicles, so that nothing seems more natural than to connect the one circumstance with the other.

Having paid great attention to the process, however, I can decidedly affirm—

1. That acetic acid dissolves out the contents of the corpuscles in young and fresh *Echinococci*, without the least evolution of gas from them; and that the same assertion holds good of the corresponding corpuscles contained in the spirit specimens of *Tænia* and *Bothriocephalus* which I have examined.

2. That caustic ammonia produces little cavities and sometimes a concentric lamination in these bodies.

And, 3rdly, that in a spirit specimen of an *Echinococcus* from the No. CCXLV.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.

Panther (which Dr. Hyde Salter kindly lent me), the corpuscles appeared vesicular without the action of any reagent.

It may be said then, that the peculiar strongly refracting corpuscles of the cestoid and cystic Entozoa usually contain an albuminous substance, and sometimes a fatty matter, but that this is very liable to become replaced by a calcareous substance.

Homologically, I think they are identical with the peculiar, elongated, strongly refracting, solid bodies, contained in the skin of both the *Dendrocoele* and *Rhabdocoele Turbellaria*, which in some marine *Planaria*-larvæ, according to Prof. Johannes Müller, are developed into true thread cells, similar to those of the hydroid Polypes. The thread cell of the latter is equally developed as a secondary deposit within a vesicle (nucleus?) contained in the cells of the body; the only difference would be, that whereas in the Polype the succeeding internal deposit takes place in the form of a spiral thread, in the cestoid or cystic Entozoon it takes place as a succession of simple layers, until the vesicle is full.

Aware of the discoveries that have been lately made by Siebold, Van Beneden and Guido Wagner, as to the extent to which the water vascular system is developed in the Cestoid Entozoa; and unacquainted with what had been observed by Dr. Lebert* (*vide infra*), I particularly endeavoured to detect, in the quite fresh *Echinococci*, some evidence of its existence, and I was so far successful, that I could very readily observe in several specimens (examined on the first day) a number of the peculiar flickering cilia so characteristic of this system of vessels wherever it exists. In spite of all my endeavours, however, I could trace nothing of the vessels themselves, in which, by analogy, one has every reason to believe the cilia are contained†. In one *Echinococcus* I observed six of these long flickering cilia in the positions indicated by the short wavy lines in fig. 1 (Pl. XXVIII.). They were so distinct as to be perfectly measurable, their length being about $\frac{1}{35000}$ th of an inch. They were excessively delicate, but broader at the fixed than at the free end, and they completely resembled the corresponding organs in the *Rotifera*‡, *Naidæ*, &c.

Professor Owen has stated (article *Entozoa*, Todd's Cyclopædia, 1839) that the *Echinococci* (from the Pig) which he examined, moved "freely by means of superficial vibratile cilia," p. 118. There were certainly no such cilia upon the *Echinococci* of the Zebra.

The movements of the *Echinococci*, so far as I witnessed them, were confined to slow, undulatory, peristaltic contractions. I found numbers in every stage of contraction, but I could not observe any actually performing the process. The head with the hooks, is drawn

* Prof. Virchow, and the colleagues before whom he laid his observations upon the occurrence of cilia in the pedicle of *Echinococcus* (*vide infra*), appear equally to have overlooked Dr. Lebert's excellent paper, although it is contained in Müller's Archiv for 1843.

† In the *Planaria torva* I have similarly observed the cilia but not the vessels.

‡ See the essay by the author on "*Lacinularia socialis*, &c. &c." in the Microscopical Journal, No. 1, 1852.

in first, as one meets with many forms in which the suckers only protrude at the extremity, like four knobs. The suckers then follow and are turned completely in, so that their proper outer surfaces look towards one another, the coronet of hooks lying beneath them. In this state, which has been so often described, the animal has not more than half its previous length, and takes on a great variety of forms, oval, rounded, heart-shaped, &c. Instances of these varieties are figured in both plates.

b. The secondary cysts.—When the fluid contained within one of the large *Echinococcus*-cysts is emptied into a glass vessel, it is at first turbid with minute white bodies, but these rapidly subside and form a white sediment at the bottom of the vessel. These white bodies vary in size from $\frac{1}{30}$ th of an inch in diameter downwards to $\frac{1}{100}$ th. They are the secondary cysts.

Under the microscope these bodies are seen to be delicate spheroidal sacs, containing *Echinococci*. The largest examined (Pl. XXIX. fig. 9) had at least thirty of these in its interior. It consisted of a very transparent structureless membrane, apparently lined by a delicate granular film, which was most distinct near the pedicles of the contained *Echinococci*. These *Echinococci* in fact were not free like those contained in the primary cyst, which I have previously described, but each was attached by a delicate cord, more or less resembling the "appendage" of the free *Echinococcus*, to the inner wall of the secondary cyst (Pl. XXIX. fig. 8), and radiated thence inwards. These *Echinococci* resembled in all respects those previously described, except that I could observe no ciliary motion in them*; they were in all conditions of protraction or retraction, and exhibited the ordinary movements. None were ever found free in a secondary cyst, and the members of each cyst, as well as those in different cysts, were as nearly as may be of the same size and degree of perfection.

The space left between them in the interior of the secondary cysts was sometimes filled with a clear fluid, and at others more or less obscured by granules. In none of those observed by me was there any trace of the peculiar mode of development of the contained *Echinococci* from the granular contents of the secondary cysts described by Von Siebold (*vide infra*).

The membrane of these cysts was traversed by a meshwork of fine clear delicate vessels, with distinct walls and about $\frac{1}{10,000}$ th to $\frac{1}{16,000}$ th of an inch in diameter. These were not folds, as their lumen could be clearly seen at the edge of a cyst (fig. 8). They terminated in a somewhat wide space at the base of the pedicle of each contained *Echinococcus*, and in one instance I traced a vessel for some distance into this pedicle. There were no cilia nor granules contained in these vessels, but they precisely resemble those canals of which traces were seen in the Endocyst, and their development will, I think, show that they are identical with them.

* This may well arise from my not having examined them till the 28th. Lebert appears to have found the observation of the cilia to be favoured by the interposed membrane of the secondary cyst (*vide infra*).

I may anticipate so far as to say that I believe that these vessels represent the water vascular system of the parent-cyst.

A dark spot may be observed upon the surface of fig. 9. This was a blunt yellowish wrinkled process, like that represented in the lower portion of fig. 7. It was the only projection of the kind in this specimen.

When such a sac as this is burst the *Echinococci* become everted, and the secondary cyst turns itself inside out, so that the *Echinococci* appear to be seated like Polypes upon a central stem. This curious peculiarity has led to much misconception as to the mode of their attachment *within* the cyst. Von Siebold, however, pointed out the true nature of this process as far back as 1837* (*vide infra*).

The smallest free secondary cysts varied in size, as I have said, down to $\frac{1}{100}$ th of an inch, when they contained only four *Echinococci* (Pl. XXIX. fig. 6). These, however, were quite as large as those in the largest secondary cysts.

The structure of the middle-sized and small vesicles was in most respects the same as that of the large ones, but there was this difference, that they possessed, attached to their outer surface, by pedicles, a variable number of oval bodies of the same average size as the *Echinococci* or less, but presenting a yellow wrinkled appearance, containing very few corpuscles, often none, and either exhibiting no trace of the circlet of hooks (fig. 6) or offering only a few, dark irregular and withered looking ones (fig. 7). It was impossible to confound these *external* bodies with accidentally everted *internal* heads, three of which are represented at the upper part of fig. 7; the appearance of the two being more markedly different than even the figure represents it.

I cannot help thinking that these withered *Echinococci*, for that, as will be seen presently, is what they really are, are what Mr. Erasmus Wilson has figured as developing forms (*loc. cit.*).

Development.—We have found free *Echinococci* and free secondary cysts contained in the fluid of the primary cyst: how do they come there? To answer this question we must return to the endocyst. I found adherent to, and growing from it, *a.* fixed *Echinococci*, and *b.* fixed secondary cysts.

a. Fixed Echinococci.—These, in various stages of development, are scattered all over the inner surface of the endocyst, as in the diagrams E. and F. (Pl. XXIX.)

Elongated elevations of the endocyst (Pl. XXVIII. fig. 5) are first seen: within these the circlet of hooks and then the corpuscles make their appearance: the elevation becomes a papilla, and the papilla, gradually constricting itself at the base, becomes the oval *Echinococcus*, attached by a narrow pedicle. In this state the slightest touch is sufficient to separate the pedicle from the endocyst, and then the *Echinococcus* is set free. The pedicle contracts upon itself so as to

* The *Echinococci* are figured in this everted state by Chemnitz (quoted by Siebold, art. *Parasiten*, Wagner's Encyclopædia. &c.), by Erasmus Wilson (Medico-Chir. Transactions, 1845), and by Busk (Microscopical Transactions, 1846).

have a rounded form, but it very often betrays its previous adherence by the ragged fragments of the endocyst, which it carries with it.

Whether this is properly a normal process in the *Echinococcus* it is difficult to say, but as Dr. Guido Wagner and Van Beneden have shown, it occurs normally in the *Tetrarhynchidæ*, and it exactly resembles that detachment of the "tail" from the *Cercaria*, which takes place in the *Distomata*.

As little is it known whether the *Echinococci* undergo any further development. The suggestion first made by Delle Chiaje, that they may dilate into cysts and develop young *Echinococci* within themselves, appears to me highly improbable; and it is an hypothesis which is not needed to account for the secondary cysts.

b. Fixed Secondary Cysts.—The development of these indeed, takes place in such a manner as to preserve the homological relations of the *Echinococci* to the exterior of the parent. The secondary cysts, in fact, are thus formed: *Echinococci* are developed not only from the inner surface of the endocyst, but from its outer surface (Pl. XXVIII. fig. 4). Their growth is probably accompanied by that of the endocyst itself, which thus becomes raised up from the ectocyst and projects into the general cavity (fig. 5). Of course any internal *Echinococci* which happen to be attached to this part of the endocyst are raised up with it (figs. 4, 5): they may be fewer or more according to circumstances. The neck of attachment of the secondary cysts gradually narrows (fig. 4), and at last the secondary cyst, whose size depends entirely upon the number of *Echinococci* developed under the endocyst at one spot, is detached and falls into the cavity. So long as the secondary cyst remains attached, its external *Echinococci* have the normal clear appearance, and are in full health; but when once it is separated, they appear rapidly to wither away and become yellow, losing their hooks and their corpuscles, and eventually disappearing. The original point of attachment of the sac remains as an obtuse cicatrice.

Von Siebold, who has beautifully described the development of the secondary cysts, has, I think (*vide infra*), mistaken the *one* mode of development of the *Echinococci* outside the endocyst for the *only* mode. He appears to have seen the endocyst, when he describes the "delicate membrane in which the young *Echinococcus*-heads are enclosed," and to *assume* merely, that this membrane bursts and sets the *Echinococcus* free upon the inner surface of the parent cyst. Understanding the mode of development to be as stated above, it is easy to comprehend how it is, that the *Echinococci* are so nearly at the same stage of development in all the secondary cysts; and that this stage has no relation to the size of the cysts. The existence of the external *Echinococci* upon the secondary vesicles in this way also, becomes not only intelligible, but almost necessary.

II. The theory which I have to offer of the nature of the *Echinococcus*, is based upon three facts which are now well established. 1st. That young Cestoid Worms, which, from some cause or other, have passed into any other part of the organism of the animal upon which they are parasitic, than the intestine, become abnormally

dilated, at their posterior extremity; and the anterior end may be retracted into the sac thus formed, which then invests it like a double serous sac—a structureless investment may be excreted round this encysted worm or it may not. Such an altered Cestoid Worm as this is called a *Cysticercus*.

2ndly. A dilated Cestoid worm, such as has been just described, may develop new “heads” with suckers and hooks all over its outer surface, never developing any upon its inner surface. Such a Cestoid worm is the *Cænurus cerebralis*.

3rdly. The Cestoid worms all possess the power of gemmation (or it may be called fission) in their unaltered state: and Bendz (Isis, 1844) has distinctly shown that the vesicular extremity of the *Cysticercus* gemmates. Processes are formed and thrown off, and these develop appropriate heads and hooks, becoming complete *Cysticerci*.

Bearing these facts in mind, it is I think very easy to account for the *Echinococcus*-vesicles. The surfaces which produce the *Echinococci* must be both external; the *Echinococcus*-cyst therefore does not answer to the simple cyst of the *Cænurus*, or of the protruded *Cysticercus*; but to the double cyst of the retracted *Cysticercus*, the upper half of whose proper outer surface forms the inner wall of the cyst in the retracted state (see Diag. D. Pl. XXIX.).

Suppose the cyst, thus formed, to dilate and to develop a multitude of heads upon this upper half of the outer surface, after the analogy of *Cænurus*: then the two walls being pressed together into one, it will appear like a simple cyst covered with heads internally (Diag. E.).

If, however, at the same time, in complete correspondence with *Cænurus*, heads have been developed over the whole outer surface, we have the primary *Echinococcus endocyst* (Diag. F.).

Now the cyst may grow out at a particular point, and so form a bud, which is cast off externally. This takes place in the *Echinococcus* of Oxen. But if it have surrounded itself with a dense cyst, analogous to that of the encysted *Tetrarhynchidæ*, such external budding cannot take place; and if the local growth takes place at all, it will produce a projection internally, and the internal fixed secondary cyst will be produced. These, narrowing at the neck and detaching themselves, become the free secondary cysts as was shown above.

The *Echinococcus* then is a species of *Tænia* which has become dilated and encysted; which has subsequently produced heads all over its external surface, and finally, budding, casts off its vesicular processes internally, because it has no exit for them externally.

Echinococcus is thus the most complex form of that change which young Cestoid Worms are liable to undergo if they wander from their proper nidus; the combination of hooks with suckers refers it to the genus *Tænia*, to which *Cænurus* and *Cysticercus* may by similar reasoning be shown to belong; and, therefore, like these two latter genera, it must, as a genus, be abolished. It is probable however that *Cysticercus*, *Cænurus* and *Echinococcus* are modifications of distinct species, or groups of species, of the genus *Tænia*; and are

not mere varieties of one species produced by difference of locality. They are all three found in the brain, for instance.

As to the genus *Acephalocystis*, there is good reason for believing, that all genuine specimens of it are *Echinococcus*-cysts which have either not developed heads, or in which they have been overlooked.

The converse of the anatomical evidence as to the identity of *Echinococcus* with a modified *Tænia*, has just been supplied by some very beautiful researches of Von Siebold's, published in the *Annales des Sciences* for 1852 (or *Annals of Natural History*, December 1852). Von Siebold gave to young puppies spoonfuls of *Echinococcus*-cysts in milk. Upon opening them after a short time, he found *innumerable Tænie attached all over the surface of the intestine*. The cysts had been digested, but the living *Echinococci* had resisted the action of the stomach, and, freed from their imprisonment, had begun to develop joints. Growth had not gone on sufficiently to enable the learned Professor of Breslau to determine the species. He promises, however, a continuation of his researches; and it is to be hoped that we may soon have a complete clearing up of the difficulties with which helminthologists have so long been puzzled, from his able pen*.

III. The literature of *Echinococcus* exhibits a singular instance of the manner in which naturalists delay their own progress, by not attending to what has been done by their predecessors. Goeze wrote in 1782, and effectually demonstrated the cestoid relations of the *Echinococci*, as may be seen by the following extracts from his beautiful work (*Versuch einer Naturgeschichte der Eingeweidewürmer*); nay, before his time, Pallas had on very good grounds conjectured the same thing, and yet half a century afterwards we find this all forgotten, and speculation rife as to the nature of the *Echinococci*.

Goeze thus describes the *Echinococcus*-vesicles (*op. c.* p. 258 *et seq.*):

“C. The small social granular Bladder tape-worm (*Blasen-bandwurm*): *Tænia visceralis socialis granulosa*.”

“This is as it were an intermediate form between the great globular Bladder tape-worm (*Cysticercus*), and the many-headed worm found in the brain of staggering Sheep.”

“I had already read what Pallas supposes on this subject in the ‘*Neue Nordische Beyträge*,’ i. p. 85, when, by a lucky discovery, I made the whole matter out.”

“Upon the 1st of Nov. 1781, I met with an excessively distorted Sheep's liver, which was so beset and penetrated by large and small watery vesicles,—the former as large as hens'-eggs, the latter as hazel-nuts,—that, externally, one could discern hardly anything of the substance of the liver.”

