except in the dark, when it contracted them if the light of a candle fell upon it. The power of fully withdrawing them seemed to be wanting. They were more than an inch in length when entirely displayed. The next day I perceived it lying in the angle at the bottom of the glass containing sea-water, enveloped in a glaucous semitransparent film of mucus looking like a stout spider's web, in which it moved as a worm moves in its case. It had expanded to a length of $4\frac{1}{2}$ inches, but on being touched immediately contracted so as to measure only $1\frac{3}{4}$ inch. It possessed the power of swelling out portions of the column; sometimes the swelling appeared near the middle of the body, sometimes near the base. On some occasions it lay with the lower part of the body bent into a hook; at others it quitted the protection of its tube and floated at the surface of the water. The animal was never observed to wriggle or glide through the water like a worm; all its motions were extremely slow. It was captured at the bottom of a pool in the rocks near Funchal.

DESCRIPTION OF THE WOODCUT, p. 304.

Fig. 1. *Alicia mirabilis*, as seen with the base detached and uppermost, the tentacles lying on the bottom of the tank.

Figs. 2 and 3. Two of the appendages of the column, of the natural size.

Fig. 4. One of the warts of an appendage, enlarged. The outer coat is colourless and transparent; the top of the interior body is dull purplish, the lower part yellowish brown, and the interspace colourless.

November 12, 1861.

Dr. J. E. Gray, V.P., in the Chair.

Dr. P. L. Slater exhibited a cast of the skull of the Aye-Aye (*Chiromys madagascariensis*), taken from a specimen in the possession of M. E. Verreaux, of Paris, the fourth example of this rare Mammal received in Europe.

Mr. S. Stevens exhibited a portion of the collection of birds recently forwarded by Mr. Wallace from Mysol and Waigiou, amongst which were many rare and interesting species.

The following extract from a letter addressed to the Secretary by Edward Blyth, Esq. (Corr. Memb.), dated Maulmein, May 10th, 1861, was read to the meeting:—

“I have made this day a grand discovery, which neither you nor others will believe in at the first announcement, but it is true nevertheless,—viz. that the extraordinary Rhinoceros-horn figured * as

* See P. Z. S. 1854, p. 250.

that of *Rhinoceros crossii* by Gray, in your 'Proceedings,' is the well-developed anterior horn of an old male *R. sumatranus*—the common species of these provinces. My host at this place is a great sportsman, and some noble trophies of the chase hang in his verandah; but what fixed my attention was the head of *R. sumatranus*, with a development of horns which I had never imagined to occur in this species; and the resemblance of the much-curved anterior horn to that of Gray's supposed species, *R. crossii*, struck me at once. Conversing with my host on the subject, he remarked that he took a similar head to England (where it now adorns his family hall), with the front horn at least 3 inches longer, and still more curved. A little reflection, and I felt satisfied that *R. crossii* must sink into a synonym of *R. sumatranus*."

In a subsequent communication Mr. Blyth remarked:—

"All doubts now removed about the identity of *R. sumatranus* and *R. crossii*. Mason states that the skin of the Tenasserim species 'is quite smooth, like a buffalo's'—meaning devoid of folds; but Col. Fytche assures me that the one he shot had the slight folds described and figured of *R. sumatranus*. The mature female horns are small, and the nasal bones comparatively narrow; I am not aware that a corresponding sexual difference occurs in any other Rhinoceros. In the Indian one-horned species the sexes are alike in size and development of horn."

The Secretary reported the return from the Cape, on the 1st instant, of the Society's collector, Mr. James Benstead, with a second collection of animals presented to the Society by His Excellency Sir George Grey, K.C.B., the Governor of the Colony. The collection consisted of the following:—

MAMMALS.

1. A young male Hartebeest (*Antilope caama*).
2. A female Reh-bok (*Antilope capreola*).
3. A four-horned Sheep (*Ovis aries*, var.).
4. A male Ratel (*Mellivora ratel*).

BIRDS.

5. One male and two female Ostriches (*Struthio camelus*).
6. Three Stanley Cranes (*Grus paradisea*).
7. Two Jackal Buzzards (*Buteo jacal*).

The Hartebeest was of great interest, as having been only exhibited once before in the Society's collection. The Ostriches, being from the Cape, afforded an opportunity of comparing together the northern and southern birds, which had long been desired, and which would probably lead to their being distinguished as different local varieties, if not as species.

The following papers were read :—

1. NOTICE OF HELOGALE, A NEW GENUS OF VIVERRIDÆ.
By DR. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., ETC.

In making out a list of the skulls of the animals in the Museum, Mr. Edward Gerrard called my attention to a peculiarity in the skull of some of the smaller African Mangoustes. They are externally like the true *Herpestes*, but they want the smaller false premolar teeth in the upper jaw, which are always to be found in the true species of that genus. I propose to designate the group *Helogale*, which may be thus characterized:—

HELOGALE.

Cutting teeth $\frac{3-3}{3-3}$; Can. $\frac{1-1}{1-1}$; Premol. $\frac{3-3}{3-3}$; Mol. $\frac{2-2}{2-2} = 36$.

Body slender; head oval; ears distant; toes 5—5; claws com-

Skull of *Helogale parvula* (side view).

Skull of *Helogale parvula* (upper surface.)

pressed, acute; soles of hind feet half bald and callous; tail hairy, tapering.

1. HELOGALE PARVULA (*Herpestes parvulus*, Sundeval).

Skull broad.

Hab. Natal.

2. HELOGALE TÆNIONOTA (*Herpestes tænionotus*, A. Smith).

Skull elongate.

Hab. South Africa.

The skull differs considerably in shape from that of the species of true *Herpestes*.

2. NOTICE OF A NEW SPECIES OF PILOT-WHALE (*GLOBIOCEPHALUS*), FROM THE COAST OF DORSETSHIRE. BY DR. J. E. GRAY, F.R.S., V.P.Z.S., ETC.

In 1853 the British Museum received the skull of a Cetacean which was dredged up at Bridport, on the coast of Dorsetshire, from the Rev. John Beecham, of the Wesleyan Mission Board. It is evidently a species of *Globiocephalus*; but on comparing it with the skull of *G. vineval*, the Common Pilot-Whale, and other species of *Globiocephalus* which have come under my observation, it appears to be quite distinct from them, and, as I believe, of a species that has not before been noticed.

It is evidently the skull of a large animal, being nearly as large as that of the Common Pilot-Whale; but it is at once distinguished from all the other species of that genus by the convexity of the palate and the oblong form of the nose of the skull, which is nearly of the same width for the greater part of the length, and is regularly rounded in front; while in *G. vineval* it gradually converges from the notch to the apex, and the palate is quite flat, especially in front; and this is the case with all the other species of the genus.

GLOBIOCEPHALUS INCRASSATUS. Thick-palated Pilot-Whale.

Teeth $\frac{9-9}{0}$ or $\frac{10-10}{0}$; the nose of the skull attenuated, the side nearly parallel, and regularly rounded in front; the palate very convex, especially in the front; the upper surface of the intermaxillars rugose in front.

Hab. British Seas, Bridport (*Rev. J. Beecham*, 1853).

	inches.
Length of the skull	28
—— of the nose	14
—— of the teeth	8? imperfect, worn at the end.
Width of nose at the bridge	10
—— of nose at the under .	$9\frac{1}{2}$
—— of skull at orbits . . .	17

The back of the skull is higher and much narrower than in the skull of *G. vineval*. (See woodcuts, pp. 310, 311.)

This species does not appear to have been observed before as British, and I do not find any indication of its having been described as an exotic species. But it is so distinct both in the form of the nose of the skull, in the width of the intermaxillary bones, and more especially in the thickness and convexity of the palate of the front part of the skull, from the species that has hitherto been described, and the differences are so visible, that Mr. Edward Gerrard selected it as a distinct species as soon as he saw it.

It has been suggested that this may perhaps be the other sex of the common Pilot-Whale (*Globiocephalus vineval*); but I can scarcely think this probable, as I have seen many skulls of the latter, and they have been all nearly similar and very unlike the one under consideration; and I can scarcely believe that all I have seen could have

been of the same sex, for it is a Whale that comes on the coast in great shoals, and hence one of its names is the "Social Whale," and

Upper surface of the skull of *Globiocephalus svinéal*.

specimens of both sexes have been recorded as caught on the British coast. At the present moment there is an inclination to regard some

of the Whales which have been considered species as mere sexes of the same species, simply because the specimen described in one case

Upper surface of the skull of *Globiocephalus incrassatus*.

happens to be a male and in the other a female. Thus *Delphinus micropterus* is said to be the female of *Ziphius sowerbiensis*, for the above reason ; but I have not heard that any new specimen has been

discovered, or any fact eliminated, to prove the truth of this suggestion, and it may be only an instance of accidental coincidence—

Fig. 1. Side view of skull of *Globiocephalus incrassatus*.

Fig. 2. Diagram of the cross-section of the palate of *G. incrassatus*.

such a case as may be disproved by the next discovery of either animal.

In the same manner Professor Eschricht, of Copenhagen (and no one has studied the Whales of the North Sea with greater earnestness and success), regards *Hyperoodon latifrons* as the male of the old well-known *Hyperoodon rostratum*, because his specimen of the former belongs to a male, and that of the latter to a female specimen; and he exhibits them side by side as sexes of the same animal in his Museum (see Ann. and Mag. Nat. Hist. 1852, ix. p. 281). Now this is an evident mistake, arising from mistaking an accidental coincidence for an established fact.

The specimen from which the skeleton of *Hyperoodon latifrons* was derived, that is in the Museum of the College of Surgeons in Edinburgh, was a *female*, which was taken on the 24th of October, 1839, accompanied by a young male, in the Frith of Forth. Therefore there are female as well as male specimens known of *Hyperoodon latifrons*, which is regarded by Professor Eschricht as the male of the more common *H. rostratum*, of which I have also seen males as well as females, as recorded in my paper on this subject in the 'Proceedings' of the Society for November 1860.

3. ON A LARGE SPECIES OF TEREDO, SUPPOSED TO BE THE ANIMAL OF THE GENUS FURCELLA, LAMK. BY DR. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., ETC.

In a former communication to the Society on the genus *Furcella*, I came to the conclusion that the animal of that genus was destitute of any shelly valves, because on examining the tube of a young specimen in a very perfect state, that contained in its cavity the two palettes of the animal, it had no appearance of valves, which I supposed would be of too large a size to have escaped out of the tube, more especially as the palettes were in it, which were of a much smaller size and more slender character than the valves were likely to be, and the tube had all the appearance of the animal which formed it having been eaten out by the larvæ of *Muscidæ*, as the skins of the larvæ and pupa-cases were found in the tube with the palettes.

But this shows the danger of coming to any conclusion without one has the actual specimen before one; for we have lately received from Mr. Jamrach, along with a number of Fishes, Reptiles, and other animals in spirits, chiefly from the Dutch Colonies of the Indian Ocean, two specimens of a large species of true typical *Teredines* in spirit, without their shelly tube, but with their palettes attached, which seem to be very probably the animal of the genus *Furcella*.

The reason why I believe them to be the animal of that genus is, first, their large size, which is quite sufficient to form a tube as large as the younger specimen of the genus *Furcella*, and, secondly, the form and size of the palette, which agree in general character with those which were found in the tube of *Furcella*, and which are figured in the 'Proceedings' of the Society for 1857, p. 243, Mol-

lusca, pl. xxxix. f. 3. Yet there is just that amount of difference between the palette of these animals and those found in the young specimen of *Furcella* which prevents one from saying that the animal is absolutely the animal of the *Furcella*.

The palettes of *Furcella* were slender, cylindrical, with a dilated tip like a double-headed hammer, like the young palette of *Teredo malleolum* of Turton, but of a much larger size; and they had a small, slightly-raised tubercle on the middle of the inner side of the dilated end.

The palette in the two specimens of *Teredo* which we have lately received is of precisely the same form, and nearly of the same size; but instead of having this small tubercle, the middle of the dilated end is produced into an elongated process about half an inch long, which is more slender and oblong at the base, thicker, flattened, and dilated above, and truncated at the top.

The valves of the shell are exactly like those of the *Teredo navalis*, *T. norvegicus*, and other normal species of the genus, but larger.

I am inclined to name this species *Teredo furcelloides*; for I do not think it would be safe to decide, without further evidence, that it is the animal of *Furcella*, Lamk.; but at the same time I consider it right to bring the occurrence of this animal at once before the Society, as it has led me to doubt if my conclusion was correct that *Furcella* is a genus of Conchiferous Mollusks without any valves, as I was inclined to believe before the animal occurred, and which the evidence then before me led me to believe was a correct conclusion.

