

with a clue to the position of any species of genera previously unknown on our coasts which may reward his researches. The characters of the families and genera are given in analytical tables, and afterwards in a more detailed form. The generic descriptions in those cases where the genus contains several species are followed by analytical tables of the species, and we then come to the carefully drawn-up specific descriptions, which are preceded by short characters and by a very full synonymy. The varieties of the different species are also described in considerable detail, and this descriptive portion is followed in each case by an account of the habits and natural history of the species, and a list of the localities in which it has been met with. As there are few, if any, of our British naturalists who have had the same opportunities as Mr. Gosse of studying the Sea-Anemones in their native haunts, or who possess the power of describing their observations in the same lucid and interesting style, this portion of the work is most attractive and valuable.

The species described in the four Parts before us all belong to Mr. Gosse's family *Sagartiadæ*, to which we observe he now refers the genus *Capnea*, placed by him amongst the *Caryophyllacea*, in his Synopsis lately published in this Journal. They include the genera *Actinoloba* (*A. dianthus*), *Sagartia*, with fifteen species (five or six imperfectly known species being deferred to an Appendix), and *Adamsia*.

The plates illustrating the work are, like most of Mr. Gosse's, beautifully executed; they represent the various species and many of their varieties, adhering, in different states of expansion and contraction, to the walls of their rocky home, from which the bright colours of their delicate crowns of tentacles stand out in fine contrast. Each plate contains on an average about nine figures; and their beauty, coupled with the intrinsic value and interesting nature of the work, must render it equally acceptable as an ornament to the drawing-room table and as a handbook for the scientific naturalist.

PROCEEDINGS OF LEARNED SOCIETIES.

ZOOLOGICAL SOCIETY.

April 13, 1858.—Dr. Gray, F.R.S., V.P., in the Chair.

DESCRIPTION OF A NEW GENUS OF SPONGE (XENOSPONGIA) FROM TORRES STRAIT. BY DR. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., PRES. ENT. SOC. ETC.

The Sponge here described was received from Torres Strait with some very interesting Madrepores and Polyzoa.

It is peculiar from its being free like the *Fungiæ* among the Madrepores, but more concave beneath, from its having the upper oscules placed in the diverging forked groove of the upper surface, and from its having the whole of the under surface covered with a thick coat

formed of agglutinated particles of silicious sea-sand, this coat being much thicker than the sponge itself; it is probably used to keep it in its place and position at the bottom of the sea.

Genus XENOSPONGIA.

Sponge free, discoidal, subcircular, concave below, convex above (rarely lobed on the side); the lower surface with a thick coat of agglutinated silicious sand of nearly equal-sized particles; the upper surface covered with a white leathery coat formed of felted spicula, studded with round tufts of glassy spicula, the tufts of nearly equal size, formed of numerous very fine transparent filiform spicula, forming a roundish brush, each tuft surrounded at the base by a slightly raised edge of the leathery upper coat; the circumference of the disk is surrounded by a uniform series of similar tufts. The centre of the upper surface is marked with a subcentral impressed groove with raised edges enclosing a series of circular oscules; this groove sends out branches diverging towards the edge, which are forked and reforked (or rarely trifid) as the disk enlarges, until they approach the edge of the circumference, which is surrounded by two continuous circular grooves, concentric with the margin, containing between them a single circular submarginal series of tufts of spicula.

When the sponge is young, the forked diverging grooves are few, definite, and evenly spread over the surface of the disk, with several series of tufts between them; but as the sponge increases in age, the grooves become much more numerous, closer together, nearly parallel with each other, and enclosing only a single series of tufts of spicula between the parallel grooves.

The substance of the sponge between the grooves is minutely netted, the interspaces of the network being formed of bundles of very minute spicula, with a single series of small uniform-sized, equal, roundish oscules.

The upper surface of the adult sponge is sometimes taken possession of by a species of *Balanus*, which forms a prominence on its surface, and is covered externally with a coat of the sponge.

XENOSPONGIA PATELLIFORMIS.

Hab. Torres Strait.

The particles of sand forming the lower coat of the sponge are as if they were imbedded in a kind of plaster, having a smooth uniform surface, exactly as if the sand had been well mixed with a small quantity of fluid mortar and then cast upon a smooth body.

The whole under surface is not perfectly smooth, but with more or less distinct impressed lines or concavities placed parallel with the circumference, showing the periodical increase in the size of the sponge.

There is scattered over the under surface of the larger specimen a few larger dark-coloured stones and a few fragments of shells, which give a variegated appearance to the coat. The larger specimen, after

it had reached a certain size, made an irregular growth on one of the sides, forming two rounded lobes which overlap each other, while the whole front retains the concave conical shape.

The lobe, which is expanded on the under surface of the other, is fringed with a continuous series of very close tufts of silky spicula. I have no doubt, as the bases of these tufts are to be seen on the rest of the margin, that similar tufts occupy the whole edge of the sponge in its perfect state, and have been rubbed off; they have been retained in this place, because it is better protected from external injury than the other part of the sponge.

In the larger specimens the grooves are much more irregular, as well as more abundant and more crowded than in the smaller one; and in some few instances they appear to arise in the surface independent of any connexion with the other grooves, which is not the case in the smaller example.

In the same specimen there are a few groups or rather lines of oscules, situated on the surface of the sponge itself, and not placed in the grooves, where all the other oscules are placed.

In the diverging grooves the texture of the sponge seems to be across the grooves, that is, parallel to the outer circumference of the sponge, leaving minute square pits in the network.