“The animal itself was almost perfectly healthy. In its total size, this monstrous liver was about equal in breadth to the two hands; and its length was about half an ell: the weight however was four pounds. I was obliged to divide it into two portions in order to be able to get it into a large jar (3 inches, glass) with spirit. When I

* A full account of Siebold's investigations has, in fact, appeared in Siebold and Kolliker's ‘*Zeitschrift*’ for 1853, under the title, “*Ueber die Verwandlung der Echinococcus-brut in Tænen*.”—T. H. April 1854.

pricked one of the vesicles with a needle, the water spirted out, as out of a fountain. I observed, however, that the distended vesicles contained nothing beyond a mere lymph and possessed no special internal vesicle. In separating the one portion of the liver I could not avoid damaging some of the vesicles contained in its interior. Out of these tolerably hard leathery external vesicles, fell bluish, callous (kallöse), internal vesicles, which were still closed. In their substance indeed they were somewhat softer than the outer vesicle; but still far more cartilaginous than the vesicles of the globular, many-headed bladder-worms. On opening these there was found internally in different places a greyish granular matter like the smallest fish roe, which was united to a very delicate mucous membrane, [which] in water however immediately disappeared, so that the granules swam about by themselves. In a vesicle as large as a dove's egg there were thousands, so small that they could hardly be distinguished by the naked eye. Under No. 4. Tub. A of my microscope I could already perceive the organization of these corpuscles. Their form varied greatly; sometimes heart-shaped with an indent above and a dark line; sometimes pitcher-shaped, with two round knobs above, at each side one; sometimes like a horse-shoe with a short dark middle line; sometimes like a rounded handle, with an indent above and with two knobs laterally, and anteriorly rounded off with a dark circle. When I used No. 1. Tub. A, I saw clearly that they were true tape-worms. The body flat with dark dots; anteriorly four suckers, and on the obtusely rounded proboscis, the double circle of excessively small hooks; behind, however, in each there was a small excavated indentation like an anus. The others were contracted in quite peculiar forms, and the dark median streak was the hook circle. Under the compressor, the four suckers, the circle of hooks and the points become much clearer. In these worms I have observed a circumstance which I have perceived in no other kind of bladder-worm; namely that on pressure the delicate hooks are detached and float about freely.

“This kind of bladder-worm is distinguished then from that inhabiting the brain of staggering sheep by the following circumstances:—

“1. That the vesicles with the granular matter or with many thousand infinitely small worms, are covered by a strong leathery external vesicle in which they lie free.

“2. That their roe-like material swims about in the inner vesicle in a clear lymph, and the single worms are only united together by a delicate mucous membrane, but are not as in those, essentially adherent to the bladder, and not even to their [own] membrane.

“3. That each of these granules or worms is several hundred times smaller than one of the white corpuscles or worms in the central bladder of the staggering sheep.

“This is then the same, but now explained phænomenon, which the acute Pallas has already observed; but has left without elucidation.

“In the ‘Stralsund Magazine,’ 1. St. p. 81, he has already directed the attention of observers to these points:

“‘Whoso will consider the above description of the true bladder-worm, will not perhaps with M. de Haen deny to worms all partici-

pation in the origin of watery tumours and of Hydatids, at least it seems to me very probable that the unattached (unangewachsene) watery bladders seen by many observers in the human body—most frequently in abnormal cavities in the liver—are caused by a worm similar to, if not identical with, our bladder-worm, I say from a worm *probably resembling our* bladder-worm; for we find in the liver and lungs of Oxen and Sheep another wonderful kind of watery bladder, which seems to arise from nothing but some kind of animal germ; but however is widely different from our bladder-worm, and cannot have arisen from it.’ ”

Pallas, after describing some of the Hydatids, goes on to say :

“The water-bladder itself consists of a white, hardish, quite homogeneous membrane, which becomes thinner towards the caudal extremity; wherever it is lacerated it folds back, and may be best compared with a section (as thin as paper) of a boiled cartilage of a young animal. Within, this external strong membrane is lined by a delicate structure or membrane, which is very easily separated from it, and is beset with a great number of small, white, commonly round, or oval, corpuscles. The corpuscles consist, as the microscope shows, of longish globules united together, whose substance appears to be dotted.”

Subsequently (p. 261) Goeze quotes from the ‘Nordische Beyträge,’ 1. St. p. 83, thus :

“It is probable that the unattached hydatids which are at times observed in the human body (are), either of the same kind as the proper bladder-tape worm, or are the same as those singular watery bladders, which I have observed and described in the liver and lungs of diseased Calves and Sheep, and which are most certainly also to be ascribed to a living creature, and are not indistinctly organized (at least if we consider the inner membrane strewed over with granular globules).

“On reading through Leake’s treatise upon the ‘Staggers in the Sheep,’ p. 85, it seems very probable to me that the bladders in the brain are more similar to those which I have described in the lung and liver in Sheep and Calves, than to the bladder-worm which Tyson and Hartman have described before me (our globular one); nay perhaps, that they even constitute one genus with the former. The small worm provided with a circle of hooks and four suckers, in these vesicles—might be a development of the globules observed by me.

“I have at present no opportunity of examining these vesicles in the fresh state. Perhaps on applying a stronger magnifying power the granules might exhibit more organization.”

Consequently, Pallas did not at that time know what to make out of the granules of these vesicles. The peculiar organization of these he did not himself see, as I have now discovered, described and figured it. To whom then belongs the first and true discovery of the nature of the granules in the internal membranes of the singular Hydatids of the livers and lungs of Calves and Sheep?

But I wish that I could throw more light upon and explain the mode of origin of these vesicles, and upon the œconomy of the many thousand single worms socially united in a single bladder. Do they

grow? do they disperse themselves? does each build its own dwelling? or where do they remain? shall our successors learn nothing on these matters?

Goeze's figures are very good.

The commonly received view of the relation between the cysts and their *Echinococci* appears to have been first advanced by Delle Chiaje in his *Elmintografia Umana*, p. 30*.

"The said worms, oval, narrowed at the two extremities and enlarged in the middle, are scattered irregularly over the interior of the vesicle. The extremity of the head is garnished with a crown of hooks deprived of suckers. In proportion as they enlarge, these little microscopical bodies take on, little by little, a spherical form, the hooks become detached, and new *Echinococci* are produced in such little bodies, which have transformed themselves into Hydatids. The new worms are the children (figliuolini) of the primitive Hydatid, which was a similar microscopic body. They have a proper vitality, different from that of the vesicle which contains them."

Müller, 'Jahresbericht,' 1836, describes the *Echinococcus*-cysts and their contents found in the urine of a young man labouring under renal disease.

The cysts had a laminated outer coat; some contained *Echinococci* and some none, but in other respects they were completely alike. The *Echinococci* exactly resembled the ordinary figures.

"In a few of the free ones, a trace of a membranous cord, looking as if it had been torn off, appeared at the posterior end of the body; as if the worms had at an earlier period been fixed."

Müller could not make out whether the *Echinococci* were fixed to the interior of the secondary vesicle or not.

Tschudi, 'Die Blasenwürmer, 1837,' observed the retrograding yellow *Echinococci*, which he assumes to be returning to the vesicular form. He considers that the "corpuscles" are ova, and that by their development in the interior of one of these retrograded *Echinococci*, the secondary cysts are formed.

Gluge, 'Annales des Sciences Naturelles, 1837,' describes the corpuscles of the *Echinococci* very carefully and minutely. He was the first to notice the peculiar structure of the endocyst. He says, "I have constantly seen in it a kind of arborization very similar to the formation in fibrinous exudations during the first stage of inflammation. We see these transparent bodies with slightly irregular contours resembling empty blood vessels and ramifying like them. I do not know whether these are true vessels, I merely draw attention to the fact."

In the same year (1837) the second edition of Burdach's 'Physiologie' appeared. It contains an admirable chapter by Von Siebold, upon the development of the Entozoa. Burdach's work is so little known, and so inaccessible in this country—that I think it worth while to subjoin the whole of what Von Siebold says upon this subject:—

* *Compendio di Elmintografia Umana*. Napoli 1825. Compilato da Stephano Delle Chiaje.

“In the development of the *Echinococci* also, much has remained obscure. We must in them always distinguish two things; the parent vesicle, and the proper *Echinococci* enclosed within this. The maternal vesicle is covered internally by an excessively delicate epithelium, in which are contained corpuscles similar, though here generally elongated, to those which we have found in the neck of *Cœnurus*. In the fluid which the maternal vesicle encloses, we meet with a few *Echinococci*, which when they have everted their coronet of hooks and their suckers, allow nothing to be perceived in their interior but a few scattered glassy corpuscles. These *Echinococci* evidently arise from the inner surface of the parent vesicle. My own observations hereupon have been made upon *E. hominis*, *E. veterinorum*, and a new species which, since the number of its suckers varies very much, I will call *E. variabilis*. On examining the inner surface of the parent vesicle we see little vesicles attached here and there, which contain a finely granular substance; out of this mass the *Echinococci* proceed (hervorkeimen), sometimes only one, sometimes two, six, seven or more. A portion of the granular mass becomes, in fact, sharply marked off, forms a small roundish body, which, however, by one of its ends, still clearly passes into the rest of the substance; the rounded body gradually takes on a pea shape, the constricted portion elongates, and the body, which has now assumed a more oval form, is connected only by a delicate viscid thread with the mass from which it sprang; we soon now observe in the interior of the body the circlet of hooks and the glassy corpuscles. The *Echinococcus*-head thus far developed now begins to move—everting and retracting its suckers and hooks; the whole body being at the same time sometimes elongated, sometimes contracted. The development of the *Echinococci* having proceeded to this stage, the delicate membrane in which they are enclosed bursts. The young *Echinococci* do not immediately fall out, for they are all connected to the inner surface of the membrane, which until now has enclosed them, by means of a delicate cord or process of the latter, which penetrates at the posterior extremity of the *Echinococcus*, through a pit, into the interior of the body of the *Echinococcus*. The pit looks almost like a sphincter, holding just that cord of the membrane; only after an interval do the cords and the bodies of the *Echinococci* become separated. The mode of connection of these cords with the bodies of the *Echinococci*, and their separation from them, reminds one completely of the relation which the bodies and tails of the *Cercariæ* have to one another. The membranous covering of the young *Echinococci* wrinkles up immediately when it is torn. The *Echinococci* become everted, and so form a rounded heap, in the middle of which the collapsed investment lies hidden, the *Echinococci* being attached to it like the polypes upon a polypidom.

“Such masses of *Echinococci* either remain for a long time hanging to the inner surface of the parent vesicle, or they become detached from it before the single *Echinococci* have separated from the wrinkled membrane. The granular mass contained in the vesicles is probably comparable with nothing else than with a yelk mass, which

supplies the heads with the substance necessary for their development through those fine cords. For the rest, I will not undertake to decide whether all those larger and smaller vesicles, which contain *Echinococcus*-heads and float about free among fully-developed *Echinococcus*-heads in the cavity of the parent vesicle, are detached from the wall of the latter, or whether some few of them do not arise from the free *Echinococcus*-heads themselves, which have developed *Echinococcus*-germs in their interior, and afterwards become distended into vesicles by them; I was often surprised, in fact, to find upon free vesicles containing *Echinococcus*-heads, hooks attached, perhaps remnants of the destroyed circlet of hooks. In such vesicles of *E. variabilis*, in fact, I believe I could trace remains of the suckers. With greater difficulty can we understand the mode of origin and propagation of the maternal vesicle of the *Echinococci*. Since in *Echinococcus hominis* we often find smaller hydatids enclosed within larger ones, we must believe that the external hydatid is the parent in which the others have been subsequently produced. In what manner, however, this enclosure has taken place, I must leave as much unsolved as the origin of the parent vesicle itself."

The next step was made by Dr. Lebert, in his excellent paper (unfortunately without figures), "Einige Bemerkungen über Blasenwürmer," in Müller's Archiv for 1843. From this I make the following extracts:—

"In the most, even freshly examined hydatids, the animals no longer move. Yet not unfrequently, if many vesicles be examined, living groups may be met with. The movement of the animal, while still in the maternal vesicle, consists partly in turning upon its axis, partly in a wavy contraction, comparable to a peristaltic movement. In the interior of these yet living and moving animals I have perceived ciliary motion very clearly. It appeared in the whole interior of the animal, and I could observe it for hours together. At first I could with difficulty distinguish the single vibrating cilia; yet, partly after partial evaporation of the fluid in which the animals were contained, partly by modifying the light with a very fine perpendicular diaphragm, I could succeed in seeing the cilia themselves, which are slightly curved and somewhat hook-like, and hardly more than $\frac{1}{800}$ mm. in breadth. I have seen the single cilia with especial distinctness towards the margin of the animal; commonly, however, they are indistinct, on account of the contemporaneous vibration of a certain number of cilia, which resemble in their motion a field of corn agitated by the wind. The observation of this ciliary motion was perhaps rendered more easy by the circumstance, that I observed the animals still adherent to the finely granular membrane which forms the parent vesicle, and which, in all probability, favourably modified the light."

"As to what concerns the development of the vesicles themselves, it seems to go on in the following manner:—upon the inner wall of a cyst which contains *Echinococcus*-cysts, secondary cysts are formed, which, after they have attained a certain grade of development, be-

come detached from the inner wall of the larger cyst, and fall freely into their cavities, but still show the remains of their attachment in a slightly pointed place: on the inner surface of these secondary vesicles tertiary ones are now formed in the same manner, and so on. The hydatid sacs then arise by a kind of endogenous formation similar to that which Prof. Müller has already so beautifully described in the development of a peculiar kind of hydatid tumours (Balgeschwülste)."

In his Article "Parasiten" (Wagner's Handwörterbuch d. Physiologie, bd. 2, 1844), Von Siebold, after recapitulating his view of the development of the *Echinococci* contained in Burdach's Physiologie, makes the following highly suggestive remarks:—

"Clearly as we can trace the development of the young of the *Echinococcus*, we understand very little of the mode in which the pill-box (ingeschächtelt) aggregations are produced. The multiplication of the vesicles certainly does not take place by division, nor by the formation of buds upon the outer surface of the parent cyst, as some have supposed. The hypothesis remains, that the young *Echinococci* cast off their circle of hooks, become distended, lose their suckers, and so change into little *Echinococcus*-vesicles, in which a new brood then becomes developed. I must indeed confess that I have not directly observed this process. In any case, the young *Echinococcus* must be in a fit state to wander; and if it should be made out that new *Echinococcus*-vesicles proceed from them in the interior of the parent vesicles, we might also justly assume that the young *Echinococci*, wandering into other organs, or even into other persons, may thus lay the foundation for new colonies. Whether, again, there exists a special cestoid worm provided with sexual organs, with which the *Echinococcus*-vesicles stand in the same relation as the *Cercaria*-sacs do with certain *Trematoda*, time will show. If it be so, the young *Echinococci* must change, having become separated from their pedicle, not into *Echinococcus*-vesicles, but by the elongation of the body into *Tæniæ*."

Finally, in the 'Verhandlungen der Physikalisch-Medicinischen Gesellschaft zu Würzburg' for 1850, (to which my attention was drawn by my friend Mr. Busk,) I find the following notice:—
"Herr Virchow described the ciliary movement which he had observed in the stem by which the young *Echinococci hominis* of Man are attached to the maternal vesicle,—a new observation for this genus."

I have here endeavoured to notice all those Memoirs which, at the time of their publication, made a definite addition to what was already known upon the structure of *Echinococcus*. The literature of the subject is somewhat voluminous, and hence the necessity of this limitation, and the consequent absence of any account of the valuable memoirs of Goodsir, Curling, Busk, and Erasmus Wilson, all of whom had been anticipated by the continental observers.

DESCRIPTION OF THE PLATES.

PL. XXVIII.

- Fig. 1. A single detached Echinococcus-head, with the hooks and suckers protruded. The position of the six observed cilia is indicated by the wavy lines.
- Fig. 2. A fragment of the Endocyst, with one of the abortive hooks.
- Fig. 3. Fully formed hooks from an Echinococcus-head, seen in profile and in front.
- Fig. 4. Secondary cyst still attached to the wall of the primary. The external Echinococci are seen in various stages of extension and contraction; the internal Echinococci shine through the walls of the cyst.
- Fig. 5. A similar cyst, with only one external Echinococcus. The relation of the Endocyst to the laminated Ectocyst is well seen, and the budding Echinococci on the inner surface of the former, which will eventually become external heads of secondary cysts.

PL. XXIX.

- Fig. 6. A very small secondary cyst, with the remains of its pedicle above, and of an external Echinococcus below.
- Fig. 7. Secondary cyst burst at the upper part and allowing three of the internal Echinococci to escape. The contrast of their appearance with the two dark and withered external Echinococci is well-marked.
- Fig. 8. Portion of the wall of a secondary cyst, showing the ramified vessels, and the attachment of the internal Echinococci to its interior surface.
- Fig. 9. A large secondary cyst with no external head, but with the remains of its pedicle appearing as a brownish spot.

Diagrams:—Hypothetical representations of—A. a young *Tania*; B. a *Cœnurus*; C. a *Cysticercus*; D. the same, encysted; E. a *Cysticercus*, encysted, enlarged, and developing many heads (like *Cœnurus*) from the upper portion of its outer (now inner) surface; E. a similar form, which develops heads from the lower portion of its outer (now wholly outer) surface, and so becomes an *Echinococcus*-cyst.

4. DESCRIPTIONS OF NEW SPECIES OF PALUDOMUS, A GENUS OF FRESHWATER MOLLUSKS. BY LOVELL REEVE, F.L.S.

1. *PALUDOMUS RUDIS*. *Pal. testa oblongo-ovata, solidiuscula, spira breviuscula; anfractibus superne leviter depressis, undique obsolete costellato-striatis; apertura subampla, intus callosa; fusco-olivacea, immaculata, intus alba.*

Hab. —?