The palettes are situated at the hinder end, just within the edge of the mantle, the siphons being quite distinct from or within their base. The siphons are slender, of nearly equal diameter, and united nearly to their tips; in their contracted state they just reach to the dilated part of the palette at the base of the terminal elongated process. These are some fragments of a thin lamina of shell attached to the hinder end of the mantle near the base of the palettes.

If this should prove to be the animal of *Furcella*, or even of a *Furcella*-like *Teredo*, it shows most conclusively that the cup at the end of the tubes cannot be regarded as the analogue of the true valves of the genus, as I have also proved in a former paper (see Proc. Zool. Soc. 1858, p. 258).

If these animals prove to belong to the genus *Furcella*, as I suspect they may, then that genus or group of species will only be separated from the other *Teredines* by the habit of living in sand, by the club-shaped form of the tube closed at the end with two arched plates, the division and separate prolongation of the tubes of the siphonal aperture, and the hammer-like form of the palettes.

4. ADDITIONAL OBSERVATIONS ON THE GENUS CUSCUS.

By DR. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., ETC.

In the 'Proceedings' for 1858, p. 100, I gave some observations on the genus *Cusculus*, with the description of a new species; and

in the volume for 1860, p. 1, I described another species of the genus.

Since that time we have received several other specimens from Mr. Wallace, and I have also been able to examine several other examples sent home by the same excellent collector; and the examination of these specimens has induced me rather to modify my views as regards the species, and has enabled me to observe other characters for the species which were before unknown to me.

I therefore lay before the Society these additional observations, in the hope of doing something towards settling the species of this very difficult group of animals, which are curious as being the only Marsupials that have as yet been submitted to a kind of domestication; though I have never been able to see why Kangaroos might not have been domesticated by the Australian emigrant, except from the difficulty of making them adopt new ways even in a new country.

I may observe that I believe the British Museum contains the largest and finest collection of the specimens of this genus that has been ever brought together. A few years ago we considered ourselves fortunate in having two specimens; now we have thirty-three from very different localities, and I have besides these examined about half as many more.

The zoologists of the modern school are very desirous that the name of the original namer of the species should always be inserted after the specific name, to show to whom belongs the honour of having first named the species,—often a very doubtful source of congratulation or proof of scientific attainment, as for example in this genus.

Should the various varieties of colour really be proved to be good species in this genus, we shall have to adopt the names of Lesson, an author who seems only to have seen a very few specimens, and to have given a name to each of those that he saw, without giving himself the trouble to discover what were the characters that separated them from the other examples of the genus; and it is often the case, not only with species but with genera, that the man who first gives the name to either one or the other often knows less about them, and takes less trouble to study the subject, than men who have never given a new name to either genus or species. This was specially the case with Swainson, who has given the names to many genera of shells and birds even on the slightest characters, and without the least analysis.

In the former paper I divided the *Cusci* into two sections, according to the hairyness and prominence of the ears; I will now divide them into four sections, according to the form of the skull and the number and disposition of the anterior false grinders, and thus place at the disposal of the student two means of determining the species.

Sect. I. The nose of the skull short, broad, and rounded. The anterior conical false grinders one on each side, large, and nearly filling up the short diastema. The grinders large, in an arched series, con-

verging behind. The forehead of the skull rather swollen over the front, and depressed between the hinder part of the orbits. Ears hidden under the fur. Fur of one colour. *EUCUSCUS*.

1. *CUSCUS* (E.) *URSINUS*, Gray, P. Z. S. 1858, p. 103.

Temm. Monog. t. 1. f. 1, 2, 3 (adult), t. f. 1-5 (half-grown) (skull), t. 4 (skeleton).

Blackish; tail and rump dark, like back.

Hab. Celebes (*Temm.*).

The three skulls, of different ages, all show only a narrow linear space between the upper edges of the masseter muscles. The forehead of the youngest specimen is not so concave as that of the two older ones.

We have an adult and half-grown female from Celebes, obtained for the Leyden Museum in 1843; and a nearly adult specimen without any distinct indication of its sex—probably a female—with the pouch sewed up, from the Zoological Society, 1855.

If this should be the case, we have only female specimens of this genus; but I believe they have a male at Leyden.

2. *CUSCUS* (E.) *BREVICAUDATUS*, Gray, P. Z. S. 1858, p. 102.

Pale brown; the tail and rump of the same colour as the back.

Hab. Cape York (*Mr. Macgillivray*).

The skull, which is that of a very young animal, is more like that of *C. ursinus* than that of any other species in our Collection.

The canines are close to the cutting-teeth, and with a very small space between it and the first grinder. The skull is rather convex, and swollen in front over the orbits.

We have only the young specimen and its skull, on which Mr. Gould established the species. It seems very distinct from *C. ursinus*.

Sect. II. The nose of the skull rather produced, rounded. The anterior conical false grinders one on each side above, moderate-sized, near the middle of the broad diastema. The grinders in a slightly arched series. The forehead very convex, and rounded over the middle of the orbit, and flat behind. The ears hairy outside, hidden in the fur. The fur more or less variegated. Tail pale or yellowish. Dorsal streak none. *SPILOCUSCUS*.

The skulls which we have of the animals of this section show that there are probably two distinct species. One species has grinders of a rather larger size than those of *C. ursinus*, but differing from them in being in only a slightly curved line, the three first grinders forming a series of from 10 to $10\frac{1}{2}$ lines, or twelfths of an inch. In this respect the skull agrees with those figured by Temminck (Mon. Mam. t. 3. f. 1-6) as of *Phalangista maculata*. But one skin agrees with the description of the skin of *P. chrysorrhoea* of that author, and its teeth with the figure of the teeth of *P. maculata*. Yet it is to be recollected that this author only had a very small number of specimens to examine, and he does not mention in his

description of either species the difference in the size of the grinders, though he shows the difference in his figures.

The second species has smaller grinders, placed in the same manner as the former,—the three front grinders forming a series of from $8\frac{1}{2}$ to 9 lines in length, as they are figured by Temminck (Monog. t. 1. f. 4–6) as *Phalangista chrysorrhos*.

We have two skulls with their skins belonging to this kind; and both have the spotted skins which Temminck calls *Phalangista maculata*. Under these circumstances it is difficult to adopt Temminck's name. Are we to take those of the skin or those of the skulls? Perhaps what he describes as *C. chrysorrhos* may be the proper and wild state of each species, and the spotted varieties described as *C. maculata* may be albino varieties or half-domesticated varieties of them, for the natives of some islands are said to breed them.

As I have not the power of examining the skulls of all the specimens, I have arranged those in the Museum provisionally under these two names, taking them as they designate the general colour of the fur.

3. CUSCUS (S.) CHRYSORRHOS.

Cuscus maculata, var. 1, 2, Gray, P. Z. S. 1858, p. 102.

Phalangista maculata, Temm. Mam. t. 2. f. 1–5 (adult), 6 (young skull).

The grinders * large, three front of from 10 to $10\frac{1}{2}$ lines in length.

Fur dark grey-brown; sides and middle of the back blacker or black; face reddish; rump and tail yellowish; belly white.

Var. *albina*?

White; feet and large spots on back red-brown.

Hab. Ceram; south coast of New Guinea; “Moluccas” (Temm.).

1. An adult female of a large size from the Leyden Museum as *C. chrysorrhos*, Temm. 1859.

2, 3. An adult and a three-fourths grown female, with the sides very deep black. From Ceram; Mr. Wallace, 1859.

4. A young female specimen from the south coast of New Guinea; J. B. Jukes, 1846.

The skull of this animal shows that it belongs to the large-toothed species.

Var. ? *albina*. White, reddish varied.

C. maculata, nos. 3–5, Gray, P. Z. S. 1858, p. 102.

5. White, with a long irregular patch on the back, and the four feet red. A female from Dufour Island, south-east coast of New

* I give the measurement of the three first of the true grinders only, because in the young skull the hindermost grinders are not developed. I may state that the difference in the size of the grinders does not depend on the sex of the species, as there are both males and females with teeth of each size.

Guinea; John Macgillivray, 1851; and its skull, which agrees with Temminck's figure of the skull of *C. maculatus*.

6. ? An adult male, with numerous confluent reddish spots. New Guinea; John Macgillivray, 1855.

7. ? A half-grown male, with numerous small, reddish and dark-brown spots, often confluent. Darnley Island, south coast of New Guinea; John Macgillivray, 1855.

I have not been able to examine the skull and teeth of these specimens; so they may belong to the next.

4. CUSCUS (S.) MACULATUS.

Cuscus maculatus, Lesson, Voy. Coq. t. 5.

Cuscus maculatus, var., nos. 3-7, Gray, P. Z. S. 1858, p. 102.

Phalangista chrysorrhoea, Temm. Mon. t. 1. f. 4, 5, 6 (skull, not skin).

Grinders moderate, three front forming a series of from $8\frac{1}{2}$ to 9 lines in length. Skull very convex on the front of the orbit, flat or slightly concave behind the convexity, the temporal ridges close together, united (in the adult skull) and forming a sharp ridge.

White, spotted with fulvous grey-brown or black; forehead reddish.

Hab. New Guinea. Waygeroo and Aru Islands.

There are both sexes in the Museum Collection.

1. Adult male. Spots on the head and shoulders, confluent on the back and sides, small, scattered; tail white. Waygeroo. Purchased of M. Verreaux, 1856, as *Cuscus maculatus*.

2. Adult male. White, with numerous, scattered, small spots; tail white, slightly varied with pale reddish. Aru Island; Mr. Wallace, 1857. This belongs to the smaller-toothed kind.

3. Adult male and female. Very similar; yellowish white spots, numerous, smooth, intense black; head reddish-brown; tail white, marbled with pale reddish. Waygeroo (*Mr. Wallace*, 1860).

Mr. Wallace observes that these animals are diurnal: the female he marks as having a pale hazel iris. The skull of the male shows that it also belongs to the smaller-toothed kind.

The three skulls in the Museum agree with the above description, but vary among themselves; one of the skulls from Aru (1195 *b*) is much narrower in all its parts, and is less swollen and narrower between the orbits, than the others from the same locality, and is probably the skull of a female, as 1195 *a* is from the male specimen sent from Aru by Mr. Wallace.

The skull of the male specimen sent by Mr. Wallace from Waygeroo is similar to the male from Aru (1195 *a*), but is rather more swollen, especially between the front of the orbits.

Sect. III. The nose of the skull rather produced, rounded. The anterior conical false grinders one on each side above, moderate-sized, near the middle of the broad diastema. The forehead deeply concave, with a raised edge on each side between the orbits. Ears naked

within, extended beyond the fur of the head. Fur of body and tail uniformly coloured, with a dorsal streak. *STRIGOCUSCUS*.

5. *CUSCUS* (S.) *CELEBENSIS*, Gray, P. Z. S. 1858, p. 105, t. 62.

Hab. St. Cristoval, Solomon's Group of Islands.

We have both sexes in the British Museum Collection, and the skulls of two others nearly adult, collected by Mr. Rayner and Mr.

Skull of *Cuscus celebensis* (upper surface).

J. Macgillivray during the voyage of the 'Herald.' There is very little difference between the two skulls, though they are from a male and female animal.

Skull of *Cuscus celebensis* (side view).

In the description of the species in the paper above referred to, the animal is erroneously said, by a slip of the pen, to have no dorsal streak.

We have in the British Museum a young specimen of a *Cuscus* from Macassar, which is very like *C. celebensis*, but it has no visible dorsal streak: it is not in a very good condition. It may be a variety of this species, or the young of one of the other, or perhaps an undeveloped state of a new one.

Sect. IV. The nose of the skull rather produced, rounded. The anterior conical false grinders *two* on each side above, the anterior rather larger, the hinder very small, cylindrical; both near the other grinder, and widely separated from the canines. The forehead with a deep concavity between the orbits. Ears naked within, extended beyond the fur of the head. Fur on body and tail uniformly coloured, with a dorsal streak. CUSCUS.

6. CUSCUS ORIENTALIS, Gray, P. Z. S. 1858, p. 104, t. 61.

Cuscus quoyii, Lesson in Quoy & Gaim. Voy. Uranie, Zool. t. 56. f. 6.

The male and female grey brown, with a distinct dorsal streak.

Var. *albina*?

Cuscus orientalis, Temm. & Gray.

Males pure white, without any dorsal streak.

Hab. Islands of Waigiou and Ceram.