In the marginal grooves, on the contrary, chief fibres of the texture appear to be also across the groove, that is, radiating from the centre towards the margin; but this appearance may probably arise partly, if not entirely, from the manner in which the sponge has contracted when it dried, and may not be apparent in the fresh state; but having only a single specimen of the adult and young form of the sponge, I am disinclined to soak it in water and examine it in a moist state, fearing that it may spoil the specimen, which is now very brittle and inclined to crack from the edge to the centre of the frond.

NOTE ON A TALKING CANARY, ADDRESSED TO DR. GRAY, V.P.Z.S.
BY S. LEIGH SOTHEY.

The Woodlands, Norwood, Surrey,
March 26, 1858.

DEAR SIR,

Touching that marvellous little specimen of the feathered tribe, a Talking Canary, of which I had the pleasure a few days since of telling you, I now send you all the information I can obtain respecting it from the lady by whom it was brought up and educated at this our homestead.

Its parents had previously and successfully reared many young ones; but three years ago they hatched only *one* out of four eggs, which they immediately neglected, commencing the rebuilding of a nest upon the top of it. Upon this discovery, the unfledged and forsaken bird, all but dead, was taken away and placed in flannel by the fire, when after much attention it was restored and then brought up by hand. Thus treated, and away from all other birds, it became familiarized only with those who fed it; conse-

quently, its first singing notes were of a character totally different to those usual with the Canary.

Constantly being talked to, the bird, when about three months old, astonished its mistress by repeating the endearing terms used in talking to it, such as "*Kissie, Kissie*," with its significant sounds. This went on, and from time to time the little bird repeated other words; and now, for hours together, except during the moulting season, astonishes us by *ringing the changes*, according to its own fancy, and as plain as any human voice can articulate them, on the several words—"Dear sweet *Titchie*" (its name), "*Kiss Minnie*," "*Kiss me then dear Minnie*," "*Sweet pretty little Titchie*," "*Kissie, kissie, kissie*," "*Dear Titchie*," "*Titchie wee, gee, gee, gee, Titchie, Titchie*."

Now as I have shown that the great Melanchthon signed his name in no less than *sixty* different ways in uniting the words *Philippus Melanchthon* (see the plate of facsimiles in my work, a copy of which is in the British Museum), you will not be surprised at the extraordinary manner in which the dear little bird varies the several words he has learned.

The usual singing notes of the bird are more of the character of the Nightingale, mingled occasionally with the sound of the dog-whistle used about the house. It whistles also, very clearly, the first bar of "*God save the Queen*." It is hardly necessary to add that the bird is, of course, by nature remarkably tame; so much so, that, during its season, it will perch down from its cage on my finger, shouting and talking in the most excited state.

Our friend Mr. Waterhouse Hawkins, who has heard the bird, tells me that about twenty years ago a Canary that spoke a few words was exhibited in Regent Street, the only other instance, I believe, publicly known.

I have now only to apologize for having trespassed upon your patience to read all this long story about the accomplishments of a little bird; though at the same time I feel, that in acquainting you, as Vice-President of the Zoological Society, with the facts stated, I am not only giving you the means of placing upon record the same, but affording you the opportunity of witnessing the *truth* thereof, as being, in the event of any accident happening to the bird, a more satisfactory evidence than the mere assertion of,

Dear Sir,

Yours most faithfully,

Dr. John Gray.

S. LEIGH SOTHEY.

April 27, 1858.—Dr. Gray, F.R.S., V.P., in the Chair.

DESCRIPTIONS OF NEW SPECIES OF ANT-WRENS (FORMICIVORINAE). BY PHILIP LUTLEY SCLATER, M.A., F.L.S. ETC.

MYRMOTHERULA MULTOSTRIATA.

♂. *Nigra, albo striata: alis caudaque nigris albo limbatis et terminatis: subtus alba, lineis angustis nigris omnino striata.*

♀. *Capite ferrugineo, nigro striato: subtus pallide rufescenti-albida, striis minus crebris nigris.*

Long. tota 3·5, alæ 1·9, caudæ 0·9.

Hab. Upper Amazon, r. Ucayali (*Hauxwell*).

Mus. Brit., P. L. S.

FORMICIVORA ERYTHROCERCA.

♂. *Pileo nigro, loris et superciliis elongatis albis: dorso superiore griseo nigro variegato: interscapulii plumis ad basin albis: dorso postico ferrugineo: alis extus et cauda tota saturate rufis: alarum tectricibus superioribus nigris albo terminatis: subtus grisescenti-alba, nigro variegata, ventre cum lateribus et crisso ferrugineis; rostro brunnescente, pedibus pallidis.*

Long. tota 5·5, alæ 2·3, caudæ 2·7.

Hab. Brazil?

Mus. Dom. Eyton.

A single specimen of this apparently distinct species has been kindly lent to me by Mr. Eyton. The colouring of the upper surface resembles *F. ferruginea* and *F. Genæi*, but it is easily distinguishable by its pure rufous tail.

CERCOMACRA NIGRICANS.

Formicivora melanaria, Ménétr. Mon. Myioth. p. 500. pl. 9. fig. 2??

♂. *Cinerascenti-nigra, subtus nigra; macula interscapulii celata, tectricum alarium marginibus, remigum basi interiore et caudæ rectricum omnium apicibus albis: rostri nigri mandibula inferiore albicante: pedibus nigris.*

Long. tota 5·5, alæ 2·4, caudæ 2·5.

Hab. New Granada, S. Martha (*Verreaux*); Bogota.

Mus. Brit., P. L. S.