A rather solid species, encircled with faint rib-like striæ, and of a uniform olive-brown colour.

2. *PALUDOMUS TRIFASCIATUS*. *Pal. testa oblonga, spira sub-elevata; anfractibus plano-convexis, undique costellato-striatis; apertura parviuscula, intus vix callosa; olivacea, fasciis tribus nigricanti-fuscis subirregulariter cingulata.*

Hab. Branch of the Ganges (*Westermann*).

It will be understood that the colour described in these species is that of the epidermis; the substance of the shell in all is of a bluish white, faintly stained with the bands, which are more strongly marked in the interior.

3. **PALUDOMUS PALUDINOIDES.** *Pal. testa oblonga, spira sub-elevata; anfractibus convexis, longitudinaliter lirato-striatis, superne leviter depressis et marginatis; apertura mediocri; virescenti-olivacea, rufo-nigricante irregulariter fasciata.*

Hab. Sikkim branch of the Ganges (*Capt. Bacon*).

Characterized by a fine sculpture of close-set longitudinal lines.

4. **PALUDOMUS ABBREVIATUS.** *Pal. testa abbreviato-ovata, solida, Neritinæformi, spira brevissima; anfractibus superne plano-declivibus, deinde convexis, lævibus; apertura sub ampla; olivacea, lineis duabus fuscis interdum obsolete cingulata, aperturæ fauce fasciata.*

Hab. Ceylon.

Of a solid *Neritina*-like form.

5. **PALUDOMUS PHASIANINUS.** *Pal. testa ovato-turbinata, Littorinæformi, spira acuta; anfractibus convexis, lævibus; apertura parviuscula; alba, rufo-fusco undique longitudinaliter undato-strigata.*

Hab. Seychelles.

This has the form, and more of the general aspect of a *Littorina* than of a *Paludomus*, but the aperture is characteristic of the latter genus.

6. **PALUDOMUS MAURUS.** *Pal. testa subacuminato-turbinata, spira prominente; anfractibus rotundatis, superne subexcavatis et obsolete lineatis; apertura parva; castaneo-fusca, immaculata.*

Hab. Branch of the Ganges (*Westermann*).

A dark chestnut species of narrower, more acuminated growth.

7. **PALUDOMUS ACUTUS.** *Pal. testa acuminato-turbinata, spira acuta; anfractibus rotundatis, ad suturam excavatis et lineatis, medio lineis incisicis cingulatis; apertura parva; virescenti-olivacea.*

Hab. near Pondicherry.

The apex of the shell, which in most species is eroded, is here sharply developed. The whorls are characterized by being encircled round the middle with conspicuous engraved lines.

8. **PALUDOMUS PUNCTATUS.** *Pal. testa acuminato-turbinata, spira acuta; anfractibus convexis, lineis incisicis, utrinque peculiariter punctatis, cingulatis; apertura parva; olivacea, nigricante hic illic maculata.*

Hab. Mauritius (*Sir David Barclay*).

Curiously punctured on either side of the engraved lines, with which the shell is encircled throughout.

9. **PALUDOMUS DECUSSATUS.** *Pal. testa acuminato-oblonga, tenuiuscula, spira subacuta; anfractibus convexis, striis minutis longitudinalibus et transversis undique subtilissime decussatis;*

apertura parviuscula, oblonga; virescenti-olivacea, fasciis tribus rufo-nigricantibus cingulata.

Hab. Ceylon (*Layard*).

Chiefly characterized by its finely decussated surface.

10. *PALUDOMUS BACCULA.* *Pal. testa oblongo-turbinata, spira prominente, anfractibus plano-convexis, lævigatis, vel, sub lente, subtilissime striatis; apertura parva; olivacea, brunneo-nigro tineta.*

Hab. Branch of the Ganges (*Westermann*).

A small dark olive turbinated species, besmeared with shining brown black.

11. *PALUDOMUS ERINACEUS.* *Pal. testa obovata, tenuiuscula, anfractibus convexis, liris muricato-squamatis spiraliter cingulatis; apertura subampla; atra, intus cærulescente, columella et apertura limbo castaneo-nigris.*

Hab. Mountain streams of Ceylon (*Layard*).

This species is closely allied to *P. loricatus*, but proves to be distinct in all stages of its growth. The shell represented in my monograph of this genus (Conch. Icon. *Paludomus*, Pl. 1. fig. 1a) as the young of *P. loricatus*, is the young of this species. In *P. erinaceus* the scales are always open, erect, and prickly. In *P. loricatus* they are closed and nodular, and the shell is of a lighter olive brown. Mr. Cuming possesses characteristic specimens of each species, from the young to the adult.

12. *PALUDOMUS LAYARDI.* *Pal. testa suboblongo-ovata, solida, anfractibus convexis, superne declivibus, costis angustis lævibus, lira intermedia, spiraliter cingulatis; castaneo-fusca; apertura subampla, intus alba, columella et apertura limbo fusco-nigris.*

Hab. Mountain streams of Ceylon (*Layard*).

A fine solid species of large bold growth, encircled throughout with narrow smooth ribs, having a fine linear ridge between them.

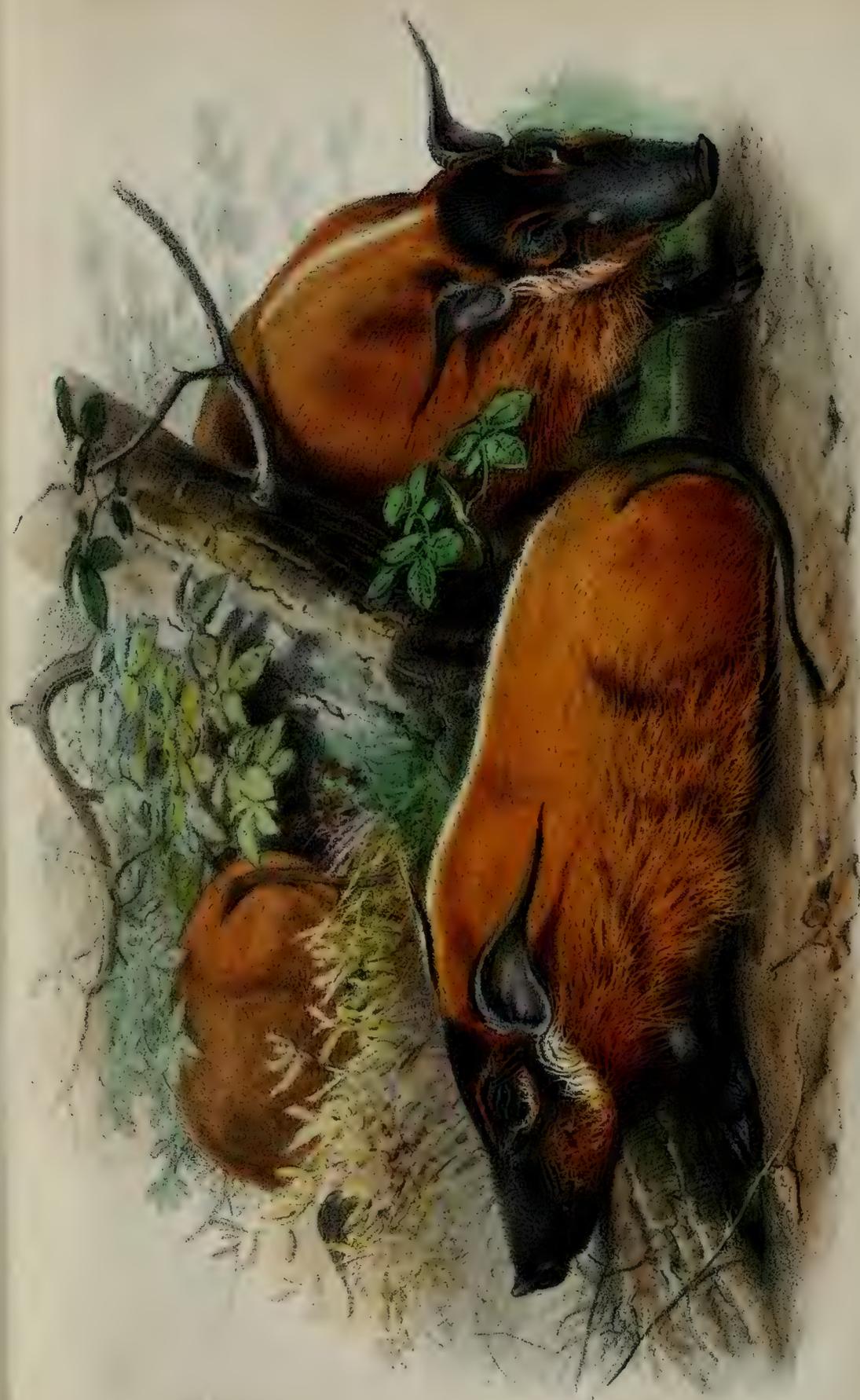
13. *PALUDOMUS ÆREUS.* *Pal. testa ovata, solidiuscula; anfractibus convexis, costis angustis annularibus subdistantibus cingulatis; olivacea, strigis nigris undatis oblique picta; apertura subampla, cærulescenti-nigro limbata.*

Hab. Mountain streams of Ceylon (*Layard*).

The ribs are more ring-like and distant than in the preceding species, and the shell is of a lighter olive colour variegated with obliquely waved black streaks.

14. *PALUDOMUS DILATATUS.* *Pal. testa suboblongo-ovata, spira exertiuscula; anfractibus rotundatis, superne vix depressis, spiraliter obscure superficialiter liratis; intense nigricanti-fusca, immaculata; apertura oblonga, inferne dilatata, intus cærulescenti-alba, bi- vel tri-fasciata, nigro-limbata.*

Hab. Mountain streams of Ceylon (*Layard*).



Allied to *P. Neritoides*, but of a more oblong form, with a more dilated aperture.

15. *PALUDOMUS CONSTRICTUS*. *Pal. testa subpyramidali-oblonga, solida, spira exserta; anfractibus lævibus vel obscurissime sulcatis, superne concavo-constrictis; olivacea, fascia nigropunctata, moniliformi, versus apicem picta; apertura ovata, callosa, alba.*

Hab. Mountain streams of Ceylon (*Layard*).

This differs from *P. conicus*, to which it is most nearly allied, chiefly by its more oblong and constricted form.

16. *PALUDOMUS CLAVATUS*. *Pal. testa oblongo-ovata, utrinque attenuata, crassa, ponderosa, spira breviuscula, conica; anfractibus lævibus conico-declivibus; nigricanti-olivacea; apertura subdilata, callosa, alba.*

Hab. Mountain streams of Ceylon (*Layard*).

Distinguished from *P. oratus* in being more gradually attenuated towards the apex.

17. *PALUDOMUS BICINCTUS*. *Pal. testa globosa vel oblongo-globosa, longitudinaliter subobscurè sulcato-striata, spira brevi; anfractibus convexis superne subdepressis, et minute spiraliter sulcatis; olivaceo-fusca, nigricante obscure bifasciata; apertura albida.*

Hab. Mountain streams of Ceylon (*Layard*).

Allied to *P. decussatus*, but of more acuminated growth.

5. ON THE PAINTED PIG OF THE CAMAROONS (*POTAMOCHÆRUS PENICILLATUS*).

BY JOHN EDWARD GRAY, PH.D., F.R.S., V.P.Z.S. ETC.

(Mammalia, Pl. XXXIV.)

This Pig was imported into Liverpool, where it remained some time, being regarded as the common Cape "Bosch Vark." It was at length purchased by the Society, and is one of the most interesting additions made during the course of the present year to the very numerous series of animals now in the Gardens.

It differs in colour and proportions from the Cape "Bosch Vark," but like it belongs to a very distinct group of Pigs from those found in Europe and Asia, and from the *Babyrussa* of the Malay Islands.

In the 'Annals and Magazine of Natural History' for October 1852, I gave a short account of this animal, and formed a genus for this group of African Pigs, to which I gave the name of *Choiropotamus*, describing the present species by the name of *C. pictus*, and it is figured under this name in the 'Illustrated London News.' Since these notices were published, I have found that it will be necessary to change both these names; the first because there is a genus of

fossil animals described by Cuvier, which has been called *Cheiropotamus*. I therefore propose to reverse the words and call the genus *Potamochoerus*. The specific name is changed because the pig appears to have been described in 1848 from a specimen in the Museum of the town of Basle in Switzerland, in a work which has not yet reached this country, but a short abstract of the description has been copied into a French Journal.

The group of *Pigs* (*Sus*, *Cuvier*) may be divided into three very well-marked genera, distinguished by their external appearance, peculiarities in the skull, and by their geographical distribution, thus:—

Genus 1. *Sus*.

The ears rounded; tail slender; face conical, simple, or with a small wart on each cheek; the hinder upper part of the intermaxillary bones simple; the upper canines coming out on the lower edge of the maxilla and then recurved. Found wild in Europe and Asia, but domesticated in all parts of the world.

This genus contains several species, and almost the whole of them are found wild in the forest, whilst some of their descendants are generally to be met with in a domesticated or semi-domesticated state. This is the case with the Pigs found in the islands of the Indian Archipelago, which have been regarded as distinct species.

I may state that it is exceedingly difficult to distinguish the species of this genus, especially from the examination and comparison of the skull. I have examined with care ten skulls of what I believe to be the European Wild Boar and its offspring, grown in this country, at the Cape of Good Hope, and at the Gambia, and twelve skulls of the Wild Boar from Continental India, and though they offer considerable variation, I cannot discover any constant easily-described character by which I can distinguish the European and the Indian kinds from each other, and this is the case with many other genera allied to the Pigs. We have in the Zoological Gardens the Wild Boar of Europe and a Wild Boar and Sow from Madras living side by side, and they have all the appearance of being most distinct species, which may be thus characterized:—

SUS APER.

Covered with crowded bristles, forming a crest on the withers; black speckled, with grey tips to the bristles; the legs hairy, black; hoofs black.

Hab. Europe, Germany.

SUS INDICUS.

Covered with scattered, more rigid bristles, more abundant on the front part of the body; pale grey, blackish on the outside of the shoulders; legs slender, covered with a few bristles; hoofs white.

Female (perhaps half-bred).—Body rather more hairy; the outer front hoof of each hind foot black.

Sus Indicus, Gray, Cat. Mam. B.M.

Hab. India, Madras.

The skulls of the Wild Hogs from Madras and the Himalaya in the British Museum all appear larger, and have the hinder part of the forehead not so high and dilated as in the common Domestic Boar, much resembling the skull of the sows of that species. They can scarcely be all from female animals of the Indian kind.

I may observe that the nasal bones of this genus appear to elongate and occupy a greater part of the length of the face in the adult than in the young animal. In the young they seldom extend beyond a line even with the large foramen on the side of the face, but in the adult they are generally produced much behind it.

Genus 2. BABYRUSSA.

The ears rounded; tail and limbs slender; face conical, simple; the hinder upper part of the intermaxillary bone smooth; the upper canines (in both sexes) coming out from the side of the jaw and bent upwards from the base, and then arched backwards, sometimes even spirally recurved. *Hab.* The Indian islands.

1. BABYRUSSA ALFURUS.

Genus 3. POTAMOCHÆRUS.

The ears elongate, suddenly tapering and ending in a pencil of hairs; face elongate, with a long protuberance on each side halfway between the nose and the eye; the tail thick, high up the rump; the upper part of the intermaxillary bone swollen, rugose; the upper canines arising from a prominent bony case on the side of the jaws, coming out on the lower edge of the jaw and then recurved. *Hab.* Africa.

Koiropotamus, Gray, Cat. Mam. B.M. xxvii.

Choiropotamus, Gray, Ann. & Mag. N. H. 1852 (not *Cheiropotamus*, Cuvier, Oss. Foss.).

1. POTAMOCHÆRUS AFRICANUS.

Black; cheeks whitish, with a large central black spot.

African Wild Boar, Daniel, African Scenery, t. 22 ♂.

Sus africanus, Schreb. Säugth. t. 327, head.

Sus larvatus, F. Cuvier, Mém. Mus. viii. 447. t. 22. Blainv. Osteog. xxii. t. 5 f. t. 8 f.

Choiropotamus africanus, Gray, List Mam. B.M. 185.

Choiropotamus larvatus, Gray, Ann. & Mag. N. H. 1852.

Sus koiropotamus, Des Moul. Dict. Class. H. N. Atlas, t. 7 ♀.

All the specimens which have come under my notice are coloured as above described. But Dr. Andrew Smith (Zool. South Africa) observes, scarcely any two specimens are of the same colour; some are brownish black, variegated with white, and others almost entirely uniform light reddish brown.

2. POTAMOCHÆRUS PENICILLATUS (Mammalia, Pl. XXXIV).

Bright red bay; face, forehead, ears and a large spot on the front of the legs black; edge of the ears, whiskers, streaks over and under the eye, and a continued sub-crested streak along the middle of the

back white; hair of the back short (black at the base), of the sides and whiskers elongate; tail very long, thick.

Sus penicillatus, Schinz, Monog. Säugth. 1848, fide Rev. Zool. 1848, 152.*

Choiropotamus pictus, Gray, Ann. & Mag. N. H. 1852.

Painted Pig of the Camaroons, Illustrated News, 1852.