Mr. Wallace attached to the male species this observation, "the claws, soles, and end of the tail nearly white; eats leaves and cocoa-nuts (young)." He calls the male *C. orientalis*.

We have specimens of both sexes in the Museum; a very young and adult female from Waigiou, obtained from M. Verreaux in 1856; and male and female, with two young from the pouch, from Waigiou, and a male from Ceram, from Mr. Wallace, in 1859 and 1860.

In the skull of the female the temporal ridges are separated from one another by a wide flat band.

Temminck, and other authors since his work, have described the male of this animal as white, and the female as silver-grey with a black dorsal streak; but we have both sexes of the latter colour. Can the white males be an *albino variety*, and confined to the male sex? We have two full-grown males of that colour, one obtained from Leyden Museum, said to come from Amboyna, and another from M. Verreaux, said to come from New Zealand; they both have the small hinder false grinders.

7. CUSCUS ORNATUS, Gray, P. Z. S. 1860, p. 1, pl. LXXIV. (male).

Both sexes grey-brown, grised, and marked with small white spots and a distinct dorsal streak; the ground-colour of the male is yellowish-red, of the female dark grey-brown.

Hab. Ternate and Batchian (*Wallace*).

We have a male and three females in the British Museum, all from Mr. Wallace—a male from Batchian in 1859, two adult and a young female from Ternate, obtained in 1858 and 1859.

In the British Museum there are two young specimens of the genus which I am not able to determine with certainty. They are both of a fulvous-brown colour, and without any streak on the back.

1. Said to come from "Amboyna," and is supposed to be a young *C. orientalis*; the sex is doubtful, but probably a male.

Skull of *Cuscus ornatus* (upper surface).

2. The other was sent by Mr. Wallace from Macassar in 1857, and is a young male. I formerly considered it as a variety of *C. celebensis* (P. Z. S. 1858, p. 43); and it is like that species in se-

Skull of *Cuscus ornatus* (side view).

veral particulars; but the want of the dorsal streak is a great peculiarity, which was not so distinctly seen before it was stuffed.

5. ON THE OPHIDIANS OF THE PROVINCE OF BAHIA, BRAZIL.
By DR. OTHO WUCHERER, CORR. MEMB. (Part II.*)

Of the family of *Coronellidæ* several species of *Liophis* are very common in this province—*Liophis cobella*, *L. merremii*, *L. reginæ*, and *L. conirostris*. The last appears to me to occur only in the vicinity of the city of Bahia. In several collections of Ophidians sent to me from different parts of the province, I never found a single specimen, whilst it is rather common in the vicinity of the city of Bahia. It never attains to the same size as the other species. Some specimens of *L. merremii* show so constantly certain differences from others, that I feel tempted to consider them as belonging to a distinct species, particularly as those differences are by no means referable to the different age of the individuals; however I shall withhold my suggestions until I shall have collected more materials to substantiate them. *Erythrolamprus venustissimus*, of the same family, is not unfrequent. It shares with different other snakes the Portuguese name of *Cobra Coral*.

The species of the genus *Xenodon*, which have been referred to the family of *Natricidæ*, are allied to *Liophis* in many respects. Their dentition is very similar; they may all be considered as freshwater snakes (some species of *Liophis* are called by the Brazilians *Cobras d'agua*), although they are frequently found in dry places and at a distance from the water. They all live on Batrachians, and have this peculiarity in common with the other snakes of the family of *Natricidæ*, that they do not squeeze their prey to death before swallowing it, nor ever coil themselves around it.

I have noticed only two species of *Xenodon*—*X. rhabdocephalus* and *X. colubrinus*.

In a preliminary list of snakes observed by me, given by Dr. Albert Günther, *X. severus* is mentioned; however, on a repeated examination of the specimens in my possession, I must refer them all to *X. rhabdocephalus*†. This is a very common species in Bahia. Several young examples may be frequently found together. It is very lively and courageous, and, on account of its broad head and rather vicious appearance, much dreaded by the Brazilians, who give it the name of *Surucucú*. In order to distinguish *Lachesis mutus* from it, they call the latter *Surucucú bico de jacca*, from the resemblance of its strongly keeled scales to the prominences on the Jackfruit—the fruit of the *Artocarpus integrifolia*. This *Xenodon* is very voracious. Recently I had a young living specimen of it in the same cage with one of *Liophis conirostris*, and gave them two young *Cystignathi fuscii* for their food. The *Xenodon* immediately seized one of the frogs by the snout; but the *Liophis* did not succeed so well with the other frog, and found it easier to seize the *Xenodon's* prey by the hind legs. A struggle commenced, in which the *Xenodon* had better hold of the frog than the *Liophis*, and the latter, being obstinate and not in-

* See above, p. 113.

† One specimen of *X. severus* in the Collection of the British Museum is mentioned in the Catalogue as derived from Bahia.

clined to relinquish its hold, began to encompass its head with its wide jaws. It became evident that the *Liophis* would have to share the fate of its intended victim. As it was the first living specimen of its species I had been able to obtain, I was very anxious to save its life; so I cut the *Xenodon* in two with a knife, and the *Liophis* quickly passed through the anterior segment of the *Xenodon's* body with the frog. The *Liophis* was returned to its cage, when it directly seized hold of the other frog, and swallowed it undisturbed. It had along its head, neck, and anterior part of the body minute wounds from the *Xenodon's* teeth, which bled freely while it was engaged in swallowing the frog; but it has done quite well since, and I hope it may arrive safely at the Gardens of the Society.

It is surprising how broad and flat a *Xenodon rhabdocephalus* makes itself at times, chiefly whilst basking in the sun. This is owing, I suppose, to a peculiar conformation and attachment of its ribs, which I have not yet examined. The species of *Liophis* never make themselves so broad. A *Xenodon* can pass a crevice which is exceedingly small in proportion to the width of its head,—one smaller than that which a *Liophis* with a much thinner body can pass.

Of the interesting species *Xenodon colubrinus*, so well established and happily named by Dr. Albert Günther, I received several live specimens from Ilhéos. When irritated, it rapidly strikes the ground with its tail—a habit I have also noticed in *Spilotes variabilis*, *S. pæcilostoma*, *S. corais*, and in *Coryphodon pantherinus*. In its habits it resembles also *X. rhabdocephalus*; but in the form of its head it shows great similarity to the members of the next family—that of *Colubridæ*. In this species I first noticed a bright white spot or groove on the tip of each scale. Recently I have become indebted to Dr. A. Günther's kindness for a perusal of Prof. Reinhardt's interesting paper on these curious spots or depressions. Reinhardt discovered them during his stay in Brazil, about thirteen years ago, in a living specimen of *Philodryas olfersii*—a snake which has not yet been noticed by me. After his return to Europe he found them in preserved specimens of many other Ophidians, and has tried to vindicate for them the importance of a classifying character, which they undoubtedly possess. Reinhardt mentions that these depressions had been noticed before by Wagler in species of *Xenodon*, by Holbrook in *Coluber alleghaniensis*, and by Günther in West Indian species of *Dromicus*, but that they had been overlooked by other herpetologists. In *Xenodon colubrinus* they are remarkably distinct, clearly perceptible with the naked eye; they are circular, and placed very near the tip of the scales.

The family *Colubridæ* is represented by two genera in this province—*Spilotes* and *Coryphodon*.

Coryphodon pantherinus is exceedingly common. The grooves on its scales are double, as in all the other species of this family, with the exception of *Zamenis dahlia*, Fitz., which, according to Reinhardt, has scales with a single groove. Reinhardt, however, observes that this Ophidian had been classed by Schlegel with the *Psammodromidæ*, which have scales provided with a single groove.

Of the genus *Spilotes* I have noticed *S. corais*, *S. pæcilostoma*, and *S. variabilis*.

They are very similar in their habits, very bold; and the most undaunted is perhaps *S. corais*. It is called by the Brazilians "*Papa-pinto*," from its averred predilection for chickens, of which circumstance I have never been able to satisfy myself. It frequents the neighbourhood of rivers, where it often strikes terror into the black washerwomen occupied at their calling, by approaching and running after them. I have been told strange stories about its creeping on to the beds of sleeping women who nurse, and sucking at their breasts. It may be that, like many other reptiles, it is very fond of milk; and this may account in part for such tales, which have been current in other countries also. *S. corais* has generally seventeen rows of scales; but I have seen several specimens with only fifteen rows. One very large specimen from Caravellas in my possession, which measures 8', has nineteen rows of scales. The other two species of *Spilotes* are both called "*Cainana*;" the grooves on their scales differ from those of *S. corais* in being larger and oblong or elliptical. I was on the point of referring a specimen of *S. corais*, with fifteen rows of scales, to *Herpetodryas dendrophis*, on account of the slender form of its head; but the presence of the two depressions on each of its scales assisted me in its correct determination. With regard to *S. variabilis*, I must state that the specimens examined by me, which were all adults, had no loreal shield.

The *Dryadidæ* I have met with belong to two genera, *Herpetodryas* and *Philodryas*. *Herpetodryas carinatus* is one of the most common snakes in this province. The Brazilians call it, as well as all the other slender species of snakes, "*Cipo*," which signifies the stem or a stick of a creeping-plant. Before I had read Schlegel's 'Essay,' I referred all the specimens of *Herpetodryas* in which I did not detect any keeled scales to *H. fuscus*, this being the only distinctive character given in Günther's catalogue. When I found that Schlegel had not admitted *H. fuscus* as a separate species, I submitted all my specimens (several dozens) to a closer examination, and found that there was not a single one in which at least very slight traces of keels were not to be found in some scales; so that I feel inclined to follow Schlegel, and to consider my specimens as belonging to one species. According to Reinhardt, the scales of *Herpetodryas carinatus* are without any groove,—an observation with which I cannot agree, having found grooved scales in all my specimens. In some specimens they were found, indeed, only on a few scales of the neck near the head; others had them on the two middle rows of keeled scales. The occurrence of these grooves in *Herpetodryas** is very interesting, particularly because they are single, and not double as is generally the case in keeled scales. They are placed near to the inner edge, and at the point of junction of the distal with the

* I have examined several specimens of this species: I was unable to find these grooves in *H. carinatus*; one specimen of *H. fuscus* showed a single groove on a few scales on the neck.—A. G.

middle third of the scale. They are proportionately smaller in larger specimens. The largest specimen noticed by me is 5 feet 7 inches long.

Philodryas viridissimus is not quite so common as the last species. The largest specimen I have seen measured 4 feet. Reinhardt found two grooves in the scales of this snake. After a careful search, I cannot find more than one groove at the tip of the scales. Some scales on the tail have certainly two grooves, evidently in consequence of the confluence of two scales.

Philodryas schottii.—I obtained a single specimen in a bad state.

Of the family of *Dendrophidæ* I have seen a single specimen of *Ahaetulla liocerca* *: it must be a very beautiful snake. It is said to be exceedingly lively; and this, with its proportionately long teeth, may be the cause of its being considered dangerous by the Brazilians.

The family of *Dryophidæ* has two representatives in Bahia, belonging to the genus *Dryophis*—*D. argentea* and *D. acuminata*. The former is very scarce (I have seen only one specimen in Mr. C. M. Föppel's collection), the latter very common.

6. DESCRIPTION OF A NEW SPECIES OF ELAPOMORPHUS FROM BRAZIL. BY DR. OTHO WUCHERER, CORR. MEMB.

ELAPOMORPHUS SCALARIS.

Eight upper labials, the fourth and fifth touching the eye, the seventh largest. Scales in seventeen rows; 128–130 ventral shields; dirty brick-red above; head brownish, with a black narrow dorsal streak traversed by short black bands; narrow black spots on the sides.

Hab. Cañavieras, Matta de S. João, Bahia.

Description.—The body of moderate length, almost cylindrical; belly flat; the tail short. Head moderate, distinct, with flat crown; the cleft of mouth moderate; rostral shield triangular, almost reaching the surface of the head, recurved, concave, the inferior edge slightly protruding; three frontals, two anterior and one posterior, the former small, almost triangular, very narrow in the antero-posterior direction, the posterior one very large; one nasal pierced by the nostril; nostril large, lateral; superciliary shield small; one anterior, two posterior oculars, the anterior large, high, forming a short suture with the vertical; loreal elongate; vertical moderate, almost triangular; occipitals large, forked behind; one temporal, sometimes two, one behind the other, touching the inferior posterior ocular; upper labial shields eight, the fourth and fifth touching the eye, the seventh largest; eye moderate, sublateral, pupil round; scales rhombic, not truncated, smooth, equal, without any groove, a few in the middle row of the tail larger, in seventeen rows; posterior tooth longest, grooved; two pair of chin-shields. Snout and part of crown brown and bluish iridescent, irregularly speckled with black; lips

* I received it from Mr. Christopher Gayleard, whose unceasing kindness in assisting me to collect specimens I am happy to acknowledge.

white; the back is of a dirty brick-colour: a black streak, of the breadth of the middle dorsal row of scales, runs along the body almost to the tip of the tail; this is crossed by short, transverse, black bands, some of which do not correspond exactly in their lateral halves; on the sides a line of narrow, almost linear, black spots; underneath uniform yellowish white.