I received specimens of this bird from MM. Verreaux, labeled "*F. melanaria*." But that species seems to be "*coal-black*" above, and is from a very different zoological region. I therefore doubt their identity.

PYRIGLENA MACULICAUDIS.

♂. *Atra: campterio, tectricum alarium apicibus, macula dorsi celata et caudæ rectricum apicibus albis: rostro et pedibus nigris.*

Long. tota 5·5, alæ 2·7, caudæ 2·5.

Hab. Trinidad.

Mus. P. L. S.

I have two specimens of this apparently unnamed *Pyriglena* in my own collection. It is distinguishable from *P. atra*, *ellisiana*, and *serva*, by the white terminations of the tail-feathers. The bill is rather broader and stouter than in the typical species.

HYPOCNEMIS SCHISTACEA.

♂. *Cærulescenti-schistacea unicolor* : *tectricum alarium omnium apicibus minute albo punctatis* : *rostro et pedibus nigris*.

Long. tota 5·0, alæ 2·5, caudæ 2·0.

Hab. Upper Amazon ; Rio Javarri (*Bates*).

Mus. Brit.

In the general form and somewhat slender bill this species resembles *H. erythrophrys* ; but its uniform colouring renders it easily distinguishable from that and other described members of the genus.

ADDITIONAL OBSERVATIONS ON THE GENUS FURCELLA.

By DR. J. E. GRAY, F.R.S., ETC.

Sir Everard Home, as I stated in my former paper*, figured the fragment of the vaulted continuation of the tube that closes its lower ends, for the shelly valves of the animal. Considering this as an accidental mistake, I took no further notice of it. An eminent comparative anatomist having observed,—“In the great *Teredo arenaria*, which lives in soft mud, the valves are wanting, according to Dr. Gray, or their homologues form the convex cap closing the periodical growths of the calcareous tubes” (“Mollusca,” in *Ency. Britan.* 353), I feel it incumbent on me to show the reasons why I cannot consider the “convex caps” closing the calcareous tube to be the homologues of the true valves, which, in my paper, I have said are entirely absent.

First. The caps have the structure, and are continuations of the tube, and have no relation to the usual valves of the *Teredo* in their form or structure.

Secondly. The convex caps here referred to are evidently identical in structure and formation with the convex cap that is found on the end of the tubes of the allied genera *Clavagella* and *Aspergillum* ; and as these genera have the shelly valves of the animal in their proper situations, on the sides of the body, quite distinct from the convex caps, I think it is conclusive that they are not the *homologues* of the valves, in those genera, as both the valves and the caps which are considered as their homologues are present together, so that I must consider the convex cap in those genera as I do in *Furcella*, only as a continuation of the shelly tube in which the animal lives, and having no more affinity with the shelly valves than the tube of *Gastrochæna* and some *Lithodomi* and other perforating Mollusca.

Thirdly. It is to be remembered that some species of the true genus *Teredo*, which have distinct shelly valves, also form a shelly convex cap at the base of their tube in front of the animal, exactly similar in structure and situation to the cap of the genus *Furcella*, as I mentioned in my former paper ; so that I cannot consider it only as a septum formed by the animal for its protection during the period of rest in those species of *Teredinidæ* which have true, well-deve-

* See Annals, vol. i. ser. 4. p. 295.

loped, shelly valves, and also as the homologue of the shelly valves in the genus of the family which is without true valves.

Hence I must continue to regard *Furcella* as a Conchifer without shelly valves, or any part homologous to them; and if we were to find a Conchifer without valves, I should consider their absence would be most likely to occur in a family in which the valves of the normal members are so reduced in comparison with the size of the animal as in *Teredinidæ*, where they have been regarded as "mere appendages of the foot;" this also being a family of Bivalve Mollusca, in which the animals always live in a shelly tube, it is one in which the valves are least required for their protection.

Since I sent in the former paper, I have had the opportunity of examining Mr. Cuming's series of *Furcella* from the Island of Camiguen, one of the Philippines, where they live in hard mud left exposed at very low water.

Mr. Cuming has several specimens of the tube of the young animal, which commence with a much smaller diameter than the specimen previously described, and enlarge more rapidly in thickness, so that the tube is more conical. He has two examples of the base of the tube of larger specimens, which end in the cap formed of two overlapping arched plates, showing that to be the normal formation of the termination. All the specimens have two separate apical siphonal tubes.

He has also two specimens of the upper part of the tube, which are of a slender, elongated, nearly cylindrical form; both are pierced through the whole length by two central semicylindrical tubes, separated by a narrow opaque septum. One of these specimens is water-worn, the other as fresh as if it had been broken from a living specimen; the latter shows at the fracture that the apex of the tube is formed of a number of concentric laminæ deposited one within the other. The two semicylindrical siphon-tubes are surrounded with a special opaque shelly lamina, the septum between them being of the same thickness and structure; and between the outer surface of this tube of the siphon and the inner surface of the cylindrical outer sheath or tube, there is a transverse space at each end of the central septum, between the two siphonal tubes, filled with a deposit of a loose, spongy, cellular, shelly texture.

Mr. Cuming has two small tubes from California which appear to belong to the genus *Teredo*, and which have the lower or larger end of the tube closed with a single hemispherical cap like those described in my former paper. In one the cap is simple and terminal, and the apex of the tube is oblong and quite simple; in the other the cap at the lower end of the tube is larger, rather distorted, and bent on one side of the axis of the tube, and the aperture at the apex of the tube is partially divided by a series of plates, which have a prominence in the middle on each side, forming an imperfect division of the cavity.