Hab. W. Africa. River Camaroon. "Gold Coast, Mus. Basle," fide *Schinz*.

A fine male of this species has been living in the Gardens of the Zoological Society since September 1852.

6. ON THE HORNS OF THE SANGA, OR GALLA OXEN, OF GIBBA. BY J. E. GRAY, PH.D., F.R.S., V.P.Z.S.

Dr. Gray brought before the Society a pair of horns of these oxen, which the British Museum had lately purchased at the sale of the property of the late Earl of Mountnorris, at Arley Hall.

They are the pair mentioned by Mr. Salt in his 'Voyage to Abyssinia,' at p. 258, 4to edit. 1844, where he observes:

"There (Gibba) for the first time I was gratified by the sight of the *Galla Oxen*, or *Sanga*, celebrated throughout Abyssinia for the remarkable size of their horns. Three of these animals were grazing among the other cattle in perfect health, which circumstance, together with the testimony of the natives, 'that the size of the horn is in no instance occasioned by disease,' completely refutes the fanciful theory given by Mr. Bruce respecting this creature.

"The *Ras* having subsequently made me a present of three of these animals alive, I found them not only in excellent health, but so exceedingly wild, that I was obliged to have them shot.

"The horns of one of these are now deposited in the Museum of the College of Surgeons, and a *still larger pair are placed in the Collection of Lord Valentia, at Arley Hall*. The length of the largest horn of this description which I met with was nearly four feet, and its circumference at the base twenty-five inches.

"I shall only further observe that its colour appears to vary as much as in the other species of its genus; and that the peculiarity in the size of the horns was not confined to the male, the female being very amply provided with this ornamental appendage on her forehead, pp. 258, 259. See also Bruce's 'Voyage,' App. 1. Letters 9 & 10."

Dr. Gray observes that the horns are shorter, and more curved and lyrated than the figure engraved in t. 19, at p. 259 of Salt's 'Travels in Abyssinia,' which also appears to make them bear a larger proportion to the size of the animal than the specimen suggests; and they are quite as remarkable for their erect position on the forehead as for their size.

* I have seen the specimen in the Basle Museum, and it is certainly the species here described, only differing a little in the depth of the colouring.—J. E. G.

They and the core which supports them are very light, compared to their size, and not half the weight of the smaller wide-spreading horns of the long-horned Cape Waggon Oxen. The horns are thin, pale coloured, and of a loose texture, being worn and fibrous on the surface in several parts.

In the lightness and very cellular structure of the core, the thinness of the horny coat, and the large size, they agree with the pair of horns in the British Museum brought from Central Africa by Captain Clapperton, R.N., and Major Denham, R.E., which are figured in Griffiths' 'Animal Kingdom,' vol. iv. t. 201. f. 4; but these horns are shorter and much larger in diameter, and are spread out on the sides of the head like those of the Common Domestic Oxen, and they are very much lighter for their size than those of the *Galla Oxen* or *Sanga*.

Sir Richard Vivian has kindly informed me that he has seen a breed of cattle in Italy, with the horns rather erect, somewhat resembling those of the *Sanga* in position.

7. DESCRIPTION OF A NEW GENUS AND SOME NEW SPECIES OF TORTOISES.

BY JOHN EDWARD GRAY, PH.D., F.R.S., V.P.Z.S. ETC.

Fam. 1. EMYDIDÆ.

1. MANOURIA, n. g.

Animal unknown. Shell rather depressed; caudal plates double, separate; sternum solid, broad, produced and slightly nicked in front, notched behind, with only five pairs of broad shields; pectoral shields short, subtriangular, only occupying the angle between the outer edge of the humeral and abdominal shields; axillary shields small, inguinal larger; the areola of the discal shields central.

The depressed form and divided caudal plates induce me to place this genus in *Emydidæ*. In external appearance it much resembles the North American Land Tortoise, *Testudo gopher*, but it is at once known from that species, and all the other genera of *Testudinidæ*, *Emydidæ* and *Chelydidæ*, by the peculiar form of the pectoral shields, which at first sight might be mistaken for a very large-sized inguinal shield, if that plate were not also present.

In this respect it somewhat resembles the genus *Kinosternon*, but there the shield is only narrower at the inner end, and rather nearer to the centre of the sternum.

Various genera of *Testudinidæ* have the pectoral plate much smaller than the others; and perhaps the small size of the pectoral shield in this genus shows its affinity among the *Emydidæ* to that family.

If it were not for the irregular division of the caudal plates, and the form of the pectoral plate, it might be regarded as nearly allied to the very variable *Testudo Indica*.

1. MANOURIA FUSCA.

Pale brown, nearly uniform; discal shields concentrically grooved, with a central areola; the anterior and posterior lateral margins acute, slightly sinuated and rather bent up; the humeral and abdominal plates longer than broad, the abdominal very large; the gular produced, narrowed in front.

Hab. Singapore.

Unfortunately we only possess a single very imperfect specimen of this very interesting Tortoise, wanting several of the discal shields.

2. EMYS LATICEPS.

Shell pale olive, yellowish beneath; sides rounded, hinder lateral margin rather expanded and recurved, hinder end rather compressed above; shields thin, transparent, inferior plates with a narrow black edge; head large, short, broad, covered with a smooth skin; neck with very narrow yellow lines.

Hab. West Africa, River Gambia (*M. Castang*).

This is the *only* Emys yet found in West Africa, and is easily known by its short broad head.

Fam. 2. CHELYDIDÆ.

3. HYDROMEDUSA SUBDEPRESSA.

Shell oblong, depressed, dark brown, entire, rounded in front, rather angular behind; nuchal plate short, broader than the post-vertebral; post-vertebral square, as long as broad, with the front angles produced; sternum pale brown; gular plates short, unequal; head grey; lips and beneath white; neck with small conical warts.

Hab. Brazils.

There is in the British Museum collection a single adult specimen of this species, which has some of the plates of the back and sternum divided into a number of small roundish shields.

The specimen was sent from Brazil to Mr. Brandt of Hamburg, who transmitted it to the Museum. It may be only a variety of *H. flavilabris*, but the nuchal and post-vertebral shields are very differently shaped.

4. HYDRASPIS SPIXII, Gray, Cat. Rept. B. M. 30.

Shell oblong, depressed; middle of the back flat; marginal shields very broad in front, narrow and bent up on the sides, broader and arched over the hind legs; the post-vertebral shield large, as wide as long; third and fourth narrow, longer than broad; the fourth and fifth with an acute keel on the hinder edge; sternum rather broad; head very large, crown and temples covered with small shields; ears prominent; neck smooth; lower part of the outer edge of the hind leg with four larger plates, the last compressed and largest.

Hab. Brazils, Para.

There is an adult stuffed specimen, and a skeleton of nearly the same size, of this species in the British Museum collection.

This species is very like *H. gibba*, but the back is more depressed,

the margin much wider, the head nearly double the size, compared with the size of the body, and the scales on the head are small, more numerous and more equal in size, and those on the edge of the hinder legs are larger and more equal in size.

Fam. 3. TRIONYCIDÆ.

CYCLANORBIS PETERSII.

Shell broad, rounded before and behind ; sternal callosities five.

Hab. West Africa, River Gambia.

This genus was proposed by Dr. Peters, on his return from Mozambique, for a soft Tortoise which he discovered in that country, which has flaps to the sides of the sternum, covering the legs like the *Amydæ* of Asia, but differs from these in having no bones on the margin of the dorsal disk, which is soft and flexible as in the *Trionyces* with exposed legs.

This species from the Gambia appears to be distinct from the one noticed by Dr. Peters in Mozambique ; I have therefore named it after that excellent naturalist, who has made such sacrifices for the extension of our knowledge of natural history, and of zoology in particular.

8. DESCRIPTIONS OF FOURTEEN NEW SPECIES OF LAND SHELLS,
FROM THE COLLECTION OF HUGH CUMING, ESQ.

BY DR. L. PFEIFFER.

1. *HELIX BISULCATA*, Pfr. *H. testa late umbilicata, convexo-depressa, solidula, spiraliter et minutissime oblique striata, nitida, fulvo-castanea ; spira breviter conoideo-convexa, apice obtusula ; sutura impressa ; anfr. 6½ convexiusculis, ultimo multo latiore, periphæria obsolete angulato, antice non descendente, basi plano, circa umbilicum subcompresso, utrinque medio impresso-sulcato ; apertura parva, parum obliqua, subtriangulato-lunari ; perist. subsimplice, marginibus vix conniventibus, dextro recto, declivi, basali leviter arcuato, subincrassato.*

Diam. maj. 29, min. 25, alt. 13 mil.

Hab. in Tasmania.

2. *HELIX MERZIANA*, Pfr. *H. testa umbilicata, conoidea, tenuiuscula, superne subtiliter ruguloso-striata, fusca, strigis et maculis lutescentibus marmorata ; spira convexo-conoidea, obtusula ; sutura impressa, marginata ; anfr. 5½ convexiusculis, ultimo acute carinato, antice non descendente, basi subplano, minute striato, flavido, juxta carinam compressam castaneo-unifasciato ; umbilico latiusculo, extus subinfundibuliformi ; apertura perobliqua, securiformi, intus iridescente ; perist. subconnivente, margine dextro tenui, antrorsum curvato, subdepresso, columellari et basali perarcuatis, subincrassatis.*

Diam. maj. 23, min. 20, alt. 9½ mill.

Hab. S. Cristoval ins. Salomonis.

3. **HELIX COSTULOSA**, Pfr. *H. testa umbilicata, solidiuscula, conoidea, carinata, oblique subtiliter costulosa, alba, epidermide lutescente induta; spira regulariter conoidea, obtusula; sutura impressa; anfr. $6\frac{1}{2}$, vix convexis, ultimo non descendente, remote subvaricoso, basi paulo convexiore; umbilico subangusto, pervio; apertura obliqua, sublunata; perist. obtuso, marginibus remotis, supero recto, basali substricto, breviter reflexo, ad columellam subito ascendente, dilatato.*

Diam. maj. $17\frac{1}{2}$, min. $15\frac{1}{2}$, alt. 10 mill.

Hab. in insulis Salomonis.

4. **BULIMUS IRIS**, Pfr. *B. testa imperforata, ovato-conica, solidula, rugoso-striata, sub epidermide decidua, fulvida, cærulescente, strigis albidis et angustis spadiceis ornata; spira conica, apice pallida, obtusula; anfract. 5, supremis planis, ultimo $\frac{3}{5}$ longitudinis æquante, ventroso, basi late carinato, carina utrinque linea impressa marginata; columella substricta, alba, callosa; apertura vix obliqua, ovali, basi angulata, intus cærulescente; peristom. subincrassato, breviter expanso, marginibus callo albo junctis.*

Long. 64, diam. 32 mill.

Hab. La Ceja, Rio Negro Novæ Grenadæ (Bland).

5. **BULIMUS FLEXUOSUS**, Pfr. *B. testa compresse umbilicata, oblongo-turrita, tenuiuscula, sublævigata, obsolete punctato-striata, subopuca, albida, strigis spadiceis in ziczac flexis, albo-punctatis, fasciisque nigricantibus, altera mediana, altera basali ornata; spira elongato-conica, apice obtusula; anfract. 7, modice convexis, ultimo spira brevior, basi rotundato, pone aperturam striga lutescente cincto; columella vix plicata, lilacea; apertura parum obliqua, oblongo-ovalis, intus lilacina; perist. albo, tenui, undique dilatato, margine dextro expanso, columellari patente.*

Long. 40, diam. 14 mill.

Hab. Marinato Novæ Grenadæ.

6. **BULIMUS BARANGUILLANUS**, Pfr. *B. testa compresse umbilicata, ovato-pyramidali, tenuiuscula, striatula, vix nitidula, lutescenti-albida, strigis subrectis, angustis, fulvis irregulariter signata; spira elongato-conica, acutiuscula; sutura levi; anfractibus 7, planiusculis, ultimo spiram superante, convexo, antice subascendente, basi subcompressa, pone aperturam striga extus cærulescente, intus spadicea, cincto; columella leviter arcuata, superne subplicata; apertura ampla, verticali, elliptico-ovalis; peristomate tenui, dilatato, margine dextro expanso, columellari late reflexo, patente.*

Long. 32, diam. $13\frac{1}{2}$ mill.

Hab. Baranguilla in Andibus Columbianis (Bland).

7. **BULIMUS ASCENDENS**, Pfr. *B. testa imperforata, ovato-oblonga, solida, irregulariter striata et lineis impressis spiralibus obsolete decussata, parum nitida, fulva, strigis sparsis castaneis ornata; spira elongata, convexa, obtusa; sutura simplice, anfractuum superiorum levi, ultimorum profunda; anfractibus 7-8, superioris*

planis, sequentibus convexiusculis, ultimo $\frac{3}{7}$ longitudinis æquante, rotundato, antice subascendente; columella alba, subverticali, superne leviter plicata; apertura angusta, subelliptica, intus albida; peristomate leviter incrassato, recto.

Long. 95, diam. 34 mill.

Hab. in Brasilia.

8. *BULIMUS ACHILLES*, Pfr. *B. testa imperforata, oblongo-ovata, solida, longitudinaliter striatula, striis remotioribus spiralibus subdecussata, vix nitidula, fusco-olivacea, strigis saturate rufis, ad suturam dilatatis ornata; spira convexo-conica, superne rufula, apice obtusula; sutura levi, anfractus ultimi crenulata et marginata; anfract. $6\frac{1}{2}$, vix convexiusculis, ultimo spiram æquante, antice subascendente, basi attenuato; columella alba, superne subtorta, basi vix recedente; apertura vix obliqua, semiovali, intus cinerea, nitida; peristom. albo, vix incrassato, recto, margine dextro repando.*

Long. 57, diam. 25 mill.

Hab. in ripis fluvii Amazonum.

9. *BULIMUS REQUIENI*, Pfr. *B. testa oblongo-ovata, tenuiuscula, longitudinaliter confertim striata, parum nitente, olivaceo-fusca, ad suturam rufo-submaculata; spira conica, apice obtuso, subim-erso; sutura submarginata; anfract. 5, convexiusculis, celeriter accrescentibus, ultimo spira vix brevior, obsolete striato; columella callosa, leviter arcuata, ad basin aperturae obliquae, ovalis, obsolete truncatula; peristom. simplice, recto, intus fusco-limbato.*

Long. 62, diam. 26 mill.

Hab. in Brasilia.

10. *BULIMUS FORTUNEI*, Pfr. *B. testa vix subperforata, turrata, solidula, longitudinaliter confertim costulato-striata, vix nitidula, subdiaphana, cerea; spira regulariter turrata, obtusa; anfract. $7\frac{1}{2}$, convexiusculis, ultimo $\frac{1}{3}$ longitudinis subæquante, basi rotundato; columella leviter arcuata; apertura obliqua, ovali, basi rotundata; peristom. simplice, recto, margine dextro repando, columellari anguste fornicatim reflexo.*

Long. 11, diam. 4 mill.

Hab. Shang Hi, Chinæ (*Fortune*).

11. *PARTULA SALOMONIS*, Pfr. *P. testa subumbilicata, ovato-conica, solidula, longitudinaliter distincte et confertim striata, sub epidermide decidua, fulva, alba; spira conica, acutiuscula; sutura levissime crenulata; anfract. 5, convexis, ultimo $\frac{3}{5}$ longitudinis æquante, basi rotundata; columella leviter arcuata, medio subplicata; apertura fere verticali, auriformi-oblonga; peristom. aurantiaco, labiato, margine dextro substricto, breviter expanso, superne curvato, columellari per dilatato, patente.*

Long. 34, diam. 18 mill.

Hab. in insulis Salomonis.

12. *PARTULA REEVEANA*, Pfr. *P. testa anguste umbilicata, ovato-conica, solida, longitudinaliter striatula, carnea, epidermide fulva, strigata; spira elongato-conica, apice rubicunda, obtusula; sutura mediocri; anfract. 5, convexiusculis, ultimo spira brevior, turgido, basi saccato; pariete aperturali dente magis minusve distincto munito; columella vix plicata; apertura verticali, oblonga, oblique truncata; peristom. calloso, roseo, expanso, margine dextro substricto, columellari dilatato, reflexo.*

Long. $21\frac{1}{2}$, diam. 11 mill.

Hab. in insulis Salomonis.

13. *PARTULA MICANS*, Pfr. *P. testa profunde rimata, subperforata, ovato-conica, tenui, striis incrementi confertis et lineis spirulibus distincte decussata, diaphana, nitidula, pallide cornea; spira conica, acutiuscula; sutura profunda; anfract. fere 5, convexis, ultimo spiram æquante, basi rotundato; columella leviter arcuata; apertura vix obliqua, oblongo-ovali; peristom. albido, expanso, acuto, marginibus conniventibus, columellari dilatato, patente.*

Long. 15, diam. 8 mill.

Hab. in insulis Salamonis.