Dimensions of two specimens:—

Length of head	0·010	0·013
Length of tail	0·040	0·055
Total length	0·320	0·250
Ventral shields	128	34
Subcaudal shields	130	34

The smaller specimen is in the British Museum. The larger specimen was sent to me from Cañavieras. It was injured in the head, and a few characters are not recognizable; the smaller corresponds with it in every particular. I received it from M. C. Gayleard, from the Matta de S. João, a few leagues south from the city of Bahia. This species differs from others in the shape of its head, which is distinct, in having a shorter body, broader ventral shields, and seventeen rows of scales; but the dentition and coloration are very similar.

7. REVIEW OF THE VERMETIDÆ. BY OTTO A. L. MÖRCH (OF COPENHAGEN). (Part II.)*

Genus SPIROGLYPHUS, Daudin, Recueil, 1800, p. 39.

Spirogyphus, Gray, Guide, 1857, p. 127; Mörch, Journ. Conch. 1859, viii. p. 360.

Bivonia, Gray, Proc. Zool. Soc. 1847, p. 156 (nec Gray, nec Cat. Brit. Mus. 1842, pp. 62 & 90); Gray, Figs. of Moll. 1850, iv. p. 82 (not description); Adams, Genera, p. 358 (not the description).

Stoa, De Serres, Ann. des Sc. 1855, pl. 259. pp.

T. plerumque planorbiformis corrodens; striæ incrementi expressæ; liræ spirales rarissime inveniuntur.

Operculum magnum crassum superne convexum, laminis concentricis crassis; inferne planum concentrice liratam, centro mammilla cylindrica valida, peripheria margine angusto elevato sæpe compresso; color sanguineus vel atro-purpureus.

The shell of this genus is so similar to that of *Stoa* that it can only be distinguished by the operculum, which is convex outside, flat inside, with a central cylindrical wart, not mentioned either by Dr. Gray (Guide), by Bivona, or Philippi. It has some relations to the lid of *Vermiculus*, and in some respects it approaches that of *Pyxipoma*; I know at least no true *Vermetus* which, according to the lid, is more allied to it. The colour varies in all the species from bright purple to nearly black, and the surface from nearly flat to very convex. I refer to this genus *V. glomeratus*, Biv., which only

* See P. Z. S. 1861, p. 145.

differs in having the central mammilla conical and not cylindrical. The colour of the shell is generally brown, often white with brown transverse bands. Chemnitz and Carpenter regard the genus as being sinistral; but I cannot see any difference between it and the other *Vermeti*.

1. SPIROGLYPHUS SPIRULIFORMIS, De Serres, 1855.

"Cette espèce est caractérisé par le dernier tour détaché des premiers, qui se prolongent dans l'âge adulte en un tube légèrement recourbé bien au-delà de la spire orbiculaire formée par l'ensemble de ces mêmes tours. Diam. 0^m.026 à 0.028."—*M. de Serres*.

Stoa spirulæformis, De Serres, Annales des Sciences, v. p. 241, t. 8 c. f. 1.

"La *Stoa spirulæformis* a été rencontrée sur la *Pinna nigrina*, coquille décrite par Lam. comme de la mer des Indes, tandis que nous l'avons reçue de l'île de Zanzibar. Quant à la *St. spirulæformis*, elle paraît habiter sur les valves de quelques Modioles de l'océan Atlantique boréal, ainsi que des côtes de l'Amérique septentrionale."

The specimen represented is most probably from Zanzibar, the American locality being very likely wrong, which is not improbable from the curious form of the sentence commencing with "Quant."

I have not seen any shell corresponding to the representation quoted. The first whorls appear to be smooth, in which respect it differs from all the following varieties. It is stated that the specimen is represented of the natural size, and double as large as *S. perforans*; but fig. 6, the natural size of the latter species, is, on the contrary, represented somewhat larger.

Var. α. SCAPHITOIDES.

T. forma Scaphitis twanii parum immersa; anfr. obtuse quadrangulares; anfr. juveniles bullati læves castanei; anfr. sequentes planorbiformes, superne planati, liris incrementi arcuatis approximatis regularibus; anfr. ultimus rectus, versus aperturam solutus incurvus, latere externo plano, laminis incrementi deplanatis arcuatis convexis, superne planatus, laminis incrementi crassis arcuatis reductis, antice profunde excavatis, plerumque duplicatis. Color badius, aperturam versus cinereus; fascia lateralis castanea. Apertura ovalis leviter contracta.

Diam. spiræ circ. 4 m., long. 8 m., diam. ap. 1 m., diam. anfr. ult. 1½ m.

Hab. Ins. Philippin., on a young specimen of *Margaritifera muricata*, Reeve; of the same shape as the preceding, but much smaller (*coll. Cuming*).

Var. β. VORTEX.

T. planorboides; anfr. angulati cinerei, superne plani, linea lata badia submediana, laminis incrementi irregularibus subremotis, arcuatis, antice hiantibus.

Diam. ap. 5–6 m., dm. apertura 1⅓ m.

Operculum crassiusculum superne planum, lira arctispirali, periphæria membranacea, centro puncto impresso annulo obsoleto circumdato; inferne margine peripherico angusto bipartito, parte interna sanguinea, parte externa flavescens, centro mammilla latiuscula parum prominente.

Diam. $1\frac{1}{2}$ millim. (coll. Cuming).

Hab. Ins. Philippin., on *Haliotis ovina*, Chemn., slightly corroding.

Var. γ . LEMNISCATA.

T. tenuiuscula, anfr. primi planorbiformes, anfr. ultimi lemniscatim contorti.

On the same shell as the preceding.

Var. δ . SPIRALIS.

T. tenuis castanea fascia spirali lata alba, leviuscula, anfr. alio super alium decliviter et spiraliter incumbens, striis incrementi obsoletis, lira spirali obsoletissima.

On the same shell as the two preceding varieties.

Five or six specimens agreeing with the above description differ entirely in the manner of contortion from that known in the other species; but the transition to the planorboid varieties seems to me so striking, that I do not dare to include it in another genus or species. The striae of growth are bent in the same way as in the preceding, but are very rarely slightly foliaceous. It is deeply corroding.

Var. ϵ . SOLIDISSIMA.

T. crassa parum immersa planorboides vel lemniscatim contorta, alba, in anfr. ultimo angulo laterali linea badia notata; laminæ incrementi obsoletæ antice excavatæ, interstitiis sæpe foveatis.

Diam. aperturæ fere 2 m.

Operculum solidum crassum atro-purpureum; superne convexum fere hemisphæricum, lirula arctispirali obsoleta; inferne margine peripherico elevato angusto incrassato sanguineo; impressio muscularis concaviuscula, centro mammilla valida cylindrica prominente, vertice plano dilatato. Op. superne fascia peripherica lata flava.

Diam. fere $1\frac{1}{2}$ m.

About ten specimens on *Chama radiata*, Lam. (Mus. Reg.).

Var. ζ , operculo dilute sanguineo.

Operculum dilute sanguineum planum, mammilla centrali parva, periphæria lamina tenui flava.

On *Turbo marmoratus*, several specimens showing considerable variations in colour and shape. The shells are so overgrown with *Nulliporæ* that they cannot be described. The colour is brown inside, white outside.

Var. η . IMMERSA.

T. profundissime immersa; anfr. plani; liræ incrementi arcuatæ confertæ minutissimæ.

Serpula spirorbis contraria, Chemn. ix. p. 140.

S. spirorbis, orbiculata sinistra, Chemn. ix. p. 151, f. 999.

S. spirorbis β, Gm. S. N. 3740.

S. spirorbis, var., Dillw. p. 1073.

Spiroglyphus contrarius, Mörch, Journ. Conch. 1859, vii. p. 45.

Hab. On *Polydonta granularis*, Bolten : from Tranquebar.

I have seen several specimens on the shell represented by Chemnitz ; but they do not seem to differ from the preceding, except by burrowing very deeply, in such manner that the sides are entirely concealed, and the surface is sunk to the same level as the surface of the *Trochus* ; but this appears only to depend on the nature of the outer layer of the *Trochus*.

Var. θ. ERYTHRÆNSIS.

T. albescens, intus castanea, laminis incrementi tenuissimis confertis brevibus sigmoideis ; anfr. aperturam versus solutus cylindricus.

Operculum superne convexum, inferne concaviusculum, margine peripherica angusta elevato bipartito, parte interna purpurea, externa flava ; mammilla centrali læte aurantiaca.

Hab. On *Arca foliacea*, Forsk., from the Red Sea (*Mus. Reg.*).

Var. ι. DISCULUS.

Operculum superne convexiusculum ; inferne planiusculum, area immersa bipartita, disco centrali lato atro concentrice lirato, zona externa angusta nuda ; mammilla centrali aurantiaca ; limbo latiusculo leviter elevato nitido bipartito, parte interna saturate purpurea, externa sanguinea.

From the same shell as the preceding.

2. SPIROGLYPHUS AMMONITIFORMIS, De Serres, 1855.

Coq. "discoïde, à tours continus et arrondis, diffère de la *S. spirulæformis*, en ce que les derniers tours ne se détachent jamais des premiers, et qu'ils sont fortement striés.

"Grand diam. 0^m·020 à 0·021 ; petit diam. 0^m·016 à 0·017."

Stoa ammonitiformis, De Serres, Ann. des Sc. v. p. 240, t. 8. f. 2.

"Sur les valves de la *Perna isognomon*, coquille bivalve des mers des Indes."

I do not know this shell ; perhaps it is more allied to *Stoa perforans*, which is like it in respect of the aperture.

3. SPIROGLYPHUS PLANOBIS, Dkr. 1860.

T. solidula, alba, planorbiformis, carinata, transversim sublamellosa.

Lat. vix 4 m.

Vermetus planorbis, Dkr. Mal. Blätter, vi. Jan. 1860, p. 240.

Hab. Decima Harbour, Japan (*Dr. Nuhn, Mus. Heidelb.*). On *Vermetus imbricatus*, Dkr. ; slightly immersed in the surface.

The embryonal whorls are smooth, projecting in the centre of the shell, and not unlike a very small *Amnicola*. It differs from *V. corrodens*, D'Orb., in having more regular whorls, and in wanting the tooth-like process of the carina in the aperture. I do not know this species, which seems very nearly allied to the two preceding species.

4. SPIROGLYPHUS SPIRORBIS, Sow.

Serpula spirorbis, Sow. Gen. f. 3.

Spirogyphus spirorbis, var., Dillw., Sow. Man. p. 101. f. 8.

S. spirorbis, Adams, Genera, p. 360, pl. 39. f. 4 (copy).

S. spirorbis, Chenu, Man. p. 320, f. 2305 (copy).

Represented on a *Patella*, probably from the Cape of Good Hope. I have seen one very similar on *P. argenvillei*, Kraus, but it is perhaps a *Stoa*.

5. SPIROGLYPHUS SCHRÖTERI, Mörch.

Helmintholithus muricis alati, ala mulctatus, serpularum lumbricalium undequaque sparsus, Fortis. Della valle vulcanica marina di Ronca nel territorio Veronese, 1780 (*ex Haquet*).

Lituiten mit gezähnelten Rändern, Haquet, Nachricht von Versteinerungen, 1780, 8vo, p. 25, t. 1. f. 2 g, f.

Item, Schröter, Journal, vi. 1780, p. 267.

Serpulites muricinus, Schloth. Petref. 168 (cf. Verz. 68).

Spirogyphus Schröteri, Mörch, Journ. Conch. viii. p. 45 (1860).

Hab. Fossil, Valle Canella in situ vulcanico di Ronca (*Haquet*). Burrowing on a *Strombus*.

6. SPIROGLYPHUS STRAMONITÆ, Mörch.

T. planorbiformis, profunde immersa, castanea nitida; anfr. ultimus extus obtuse angulatus, liris obsoletissimis 1 vel 2, malleatus, aperturam versus albus, strigis transversis castaneis antiquatus; striæ incrementi obsoletissimæ; anfr. primi plani; testæ infantilis apice bullato, flavescente.