I may add, that the siphonal end of the tube being divided into

two distinct tubes is not a distinctive character of *Furcella*, as we have in the British Museum a *Teredo* or rather a *Xylotrya* from Sierra Leone which has some of its tubes furnished with two distinct siphonal apertures, others in which the tubes are only partially separated, and others with a simple aperture.

The “Cloisonnaire de la Méditerranée” of M. Matheron (Annales des Sciences et de l'Industrie du Midi de la France, vols. 1 & 2), quoted by Deshayes (Ann. Sci. Nat. xi. 245), is evidently a *Teredo*, furnished with shelly valves and palettes, and not a *Furcella*.

ON A NEW GENUS AND SEVERAL NEW SPECIES OF UROPELTIDÆ, IN THE COLLECTION OF THE BRITISH MUSEUM. BY DR. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., PRES. ENT. SOC.

These animals, when first discovered, were arranged with *Typhlops* by Schneider; and afterwards Cuvier, who had previously regarded them as belonging to that genus, formed for some of them a genus under the name of *Uropeltis*. In the ‘Catalogue of the Specimens of Lizards in the Collection of the British Museum’ (12mo, 1845), I formed for them a family under the name of *Uropeltidæ*, and divided the species into three genera, each containing a single species. I lately described a fourth genus named *Morina* in the ‘Proceedings’ of this Society (1858).

Professor Johann Müller, in an article on the “Osteology of Reptiles” in Tiedemann’s ‘Zeitschrift für Physiologie’ for 1831 (vol. iv.), gave an account of the osteology of the two genera *Rhinophis* and *Uropeltis*. Schlegel in 1837 regarded them as a genus under the name of *Pseudotyphlops*, and noticed three species.

Instead of this family being characterized by the tail being “cylindrical, obliquely truncated above,” it ought to be described as tail cylindrical or compressed, covered with keeled scales, which are separate or more or less united into a horny shield,—the scales on the tip of the tail being always united and many-keeled.

Having occasion to re-examine the various specimens which we have received since the printing of the Catalogue above referred to, I have found several additional species.

The family may be divided into three groups, according to the form of the tail.

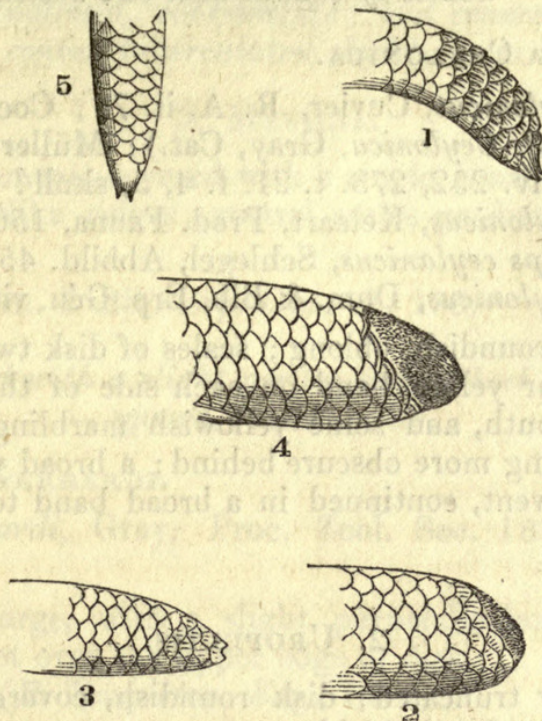
I. *The tail obliquely truncated with a flat superior disk.*

1. SILOBOURA. Disk oblong, covered with separate, two or four keeled scales.

2. UROPELTIS. Disk circular, covered with a single tubercular plate.

II. *The tail subtruncate ; end convex, rounded, covered with a single horny tubercular shield.*

3. MYTILIA. Caudal shield many-keeled ; nose more or less acute.



1. *Siloboura Elliotti*.

2. *Mytilia Templetonii*.

3. *Plectrurus Perrotetii*.

4. *Mytilia unimaculata*.

5. *Mytilia melanogaster*.

III. *Tail oblong, compressed, covered with separate 3-keeled scales ; tip covered with a small compressed cap-like spinose shield.*

4. MAUDIA.

I. *Tail cylindrical, obliquely truncated, with a flat superior disk.*
Uropeltina.

1. SILOBOURA, Gray.

Tail obliquely truncated ; disk oblong, covered with rhombic, two- or four-keeled scales, the scales on the lower edge of the disk larger, tubercular above, and having two acute tubercles on its sharp lower edge.

* *Scales of caudal disk four-keeled.*

1. SILOBOURA ELLIOTI (fig. 1).

Siloboura ceylonica, Gray, Cat. Brit. Mus. 142 (not Cuvier).

Caudal disk oblong, elongate ; scales of the disk four-keeled ; brown, with a narrow yellow streak on each side of the neck, a broad yellow

band in front of the vent continued in a band on each side of the tail.

Var. Larger scales of caudal disk three- or four-keeled.

Hab. Madras (*Walter Elliot, Esq.*).

**** Scales of caudal disk two-keeled.**

2. SILOBOURA CEYLONICA.

Uropeltis Ceylonicus, Cuvier, R. A. ii. 76 ; Cocteau, Mag. Zool. 1833, t. 2 (not *S. Ceylonica*, Gray, Cat.) ; Müller in Tiedemann's Zeitschr. Phys. iv. 252, 273. t. 21. f. 4, 5, skull ?

Siluboura Ceylonicus, Kelaart, Prod. Fauna, 156.