14. *CLAUSILIA SHANGHIENSIS*, Pfr. *Cl. testa subrimata, fusi-formi-turrita, solidula, oblique striatula, castaneo-fusca, nitidula; spira turrita, acutiuscula; sutura levi, simplice; anfract. 10, vix convexiusculis, ultimo antice validius striato, basi tumido; apertura subrotundo-pyriformi; lamellis mediocribus, intus perapproximatis; lunella brevi, arcuata; plica palatali 1 supera, subelongata, subcolumellari, inconspicua; peristom. albo, continuo, superne breviter soluto, undique anguste expanso.*

Long. 17, diam. $4\frac{1}{2}$ mill.

Hab. Shang Hi, Chinæ (*Fortune*).

9. DESCRIPTIONS OF TWENTY-FOUR NEW SPECIES OF LAND SHELLS, COLLECTED BY M. SALLÉ ON THE ISLAND OF ST. DOMINGO, FROM MR. CUMING'S COLLECTION. BY DR. L. PFEIFFER.

(Mollusca, Pl. XIII.)

1. *HELIX PHÆDRA*, Pfr. *H. testa imperforata, conoideo-depressa, tenui, irregulariter striata, pellucida, nitidissima, fulvo-cornea; spira brevi, obtusula; sutura impressa; anfr. 5, convexiusculis, sensim accrescentibus, ultimo antice deflexo, basi planiusculo; apertura perobliqua, truncato-ovali; perist. subsimplice, marginibus vix conniventibus, supero recto, basali incrassato, ad regionem umbilicalem sensim dilatato, adnato.*

Diam. maj. 18, min. 15, alt. $8\frac{1}{2}$ mill.

2. *HELIX PRUINOSA*, Pfr. *H. testa perforata, globoso-depressa, tenui, oblique subconfertim filoso-plicata, diaphana, rufa, non nitente, quasi pruinosa; spira breviter conoidea, acutiuscula; sutura profunda; anfr. 4½, convexis, ultimo rotundato, antice vix descendente; apertura obliqua, lunato-rotundata; perist. tenui, marginibus subconniventibus, supero recto, basali leviter arcuato, reflexiusculo, columellari paulo latius reflexo.*

Diam. maj. 11, min. $8\frac{1}{3}$, alt. $6\frac{1}{2}$ mill.

3. *HELIX STRUMOSA*, Pfr. *H. testa umbilicata, depressa, tenui, oblique costulata, diaphana, vix nitidula, carneo-rufa, fascia pallida, utrinque rufo-marginata, ornata; spira vix elevata, obtusula; sutura profunda; anfr. 4½, convexiusculis, sensim accrescentibus, ultimo superne subangulato, antice deflexo, pone aperturam strumoso et strangulato, basi convexo; umbilico mediocri, infundibuliformi; apertura perobliqua, lunato-ovali, intus nitida; perist. tenui, marginibus approximatis, supero valde curvato, expansiusculo, basali breviter reflexo, intus plica obliqua munito.*

Diam. maj. $16\frac{1}{2}$, min. $13\frac{2}{3}$, alt. 7 mill.

4. *BULIMUS TENUPLICATUS*, Pfr. *B. testa subrimata, oblongo-turrita, solidula, longitudinaliter subarcuatim tenuiplicata, opaca, cretacea, strigis castaneis interruptis vel triserratis ornata; spira elongata, subcurvilineari, apice acuta, nigra; sutura subsimplice; anfr. 12, convexiusculis, ultimo paulo angustiore, rotundato, $\frac{1}{4}$ longitudinis subæquante, basi castaneo-bifasciato; columella obsolete plicata; apertura subverticali, lunato-rotundata; perist. tenui, marginibus conniventibus, dextro sinuoso, filoso-expansiusculo, columellari dilatato, patente.*

Long. 18, diam. $6\frac{1}{2}$ mill.

5. *BULIMUS LUDOVICI*, Pfr. *B. testa breviter rimata, subfusi-formi-turrita, solida, leviter striata, vix nitidula, cretacea, maculis oblongis, fusco-corneis sparse variegata; spira vix curvilineari, turrita, apice acutiuscula, lutescente; sutura profunda, simplice; anfr. 12, convexis, ultimo angustiore, $\frac{2}{3}$ longitudinis æquante, basi attenuato, juxta rimam subcompresso; columella superne subtorta; apertura subverticali, lunato-rotundata; perist. tenui, marginibus conniventibus, dextro subrepando, expansiusculo, columellari dilatato, patente.*

Long. 17, diam. 5 mill.

6. *BULIMUS CYRTOPLEURUS*, Pfr. *B. testa subperforata, oblongo-turrita, solidula, valide arcuato-costata, nitidula, alba, maculis rotundis, fusco-corneis, suboblique seriatim picta; spira subcurvilineari, turrita, apice acuta, pallide cornea; sutura simplice; anfr. 12, modice convexis, ultimo vix angustiore, $\frac{1}{4}$ longitudinis vix superante, subtiliter filo-carinato, fascia an-*

gusta, basali, cornea signato; columella levissime plicata; apertura subobliqua, lunato-subcirculari; perist. tenui, marginibus subconvergentibus, dextro perarcuato, vix expansiusculo, columellari dilatato, patente.

Long. 15, diam. $4\frac{3}{4}$ mill.

7. **BULIMUS HERMANNI**, Pfr. *B. testa subperforata, cylindraceo-turrita, tenui, oblique plicatula, nitidula, albida, strigis obliquis et punctis corneis, pellucidis variegata; spira elongata, supra medium sensim in conum apice acutum, corneum attenuata; sutura levi, regulariter crenata; anfr. 10, vix convexiusculis, ultimo rotundato, $\frac{1}{4}$ longitudinis vix superante; columella subplicata; apertura parum obliqua, lunato-rotundata; perist. tenui, marginibus subconniventibus, dextro filoso-expansiusculo, columellari dilatato, patente.*

Long. 12, diam. $4\frac{1}{3}$ mill.

8. **ACHATINA RICHARDI**, Pfr. (Pl. XIII. fig. 10.) *A. testa ventroso-subfusiformi, tenuiuscula, plicis confertis longitudinalibus, infra medium anfr. ultimi obsoletis, lineisque spiralibus confertis undique sculpta, diaphana, corneo-fulva, strigis latis, angulosis et dentatis, saturate castaneis, maculisque minoribus fuscis, picta; spira conica, acutiuscula; sutura impressa, crenato-marginata; anfr. 7, superis planiusculis, sequentibus convexiusculis, ultimo spiram subæquante vel superante, basi subattenuato; columella callosa, subverticali, leviter torta, basi vix truncata; apertura verticali, rhombeo-semiovali; perist. simplice, margine dextro antrorsum leviter arcuato.*

Long. 28, diam. 11 mill.

9. **CYLINDRELLA MENKEANA**, Pfr. (Pl. XIII. fig. 7.) *C. testa breviter rimata, oblongo-ovata, superne in conum acutiusculum, plerumque subtruncatum producta, subtilissime arcuato-striata, sublævigata, nitida, alba, strigis irregularibus corneis notata; sutura levi, pliculato-crenata; anfr. (integris) 14, vix convexiusculis, ultimo angustiore, basi compresse filo-carinato, antice vix soluto; apertura subobliqua, subcirculari, plica levi columellæ subcoarctata; perist. continuo, undique breviter expanso et reflexiusculo, superne vix libero.*

Long. 31, diam. 12 mill.

10. **CYLINDRELLA MALLEATA**, Pfr. *C. testa breviter rimata, subcylindracea, sursum attenuata, truncata, solidula, minute malleato-punctata, alba; sutura levissime crenulata; anfr. superst. 10, planiusculis, supremis pallide carneis, striatis, sequentibus subæqualibus, ultimo angustiore, basi carina compressa, funiformi munito, antice vix soluto; apertura vix obliqua, subrotunda, basi canaliculata; perist. continuo, albo, undique expansiusculo et reflexo.*

Long. 31, diam. 8 mill.

11. *CYLINDRELLA FLAMMULATA*, Pfr. (Pl. XIII. fig. 8.) *C. testa breviter rimata, subcylindracea, medio paulo ventrosiore, superne truncata, tenuiuscula, laevigata, nitida, flammis latis, corneis et opacis, lacteis variegata; sutura levi, remote et obsolete nodosa; anfr. superst. 10, convexiusculis, ultimo paulo angustiore, basi carina subcompressa, funiformi, denticulata munito, antice striato, non soluto; apertura subobliqua, subcirculari, basi vix canaliculata; perist. vix continuo, albo, expanso et reflexiusculo, superne appresso, subinterrupto.*

Long. 28, diam. 8 mill.

12. *CYLINDRELLA PUNCTURATA*, Pfr. *C. testa breviter rimata, pupæformi, subcylindracea, sursum attenuata, truncata, solidula, griseo-albida, nitidula, punctis impressis corneis dense obsita; sutura vix impressa, nodis transverse oblongis, candidis, confertis ornata; anfr. superst. 9, planis, ultimo angustiore, antice subascendente, non soluto, ruguloso-striato, basi carina funiformi munito; apertura obliqua, subcirculari, transverse subdilata; perist. albo, expanso, reflexiusculo, superne interrupto, marginibus approximatis.*

Long. 18, diam. $6\frac{1}{3}$ mill.

13. *HELICINA SALLEANA*, Pfr. *H. testa conoideo-subdepressa, tenui, striatula et obsolete subgranulata, diaphana, nitida, purpurascens-fusca; spira conoidea, acutiuscula; anfr. fere 5, convexiusculis, ultimo latiore, periphæria subangulato; apertura parum obliqua, subtriangulari; columella substricta, breviter recedente; perist. tenui, marginibus callo basali lato, semiovali junctis, supero expansiusculo, basali in limbum latum, membranaceum, nigro-rufum reflexo, cum columella angulum formante.—Operc. terminale, subtriangulare, albidum.*

Diam. maj. 9, min. $7\frac{1}{3}$, alt. $5\frac{1}{2}$ mill.

14. *HELICINA OLEOSA*, Pfr. *H. testa depresso-turbinata, tenuiuscula, striatula, diaphana, oleoso-micante, griseo-fulvida; spira conoidea, vix acutiuscula; anfr. 5, convexis, ultimo magno, basi parum convexo, juxta columellam impresso; columella brevi, stricta, subrecedente, filari, callum emittente tenuissimum, subgranulosum; apertura parum obliqua, subtriangulari-semiovali; perist. tenui, breviter reflexo, margine basali cum columella angulum formante.—Operc. solidiusculum, margaritaceum.*

Diam. maj. $7\frac{1}{3}$, min. vix 6, alt. 5 mill.

15. *HELICINA CINGULATA*, Pfr. *H. testa conoideo-globosa, solidiuscula, subconfertim spiraliter striata, opaca, carneo-albida, luteo-bicingulata; spira lutea, convexo-conoidea, apice acutiuscula; anfr. $5\frac{1}{2}$, convexiusculis, ultimo rotundato; columella brevi, verticali, basi subdentata, callum emittente tenuem subcircumscriptum; apertura vix obliqua, semiovali; perist. simplice, recto, margine basali leviter arcuato, cum columella angulum formante.*

Diam. maj. $7\frac{1}{2}$, min. $6\frac{2}{3}$, alt. 5 mill.

16. *CYCLOSTOMA ADOLFI* (CHOANOPOMA), Pfr. *C. testa umbilicata, conoideo-semiglobosa, tenuiuscula, lineis elevatis radiantibus et spiralibus regulariter granulato-decussata, diaphana, fulvida, lineis interruptis rufis cincta; spira convexo-conoidea, mucronulata; sutura irregulariter et remote nodoso-crenata; anfr. 4½, convexis, ultimo rotundato, circa umbilicum medio-crem carinis pluribus munito; apertura subobliqua, circulari; perist. duplice, interno continuo, breviter porrecto, externo patente, concentricè striato, subundulato, rufo-radiato, superne in auriculam fornicatim dilatato.—Operc. testaceum, lamella spirali libera.*

Diam. maj. 8, min. 6¾, alt. 4⅔ mill.

17. *CYCLOSTOMA NOBILE* (TUDORA), Pfr. (Pl. XIII. fig. 2.) *C. testa perforata, ovato-turrita, solida, longitudinaliter confertim filoso-plicata, parum nitida, fusco-violacea; spira elongato-conica, integra, obtusula; sutura confertissime albo-crenulata; anfr. 7, modice convexis, ultimo antice breviter soluto, basi concentricè striato; apertura verticali, irregulariter ovali, intus fusca; perist. albo, duplice, interno breviter porrecto, expansiusculo, externo undique breviter patente; marginibus superne angulatim junctis, columellari levissime arcuato.—Operc. Tudoræ.*

Long. 32, diam. 15 mill.

18. *CYCLOSTOMA CINCLIDODES* (CISTULA), Pfr. *C. testa subimperforata, ovato-oblonga, truncata, solida, lineis spiralibus elevatis et paulo confertioribus longitudinalibus nodoso-clathrata, opaca, fulvido-griseo-albida, lineolis interruptis rufis sparse notata; sutura fasciculatim crenata; anfr. superst. 5, convexiusculis, ultimo antice breviter soluto, basi distinctius spiraliter sulcato; apertura vix obliqua, angulato-ovalis; perist. albo, duplice, interno porrecto, externo brevissime patente, undulato, superne in angulum producto.—Operc. Cistulæ.*

Long. 11, diam. 5 mill.

19. *CYCLOSTOMA MAGNIFICUM*, Sallé MSS. (CHONDROPOMA), Pfr. (Pl. XIII. fig. 3.) *C. testa perforata, ovato-conica, tenui, longitudinaliter plicato-striata, diaphana, parum nitente, albida unicolore vel tæniis varie interruptis castaneis, media latissima, ex strigis angulatis formata, ornata; spira tumida, apice subtruncata; sutura simplice; anfr. superst. 5, convexiusculis, ultimo rotundato; apertura verticali, ovali; perist. simplice, nitido, albo, castaneo-maculato, superne cucullatim dilatato, ad anfr. penultimum breviter adnato, angustato, ad perforationem sinuato, tum in linguam patentem dilatato, margine dextro et basali fornicatim late reflexis.—Operc. palidum.*

Long. 29, diam. 15 mill.

20. *CYCLOSTOMA LOWEANUM* (CHONDROPOMA), Pfr. *C. testa*

perforata, ovato-turrita, sæpe truncata, tenuiuscula, lineis elevatis spiralibus, confertioribusque longitudinalibus illas transgredientibus (decima quavis vel undecima plerumque validioribus) sculpta, albida, fusco marmorata et irregulariter strigata; sutura dense crenulata; anfr. 7, convexiusculis, 2 ultimis turgidis, ultimo antice soluto, dorso acute carinato; apertura subobliqua, angulato-ovali; perist. simplice, continuo, undique expansiusculo, superne angulatim producto.—Operc. fusco-luteum.

Long. 17, diam. $8\frac{1}{2}$ mill.

21. *CYCLOSTOMA EUSARCUM (CHONDROPOMA)*, Pfr. *C. testa subperforata, ovata, ventrosa, tenuiuscula, longitudinaliter confertissime plicata, vix nitida, diaphana, pallide isabellina, lineis interruptis rufis interdum cincta; spira convexo-conica, breviter truncata; sutura subsimplice; anfr. superst. 4, convexis, ultimo penultimum vix superante, antice brevissime soluto, basi liris nonnullis spiralibus sculpto; apertura vix obliqua, angulato-ovali; perist. simplice, expansiusculo, marginibus superne in angulum acutum junctis, sinistro leviter arcuato.—Operc. normale.*

Long. 13, diam. $7\frac{1}{3}$ mill.

22. *CYCLOSTOMA SIMPLEX (CHONDROPOMA)*, Pfr. *C. testa subperforata, oblonga, truncata, solidula, lineis spiralibus elevatis, longitudinalibusque confertissimis illas transgredientibus sculpta, vix nitidula, pallide aurantiaca, lineis rufis strigatim interruptis picta; sutura subsimplice; anfr. superst. $4\frac{1}{2}$, convexis, lente accrescentibus, ultimo rotundato, basi distinctius spiraliter sulcato, antice subsoluto; apertura verticali, angulato-ovali; perist. simplice, continuo, vix expansiusculo, marginibus superne in angulum productum junctis.—Operc. fusco-luteum.*

Long. $11\frac{1}{2}$, diam. 5 mill.

23. *CYCLOSTOMA HEMIOTUM (CHONDROPOMA)*, Pfr. *C. testa perforata, oblongo-turrita, tenuiuscula, lineis spiralibus obsolete elevatis, longitudinalibusque confertissimis (10–12 in fasciculum junctis) levissime clathrata, non nitente, fusculo-albida, plerumque lineis interruptis rufis et fascia 1 rufa, latiore, infra-mediana ornata; spira subtruncata; sutura confertim denticulata; anfr. 5–7, convexiusculis, ultimo antice breviter soluto, dorso carinato; apertura subverticali, ovali; perist. subduplicato, interno continuo, expansiusculo, externo a medio marginis dextri descendente, breviter patente, medio marginis sinistri in auriculam subundulatam terminato.—Operc. normale.*

Long. 16, diam. $7\frac{2}{3}$ mill.