Diam. testæ $2\frac{1}{2}$ m.; diam. aperturæ $\frac{3}{4}$ m.

Operculum tenuiusculum superne planum, area centrali lata rugulosa, annulo vivide coccineo circumdato, peripheria aurantiaca; inferne margine elevato angusto peripherico, inde concaviusculum, tuberculo centrali circulo immerso atro-purpureo circumdato (Mus. Reg.).

Hab. Guinea? on *Purpura* (*Stramonita*) *hæmastoma*, L., var.

Not unlike the *Spirogyphus* on *Patella tarentina*, in Deless. t. 23. f. 7.

7. SPIROGLYPHUS ANNULATUS, Daudin.

"*Sp. in spira irregulariter contortus, annulisque contextus.*"

"Longueur de six lignes. Tube d'égale grosseur partout, tortillé en un tour de spire irrégulière, et composé d'une multitude de très-

petits anneaux couleur de corne, qui ont la forme d'une maille de tricot."—*Daudin*.

Spiroglyphus annulatus, Daudin, Recueil de Mém. 1800, p. 50.

S. annulatus, Bosc, Hist. Vers, 1802, i. p. 187, t. 7. f. 5 (copy).

S. annulatus, Blainv. Dict. Sc. l. p. 296.

S. annulatus, Mörch, Journal de Conch. viii. p. 44.

Hab. Sur les Patelles et les Fissurelles de l'océan indien.

The represented species is probably *Fissurella barbadensis*, Gm.

Var. α. DENTIFERA.

T. irregulariter contorta, transversim lamellata, longitudinaliter carinata: aperturæ dente prominulo e carina formato.

Diam. 10 m. (D'Orb.).

Vermetus corrodens, D'Orb. Cuba, p. 235, t. 18. f. 1–3.

Spiroglyphus corrodens, Gray, Brit. Mus. Cat. Moll. Cuba, p. 14. no. 147. p. 47.

S. corrodens, Schutleworth, Ann. des Sc. 1855, p. 319.

S. corrodens, Mörch, Journ. Conch. viii. p. 44.

Hab. Cuba. Martinique, always on *Turbo tuber*, D'Orb. St. Thomas. Porto Rico. Jamaica, on *Chiton piceus*, *Vermetus*, sp., *Turbo tuber*, *Trochus pica* (*Meleagris*), Schuttlw.

Var. β, *linea badia spirali*. Humphr. Conch. t. xi. f. 13 (semi-adulta).

T. cinerascens, carina acuta castanea laterali, latere externo perpendiculari transversim rugoso lævisculo, latere interno lato declivi, laminis arcuatis crassis approximatis.

Diam. ap. fere $2\frac{1}{5}$ lin.

Hab. I. Barbados, on *Fissurella barbadensis*, Gm. (coll. Cumिंग).

Var. γ. GLOMERATA.

T. albescens vel castanea, præsertim intus, laminis tenuissimis transversis. Operculum planum vel hemisphæricum, atrum vel coccineum.

Vermetus irregularis, D'Orb. Cuba, t. 17. f. 16–18, sed vix descript. p. 235.

"*T. fusco-nigra, irregulariter contorta, transversim rugosa plicata (vel longitudinaliter sulcata, glomerata).*"—D'Orb.

Serpula glomerata, Brooke's Introd. f. 133 (verisimiliter).

Hab. St. Thomas, on *Rhipidogorgia flabellum*, L., forming large, compact, globular masses, sometimes nearly 8 dm. in diameter.

D'Orbigny's representation appears correct; but the last sentence of the diagnosis is perhaps taken from another associated species, very likely *V. varians*, D'Orb., which is always "contourné obliquement en spirale," as stated in the description of *V. irregularis*. I have seen both species together in one group, but the former species very sparingly. According to D'Orbigny, it is found at Cuba and Martinique, "sur les rochers, dans les plaques d'eau, où elle a été recueillée par M. Candé."

Var. δ. TROCHICOLA.

T. gracilis varie torta, planorbiformis vel scaphitoides, profundissime immersa, badia; anfr. plani, lirulis incrementi arcuatis regularibus vix prominentibus.

Diam. ap. $1\frac{1}{5}$ m.

Hab. St. Thomas, on *Livona pica*, L., very deeply corroding, sometimes even under the surface, but not concealed. On *Tectura melanosticta*, Gm., in the same manner. This variety is perhaps more nearly allied to *Spirogl. stramonitæ*, M.

Operculum (varietatis β) solidum crassum coriaceum, superne convexum vel fere hemisphæricum, lira arctispirali nigra; area centrali plana vel interdum immersa atropurpurea, annulo coccineo circumdata, fascia latiuscula peripherica flavescens; inferne planum, liris concentricis 3-4 pulcherrimis, lira externa valida; mammilla centrali cylindrica, vertice plano ruguloso; peripheria margine elevato angusto lævi pallide coccineo.

Var. ε.

Operculum superne area centrali elevata convexa, atropurpurea fascia coccinea circumdata, peripheria albescens; inferne area centrali (farinosa casu?) liris 2-3 concentricis acutis, fascia coccinea circumdata; peripheria angusta, parum elevata, bipartita pallide flava margine albescens; mammilla centrali distincta.

From a specimen attached to *Fissurella barbadensis*.

8. SPIROGLYPHUS ALBIDUS, Carp.?

Operculum g, et fors. f?, Carp. Cat. p. 311.

Bivonia albida, Carp. Cat. Mazatl. p. 307?

"*T. parva, albida; anfr. duobus primis lævibus, turbinoideis, subelevatis, postea amplexatis; anfr. normalibus subregulariter spiraliter contortis, marginibus subparallelis, ad sese plerumque, ad concham alienam parum, adhærentibus; rugis concentricis plus minusve expressis, spiralibus nullis.*"

Long. 22 m.; lat. .1; diam. ap. .03.

Hab. Mazatlan: extremely rare, off *Spondylus* (Liverpool coll.).

The operculum *g* is without doubt that of a *Spiroglyphus*, and not that of *Bivonia contorta*, var. *indentata*, as regarded not improbable by Carpenter. The operculum *f* differs from all the opercula of this genus I have seen, in being thin and concave; but as it is stated to be closely resembling the operculum of *Bivonia glomerata*, Phil., I do not doubt it is truly congeneric, and perhaps conspecific, as the opercula of this genus are exceedingly variable in shape. That it cannot belong to *Bivonia contorta*, as regarded probable by Carpenter, seems evident to me, from the original specimen of Carpenter showing distinct elevated lines on the columella, which proves it to be that of a *Vermetus*. I have never seen any elevated columellar line in a *Spiroglyphus*.

Sect. A. *Operculum inferne mammilla centrali abbreviato-conica, vertice obtuso.*

Bivonia, Adams, Genera; Gray, Guide, not Cat. 1842.

9. *SPIROGLYPHUS GLOMERATUS*, Bivona, 1832.

V. testis cylindricis aut subangulatis, contortis, in massam conglomeras, transversim undulato-rugosis.

Operculum completum, convexum semiglobosum, rufum superne cinereum, rugosum, secundum Bivonam spiratum, anfractibus laminosis tenuibus numerosissimis confertis; subtus medio concavum, margine nitidissimo lævissimo libero (Phil.).

Animal viridi-fuscum, cinereo et nigro punctatum et maculatum, interdum strigis atro-purpureis duabus in dorso; area inter tentacula anteriora et pedem alba (Phil.).

Diam. ap. vix. 2^{'''}.

Vermetus glomeratus, Bivona, Nuovi Genere e Nuovi Sp. p. 12, t. 5. f. 5 (Phil.).

V. glomeratus, Phil. Enum. i. p. 171, t. 9. f. 23; ii. p. 144.

Bivonia glomerata, Gray, Fig. of Moll. i. t. 188. f. 5; iv. p. 49.

B. glomerata, Adams, Genera, i. p. 358, t. 39. f. 1 (copy), f. a-c (original).

B. glomerata, Mörch, Journ. Conch. viii. p. 361.

Hab. Præsertim prope Panormum frequenter occurrit (Phil.).

The description of the operculum is very incomplete, the central mammilla being overlooked. I have not seen any operculum nearly hemispherical, as represented; but I do not doubt, from analogy with the other species, that it is occasionally found.

Var. a. CRUSTANS.

? *Le Gateau des Vermisseaux*, Fav. t. 8. f. Q, from Provence.

Das graue und braune Wurmgewächs, Knudm. Rariora, 1737, p. 164, t. 10. f. 3.

Bivonia glomerata, Adams, Gen. t. 39. f. 1 a, b, c.

T. agglomerata crassa, laxè spiraliter torta; anfr. primi teretes lævigati, candidi fundo cinereo, sulcis concentricis subremotis articulatim adstricti; anfr. ultimus fuscescens, carina laterali acuta, latere externo subperpendiculari rudi, latere interno declivi, laminis incrementi leviter arcuatis irregularibus approximatis; apertura circularis obliqua, diam. 5 m.; dissepimenta convexa v. cupuliformia, cretacea. Testa juvenilis corrodens planorbiformis badia, anfractibus angustis angulo laterali obtuso.

Operculum atro-purpureum crassum coriaceum planiusculum, superne laminis brevibus concentricis irregularibus, area centrali lata convexa; inferne area musculari excavata opaca atra, concentricè lirata, nodo centrali conico-convexo rufo; limbus nitidus bipartitus; zona interna convexa atra, externa coccinea tenuis oblique conferte striata, margine subreflexo.

Diam. fere 4 m.

Operculum juvenile planum tenue, inferne vivide coccineum.

Diam. $1\frac{1}{2}$ m.

Variat laminis confertissimis et convexitate.

Hab. In Mari Mediterraneo.

In Mr. Cuming's collection is a large flat crust, nearly the size of the hand, showing on the under side white, smooth, cylindrical whorls, with annular contractions, which seems to have been imbedded in chalk, but does not appear corroding. The representation of Philippi is very like it; the last whorl on the upper side differs entirely in shape, sculpture, and colour. A specimen from Bivona himself, in Dr. Hornbeck's collection, is very like Mr. Cuming's group. According to Philippi, it is chiefly common near Palermo. According to the locality, Golfo di Tarento, it is probable that the *Spiroglyphus* represented on *Patella tarentina*, in Delessert's 'Recueil,' pl. 23. f. 7, is the young of this species.

A small group of agglutinated straight tubes from the Adriatic Sea, by Trieste, in the collection of Mr. Alfr. Benson, furnishes the following form, probably referable to this species:—

Var. β . TUBULOSA.

Serpula annulata, Lam. Hist. 1818, v. p. 364. no. 10; ed. 2. v. p. 620.

S. annulata, Blainv. Dict. des Sc. xlviii. p. 556.

Vermetus annulatus, Rouss., Chenu, Ill. t. 2. f. 1, 1 a.

"*Testis teretibus, gracilibus, annulatim plicatis porrecto-flexuosis, glomeratis.*"

"Elle est blanche, et sa masse ressemble à un paquet de petits intestins allongés" (*Lam.*).

This group has the tubes of only $1\frac{3}{4}$ m. diameter; in another group from M. A. W. Malm, at Götheborg, without locality, the tubes are somewhat larger. The inside of the first whorls, which are all broken, is pale brown.

To this genus the following species might perhaps be referred:—

Vermetus infundibulum, Chenu, Ill. t. 10. f. 12 (with a young one).

V. costalis, Lam., Chenu, Ill. t. 10. f. 11.

Spiroglyphus marginatus, M'Coy, 1844.

S. marginatus, Morris, Brit. Foss. p. 69 (Carboniferous Limestone).

VERMETUS, Adanson, 1757.

Campulotus, Guettard, 1774, Mém. iii. p. 94.

Bivonia, Gray, P. Z. S. 1847, p. 156; Adams, Gen.; Carp. Cat.

Petalconchus, Lea, Trans. Am. Phil. Soc. 1843, p. 229; Woodw. Man. p. 462; Carp. Cat. p. 308, et P. Z. S. 1856, p. 313.

Aletes, Carp. Cat. p. 301.

T. affixa irregulariter spiraliter torta, nunquam turritelloidea, plerumque decussata; columella lira mediana elevata; sæpe laminis duabus spiralibus varie dispositis.

Operculum tenue flavum concavum parum spirale.

Animal viviparum dorso utrinque carinato, tentaculis breviusculis, filamentis pedilibus longis contractilibus.

A small group from Gaboon, corresponding to the description and figure of Adanson's "*Vermetus*," shows internally spiral lamellæ, proving its identity with *Petalococonchus*, Lea.