Pseudotyphlops ceylanicus, Schlegel, Abbild. 45.

Coloburus Ceylonicus, Dum. & Bib. Erp. Gén. vii. 164. t. 59. f. 3.

Caudal disk roundish, oblong ; scales of disk two-keeled ; black, a broad irregular yellow band on each side of the neck from the angle of the mouth, and some yellowish marbling on the sides of the body becoming more obscure behind ; a broad yellow cross-band in front of the vent, continued in a broad band to the sides of the tail.

Hab. Ceylon.

2. UROPELTIS.

Tail obliquely truncated ; disk roundish, covered with a single flat roundish granulated shield.

1. UROPELTIS GRANDIS.

Uropeltis (sp. ?), Kelaart, Prodromus, 155.

"*Uropeltis grandis*, Kelaart." In Brit. Mus.

Caudal disk subcircular, with large scattered tubercles ; nose subacute, rather produced ; dark brown ; chin and beneath yellowish brown, with some of the scales dark brown in the centre near the hinder edge.

Hab. Ceylon (*Kelaart*). Dr. Kelaart's type specimen.

2. UROPELTIS PARDALIS.

"*Uropeltis pardalis*, Kelaart."

Nose convex, rounded ; caudal disk subcircular, scarcely tubercular ; back black, with numerous small white specks on the back and sides ; caudal disk brown, smooth, with a narrow white edge above and a white spot on each side of the lower edge ; belly white, three or four irregular rows of oblong transverse black spots.

Hab. Ceylon (*Kelaart*). Dr. Kelaart's type specimen.

3. UROPELTIS ? PHILIPPINUS.

Uropeltis Philippinus, Müller, Tiedem. Zeitschr. für Physiol. iv. 248, 274. t. 22. f. 1 *a, b, c*, skull ; f. 3, animal nat. size ; Dum. & Bib. Erp. Gén. vii. 161. t. 59. f. 2.

Rhinophis Philippinus, Boie, Isis, 1827, 513 ; Müller, *l. c.* 248.

Typhlops Philippinus, Cuvier, R. Anim. ii. 72.

Pseudotyphlops philippinus, Schlegel, Abbild. 44 (not figured).

Hab. Philippines.

This species is unknown to me. One specimen in the Paris Museum.

II. *The tail cylindrical, subtruncate; end covered with a single horny convex tuberculated shield; nose acute.*

3. MYTILIA.

Caudal disk convex, covered with a single convex shield, covered with small spine-like ridges; rostral scales produced, more or less acute.

Rhinophis, Dum. & Bib. Erp. Gén. vii. 150.

* *Caudal shield with a slight perpendicular keel; rostral scales square, rather acute.*

1. MYTILIA GERRARDI.

Mytilia Gerrardi, Gray, Proc. Zool. Soc. 1858, p. 57. Rept. pl. 13.

Caudal disk large, with a slight perpendicular terminal keel; black; white spot over the upper edge of disk.

Hab. Ceylon (*R. Templeton*, Esq., 1845).

2. MYTILIA TEMPLETONII (fig. 2).

Caudal disk small, covered with radiating lines of uniform spines, with a slight perpendicular apical keel; blackish-brown, with the middle of the scales rather paler, a large irregular yellow streak on each side of the neck, and a few yellow cross-bands on the sides, becoming small and more indistinct behind; a yellow spot on each side of the vent, extending in an irregular narrow line to the end of the tail.

Hab. Ceylon (*R. Templeton*, Esq.).

** *Caudal shield convex, rounded, without any terminal keel; rostral shield compressed, produced, very acute.*—? *Rhinophis*, Hempr.

3. MYTILIA UNIMACULATA (fig. 4).

Uniform grey-brown (in spirits), with pale edges to the scales, those of the under side being the broadest, with a single oblong transverse yellow spot in front of the vent.

Hab. Ceylon (*Thwaites*).

We have two specimens of this species,—one not in a good state, rather discoloured, being uniform red-brown, from the Haslar collection, and another, in good state, received from Mr. Thwaites in 1856. They both have the same preanal spot and keelless caudal shield.

The species is most like the *Pseudotyphlops oxyrhynchus* figured by Schlegel, Abbild. 43. t. 12, which is said to be the *Typhlops oxyrhynchus* of Schneider, Amph. ii. 341; the *Rhinophis oxyrhynchus*, "Hemp. Berl. Mag.," Wagner, Syst. Amph. 195; the *Rhinophis punctata*, Müller in Tiedem. Zeitschr. Physiol. ii. 248, 273. t. 21. f. 1, 2, 3, skull; t. 22. f. 1, head shield; f. 1, *d, e, f*, caudal disk, which Schneider says came from Coromandel, and Professor Johann Müller from Guiana: but I think the latter must be a mistake, as no species of the family has yet been found on the Western continent. The specimen figured by Schlegel in the Leyden Museum differs from the one here described, chiefly in having no yellow spot in front of the vent, and in being provided with a dark spot in the centre of the scales, forming a central and some lateral lines on the back, and a single line of spots on the underside of the tail and the hinder part of the belly near the vent. I have no specimen which agrees with it in these characters.

It is doubtful if Schlegel's figures of this genus differ from *Morina*; but Professor J. Müller describes the tail as covered at the end with a "hard oval horny shield," and he says *Uropeltis* has a caudal shield exactly like *Rhinophis*, and rough with granulations; he further observes that there is no other difference between the external form and the skull of the genera, except in the form of the rostral shield, which in *Rhinophis* is sharp and keeled and produced. At any rate *Rhinophis* and *Morina* were not established on the same kind of characters, and the sharpness or bluntness of the rostral shield differs in the species of both genera; and though the name and character is applicable to this kind, the nose of the other species of the genera more resembles that of the genera *Siloboura*, *Uropeltis*, and *Maudia*.