24. *CYCLOSTOMA BLANDUM (CHONDROPOMA)*, Pfr. *C. testa subperforata, ovato-turrita, truncata, solidula, lineis elevatis spiralibus, confertioribusque longitudinalibus illas transgredi-*

entibus sculpta, diaphana, nitidula, fusco-violacea vel albida, strigis et lineolis rufis irregulariter picta; sutura simplice; anfr. superst. 4, convexis, ultimo rotundato, basi fortius spiraler striato; apertura verticali, ovali; perist. albo, duplice, interno breviter porrecto, externo undique horizontaliter et breviter patente, minute undulato, superne angulato-dilatato, ad anfr. penult. breviter exciso.—Operc. normale.

Long. 18, diam. $9\frac{1}{2}$ mill.

10. DESCRIPTIONS OF FOURTEEN NEW SPECIES OF OPERCULATED LAND-SHELLS, FROM MR. CUMING'S COLLECTION.

BY DR. L. PFEIFFER.

(Mollusca, Pl. XIII.)

1. *CYCLOSTOMA LEUCOSTOMUM* (CYCLOPHORUS), Pfr. *C. testa umbilicata, depresso-turbinata, solida, oblique confertissime striata et liris permultis obtusis spiralibus (nonnullis validioribus) sculpta, castaneo-fulva, strigis albis angulatis irregulariter flammulata; spira turbinata, apice obtusula; anfr. $4\frac{1}{2}$ convexis, ultimo circa umbilicum angustum, pervium, albo; apertura parum obliqua, circulari, intus alba; perist. simplice, subincrassato, albo, breviter adnato, marginibus superne subangulatim junctis, columellari subdilatato, patente.*

Diam. maj. 26, min. 21, alt. 16 mill.

Locality unknown.

2. *CYCLOSTOMA AMBOINENSE* (CYCLOPHORUS), Pfr. *C. testa umbilicata, turbinato-depressa, solida, laevigata, castaneo-fulva, guttis albis ad peripheriam fasciam interruptam formantibus aspersa; spira convexo-conoidea, obtusula; anfr. $4\frac{1}{2}$ convexis, ultimo rotundato, basi pallidiore; umbilico angusto, pervio; apertura parum obliqua, subcirculari, intus pallida; perist. simplice, subincrassato, vix expansiusculo, marginibus superne subangulatim junctis.*

Diam. maj. 18, min. 15, alt. 10 mill.

β . *minor. castanea, albida sparse strigata et subfasciata.*

Diam. maj. 14, min. $11\frac{1}{2}$, alt. $8\frac{1}{2}$ mill.

From Amboyna.

3. *CYCLOSTOMA BAIRDI* (CYCLOPHORUS), Pfr. (Pl. XIII. fig. 1.) *C. testa late umbilicata, depressa, subdiscoidea, solida, spiraler confertim striata, fulvo-lutea, strigis crebris angulatis castaneis picta; spira vix elevata, medio subprominula; anfr. $4\frac{1}{2}$, convexiusculis, ultimo subdepresso, periphæria obsoletissime angulato et fascia castanea ornato; umbilico aperto, $\frac{1}{3}$ diametri paulo superante; apertura obliqua, subangulato-rotundata, intus alba; perist. subsimplice, continuo, breviter adnato, expansiusculo, superne angulatim subproducta.*

Diam. maj. 26, min. 20, alt. 9 mill.

From Ceylon.

4. *CYCLOSTOMA BICOLOR* (LEPTOPOMA), Pfr. (Pl. XIII. fig. 9.) *C. testa perforata, globoso-turbinata, tenui, sub lente confertissime spiraliter striata, diaphana, albida, castaneo-bifasciata; spira turbinata, obtusula; anfr. 5, convexiusculis, ultimo rotundato, lineis 3-4 distantibus, vix filoso-elevatis munito; apertura obliqua, subcirculari; perist. simplice, subæqualiter angulatim expanso, marginibus callo tenuissimo junctis, columellari leviter sinuato.*

Diam. maj. $13\frac{1}{2}$, min. 10, alt. 10 mill.

Locality unknown.

5. *CATAULUS PYRAMIDATUS*, Pfr. (Pl. XIII. fig. 4.) *C. testa subperforata, ovato-pyramidata, solida, distincte subarcuatim et confertim striata, sericea, saturate castanea; spira turrita, apice acutiuscula; anfr. 7-7 $\frac{1}{2}$, modice convexis, ultimo non attenuato, basi axin vix excedente; carina basali compressa, antice vix dilatata; periomphalo latiusculo, profundius striato, medio turgido; apertura subcirculari; perist. albo, continuo, breviter adnato, incrassato, horizontaliter patente et reflexiusculo, basi vix producto, canali mediocri, perforato.*

Long. 23-29, diam. 10-12 $\frac{1}{2}$ mill.

From Ceylon.

6. *CATAULUS EURYTREMA*, Pfr. (Pl. XIII. fig. 5.) *C. testa subperforata, subfusiformi-oblonga, solida, subarcuato-striata, vix nitidula, castanea; spira turrita, apice obtusiuscula; anfr. 8 $\frac{1}{2}$, convexis, ultimo angustiore, basi oblique supra axin protracto; carina basali valida, compressa, antice sensim tubæ instar dilatata; apertura circulari; perist. carneo, continuo, breviter adnato, incrassato et reflexo, parte sinistra marginis basalis canali magno, subcirculari, retrorsum in rimam filiformem abeunte, perforata.*

Long. 26, diam. 10 mill.

From Ceylon.

7. *PUPINA NICOBARICA* (REGISTOMA), Pfr. *P. testa imperforata, ovato-conica, solidula, glaberrima, nitida, pallide isabelina; spira convexa, sursum conica, acutiuscula; sutura lineari; anfr. 5, vix convexiusculis, ultimo oblique descendente, antice breviter ascendente, basi rotundato; apertura subverticali, circulari, nodulo calloso minuto juxta insertionem marginis dextri coarctata; perist. simplice, vix expansiusculo, margine columellari subincrassato, incisura brevi, subascendente a basali separato.*

Long. 6, diam. 3 mill.

From the Nicobar Islands.

8. *HELICINA BULLA*, Pfr. *H. testa globoso-conica, tenui, sub lente punctulato-striatula, vix nitidula, diaphana, hyalino-alba; spira mediocri, conoidea, acutiuscula; anfr. 5, planiusculis, ultimo rotundato, antice subascendente; columella brevi, arcuata, extus subnodosa, callum tenuissimum hyalinum retrorsum*

emittente; apertura obliqua, subtriangulari-semiovali; perist. dilatato, late expanso, margine supero levissime sinuato.
 Diam. maj. 13, min. 10, alt. $8\frac{1}{2}$ mill.
 Locality unknown.

9. *HELICINA BICOLOR*, Pfr. *H. testa depresso-conoidea, acute carinata, tenuiuscula, striatula et sub lente minutissime punctato-granulata, albida, fasciis 2 fuscis supra et infra carinam ornata; spira brevi, conoidea, acuta; anfr. 5, convexiusculis, rapide accrescentibus, ultimo non descendente, basi convexiore; columella fusca, brevi, subarcuata, dilatata, basi in angulum subspiniformem terminata, callum emittente circumscriptum, fuscum; apertura diagonali, late subtriangulari; perist. dilatato, plano, expanso, intus fusco; margine supero subrepando, basali substricto.*

Diam. maj. $11\frac{1}{2}$, min. 9, alt. 6 mill.
 From Tahiti.

10. *CYCLOSTOMA FORTUNEI (CYCLOTUS)*, Pfr. *C. testa umbilicata, turbinato-depressa, solidula, subtiliter striatula, fulva, castaneo minute marmorata et infra medium unifasciata; spira brevissime turbinata, vertice subtili; sutura simplice; anfr. $4\frac{1}{2}$, convexis, ultimo terete, non descendente; umbilico conico, profundo, $\frac{1}{4}$ diametri subæquante; apertura fere verticali, subcirculari, superne leviter angulata; perist. simplice, recto, anfractui penultimo breviter adnato. Qperc. calcareum, arcti-spirale.*

Diam. maj. $12\frac{1}{2}$, min. 10, alt. 7 mill.
 From Shanghai, China (Mr. Fortune).

11. *CYCLOSTOMA LOXOSTOMUM (CYCLOPHORUS)*, Pfr. *C. testa umbilicata, depressa, discoidea, solidula, confertim filoso-striata, fusco-fulva, maculis pallidioribus conspersa; spira plana, vertice subtili haud prominente; anfr. 5, convexiusculis, sensim accrescentibus, ultimo terete, antice dilatato, non descendente; umbilico pateræformi, $\frac{1}{3}$ diametri superante; apertura diagonali, subcirculari, intus margaritacea; perist. continuo, breviter adnato, recto, subduplicato, vix incrassato.*

Diam. maj. $13\frac{2}{3}$, min. 11, alt. 4 mill.
 From Ceylon (Mr. Lear).

12. *CYCLOSTOMA FORNICATUM (CYCLOPHORUS)*, Pfr. *C. testa umbilicata, sublenticulari, tenuiuscula, lineis elevatis concentricis confertis sculpta, epidermide corneo-virente, vix nitidula induta; spira brevi, fornicata, vertice rubello, obtusulo; anfr. 4, vix convexiusculis, celeriter accrescentibus, ultimo convexiore, medio acute carinato; umbilico profundo, $\frac{1}{3}$ diametri subæquante; apertura obliqua, ovato-circulari; perist. simplice, recto, subinterrupto, marginibus approximatis, columellari subpatente.*

Diam. maj. 9, min. 7, alt. $3\frac{2}{3}$ mill.
 From the New Hebrides.

13. *CYCLOSTOMA STRIATULUM* (CYCLOSTOMUS?), Pfr. *C. testa umbilicata, globoso-turbinata, solida, oblique striatula et lineis concentricis, elevatis, subconfertis sculpta, vix nitidula, flavescenti-albida; spira breviter turbinata, apice obtusiuscula; anfr. 5, convexis, summis lævigatis, ultimo turgido, peripheria obsolete subangulato; umbilico mediocri, profundo; apertura parum obliqua, subangulato-circulari; perist. continuo, breviter adnato, incrassato, expansiusculo, superne angulato. Operculum?*

Diam. maj. $25\frac{1}{2}$, min. 21, alt. 15 mill.

Locality unknown.

14. *CATAULUS THWAITESI*, Pfr. *C. testa vix perforata, subfusiformi-turrita, solida, longitudinaliter confertim costulata, vix nitidula, violaceo-fusca; spira ovato-turrita, apice acuti- uscula; sutura impressa; anfr. 7-7 $\frac{1}{2}$, convexiusculis, ultimo vix attenuato; carina basali validissima, compressa, angulatim patente, alba; apertura verticali, circulari; perist. duplice, albo: interno basi profunde inciso, externo ad anfr. penultimum exciso, cæterum incrassato, reflexo, basi canali mediocri perforato.*

Long. 19, diam. 7 mill.

From Ceylon (Mr. Thwaites).

11. DESCRIPTIONS OF TWELVE SPECIES OF LAND SHELLS, FROM NEW ZEALAND.

BY DR. L. PFEIFFER.

1. *HELIX FLAMMIGERA*, Pfr. *H. testa imperforata, depressa, tenuissima, striatula, nitida, pellucida, lutescente, flammis rubris angulatis regulariter picta; spira convexiuscula, vix elevata; anfract. 3, parum convexis, celeriter accrescentibus, ultimo non descendente, basi planiusculo, medio impresso; apertura diagonali, lunato-rotundata; perist. simplice, recto, margine columellari arcuatim ascendente.*

Diam. maj. 7, min. 6, alt. $3\frac{1}{2}$ mill.

2. *HELIX UMBRACULUM*, Pfr. *H. testa imperforata, sublenticulari, tenuiuscula, striatula, oleoso-nitidula, virenti-cornea, strigis angustis, antrorsum descendentibus, rufis obscure picta; spira convexo-conoidea, apice acuta; sutura marginata; anfr. 5 $\frac{1}{2}$, planiusculis, acute carinatis, ultimo non descendente, basi convexiusculo, rufo obsolete tessellato; apertura obliqua, depressa, subtriangulari; perist. simplice, acuto, recto, margine basali levissime arcuato, ad columellam brevissime reflexo.*

Diam. maj. $7\frac{1}{2}$, min. 7, alt. $3\frac{2}{3}$ mill.

3. *HELIX PÆCILOCOSTATA*, Pfr. *H. testa perforata, trochiformi, tenui, confertim plicata, fulva, rufo-maculata, diaphana; spira convexo-conica, apice acutiusecula; sutura marginata; anfr. 5 $\frac{1}{2}$, angustis, convexiusculis, ultimo carinato, non descendente, basi plano; apertura parum obliqua, depressa, angulato-*

lunari; perist. simplice, recto, margine columellari ascendente, calloso-reflexo.

Diam. 4, alt. $3\frac{1}{4}$ mill.

4. *HELIX HELDIANA*, Pfr. *H. testa perforata, minuta, trochiformi, tenui, lævigata, nitida, fulvo-cornea; spira conica, apice obtusa; sutura impressa; anfract. 5, convexiusculis, ultimo carinato, non descendente, basi vix convexiore; apertura vix obliqua, depressa, angulato-lunari; perist. simplice, recto, marginibus remotis, columellari brevissime reflexiusculo.*

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

5. *HELIX DIMORPHA*, Pfr. *H. testa perforata, depressa, tenui, confertissime striata et subconfertim filoso-costata, parum nitente, diaphana, pallide cornea, minute rufo-tessellata et ad suturam maculis rufis ornata; spira vix elevata; anfract. 5, convexiusculis, ultimo non descendente, rotundato, altiore quam lato; apertura subverticali, lunari; perist. simplice, recto, margine basali subrependo, columellari superne calloso-reflexo, perforationem fere claudente.*

Diam. maj. $8\frac{1}{2}$, min. $7\frac{1}{2}$, alt. 5 mill.

6. *HELIX HYPOPOLIA*, Pfr. *H. testa angustissime umbilicata, depressa, tenui, confertissime costulata, sericea, corneo-cinerea; spira parum elevata, convexa; anfract. $5\frac{1}{2}$, vix convexiusculis, ultimo non descendente, basi convexiore; apertura parum obliqua, late lunari; perist. simplice, recto, margine columellari arcuato, superne vix reflexo.*

Diam. maj. $6\frac{1}{2}$, min. 6, alt. $3\frac{1}{3}$ mill.

7. *HELIX CREBRIFLAMMIS*, Pfr. *H. testa umbilicata, depressa, tenui, striatula, nitida, pellucida, lutea, flammis rufis creberrimis ornata; spira vix elevata, convexiuscula; anfract. $3\frac{1}{2}$, convexiusculis, ultimo non descendente, subdepresso, basi convexiore; umbilico latiusculo, pervio; apertura parum obliqua, lunato-ovali; perist. simplice, recto, margine dextro antrorsum arcuato, columellari vix reflexiusculo.*

Diam. maj. 7, min. $5\frac{1}{2}$, alt. fere 3 mill.

8. *HELIX VARICOSA*, Pfr. *H. testa umbilicata, depressa, tenuiuscula, striatula, costis distantibus varicoso-angulata, haud nitida, fusca; spira vix elevata, obtusa; anfract. $4\frac{1}{2}$ –5, planiusculis, ultimo non descendente, depresso, basi planiusculo; umbilico mediocri, pervio; apertura parvula, obliqua, lunari; perist. simplice, recto, margine columellari superne vix reflexiusculo.*

Diam. maj. $3\frac{1}{2}$, min. $3\frac{1}{4}$, alt. vix 2 mill.

9. *HELIX JEFFREYSIANA*, Pfr. *H. testa umbilicata, depressa, tenui, distincte striata, pellucida, lutea, strigis læte castaneis, fasciatim interruptis ornata; spira plana; sutura impressa, regulariter plicatula; anfract. 4, convexiusculis, ultimo sub-*

depresso-rotundato, non descendente; umbilico lato, aperto; apertura vix obliqua, lunato-ovali; perist. simplice, recto, marginibus subconniventibus.

Diam. maj. 7, min. $5\frac{2}{3}$, alt. 3 mill.

10. *HELIX BICONCAVA*, Pfr. *II. testa umbilicata, depressa, confertim arcuato-costata, opaca, corneo-lutescente, rufo-strigata; spira concava; anfract. $4\frac{1}{2}$ -5, angustis, penultimo convexo, ultimo rotundato, non descendente; umbilico lato, perspectivo; apertura subverticali, altiore quam lata, lunari; perist. simplice, recto, margine dextro antrorsum subarcuato.*

Diam. maj. 5, min. $4\frac{1}{3}$, alt. 2 mill.

11. *PUPA NOVOSEELANDICA*, Pfr. *P. testa perforata, subcylindrica, tenui, oblique confertim costata, saturate fusca, maculis stramineis præcipue ad suturam impressam variegata; spira sursum vix attenuata, apice subrotundata; anfract. $7\frac{1}{2}$, convexiusculis, ultimo $\frac{1}{3}$ longitudinis non attingente, rotundato; apertura subverticali, semicirculari, edentula; perist. simplice, recto, marginibus remotis; columellari superne vix dilatato.*

Long. $4\frac{3}{4}$, diam. 2. mill.; apert. $1\frac{1}{3}$ mill. longa.