I have convinced myself, by comparison of numerous specimens, that the presence or absence of laminæ are not even of specific value, although their forms, when present, afford characters of some value. The individuals seem to undergo changes with age, analogous to those of the genus *Cypræa*. The laminæ seem to be dependent on a thin, white, soft layer, sometimes covering the whole interior; they are mounted on a small elevated line in the mass of the shell; and one, sometimes compressed and sharp, is always found on the median part of the columella. These lamellæ must be regarded as a kind of septa, or perhaps as a muscular attachment analogous to the cup of the *Calyptæidæ*, as first advanced by Carpenter; but I have not observed any attachment in specimens *in spirit*. The animal occupies only the space near the columella, leaving the outer, often much larger space empty; the last whorls are quite filled out by the animal. The laminæ are most frequently present in the median whorls, wanting in the first and last whorls; sometimes they are continuous to the aperture, but never when the last whorl is raised in an erect tube. The size and thickness are very variable in one and the same individual, sometimes very broad, nearly touching each other, whilst in the following and preceding whorls they are very short, leaving a large gap between them.

Septa are rarely met with. Carpenter mentions in *Petalococonchus cochlidium*, a septum traversed by the laminæ. Sowerby first represented a *Vermetus glomeratus* closing the aperture with a septum, turning the convexity upward, and provided with a narrow central opening. Dr. Gray* supposed it to be the production of some parasitical animal†, induced by the fig. 18. pl. 57 of Delle Chiaje; but the discovery of *Rhizochilus* led him to regard it as a peculiarity of the species. I have only once seen a similar instance, in a detached specimen of *Vermetus varians*, D'Orb., from St. Thomas (coll. A. H. Riise). The septum, constricted a little below the free margin of the aperture, has a short narrow slit, not provided with teeth like Dr. Gray's specimen, and is of the same colour as the shell, but paler; which makes Dr. Gray's opinion very probable. This suggestion is still more strengthened by some small solitary spiral *Vermeti*, attached on *Isognomon obliquum*, Gm., and *Tridachna squamosa*, having the last whorl erect and free, with the borders of the aperture inflected so as to form a reniform or heart-shaped opening, but transverse and much larger than the slit in the preceding. The principal difference is that the walls of the aperture are bent inward. These small shells have a single series of impressed linear varices, like those of *Pythia* and *Eulima*; to the left of each varix the whorls are a little inflated. I have seen the West

* Gray, Annals of Nat. Hist. viii. 1851, p. 479, pl. 17 B. f. 4-6; Forriep, Jahresbericht, 1851-52 (translation).

† It is indeed very like the constriction formed by *Sipunculus strombi*, Mont., in the shell of *Dentalium*.

Indian form *Vermetus varians*, D'Orb., passing over to the form with plaits; this form of aperture must consequently be dissolved with age. *Varices maniciformes*, of Philippi, are not unfrequently met with, the insides of which show several raised transverse laminæ, probably arising from the dissolved old whorls. Several species are corroding, but I have never met with a planorbiform corroding shell.

I divide this genus into the following four subgenera, of which the last two very likely only depend on differences of age, corresponding to *Bulla*, *Marginella*, and the adult state of *Cypræa*; but I have not seen a sufficient number of opercula to decide the question with certainty, although I have compared numerous specimens of shells. In the following list of species I use the names *Aletes* and *Thylacodus*, to distinguish the varieties which I regard as analogous.

Subgenus 1. VERMETUS, Adans.

T. anfractibus gracilibus, laminis e parietibus procedentibus.

Typ. *V. Adansonii*, Daudin; *V. renisectus*, Carp.

Subgenus 2. PETALOCONCHUS, Lea.

T. ut præcedentis, sed laminis ab axi procedentibus.

Typ. *V. macrophragma*, Carp.; *cochlidium*, Carp.; *flavescens*, Carp.

The position of the laminæ is not quite constant. In a large dissected specimen, where the laminæ can be followed throughout the length, they often deviate considerably from the columella.

Forma 1. *Thylacodus*, Mörch.

T. ut præcedentium, sed anfr. plerumque longissimi, laminis internis nullis; columella liris spiralibus 4-5, lateralibus obsoletissimis.

Typ. *V. subcancellatus*, Biv.; *V. contortus*, Carp., *V. conicus*, Dill.

I have seen a specimen of the last species which is in the fore part an *Aletes*, and in the first whorls a plaited *Vermetus*.

Forma 2. *Aletes*, Carp.

T. ut præcedentium, sed anfr. ampli, sæpe sutura dilatata; columella lira obsoletissima mediana.

Typ. *A. centiquadrus*, Val.
Vermetus, Adanson.

Subgen. 1. VERMETUS.

1. VERMETUS ADANSONII, Daudin, 1800.

“Chaque coquille représente une espèce de cylindre de 5 à 6 pouces au plus de longueur, dont le diamètre, qui a une ligne et demi à deux lignes de largeur en haut, diminue insensiblement jusqu'au sommet, où elle se termine en une pointe très-fine; le nombre des spires varie depuis 5 à 12, peut-être davantage. L'ouverture s'élève

d'un pouce au-dessus des spires. Son épaisseur n'est pas bien considérable, mais sa dureté surpasse celle de la plupart des coquilles. Elle est cannelée dans toute sa longueur, ou relevée de 6 à 12 petits filets ridés pour l'ordinaire ou chagrinés. La couleur, pendant que l'animal vit, est au-dehors d'un brun foncé, qui après sa mort devient cendré; au-dedans elle est violette.

"*Opercule* extrêmement mince, et marqué sur sa surface de deux petits sillons circulaires concentriques. Il est une fois plus petit que le diamètre de la coquille.

"*Animal* cendré tirant sur le noir, depuis la tête, qui est mouchetée de petits points jaunes jusqu'au manteau; depuis le manteau jusqu'au milieu du corps il est blanc-sale, et noirâtre à l'extrémité inférieure."—*Adanson*.

Le Vermet, Adanson, Senegal, p. 160, pl. 11.

Tubuli instrumentum pro extrahendo subere vel globulis scolopetariis representantes. Martini, i. f. 24 B (copy).

Campulote à cannelures ridées, &c., Guettard, iii. p. 108, t. 69. f. 6.

Vermiculaire le Vermet, Favanne, i. p. 662, t. 6. f. H.; Fav. Zoomorphose, t. 18. GH (copy).

Vermetus Adansonii, Daudin, Recueil, 1800, p. 35; Gray, Phil. Trans. 1833, p. 816; Hanley, Ipsa Linn. Conch.

Vermicularia vermet, Bosc, Vers, p. 326, t. 49. f. 3 (copy).

Vermetus lumbricalis, Royssy, Hist. Moll. v. p. 399, t. 56. f. 1 (non Linn.).

V. lumbricalis, Rang, Man. p. 187.

Hab. Ins. Gorea et Magdalena. It is especially found in the basins where the water is quiet, and particularly in those excavated naturally in the rock (*Adanson*).

I possess a small crust from Gaboon, showing in the sections plaits of the stamp of *Petaloconchus renisectus*, Carp. Proc. Z. S. 1856, p. 315, fig. 5. The colour is concealed by a brownish, probably foreign matter.

Var. *α*. LAMARCKII.

T. apice spiræ affixo, antèrius in tubum ascendentem porrecta, tenui, pellucida, luteo-rufescente (Lam.).

Vermetus lumbricalis, Lam. Hist. An. s. Vert. vi. 2. p. 225; ed. 2. ix. p. 66 (non L.); Blainville, Dict. des Sc. t. lviii. p. 328; Chenu*, Illustr. t. 5. f. 1 a-d.

Hab. Senegal (Lam.). The last part of Lamarck's diagnosis has very likely only reference to the erect part of the last whorl; else it must be specifically distinct.

Var. *β*. CARPENTERI.

T. lamini per anfr. plerosque continuis, duabus æqualibus tenuioribus, a parietibus, parte axin versus, procedentibus, arcuatim medium versus continuis, interstitio haud pervio, extus

* Carp. (Cat. p. 306. lin. 18) makes some observations respecting Chenu's plates which are erroneous, as it is overlooked that Chenu has two plates marked "V."

labrum versus carinatis; camera externa majore, reniformi; plica una centrali, columellari.

Diam. spiræ .4, aperturæ .1 poll. (Carp.).

Petaloeonchus renisectus, Carp. Proc. Zool. Soc. 1856, p. 315, f. 5.

Hab. In Oceano Indico (*coll. Cumingii*). Described from a large group of very regular growth, which from its accretions, Carpenter supposes to be East Indian. A large flat crust, which I suppose is the one described, does not show any other accretions except an imbedded *Isognomon*, very like the *I. perna*, L., represented by Dunker in Moll. Guineensia, t. 8. f. 10—a form I do not know as East Indian.

2. VERMETUS VARIANS, D'Orb.

T. irregulariter convoluta, longitudinaliter rugoso-costata, vel lævigata, violaceo-fusca.

“Coq. ornée de 6–7 sillons irréguliers.

“*L'animal.* La couleur en est violet foncé; la masse céphalique poussée latéralement, au contraire, très-foncé; l'opercule et le pied sont d'un violet très-pâle. Le manteau à sa partie antérieure est bordé de rouge de carmin; le reste du corps, en dedans, est simplement rosé en passant au jaune; on remarque néanmoins, à la partie supérieure, une large bande violette, médiane, accompagnée de chaque côté d'une autre moins foncée, qui se perd en approchant de l'extrémité du corps.”—D'Orb.

Operculum orbicular, thin, nucleus central (Gray); apparently paucispiral, like that of *Serpulorbis** made nearly flat (Carp.).

Vermetus varians, D'Orb., Voy. l'Am. Mér. p. 456, t. 44. f. 7–10.

Serpuloides varians, Gray, fig. 4. p. 83, t. 128. f. 1.

Serpulorbis varians, D'Orb., Adams, Gen. i. p. 357.

Petaloeonchus varians, Mörch, Journ. Conch. viii. p. 41.

Vermetus varians, Gray, Brit. Mus. Cat. (Moll. Am.), p. 47. no. 405 (operculum); Carp. Proc. Zool. Soc. 1856, p. 315 (operculum).

Hab. Rio Janeiro; “tapissant le fond des plaques d'eau salée, sur les rochers des environs de Rio, au niveau des plus hautes marées de syzygies. Comme les lieux ne reçoivent de l'eau que tous les quinze jours, celle qui y reste est tellement concentrée, que souvent elle se cristallise sur les bords.”—D'Orb.

I have compared two rolled crusts from Montevideo (in the collection of Mr. Alfred Benson), which do not differ materially in exterior shape from var. β of the preceding species. The laminae, agreeing very well with figure 4 of Carpenter, are angulated on the edge; in one instance the larger lamina is rectangularly bent in the middle, both sides being equal. The lamina looks generally rather thick, particularly at the base.

It is doubtful if this species is in reality different from *V. adansonii*, Daud., notwithstanding the differences in the description of the animal. Dr. Gray's and Carpenter's description of the lid is after D'Orbigny's original specimen.

* Very likely a misprint, this genus having no operculum.

Var. α. CARPENTERI.

T. nigro-fusca, intus anfr. plurimis plicis solum instructis, pagina interna maxime nitente.

Diam. spiræ '3, ap. '08 poll.

V. varians, D'Orb. ? B. M. Cat. ; D'Orb. Moll. p. 47. n. 405 (Carp.).

Petalconchus varians? D'Orb. Carp. Proc. Zool. Soc. 1856, p. 315. no. 4, fig. 4.

Hab. St. Vincent's (*W. B. Carp.*); Honduras (*Dyson*, teste Carp.).

Var. β. OCCLUSA (THYLACODUS).

T. solitaria, spiraliter torta, lateraliter affixa, anfr. contiguus ; anfr. ultimus partim porrectus ; apertura clausa dissepimento convexo castaneo, foramine centrali lineari-ovali, peritremate acuto.

V. glomeratus, Sow. Gen. fig. 5 (quoad formam).

Hab. St. Thomas.

A single detached specimen in the collection of Mr. Riise. I have only found a rudiment of a thin lamina inside ; but it looks so closely like the typical form, that I do not doubt it is the same species. The slit in the septum is like that of *Fissurella nodosa*, Born.

Var. γ. MONILE (THYLACODUS).

T. solitaria, spiraliter torta, lateraliter affixa, fusco-purpurea vel violacea ; anfr. obliqui, irregulariter contigui, juxta suturam dilatati, liris 6-7 pallidis, lateralibus, approximatis, granulis pulcherrimis confertis ; sutura pallida, transversim rugosa ; striæ incrementi obsoletæ, confertæ, undulatæ ; anfr. ultimus juxta aperturam solutus, cylindricus, lævisculus, annulatim conferte rugulosus.