*** Caudal shield small, with a terminal transverse dentated keel; rostral shield square, rather acute.—Crealia.

4. MYTILIA MELANOGASTER (fig. 5).

Above brown (in spirits), with indistinct pale lines between the series of scales, formed by very small pale dots on the outer sides of the scales; sides white from lips to vent; belly black, white-spotted; tail above and below like the back, dark, with indistinct pale lines; caudal shield tridentate at the tip.

Hab. Ceylon (*Thwaites*).

We procured through Mr. Cuming two specimens of this species, which were sent home by Mr. Thwaites in 1854.

See also—

1. *Rhinophis Philippinus*, Dum. & Bib. Erp. Gén. vii. 134. t. 57. f. 1.
2. *R. oxyrhynchus*, l. c. 156.
3. *R. punctatus*, l. c. 157, only known from figures.

III. Tail oblong, compressed, covered with separate three-keeled scales; tip covered with a small compressed cap-shaped spinose shield.—*Plectrurina*.

4. PLECTRURUS.

Tail oblong, compressed, covered with separate three-keeled scales; apex furnished with a small compressed cap-shaped shield, covered with small spines, and ending in a central perpendicular spinose keel. Nose rounded, rather produced. The central ventral series of scales rather broader than the other scales, six-sided.

1. PLECTRURUS PERROTETII (fig. 3).

Pale brown (in spirits), paler beneath, with a more or less large and distinct oblong transverse yellow spot in front of the vent.

Plectrurus Perrotetii, Dum. & Bib. Erp. Gén. vii. 167. t. 59. f. 4, skull; t. 76. f. 1.

Hab. Madras (*J. C. Jerdon, Esq.*, 1846); “Neelgherries.”

Var. 1. With a series of obscure small pale spots between each series of the dorsal scales.

Var. 2. Tail with a central line of white spots on the upper side, and with a row of white spots on each side near the vent, converging and united in the middle of the end of the tail; hinder part of upper lip white.

Var. 3. Scales of the tail nearly smooth; in other specimens these scales are very distinctly three-keeled.

We have a smaller specimen of this animal, which we received from the Fort Pitt Museum, as having been sent by Mr. Ford from the Cape of Good Hope; but as they had many specimens from India in that Museum, I suspect this habitat is a mistake, as the genus has not yet been received with certainty from Africa, and it is scarcely likely that an Indian species should be also found in that country.

ON CARPENTERIA AND DUJARDINIA, TWO GENERA OF A NEW FORM OF PROTOZOA WITH ATTACHED MULTILOCULAR SHELLS FILLED WITH SPONGE, APPARENTLY INTERMEDIATE BETWEEN RHIZOPODA AND PORIFERA. BY DR. J. E. GRAY, F.R.S. ETC.

Many years ago I observed on some specimens of *Cardita variegata*, which Mr. J. Ritchie, the late Consul of Tripoli, had collected at Marseilles and sent to the British Museum, some specimens of a parasitic shell which resembled a *Balanus* in shape, but when more carefully examined were evidently not formed in the same manner as the shells of that class of animals; as however they were not in a good condition, it was not easy to decide from what animal they derived their origin.

Mr. Cuming some years later, when he transmitted his collection of Cirripedes to Mr. Dawson for examination, sent with them some

shelly bodies attached to the surface of a *Porites* Coral, and to different kinds of shells, such as *Pecten* and *Cardita*, which that naturalist returned to Mr. Cuming as "not Cirripede;" Mr. Cuming then brought them to the British Museum, requesting me to examine and describe them. These specimens brought to my mind the shells I had formerly received from Mr. Ritchie; a casual examination of their form and structure at once showed me that they could not belong to a *Cirripede*, and as they presented some characters which were not to be observed in the Mediterranean specimens, a careful study of them led me to consider them as nearly allied to the Foraminifera, but differing from any form with which I was acquainted, in being permanently attached to marine bodies; and they were so unlike, both in size and form, to any shells of the kind previously known, that several persons to whom I had expressed this opinion doubted their affinity to them. I therefore laid the specimens aside, in hopes that some other specimens might occur that would more fully elucidate their structure, and show their affinity to other known animals.

Though most of the naturalists to whom I have shown Mr. Cuming's specimens were inclined to regard them as a peculiar form of *Cirripede* shell, each examination of them tended to strengthen my original opinion, that they were a new form of *Foraminifera*; and this was further confirmed when I accidentally discovered that the cells were filled with a fleshy substance, in which bundles of simple sponge-like spicula were imbedded. This induced me to show them to Professor George Busk, and to inquire of him if he had ever seen any coral, or other natural body, to which they could be allied. He stated that he had not, unless they were the shells of a *Cirripede*; and on my expressing to him the opinion I had formed of their probable formation and affinity, he stated that it was not impossible that I was right, and that they might be an intermediate form of *Rhizopod* between a *Foraminiferous* shell and a *Sponge*, which is exactly the idea I had formed of their position, considering them as a *Sponge* that was surrounded by and provided with a shelly case with a single terminal *osculum*.

Being desirous of obtaining other opinions on the subject before publishing any account of them, I transmitted the specimens to my friend Dr. William Carpenter, stating my belief that they were a new form of *Rhizopod* which had been mistaken by several naturalists for the shell of a *Cirripede*, giving him permission to take off and examine one of the specimens. He has most kindly sent me the following note:—

" University Hall, April 23, 1858.