12. *TORNATELLINA NOVOSEELANDICA*, Pfr. *T. testa oblongo-turrita, tenui, lævigata, nitida, fulvo-cornea; spira turrita, acutiuscula; anfract. 5, convexiusculis, ultimo $\frac{1}{3}$ longitudinis subæquante, basi rotundato; plica parietali profunda, medioeri; columella albo-callosa, alte torto-subtruncata; apertura vix obliqua, subauriformi; perist. tenui, acuto.*

Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ mill.; apert. $1\frac{1}{3}$ mill. longa.

This seems to be the species mentioned by Mr. Gray (Proc. Zool. Soc. 1849, p. 167), under the name of *Elasmatina Reclusiana*, Petit, from the island Opara; but its characters are very different from those ascribed by M. Petit to his species.

12. DESCRIPTIONS OF EIGHT SPECIES OF LAND SHELLS, FROM THE ISLAND MAURITIUS. BY DR. L. PFEIFFER.

1. *HELIX MUCRONATA*, Pfr. *H. testa imperforata, turbinato-depressa, tenuissima, membranacea, oblique rugosula, lineis spiralibus confertissimis sub lente sculpta, pellucida, virenti-cornea; spira parva, conoidea, mucronata; sutura impressa; anfract. 4, rapide accrescentibus, planiusculis, ultimo non descendente, acute carinato, basi convexiusculo; apertura per-obliqua, subrhombea; perist. simplice, acuto, recto, margine columellari usque ad carinam regulariter arcuato.*

Diam. maj. 17, min. 14, alt. 9 mill.

2. *HELIX MAURITIANA*, Pfr. *H. testa subperforata, conoideo-semiglobosa, solida, superne scabre arcuato-rugosa, opaca, unicolore saturate brunnea; spira convexo-conoidea, apice obtu-*

siuscula; sutura leviter impressa; anfract. 6, vix convexiusculis, lente accrescentibus, ultimo acute carinato (carina filari, pallida), basi convexiusculo, radiato-striato, lineis spiralibus confertissimis decussato; apertura diagonali, subsecuriformi; perist. simplice, acuto, margine basali leviter arcuato, columellari calloso-incrassato, subdentiformi.

Diam. maj. 16, min. 14, alt. $8\frac{1}{2}$ mill.

3. **HELIX LIGHTFOOTI**, Pfr. *H. testa subperforata, conoideo-semiglobosa, tenuiuscula, striatula, corneo-albida; spira conoidea, acutiuscula; anfract. 6, convexiusculis, ultimo rotundato, non descendente, medio excavato; apertura obliqua, lunari; perist. simplice, marginibus remotis, supero brevi, recto, basali leviter arcuato, subreflexo, ad columellam tuberculo valido dentiformi munito.*

Diam. maj. $8\frac{1}{2}$, min. $7\frac{1}{2}$, alt. 5 mill.

4. **BULIMUS MAURITIANUS**, Pfr. *B. testa subperforata, subcylindraco-turrita, tenuiuscula, striata (lineis nonnullis elevatioribus), diaphana, cerea; spira elongata, acutiuscula; anfract. 7, convexiusculis, ultimo $\frac{1}{3}$ longitudinis subæquante, basi vix attenuato; columella substricta; apertura verticali, oblongo-ovali; perist. simplice, recto, margine dextro levissime arcuato, columellari a basi angustissime reflexo.*

Long. 9, diam. 3 mill.; apert. 3 mill. longa, $1\frac{1}{2}$ lata.

5. **TORNATELLINA MAURITIANA**, Pfr. *T. testa ovato-conica, tenui, lævigata, pellucida, cornea; spira conica, obtusiuscula; anfract. $4\frac{1}{2}$, convexiusculis, ultimo inflato, spiram subæquante; lamella parietis aperturalis mediana, compressa, intrante; columella callosa, vitrea, alte dentato-truncata; apertura subsemi-ovali; perist. simplice, acuto, recto.*

Long. 4, diam. $2\frac{1}{2}$ mill.; apert. 2 mill. longa.

6. **CYCLOSTOMA EXPANSILABRE**, Pfr. *C. testa vix perforata, ovato-conica, tenui, sublævigata, parum nitida, pallide lutea, corneo minutissime variegata et fascia 1 rufa infra medium (rarius 2) cincta; spira elevato-conica, apice acutiuscula; anfract. 6, vix convexis, ultimo medio et basi filocarinato; apertura obliqua, ovali; perist. undique subæqualiter breviterque expanso, albo, marginibus subdistantibus.*

Long. $5\frac{1}{2}$, diam. 3 mill.; apert. 2 mill. longa.

7. **CYCLOSTOMA MULTILIRATUM**, Pfr. *C. testa perforata, ovato-conica, solidula, liris elevatis acutiusculis, subconfertis, mediana et basali validioribus sculpta, opaca, rubello-carnea; spira conica, acutiuscula; anfract. $5\frac{1}{2}$, superis subplanis, ultimo convexiore; apertura parum obliqua, angulato-ovali; perist. simplice, recto, marginibus approximatis, columellari superne emarginato, deorsum dilatato, reflexiusculo.*

Long. $8\frac{1}{2}$, diam. 5 mill.; apert. 4 mill. longa.

8. *CYCLOSTOMA GLOBOSUM*, Benson MSS. *C. testa umbilicata, globoso-conica, tenui, subtilissime striatula, diaphana, non nitente, cinnamomea, maculis opacis, albidis, subfasciatim dispositis ornata; spira conica, apice peracuta; anfract. 6, superius vix convexis, ultimo globoso, carina basali subtili, filari; apertura parum obliqua, ovali; perist. simplice, marginibus fere contiguus, dextro perarcuato, columellari medio dilatato, patente.*—*Operc. tenuissimum, corneo-lutescens, extus concaviusculum.*

Long. 8, diam. 5 mill.; apert. 4 mill. longa, $3\frac{1}{3}$ lata.

These three species belong to a generic type in the family *Cyclostomacea*, for which I propose the name *Omphalotropis*, because all known species have a keel-like ridge round the umbilicus. The species belonging to it are the same which I referred previously to the doubtful genus *Hydrocena*, except the typical species of that genus, *Cyclostoma Cattaroense*, Pfr. (*Hydrocena Sirkii*, Parr.), which, by its amphibious nature and by some differences in the structure of the animal itself, seems to belong to another family. The genus may be characterized by the following phrase: *testa perforata vel anguste umbilicata, globoso-turbinata vel turrata, circa perforationem carinata. Apertura ovalis. Peristoma disjunctum, rectum, vel expansum. Operculum tenue, corneum, paucispirale.*

Its known species are the following:—1. *O. aurantiaca*, Desh. (*Cyclost. Belangeri*, Pfr.); 2. *O. erosa*, Quoy & Gaim.; 3. *O. rubens*, Quoy & Gaim.; 4. *O. multilirata*, Pfr.; 5. *O. globosa*, Bens.; 6. *O. dubia*, Pfr.; 7. *O. expansilabris*, Pfr.; 8. *O. hieroglyphica*, Fér.; 9. *O. pupoides*, Anton.; 10. *O. rosea*, Gould; 11. *O. terebralis*, Gould; 12. *O. vallata*, Gould; 13. ?*O. scitula*, Gould.

13. DESCRIPTIONS OF NINETEEN NEW SPECIES OF LAND SHELLS, COLLECTED BY M. BOURCIER, CONSUL-GENERAL, QUITO. BY DR. L. PFEIFFER.

1. *CYCLOSTOMA (CYCLOPHORUS) BOURCIERI*, Pfr. *C. testa late umbilicata, orbiculata, conoidea, solida, subtiliter striata et lineis elevatis spiralibus, plus minusve confertis sculpta, epidermide fusco-olivacea vestita; spira breviter conoidea, vertice nudo, subpapillato; anfract. $4\frac{1}{2}$ –5, convexis, lente accrescentibus, ultimo terete, antice subdescendente; apertura obliqua, subangulato-circulari, intus margaritacea; perist. simplice, recto, anfractui penultimo breviter adnato.*—*Operc. tenuissimum, corneum, arctispirale, extus concavum, intus nitidum, medio umbonatum.*

Diam. maj. 19, min. 15, alt. 9 mill.

Hab. prope Mindo, reipublicæ Æquatoris.

2. *CYCLOSTOMA HELICINIFORME*, Pfr. *C. testa obtecte umbilicata, conoideo-globosa, solidula, striatula, parum nitente, virenti-cornea; spira parvula, conoidea, acutiuscula; anfract. 6, convexiusculis, ultimo inflato, antice subascendente, pone columellam*

profunde excavato, calloso; apertura subverticali, angulato-ovali; columella subverticali, retrorsum in dentem acutum desinente; perist. incrassato, albo, undique late expanso, reflexiusculo.—
Operc. profunde immersum, rufo-corneum, paucispirale.

Diam. maj. $17\frac{1}{2}$, min. 13, alt. 11 mill.

Hab. in valle Yaraqui, reipublicæ Æquatoris.

This shell is very like a *Helicina*, but the spiral operculum excludes it from that genus, and a subgeneric section of *Cyclostoma* must be formed for it.

3. *CLAUSILIA BOURCIERI*, Pfr. *C. testa vix rimata, fusiformi, solida, sublævigata, opaca, corneo-fusca; spira subturrita, apice obtusa; anfract. 9, planis, ultimo basi rotundato; apertura pyriformi-ovali, intus carnea; lamellis approximatis, supera valida, marginali, infera arcuatim ascendente; lunella nulla (vel imperfecta?); plica palatali 1, elongata, subcolumellari inconspicua; perist. libero, soluto, continuo, carneo, expanso, superne sinuoso.*

Long. $17\frac{1}{2}$, diam. $4\frac{1}{2}$ mill.

Hab. Tunguragua, reipublicæ Æquatoris.

4. *HELIX SELENOSTOMA*, Pfr. *H. testa umbilicata, depressa, tenuissima, undique breviter pilosa, diaphana, fuscula, fasciis pluribus rufis, maculatim interruptis cincta; spira plana, medio subimmersa; anfract. $4\frac{1}{2}$, convexis, ultimo rotundato, antice vix descendente, circa umbilicum angustum, pervium subcompresso; apertura subverticali, rotundato-lunari, intus nitida; perist. tenui, sinuoso, marginibus convergentibus, supero late expanso, basali reflexo, columellari oblique ascendente, superne dilatato.*

Diam. maj. 26, min. 21, alt. 11 mill.

Hab. prope Gualea, reipublicæ Æquatoris.

Another new species from Mr. Cuming's collection, nearly allied to this, from the Andes of New Granada, may be described by the following phrasis :

HELIX CATENIFERA, Pfr. *H. testa umbilicata, depressa, tenui, confertim granulata, diaphana, pallide fuscescente, fasciis variis catenatim interruptis, rufis ornata; spira subplana; anfract. 5, convexiusculis, ultimo ventricoso, antice vix descendente, basi convexo; umbilico infundibuliformi; apertura subverticali, lunato-rotundata; perist. tenui, marginibus convergentibus, supero et basali vix expansis, columellari parum dilatato.*

Diam. maj. $25\frac{1}{2}$, min. 21, alt. 12 mill.

5. *HELIX GUAYAQUILENSIS*, Pfr. *H. testa umbilicata, depressa, discoidea, tenuiuscula, striatula, pallide lutescente, diaphana; spira plana; anfract. 5, planiusculis, lente accrescentibus, ultimo rotundato, antice non descendente, basi fasciis nonnullis opacis, albidis signato; umbilico lato; apertura obliqua, lunato-rotundata; perist. simplice, acuto, recto, marginibus conniventibus, supero subrependo.*

Diam. maj. 10, min. 9, alt. $3\frac{1}{2}$ mill.

Hab. ad Babahoya, Guayaquil.

6. *HELIX BOURCIERI*, Pfr. *H. testa obtecte umbilicata, conoideo-semiglobosa, tenuiuscula, opaca, nigro-rufescente, strigis fulguratis epidermidis subhydrophanæ, ochraceæ elegantissime marmorata; spira subconoidea, apice obtusa; anfract. 5, parum convexis, ultimo obtuse angulato, antice perdeflexo, basi subplano, medio impresso; apertura horizontali, transverse oblonga, quadridentata: dentibus 2 subæqualibus superne, et in basi lateris dextri 2 minoribus, approximatis juxta columellam; perist. albo, marginibus callo junctis, supero sinuoso, late expanso, basali late reflexo, supra umbilicum dilatato, appresso.*

Diam. maj. 27, min. 24, alt. 15 mill.

Hab. Otoralo, reipublicæ Æquatoris.

7. *HELIX BITUBERCULATA*, Pfr. *H. testa umbilicata, globoso-depressa, solida, irregulariter striata et minutissime granulata, nitidula, nigricanti-rufa; spira breviter fornicata, apice obtusa; anfract. 4, parum convexis, ultimo angulato, antice rotundato, breviter deflexo, basi inflato; apertura perobliqua, truncato-ovali, intus margaritacea; perist. violaceo-carneo, marginibus subparallelis, supero breviter expanso, basali reflexo, supra umbilicum angustum dilatato, tuberculis 2, approximatis introrsum munito.*

Diam. maj. 22, min. 18½, alt. 12 mill.

Hab. prope Tunguragua, reipublicæ Æquatoris.

8. *HELIX ATRATA*, Pfr. *H. testa subobtece umbilicata, sublenti-formi, solida, striata et minute granulata, virescenti-atra; spira parum elevata, vertice obtuso; anfract. 5, planiusculis, sensim accrescentibus, ultimo carinato, antrorsum superne turgido, deflexo, basi versus aperturam saccato; apertura perobliqua; subtrigonolunari; perist. crasso, albo, undique reflexo, marginibus callo crasso junctis, dextro supra basin dente 1, obtuse conico munito.*

Diam. maj. 44, min. 37, alt. 19 mill.

Hab. Puntophaya, reipublicæ Æquatoris.

9. *BULIMUS BOURCIERI*, Pfr. *B. testa imperforata, subfusiformi-ovata, solidula, longitudinaliter striata et concentricè subconfertim sulcata, parum nitida, carneo-grisea, obscurius variegata; spira conica, apice acuta; anfract. 6, planiusculis, ultimo spiram paulo superante, basi late et circumscripte carinato; apertura subverticali, subrhombico-ovali, basi angulata; perist. subincrassato, breviter expanso, extus et intus roseo, marginibus callo roseo junctis, dextro leviter arcuato, columellari superne subtorto, tum fere rectangule ad angulum basalem procedente.*

Long. 25, diam. 11 mill.

Hab. Pichincha, reipublicæ Æquatoris.

10. *BULIMUS FALLAX*, Pfr. *B. testa perforata, oblique ventricosonica, tenui, albida, obsoletissime lutescenti-variegata; spira conica, apice acutiusecula; anfract. 5½, convexiusculis, ultimo spiram subæquante, irregulariter tumescente, basi oblique producto, compresso, angulato; apertura verticali, subtriangulari; perist. simplice, tenui, expanso, intus albo- vel roseo-labiato, interdum*

tuberculis callosis munito, margine columellari perdeclivi, reflexo, supra perforationem adnato.

Long. 24, diam. 12 mill.

Hab. Tunguragua, reipublicæ Æquatoris.

11. *BULIMUS NYSTIANUS*, Pfr. *B. testa vix perforata, ovato-conica, solidula, scabre striata et punctata, parum nitida, albida, strigis et maculis spadiceis dense variegata; spira conica, acutiuscula; anfract. 6, vix convexiusculis, rapide accrescentibus, ultimo ventricoso, $\frac{4}{7}$ longitudinis subæquante, basi angulatim compresso; columella fusco-violacea, superne recedente, tum arcuatim ad angulum aperturae subrhombeco-ovalis progrediente; perist. simplice, breviter expanso, margine columellari superne breviter reflexo.*

Long. 32, diam. 15 mill.

Hab. in valle Pomasqui, reipublicæ Æquatoris.

12. *BULIMUS TRICOLOR*, Pfr. *B. testa subperforata, ovata, tenui, striata et minute granulata, olivaceo-fusca, strigis obliquis, interruptis, saturate castaneis fulgurata; spira ventricoso-conica, apice sanguinea, acutiuscula; sutura denticulato-marginata; anfract. 4, supremis 2 planiusculis, ultimis ventricosis, ultimo peroblique descendente, basi attenuato; columella simplice, vix arcuata; apertura parva, spiram vix superante, oblongo-ovali; perist. rufo-carneo, subincrassato, vix expanso, margine columellari superne dilatato, reflexo.*

Long. 42, diam. 21 mill.

Hab. Gualea, reipublicæ Æquatoris.

13. *BULIMUS GUTTULA*, Pfr. *B. testa perforata, ovato-conica, tenuissima, striata, pellucida, cornea; spira conica, apice obtusa; anfract. 5, convexiusculis, ultimo spiram paulo superante, rotundato; columella leviter arcuata; apertura obliqua, truncato-ovali; perist. simplice, tenui, breviter expanso, margine columellari fornicatim reflexiusculo.*

Long. 16, diam. 9 mill.

Hab. Gualea, reipublicæ Æquatoris.