Diam. ap. 3 m.

Hab. Honduras (*Dyson*, coll. Cuming.), in a valve of *Balanus tintinnabulum*?

The first whorls are lost ; in the inside of the present first whorl is to be seen a longitudinal strong keel ; but I cannot decide whether it corresponds to the central lira, or is produced by some malformation. The inside of the last whorl is pale brown, glossy, without any trace of plaits.

Var. δ. IRREGULARIS.

T. fusco-nigra, irregulariter contorta, transversim rugoso-plicata vel longitudinaliter sulcata, glomerata. (D'Orb.)

“Coq. des plus irrégulières, formant une masse compacte, souvent très-étendue, composée d'individus contournés *obliquement en spirale*, toujours fixés dans toutes leurs parties, et appliqués, comme collés, les uns sur les autres d'une manière si confuse, qu'à l'exception des dernières circonvolutions, on ne peut pas les suivre séparément. Chacun est irrégulièrement plissé en travers, ou marqué des sillons longitudinaux pas réguliers et des plis. Couleur noir brun uniforme, quelquefois rougeâtre.

"*Vermetus irregularis*, D'Orb., Cuba, p. 235, no. 146 (vix t. 17. f. 16, 18); Brit. Mus. Cat. p. 14. no. 146.

"*Hab.* Cuba; Martinique, sur les rochers, dans les plaques d'eau, où elle a été recueillée par M. Condé."—D'Orb.

I am nearly sure that the group figured is a *Spiroglyphus*, perhaps mixed with a *Vermetus*.

Forma 1. ELECTRINA.

T. parva plerumque solitaria, lateraliter affixa, spiraliter irregulariter torta, solida, subpellucida; anfr. angusti graciles, liris paucis validis nodulosis; apertura soluta.

Although this form has quite the appearance of a distinct species, I find the transitions to the preceding so striking that I at present do not dare to separate it. It is chiefly distinct by the amber-like pellucidity of the substance, narrower whorls, and stronger liræ. I have never seen more than three or four specimens together. It is very likely analogous to *Bivonia contorta*, var. *indentata*, Carp.

Var. ε. ELECTRINA (VERMETUS).

T. solitaria, repens, lateraliter affixa, spiraliter torta, aurantiaca; anfr. graciles plerumque contigui, liris validis 4-6; liræ incrementi æquidistantes in intersectionibus nodiferis, interstitiis foveatis; apertura soluta, resupinata, subcontracta; intus laminis duabus brevibus remotis juxta columellam instructis, lirula columellari mediana distincta.

Diam. ap. 1 m.

Hab. Ins. St. Thomas (A. H. Riise).

I have only seen a few specimens with interior laminæ, from Mr. H. Krebs.

Var. ζ. ELECTRINA (THYLACODUS).

Differt a precedente anfr. reticulatis, liris obsolete nodosis, laminis internis nullis.

Hab. St. Thomas, on *Lima scabra*, and on *Spondylus fimbriatus*, var. *aurantiaca*, just corresponding in colour to the *Vermetus* (Oersted).

Var. η. BADIA (VERMETUS).

T. repens, laxè contorta, tenuiuscula; anfr. primi pallidi, liris parvis numerosioribus.

Hab. St. Thomas, several detached specimens; an individual is affixed between two of the former variety (A. H. Riise).

Var. θ. CANDIDISSIMA (VERMETUS).

T. candidissima nodulosa; anfr. primi isabellini; intus lamina brevissima in anfr. medianis; anfr. superne varicibus erectis 3-4.

Hab. Ins. St. Thomas (H. Krebs; Riise).

Var. i. PERLATA (THYLACODUS).

T. spiraliter torta, lateraliter affixa; anfr. ultimus depressiusculus, liris tribus lateralibus validioribus, nodulis validis sat approximatis in seriebus transversis digestis.

Hab. St. Thomas (verisimiliter).

Var. x. COSTATA (THYLACODUS).

T. ut in præcedente sed albescens; anfr. versus suturam dilatati; nodulis confluentibus, inde transversim validissime crenato-costatis.

Diam. ap. $1\frac{3}{4}$ m.; diam. anfr. penult. circ. 4 m.

Hab. Jamaica, on *Chama macrophylla*, Ch. (Oersted).

This is the thickest and largest variety of this form.

3. VERMETUS CONICUS, Dillwyn & Wood.

Shell subcylindrical, flexuose, and spiral at the base. Tube rather thick, *brownish white*, and coiled into a conical spire of about 8 whorls at the base; the summit rises about 9 inches from the rock to which the shell adheres; but the length is probably thrice as great, owing to the coils of the base; and the diameter of the tube is about $2\frac{1}{2}$ lines (Dillw.).

La Trompe d'Eléphant, Favanne, p. 644 (t. 5. f. C), 1780.

Serpula, no. 6, Schröter, Einl. ii. p. 557.

Serpula lumbricalis, var. β , Gm. p. 3742.

Tubulus testaceus solitarius anguinus, Mart. i. f. 15.

Hab. The coast of America, adhering to rocks (Favanne); Amboyne (Rumph.).

The latter locality is added because it is on the plates of the *Amb. Rariteitkammer*; but as it is marked with a number, and not a letter, it was added by Schynvoel, and may be erroneous. Dillwyn evidently did not know this species, but has translated and extracted, somewhat erroneously, the description of Favanne. This is clear from comparing the measures given above with the following sentence of Favanne:—"Son élévation est de plus de trois pouces, mais sa longueur croît à plus de triple." The figure of Favanne is copied from Rumph. t. 42, no. 4*; but the draughtsman has taken the shell (*Turbo*?) on which it is affixed for the first whorls of the *Vermetus*. This perhaps has induced Favanne to indicate eight whorls, as reproduced by Dillwyn, although it is also possible that this indication may have been taken from a specimen, as well as the indicated colour and locality. It is the latter circumstances, in connexion with the figure of Martini, which bring me to adopt Dillwyn's name for the following forms, described in the order of their age.

Var. a. PERSONATA JUV. (THYLACODUS).

T. lateraliter affixa, spiraliter regulariter torta, nitida, badia; anfr. 6-7 contigui obliqui convexiusculi, liris longitudinalibus obsoletissimis, striis incrementi prominentioribus, varicibus linearibus impressis in serie subobliqua dorsali digestis; anfr.

* Rumph. t. 41 no. 4, is very likely a *Bivonia*.

pone varices inflati; anfr. ultimus solutus suberectus, peritremate inflexo, postice rotundato-lobato, inde apertura coarctata reniformi.

Long. axis circ. 8 m.; diam. anfr. ult. $1\frac{1}{3}$ m.

Hab. Ins. St. Croix, on *Isognomon alatum*, Gm., from the roots of the *Rhizophora mangle*, L. (Oersted); about 5 specimens. I have seen this form principally on the impressed linear varices and smooth surface of the first whorls of a specimen of the following form; the constricted aperture must then, of consequence, become dissolved with age.

Var. β . (THYLACODUS).

T. pallide ferruginea vel albescens, lateraliter affixa, spiraliter torta; anfr. contigui tenuiusculi, iris longitudinalibus et rugis transversis reticulati; columella lira mediana et interdum utrinque lirula obsoleta remota; anfr. ultimus solutus, longus, tortus, pallidus, læviusculus; anfr. primi ut præcedentes; specimen vidi cujus anfr. primi planorbiformes.

Hab. St. Croix, cum præcedente (Oersted).

Var. γ . (VERMETUS).

T. cylindrica lateraliter affixa spiralis, anfractibus contiguis, sutura dilatata applanata pallida; columella lira mediana distinctissima, utrinque lirula obsoleta, in anfr. medianis (lateris affixi) laminis duabus latis, oppositis, hyalinis, lacteis, convexiusculis, margines fere attingentibus.

Axis long. 27 m., diam. aperturæ 3 m.

Hab. cum præcedentibus.

The ten or twelve first whorls do not show any laminæ inside. In the thirteenth whorl is a pair of rudimental laminæ (perhaps broken off); in the two following whorls the laminæ are very broad, leaving a narrow slit between them, and dividing the interior into two unequal parts, of which the interior is about a third part. In the sixteenth whorl the laminæ are very short, leaving a large gap between them, and decreasing to a feeble line in the seventeenth and two following.

Var. δ . GORDIALIS (VERMETUS).

T. differt a præcedente anfractibus longissimis, irregulariter spiraliter tortis, glomeratis, foveolato-reticulatis; columella iris tribus æquidistantibus subæqualibus, lirulis obsoletis intercalantibus; laminæ internæ ut præcedentis.

Diam. apert. 4 m.

Tubulus marinus vermicularis, concameratus, striatus, notis nigris punctatus, lucidus, ex fusco rufescens, Gualt. t. 10. f. Z.

Serpula decussata, Lam. v. p. 363. no. 7; ed. 2. v. p. 620 (non Gm.).

Vermetus decussatus, Blv. Dict. Sc. 1827, t. xlviii. p. 555 (*Serpula*).

Vermetus decussatus, Desh., Lam. ix. p. 65. no. 2.

Vermicularia glomerata, Gravenh. Tergest. p. 59. var. 2 a (ex specim. orig.?).

Bivonia decussata, Chenu, Man. p. 320, f. 2303 (verisimiliter).

Hab. Ins. St. Thomas.

The whorls of this form are exceedingly long and narrow; it is generally solitary, but frequently from two to four specimens are agglomerated. Gualtieri's figure is very good; but I do not understand the small black spots mentioned in the text and marked on the figure; perhaps they are produced by a foreign matter in the grooves. It has often twice as many whorls.

Var. *c.* PROBOSCIS (THYLACODUS).

T. solitaria affixa, anfr. depressis, suturis expansis, anfr. ultimo longo porrecto albescente.

Tubulus testaceus solitarius anguinus (Mart. i. f. 15).

Serpula conica, Wood. Index, t. 38, f. 22, p. 186 (copy).

Hab. West Indies, on *Cytherea maculata* (Martini). St. Thomas (Riise).

Var. *ζ.* RETIFERA (ALETES).

T. agglomerata, vertice affixa, spiraliter torta, castanea vel ferruginea, lineis transversis saturatioribus; anfr. fere ubique contigui, ampli (nec graciles), lirulis longitudinalibus latiusculis nodulosis, interstitiis subæqualibus punctato-foveatis; rugæ incrementi regulares, in intersectionibus subnodosæ; anfr. ultimus longus, porrectus, cylindricus, pallidus; columella sæpe badia, lira elevata mediana.

Diam. apert. circ. 5 m.; anfr. penult. circ. 8 m.

Operculum tenue, flavum, superne concaviusculum, vix spirale; inferne area musculari plana subimmersa, peripheriam versus sulco divisa, opaca, concentrice conferte et subtilissime striata; limbo lato nitido convexo oblique striolato, sulcis obsoletis concentricis 1 vel 2.

Diam. 3 m.

T. foetalis (nondum nata) *Bulimoidea*, subcylindrica, apice bullato; anfr. $2\frac{1}{2}$, convexis, sutura profunda; apertura obliqua rhomboidea, inferne subeffusa; columella recta, inferne producta; labro superne leviter retuso.

Long. circ. $1\frac{1}{2}$ m.

Humphrey, Conchology, t. 10, f. 14, sed anfr. ultimo incompleto.

Vermetus conicus, Dillw., Mörch, Journ. Conch. vii. pp. 346 & 347, viii. p. 38.

Hab. St. Thomas, a group on *Strombus accipitrinus*, Mart. (Riise). Coll. Cumming.

This form is closely allied in sculpture to *Aletes centiquadrus*, and in shape perhaps differs from the var. *V. peronii*, Val., as represented in Chenu, Ill. pl. 4, f. 6, only in the rather smaller calibre of the tubes. On a group closely resembling Chenu's representation are several young ones, as described under var. *a*, affixed chiefly on the erect apertural tubes (Coll. Riise). I have seen this *Aletes* pass so

distinctly over into the preceding forms, that I do not doubt they are identical. Although I have no specimens to prove that a similar transition takes place between the forms called *Aletes* and *Vermetus* from the west coast of America, I do not doubt that this will be found to be the case on comparing larger suites of specimens.

On the upper side of the operculum are some cylindrical bodies lying on the side; but I suppose they are foreign bodies. The lobated edge mentioned in 'Journ. de Conch.,' from a single specimen, is only the effect of desiccation.

Var. η .