" MY DEAR SIR,

" Your guess was a very sagacious one. The structure of the shell is most characteristically *Foraminiferous*, being riddled full of holes like a *Rotalia*. In the interior of the only specimen I have laid open was a brownish animal residuum full of *Sponge spicules*. Of course there is no great improbability in the idea that the *Sponge* was para-

sitical; but I am inclined to believe that this organism is the connecting link which I have long thought must exist between Sponges and Foraminifera, and that it is in fact a Sponge whose integuments have been consolidated into a Foraminiferous-like shell. You will find that the interior is not one single undivided cavity, but that it is loculated; and sections of the shell show a sort of areolation corresponding with the little bosses of the exterior.

"I do not think that you will satisfactorily elucidate the organization of this creature, unless you have several sections made in different directions through the shell. I have limited myself to the one which you gave me the liberty to break up, with which I have done the best I could. I should like to have these (two) slides back again, and to have one or two perfect specimens, if you could spare me a corner of your block.

"Yours very truly,

"WILLIAM CARPENTER."

This account exactly agrees with my previous examination, as it was the knowledge that the shell was multilocular and minutely foraminated like the multilocular Foraminifera, which induced me to regard it as the case of a *Rhizopod*; and the knowledge that the cells were filled with a fleshy substance strengthened with spicula like certain sponges, induced me to believe that they were also allied to the Porifera or Sponges; and in my note to Dr. Carpenter transmitted with the specimen on the 21st of April, 1858, I stated that "I regarded it as a *Rhizopod* of a new form; it is formed of a number of cells each ending in a terminal pore. The cells look like the valves of a Barnacle, and that is the reason that Mr. Cuming and my German friend think it is one; but the examination of the structure at once proves that it cannot be one."

Being strengthened by the opinion of Professor Busk and Dr. Carpenter, I have ventured to bring the subject before the Society; and I propose to form for the Philippine specimens a genus which I shall name *Carpenteria*, after Dr. William Carpenter, who has paid so much attention and has been so successful in elucidating the structure and organization of these animals.

I shall merely give a slight description of the genus, sufficient to distinguish it from other marine bodies, and send some of my specimens to Dr. Carpenter, in the hope that it will enable him to add a full account of its formation and structure to his paper on the Foraminiferous Shells which he is preparing for the Transactions of the Royal Society, assisted by the funds of that body.

1. CARPENTERIA.

Shell conical, attached by the broad base, formed of a series of elongated cells, each ending in a contracted mouth, piled one against another in a spiral manner, and with the aperture of the last cell at the apex in the centre of the acute cone. The substance of the cells is formed of a network of calcareous anastomosing ribs; the

interspaces between the ribs are thin, calcareous, prominent externally, and pierced with numerous perforations. The cavity of the cells is filled with a fleshy sponge-like body, strengthened by nume-

CARPENTERIA.

Fig. 1.

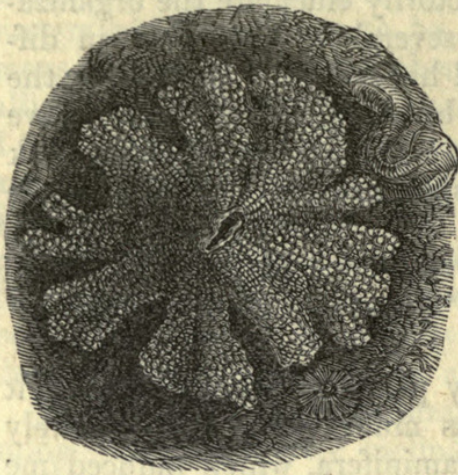


Fig. 2.

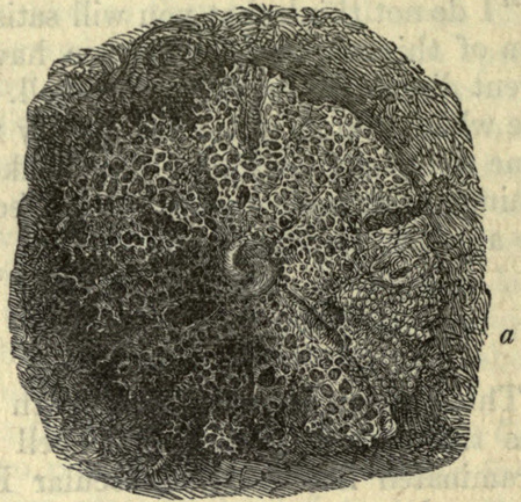


Fig. 1. Exterior surface complete.

Fig. 2. Partly eaten off by acid. a. Complete.

Fig. 4.

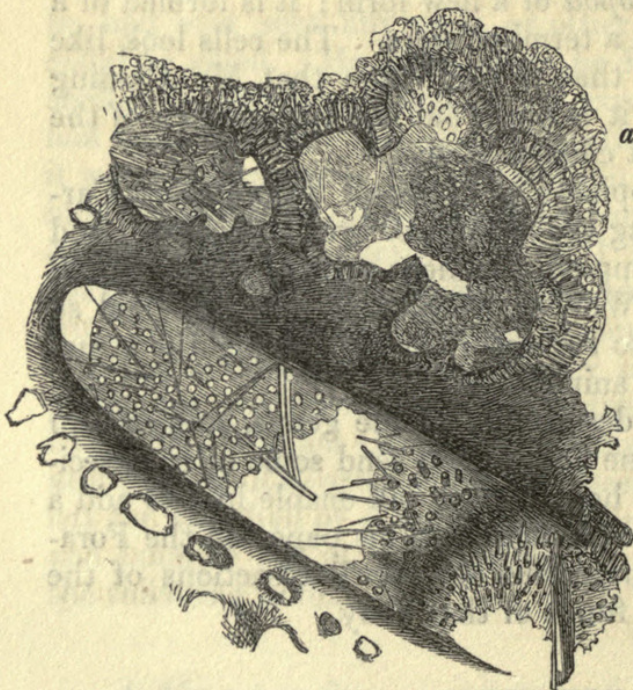


Fig. 3.