14. *BULIMUS CATLOWIÆ*, Pfr. *B. testa subaperte umbilicata, ovato-conica, tenuiuscula, confertim striata, carnea, lineolis fulvidis confertis picta, vel nigro-violacescente, albido-lineata; spira conica, apice acutiuscula, cornea; anfract. 7, convexiusculis, ultimo spira brevior, basi vix compressulo; columella subrecedente; apertura subverticali, ovali-oblonga; perist. simplice, recto, margine dextro leviter arcuato, columellari dilatato, patente.*

Long. 25, diam. 11 mill.

Hab. prope Quito.

15. *BULIMUS CUNEUS*, Pfr. *B. testa imperforata, clavato-turrita, solida, lævigata, arcuatim irregulariter substriata, fulva; spira turrita, apice acutiuscula; sutura minute crenulata, linea impressa marginata; anfract. 10, planis, ultimo $\frac{2}{7}$ longitudinis æquante, basi rotundato; columella leviter arcuata, anguste callosa, plana;*

apertura subrhombéo-ovali; perist. simplice, recto, margine dextro levissime arcuato, basali cum columella angulum obtusum formante.

Long. 63, diam. 16 mill.

Hab. in ripis fluvii Mira, reipublicæ Æquatoris.

16. *BULIMUS RIPARIUS*, Pfr. *B. testa imperforata, turrita, solida, striata, opaca, straminea; spira elongata, apice obtusiuscula; sutura lineari, confertissime crenulata, non marginata; anfract. 11, lente accrescentibus, planis, ultimo $\frac{1}{4}$ longitudinis non æquante, basi rotundato; columella superne vix torta, tum verticaliter descendente; apertura parva, acuminato-ovali; perist. simplice, recto, margine dextro leviter arcuato, columellari reflexiusculo.*

Long. 53, diam. 11 mill.

Hab. cum præcedente.

17. *BULIMUS ÆQUATORIUS*, Pfr. *B. testa perforata, oblongo-ovata, solidula, irregulariter striata, carneo-albida, fasciis 3-4, latis, cæruleo-nigricantibus, subinterruptis ornata; spira convexo-conica, apice acutiuscula; anfract. 6, convexiusculis, ultimo spira brevior, basi rotundato; columella substricta; apertura subverticali, oblongo-ovali; perist. simplice, recto, margine dextro leviter arcuato, columellari brevi, angulatim late reflexo, patente.*

Long. 34, diam. 17 mill.

β. minor, anfract. 6, fasciatus ut α.

Long. 26, diam. 13 mill.

γ. Albidus, irregulariter castaneo-strigatus.

Long. 32, diam. 16 mill.

Hab. in republica Æquatoris, *α* in monte Schinchulagua, *β* et *γ* ad Chimborazo.

18. *BULIMUS ANTHISANENSIS*, Pfr. *B. testa imperforata, ovato-conica, solidula, rugoso-striata et granulata, sericea, castanea, fulvido et luteo marmorata; spira conica, apice acutiuscula; anfract. $6\frac{1}{2}$, subplanis, ultimo spiram æquante, basi subattenuato; columella callosa, substrictè recedente; apertura subverticali, semi-ovali, intus livida; perist. simplice, recto, margine dextro leviter arcuato, columellari superne calloso-dilatato, adnato, albo.*

Long. 40, diam. 17 mill.

Hab. in monte Anthisana, reipubl. Æquatoris, 14,000' supra oceanum.

19. *BULIMUS COTOPAXIENSIS*, Pfr. *B. testa perforata, oblongo-ovata, solidula, striata, lineis spiralibus (infra medium anfract. ultimi evanescentibus) granulato-decussata, sub epidermide fulvo-lutescente, fusco sæpe strigata vel interrupte fasciata, alba; spira convexo-conica, apice obtusiuscula; anfract. 6, parum convexis, ultimo spiram æquante, basi rotundato; columella substrictè recedente; apertura parum obliqua, ovali, intus alba, nitida; perist. simplice, obtuso, recto, margine dextro leviter arcuato, columellari dilatato, albo, fornicatim reflexo.*

Long. 24, diam. 16 mill.

β. spira elongata, crebrius fusco-marmorata, lineis spiralibus anfract. ultimi usque ad basin conspicuis.

Long. 35, diam. 15 mill.

Hab. Cotopaxi, reipubl. Æquatoris; var. *β.* in monte Cayembe.

14. DESCRIPTIONS OF EIGHTEEN NEW SPECIES OF LAND-SHELLS,
FROM THE COLLECTION OF H. CUMING, ESQ.

By DR. L. PFEIFFER.

(Mollusca, Pl. XIII.)

1. VITRINA IRRADIANS, Pfr. *V. testa depressa, ambitu subauriformi, tenui, lineis impressis confertim arcuato-radiata, lineis irregularibus spiralibus obsolete decussata, diaphana, vix nitidula, superne cinnamomeo-cornea; spira parvula, subpapillatim elevata; sutura impressa, marginata; anfract. fere 4, planiusculis, rapide accrescentibus, ultimo depresso, basi convexiore; apertura perobliqua, lunato-subcirculari; perist. simplice, tenui, margine columellari regulariter arcuato.*

Diam. $18\frac{1}{2}$, alt. 8 mill.

Hab. in insula Ceylon.

2. VITRINA AMERICANA, Pfr. *V. testa depresso semiglobosa, tenuissima, lævigatissima, nitidissima, virenti-hyalina; spira parvula, vix elata; sutura subcrenulata; anfract. $2\frac{1}{2}$, convexiusculis, celeriter accrescentibus, ultimo subrotundato, subtu latiusculo, anguste membranaceo-marginato; apertura fere diagonali, lunato-rotundata; perist. simplice, regulariter arcuato, margine supero antrorsum subdilato.*

Diam. maj. 4, min. 3, alt. 2 mill.

Hab. in Rebuspublicis Fœderatis Americæ Borealis.

Forma persimilis *V. annulata*, Stud., testa lævigatissima, apertura obliqua, etc. diversa.

3. HELIX BARRAKPORENSIS, Pfr. *H. testa subperforata, elevato-trochiformi, tenui, striatula, nitida, pellucida, fusco-cornea; spira conica, acutiuscula; sutura profunda; anfract. 6, convexis, lente accrescentibus, ultimo carinato, non descendente, basi convexiusculo; apertura vix obliqua, depressa, subangulato-lunari; perist. simplice, tenui, recto, margine columellari brevi, ad perforationem punctiformem reflexiusculo.*

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

Hab. ad Barrakpore, Indiæ (*Bacon*).

4. HELIX MÜHLFELDTIANA, Pfr. *H. testa latissime umbilicata, subdiscoidea, solida, rugoso-striata, lineis elevatis spiralibus superne decussata, nigricanti-castanea; spira vix elevata, apice obtusissima; anfract. 5, planiusculis, ultimo lato, depresso, acute carinato, antice tumido, profunde deflexo, basi irregulariter compresso; apertura subhorizontali, transverse ovali, intus cærulescenti-alba; perist. simplice, marginibus conniventibus, supero recto, incumbente, basali incrassato, subreflexo.*

Diam. maj. 47, min. 37, alt. 15 mill.

Hab. in Australia.

5. *HELIX DUNKERI*, Pfr. *H. testa umbilicata, perdepressa, tenuiuscula, striata et subtilissime granulata, acute carinata, diaphana, fulva, castaneo-fasciata; spira vix elevata, apice obtusa; anfract. 4½, planis, sensim accrescentibus, ultimo antice angulatim deflexo, basi circa umbilicum mediocrem inflato, pone aperturam profunde scrobiculato; apertura horizontali, elliptico-pyriformi, dente linguæformi, libero in ventre anfr. penultimi coarctata; perist. continuo, tenui, margine supero expanso, basali reflexo, 4-dentato, dente primo obsolete, transverso, juxta umbilicum, secundo erecto, compresso, tertio obliquo cum quarto profundiore basi subjuncto.*

Diam. maj. 22, min. 19, alt. 7½ mill.

Hab. in Andibus Novæ Granadæ.

6. *BULIMUS LARDEUS*, Pfr. *B. testa subperforata, oblongo-ovata, solidula, striata, lardeo-micante, rufo-cornea; spira convexo-turrata, apice obtusa; anfract. 6, convexiusculis, ultimo ⅓ longitudinis vix superante, basi subcompresso; apertura subverticali, truncato-ovali; perist. intus labiato, subangulatim patente, marginibus remotis, callo tenui juxta insertionem dextri obsolete pliciferi junctis.*

Long. 5½, diam. 2⅓ mill.

Hab. in India orientali.

7. *BULIMUS INCRASSATUS*, Pfr. *B. testa profunde rimato-perforata, ovato-pyramidata, solida, irregulariter plicata et lineis spiralibus sculpta, saturate castanea, strigis et maculis lutescentibus, incrassatis, prominentibus munita; spira conica, acutiuscula; anfract. 7, superis planiusculis, 2 ultimis inflatis, ultimo ⅔ longitudinis æquante, basi subcompresso; apertura vix obliqua, oblonga, ad columellam angulato-effusa; perist. simplice, recto, marginibus subparallelis, columellari stricto, dilatato, fornicatim patente.*

Long. 17½, diam. 8½ mill.

Hab. in insulis Galapagos.

8. *ACHATINA CARNEA*, Pfr. *A. testa ovato-oblonga, solidula, striis spiralibus et longitudinalibus (infra medium anfractus ultimi obsolete) subtiliter decussata, diaphana, sericea, carnea; spira sensim attenuata, apice obtusa; sutura eleganter et confertim denticulata; anfract. 6 convexiusculis; sutura eleganter et confertim denticulata; anfract. 6 convexiusculis; ultimo spira vix brevior, basi subattenuata; columella leviter arcuata, abrupte truncata; apertura verticali, subrhombo-semilunari; perist. simplice, recto, obtuso.*

Long. 25, diam. 11 mill.

Hab. in America centrali.

9. *DIPLOMMATINA HUTTONI*, Pfr. *D. testa sinistrorsa, subrimata, ovato-conica, eleganter confertim et oblique costulata, diaphana, albida; spira conica, acuta; anfract. 6, perconvexis; apertura subcirculari; perist. duplice, expanso.*

Long. 2½, diam. 1 mill.

This little shell belongs to the genus *Diplommatina*, founded by

Mr. Benson (Ann. and Mag. Nat. Hist. 1849, Sept.) on sufficient characters of the shell and of the animal, for *Carychium costatum*, Hutt., which I had erroneously referred to *Bulimus* under the name *B. folliculus*. The genus seems to belong to the *Auriculacea*.

10. **PTEROCYCLOS CUMINGI**, Pfr. *Pt. testa latissime umbilicata, solida, striatula, nitida, fulvo-lutea, strigis castaneis, fulguratis, bifasciatim latioribus et saturatioribus picta; spira plana; anfract. 5, convexis, ultimo terete, antice juxta penultimum in prominentiam elongatam, fornicatam, sulco circumscriptam tumefacto; apertura parum obliqua, subcirculari, intus margaritacea; perist. simplice, albo, incrassato, reflexo, superne sulco triangulari subinterrupto, in linguam inflexam tenuiusculam producto.—Operculum?*

Diam. maj. 32, min. 28, alt. 6 mill.

Hab. in insula Ceylon.

11. **PUPINA TEMPLEMANI**, Pfr. *P. testa subperforata, subfusi-formi-oblonga, solidula, striata, parum nitida, non callosa, castanea; spira oblongo-turrita, apice acutiuscula; anfract. 8 planiusculis, ultimo basi acute et prominenter carinato; apertura verticali, basi subproducta; perist. continuo, aurantiaco, superne breviter adnato, margine dextro sinistroque reflexo-patentibus, basali deorsum dilatato, canaliculato: canali extus lato, intus lineari.—Operculum?*

Long. 20, diam. 7 mill.

β. *Pallide straminea, distinctius striata, perist. crassiore, albo.*

Hab. in insula Ceylon (*Capt. Templeman*).

12. **CYCLOSTOMA CHRYSALIS**, Pfr. *C. testa umbilicata, distorto-ovata, solida, striatula et punctato-malleata, fusco-carnea; spira irregulariter ovata apice conoidea, acutiuscula; sutura levi; anfract. 6, convexiusculis, penultimo latere aperturali planulato, ultimo angustiore; apertura verticali, circulari; perist. crasso, dilatato, patente, reflexo, margine supero linea horizontali adnato.—Operculum?*

Long. 16, diam. 9 mill.

Hab. Ava.

13. **CYCLOSTOMA (CYCLOPHORUS) BENSONI**, Pfr. *C. testa umbilicata, subgloboso-turbinata, solida, lineis obliquis et confertis spiralibus subtiliter decussata, albido-fulva, castaneo-variegata; spira turbinata, obtusiuscula; anfract. 5, convexis, supremis unicoloribus luridis, sequentibus flammulato-pictis, ultimo magno, obsolete angulato, ad carinam fascia nigricante et utrinque fasciis inæqualibus, castaneis ornato, circa umbilicum angustum, infundibuliformem pallido, subcompresso; apertura parum obliqua, subcirculari, intus lactea; perist. continuo, igneo-aurantiaco, breviter adnato, breviter fornicato-reflexo.—Operc.?*

Diam. maj. 43, min. 34, alt. 26 mill.

Locality unknown.

14. **CYCLOSTOMA BARCLAYANUM**, Pfr. *C. testa obtecte perforata, globoso-conica, solida, longitudinaliter confertim striatula et carinis*

multis acute elevatis munita, violacescenti-fusca, strigis saturatio-ribus et pallidioribus variegata; spira conica, apice obtusa; anfract. 5, parum convexis, ultimo carinis 3 validioribus, prominentioribus munito: maxima mediana, secunda basali, tertia in parte supera; apertura fere verticali, subcirculari, intus livido-sanguinea; perist. sanguineo, subincrassato, expanso, ad anfractum penultimum lunatum emarginato, margine dextro carinis crenulato, columellari fornicato-reflexo, perforationem fere claudente.—Operc. testaceum, 5-spiratum, extus concavum, album.

Long. 29, diam. 23 mill.

Hab. Isle of France (Sir D. Barclay).

This shell is figured by Mr. Sowerby in the 'Thes.' t. 26. f. 118, under the name of *C. carinatum*, var.

15. *CYCLOSTOMA ELATUM*, Pfr. *C. testa umbilicata, conica, tenuiuscula, oblique striata, lineis spiralibus, distantibus, elevatis sub lente munita, vix diaphana, albida; spira conica, acutiuscula; anfract. 5½, parum convexis, ultimo convexiore, subacute carinato, basi confertius reticulato; umbilico angustissimo, non pervio; apertura diagonali, truncato-ovali; perist. simplice, marginibus distantibus, aequalis, angulatim patentibus, columellari subangustato.—Operc. ?*

Diam. maj. 11½, min. 10, alt. 10½ mill.

Hab. in insula Ceylon.

16. *HELIX ZOLLINGERI*, Pfr. *H. testa umbilicata, subconoideo-depressa, tenui, striata, castanea, pallidius variegata, diaphana, nitidula, spira breviter conoidea, obtusa; anfract. 5, vix convexiusculis, ultimo non descendente, acute carinato, subtus convexiusculo; umbilico mediocri, extus infundibuliformi; apertura perobliqua, rhomboidea; perist. simplice, acuto, recto.*

Diam. maj. 17, min. 15, alt. vix 6 mill.

Hab. in insula Java?

17. *HELIX DUPUYANA*, Pfr. *H. testa imperforata, trochiformi, solidula, subcarinata, striis obliquis incrementi et lineis longitudinalibus, confertissimis, impressis subdecussata, sericina, fulva, fasciis 2 angustis, castaneis, altera ad suturam, altera supra carinam obtusiusculam ornata; spira conoidea, vertice obtuso; anfract. 5½, planulatis, ultimo antice breviter deflexo, basi convexiusculo, antice tumido, supra carinam deflexam scrobiculato; apertura perobliqua, subtriangulari, intus margaritacea; perist. simplice, nigro-labiato, marginibus callo nigro-castaneo, supra regionem umbilicalem dilatato, junctis, dextro repando, breviter expanso, basali strictiusculo, reflexo, medio introrsum transverse subdentato, columellari brevi.*

Diam. maj. 32, min. 28, alt. 20 mill.

Hab. in ora orientali Novæ Hollandiæ.

This beautiful shell from Mr. Cuming's collection, already figured in Chemn. ed. ii. t. 124. f. 15, 16, but not described till now, was accidentally omitted in my paper of 1849.

18. CATAULUS LAYARDI, Gray. (*Pupina Templemani*, β ., Pfr. in Proc. Zool. Soc. 1851.) (Pl. XIII. fig. 6.) *C. testa subperforata, subfusiformi-oblonga, solida, distincte arcuato-striata, pallide straminea; spira oblongo-turrita, apice acutiuscula; anfr. 8, planiusculis, ultimo basi carina elevata, compressa munita, circa umbilicum angustissimum costulato; apertura verticali, subcirculari, basi canali subaperto aucta; perist. continuo, albo, superne breviter adnato, duplice: interno porrecto, externo incrassato-reflexo, basi subangulatim producto, canali extus lato, introrsum angustiore, excavato.*

Long. $17\frac{1}{2}$, diam. medio 7 mill.

Hab. Ceylon.

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