Fig. 3. Cross sunken cells, showing the spicula in the cells.

Fig. 4. Part of Fig. 3, more magnified. a. Outer parietes of cells.

rous minute, simple, pin-shaped and fusiform smooth spicula placed in bundles.

C. BALANIFORMIS.

Hab. Philippine Islands, on *Porites*, *Cardita*, *Pecten*, and other shells.

The conical shell is furnished with a single contracted aperture at the apex of the cone; as each cell is formed it closes the aperture of the preceding cell, so that only one is seen at the top of the cone. Some specimens show two or rarely three apertures at the tip of the cone; but this arises from the tip having been broken; these apertures are of a larger size and irregular form, very unlike the contracted uniform-shaped aperture of the last cell.

When the shell is worn, or partly destroyed by acid, the thin part between the network is destroyed, leaving only the calcareous ribs, which fill the greater part of the cavity, leaving a cavernous calcareous body somewhat like a sponge turned into stone.

A section of the parietes of the cells appeared to be formed of polyhedral plates separated from one another by a rather opaque line, as if formed by the union of the edges of the plates; and each plate is pierced with a number of uniform-sized, regularly disposed circular perforations, leaving a nearly uniform imperforated belt round the margin of each plate.

The specimens on the shells of *Cardita variegata* from the shores of the Mediterranean are so different in substance and structure from those found (on the same species of shell among others) on the shores of the Philippines, that I propose to form for them a second genus, named in honour of M. Felix Dujardin, the Professor of Biology and Dean of the Faculty of Sciences at Rennes, who first described the animal of the many-chambered microscopic shells, which had before been generally considered as the residence of Cephalopods! (the most complicated organized mollusca), instead of the most simply organized animal.

2. DUJARDINIA.

Having the same external appearance and form as the preceding genus; that is, formed of cells aggregated together in a spiral form, the last cell being furnished with an apical opening; but the cells appear to have a simple cavity, and are formed of a thicker, harder, uniform shelly coat, which is very closely and uniformly pierced all over with very numerous, minute, equal-sized parallel pores. The cavity of the cell —? in the imperfect specimen which I have been able to examine, is simple; but then it has evidently been well washed, probably with acid.

DUJARDINIA MEDITERRANEA.

Hab. Mediterranean; Marseilles, on *Cardita variegata* (J. Ritchie, Esq. 1817).

These genera appear to me to form a distinct group of *Rhizopoda*, which may be called *Fenestrifera*, characterized by the animal being

always attached to marine bodies, and the cellular body of the animal being strengthened with spicula and enclosed in a calcareous cell furnished with a single contracted aperture and pierced with numerous foramens or tubes.

These shelly bodies differ from all the shells of *Rhizopods* hitherto known, in being attached, and in the form, structure, and disposition of the cells, which (should the existence of spicula on the body prove a peculiarity of the genus *Carpenteria*, where alone it has been observed) is sufficient to form a group distinct from the other *Rhizopods*.

The existence of these spicula shows that the genus *Carpenteria*, and probably all the group, forms the passage between the *Porifera* and *Rhizopods*, which has been long suspected to exist, but has not before been described.

On the Mediterranean specimens of *Cardita variegata* there is intermixed with the *Dujardinia* a species of *Lepralia*, the anomalous *Polytrema minaceum*, consisting of numerous layers, one deposited on the other, each formed of a calcareous network, with small equal hexangular interspaces, and undefined patches of a crust formed of rough calcareous cells placed side by side like the cells of a *Lepralia*, but much more unequal in size and irregular in form than the cells usually found in that genus. The parietes of these cells are pierced with numerous equal-sized minute pores like the foramens of *Foraminifera*, the whole substance of the cell being apparently formed of numerous short shelly tubes placed parallel side by side. The cells are furnished with a small roundish hole at one of their extremities, which is often hid by the convexity of the other cell.

This may be a peculiar genus of *Lepraliadae* allied to my genus *Cribrillina* (Cat. Brit. Radiata, pp. 116, 147), which has "foraminiferous cells," as Professor Busk calls them; or it may prove to be another form of *Foraminifera*. If the former, the form of the cells and mouth, and the structure of the cell-walls, are sufficient to distinguish it from *Cribrillina*. As the only way to draw attention to it is to give it a name, I propose to form for it provisionally, until its nature is better understood, a genus named

PUSTULARIA.

Cells ovate, four- or five-angled, convex, crowded together side by side, forming a crust without any definite form; the cells closed, their entire parietes being pierced with numerous close uniform minute pores; the cavity simple; aperture small, roundish, simple at the front end of the cell (without any ovarian cells?).

1. PUSTULARIA ROSEA.

The crust rose-red, rather rugose.

Hab. Mediterranean.



1858. "Proceedings of Learned Societies." *The Annals and magazine of natural history; zoology, botany, and geology* 2, 369–386.

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