T. ut præcedentis, sed substantia crassa.

Hab. Ins. St. Thomas (*A. H. Rüse*).

4. VERMETUS (THYLACODUS) CONTORTUS, Carp. 1857.

Bivonia contorta, Carp. Cat. p. 305. no. 355.

? *Vermetus glomeratus*, Mke. Zeitschr. 1857, p. 178. no. 4, and 1850, p. 165. no. 14; Adams, Panama, p. 216. no. 323?

T. solitaria, lateraliter affixa (quondam), badia, tenuiuscula, irregulariter contorta; anfr. graciles, teretes, fere ubique æquales, irregulariter aliussuperalium decliviter et spiralliter incumbentes; anfr. primi plerumque contigui, ultimi disjuncti, liris longitudinalibus approximatis, rugis vel plicis incrementi decussatis, inde reticulati, intersectionibus obsoletissime nodulosi; anfr. ultimus porrectus læviusculus, pallidus, latere affixo ferrugineo rudi, irregulari; varice manicæformi in anfr. penultimo; columella in anfr. medianis liris 3-5 distinctis, harum tribus superioribus approximatis.

Diam. aperturæ $3\frac{1}{2}$ m. (ex specim. orig. Carpenteri).

Hab. Gulf of California (*Mus. Cuming*).

I have not seen any laminæ inside, but, from the great resemblance of the 3-5 spiral liræ on the columella* with those of the preceding species, I believe they will be found in other specimens. This species resembles most in shape var. δ of *V. conicus*, Dill., but is a *Thylacodus*. The opercula, supposed by Mr. Carpenter to belong to this species, are more likely those of *Spirogylyphus albidus*, Carp.

Var. α . REPENS (THYLACODUS).

T. lateraliter affixa, irregulariter spiralis, solida; anfr. plerumque contigui ampliores quam in sp. præced.; anfr. ultimus longus, rectus, repens nec solutus; intus callo lineari lacteo.

Diam. aperturæ 4 m.

Hab. Gulf of California, on *Margaritifera* (*Mus. Cuming*).

In the broken end the columellar lines are not to be seen distinctly, but only a white linear keel which seems situated on the walls of the whorl.

This species is perhaps a state of *V. (Petalocochnus) macrophragma*.

* Not mentioned by Carpenter, because the shell was not opened by him.

Var. β . FAVOSA (THYLACODUS).

T. lateraliter affixa, irregulariter spiralis, cerea; anfr. graciles interdum soluti, teretes, sæpe contigui vel tecti, hic illic varicibus brevissimis arcuatis erectis, superficie longitudinaliter seriatim pulcherrime favosa; foveæ plerumque hexagonæ e liris longitudinalibus conferte regulariter undulatis et rugis æqualibus transversis æquidistantibus formatis: anfr. primi graciliores, læviusculi, castanei.

Diam. aperturæ $2\frac{1}{2}$ m.

Hab. California, on *Crucibulum* (*Mus. Cuming*).

The surface of this shell is quite like that of a honeycomb. The two pair of sides of the hexagonal holes are formed by the undulation of the longitudinal liræ; the third pair is formed by transverse rugæ, exactly of the same size and form as the longitudinal liræ. Longitudinally the rows are quite regular, transversely the rows are oblique, or rather irregular. It is perhaps somewhat corroding. The sculpture and colour look so different from the type that it perhaps will prove to be a distinct species; but some parts show the same dark-brown colour as in the type, and the first whorls are very like those of the following variety, which I believe really belongs to the true *V. contortus*, Carp.

Var. γ . CONTORTULA (THYLACODUS).

T. parva, cerea, irregulariter spiralis; anfr. graciles circiter 6-10 superne liris duabus remotissimis, lira externa obsoleta, rugis transversis cancellati; latere inferno irregulari, lapillis agglutinatis.

Diam. aperturæ $\frac{3}{4}$ m.

Hab. Gulf of California, affixed to the typical specimen.

Approaches, according to the description, *Bivonia* (?) *contorta*, var. *indentata*, Carp.

Forma 1. THYLACODUS (?) CONTORTUS, var. INDENTATA, Carp.

"*T. Biv. contortæ simili, sed minore, colore haud rosea, sculptura indentata; costis paucioribus; interstitiis profundis, cancellatis.*"

Bivonia ? *contorta*, var. *indentata*, Carp. Cat. p. 307. no. 355.

Hab. Mazatlan; very rare on *Spondyli*, &c. (*Liverpool coll.*), Carp.

This form corresponds, according to the description, to forma 1. *electrina*, of *Vermetus varians*, D'Orb.

Var. δ . INDENTATA (VERMETUS).

T. parva, pallide aurantiaca, lateraliter affixa, irregulariter spiralis; anfr. obliqui, graciles, contigui, ad suturam dilatati, appressi, liris validis 4-5, liris transversis æquidistantibus lateraliter fortioribus; in anfr. medianis lamina plana tenui lata versus columellam instructa, in parte inferiore columellæ lamina brevi opposita.

Diam. aperturæ $\frac{1}{2}$ m.; long. axis circ. 7-9 m.

Vermetus (Thylacodus) contortus, var. *indentata*, Carp., Mörch, Mal. Blätter, 1860, p. 77. no. 69.

Hab. Sonsonate; two specimens on a rolled valve of a young *Spondylus limbatus*, Reeve (vix Sow.) (*Oersted*).

This variety corresponds exactly to *V. varians*, forma 1, var. *e*. It differs chiefly in the position of the laminae, which does not look to be quite constant. *V. macrophragma* differs in having both laminae distinctly situated on the columella itself, while their position in the present species is not very evident. The median columellar lira is not so strongly marked as in *V. macrophragma*.

Var. *e*. CORRODENS (VERMETUS).

T. parva profunde corrodens; columella lira acutiuscula; laminis duabus acutis latiusculis in parietibus juxta columellam instructa.

Hab. Ins. Sibo* (*Spplr.*), on *Purpura lineata*, Lam.

The outside of the specimens is entirely destroyed. I refer this shell to the present species on account of the locality and the situation of the internal laminae.

5. VERMETUS RENISECTUS (Carp.), Mörch.

Petalococonchus renisectus, var. Carp. Proc. Zool. Soc. 1856, p. 315.

T. badia, lateraliter affixa, spiraliter torta; anfr. obliquis subæqualibus, fere ubique contiguus, longitudinaliter leviter liris, interstitiis læviusculis, præsertim versus aperturam, et in latere umbilicali lirula intercalante; rugæ incrementi regulares, rectæ, æquidistantes, sæpe in intersectionibus graniferæ; intus laminis duabus planis juxta columellam instructa; lira columellari mediana distincta; apertura circularis soluta.

Diam. aperturæ 2 m.

Vermetus glomeratus, Rouss. Chenu, Ill. pl. 2. f. 2 d (quoad formam).

Var. *a*. (VERMETUS).

Liræ obsoletæ; rugæ incrementi acutiusculæ, prominentes.

Hab. Ins. Philippin., both varieties on a valve of *Radula vulgaris*, Link (coll. *Cuming*).

The shell shows on some places an amber-like pellucidity, like *V. varians*, forma 1.

Var. *β*. GORDIALIS (THYLACODUS).

T. flavescens, fusco-cinerea, agglomerata, lateraliter affixa, spiraliter torta, anfr. obliquis plerumque contiguus, liris parvis regularibus, interstitiis obsolete punctato-scrobiculatis, rugis incrementi regularibus, approximatis; sutura pallida appressa; columella lira mediana acuta, utrinque liris duabus obsoletis remotis; apertura circularis soluta.

Diam. 3 m.

* Very likely intended to be Quibo.

Vermetus glomeratus, Rouss. Chenu, Ill. t. 2. f. 2 (sed anfr. ult. producto).

Hab. Ins. Philippin. This group is composed of four specimens, corresponding to var. β of *V. conicus*, Dill. If provided with plaits, they would correspond to var. δ , *gordialis*, of the same species.

Var. γ . (THYLACODUS?) *anfr. ultimo longo porrecto*.

"*Testis subsolitariis, basibus in spiram attenuatam desinentibus, antice elongato-porrectis* (coll. Lam.)."—Lam.

Serpula glomerata, var. β , Lam. 1818, v. p. 363; ed. 2. v. p. 619. *Vermetus glomeratus*, Rouss. Chenu, Ill. pl. 2. f. 2 a, d (f. 2 c is probably enlarged).

V. —, Desh. *Traité Conch.* pl. 79. f. 12?

Hab. —?

Lamarck does not mention the locality of the variety which he supposes to be distinct from this typical form from l'Isle de France. In the 'Voyage de l'Astrolabe' (p. 298), *Vermetus carinatus* is compared with a specimen of *V. glomeratus* in the collection of the Museum at Paris.

Var. δ . ASPERULA (THYLACODUS?).

T. solitaria, lateraliter affixa, irregulariter spiralis, rufescens; anfr. contigui, liris approximatis lacteis, subtiliter nodoso-squamosis, interstitiis lirula parva intercalante, liris et rugis incrementi albescentibus, irregularibus, approximatis; anfr. ultimus partim erectus, albus, læviusculus, varice magna maniciformi, intus laminis incrementi tribus remotis; apertura suborbicularis lateralis, superne fornicata; columella lira mediana acuta.

Diam. aperturæ 2 m.; long. axis circ. 27 m.

Hab. Ins. Philippin.; a single specimen on a valve of *Chama rubra*, Reeve (dente coccinea).

The aperture, which looks to be filled, is lateral, and covered above with a half-vaulted septum, corresponding to those described by Gray, and represented by Sowerby. The fine nodulous or scale-like sculpture seems to be dependent on the short spines of the *Chama*. The last whorl is nearly uniform bluish white.

Var. ϵ . ASPERELLA (VERMETUS?).

T. lateraliter affixa, spiralis, opaca, saturate badia; anfr. contigui, lirulis approximatis interruptis, rugis transversis geminis juxta suturam sæpe furcatis; columella lira mediana gemina vel bipartita, utrinque in parietibus callis duobus linearibus lacteis; apertura soluta erecta albescentis.

Diam. $2\frac{1}{2}$ m.

Hab. Ins. Philippin.? two agglomerated specimens, with traces of a green stone on the attached side.

This is evidently of the same stamp as the preceding variety, but is of a dull-brown colour. The surface seems corroded, being riddled with numerous small narrow holes, as if marked by the point of a knife (*Mus. Cuming*).

Var. ζ. JUVENILIS, *apertura personata*.

T. lateraliter affixa spiralis; *anfr. circiter 10, contigui, castanei, læviusculi, malleati vix lirati, varicibus impressis in linea obliqua dorsali digestis*; *anfr. ultimus partim solutus subrectus*; *peritrema inflexum, lobo dorsali triangulari, dentiformi, obliquo, inde apertura cordiformi coarctatum*.

Hab. India, on *Tridachna squamosa*, Lam. (*Mus. Reg.*).

This shell differs only from the young of *V. conicus*, Dillw., var. *a*, in the posterior inflected lobe of the aperture, which is sharp and not rounded.

Forma I. WOODWARDI, Carp.

This form is analogous to forma *electrina* of *V. varians*, and to forma *indentata* of *V. contortus*.

Petalconchus renisectus, var. *woodwardi*, Carp. Proc. Zool. Soc. 1856, p. 316. no. 5 e.

T. dense agglomerata, nigro-castanea, cinerascens, substantia dura; *anfr. graciles, laxè contorti, in locis immersis annulatim rugosi, superne in locis apertis liris distinctis compressis, rugis incrementi plerumque parum prominentibus*; *apertura soluta, porrecta, circularis*; *anfr. intus nitide nigro-castanei, laminis duabus validis, marginibus reflexis juxta columellam instructis, lira mediana columellari plerumque valida*.

Diam. aperturæ $\frac{1}{3}$ – $1\frac{1}{2}$ m.

Operculum pallide flavum, superne concaviusculum, area centrali parva concava, lamina suberecta circumdata; *inferne planum, area centrali parva immersa, centro, ut mihi videtur, nodulo irregulari*.

Diam. $\frac{3}{4}$ m.

A specimen was found loose on the upper side of the group.

Hab. — ? A group with numerous specimens, about 9 dm. long and 6 broad, without locality, in Mr. Cuming's collection.

Among the tubes were found a *Bittium*, closely allied to *B. gibberulum*, C. B. Adams, but brown, thicker, and much shorter; two specimens of *Cæcum* (*Anellum*), sp., and a *Brochina* (*Volsella*), about $5\frac{1}{2}$ m. long and 3 in height, very like *Myt. charpentieri*, Dkr. Moll. Guineens. t. ix. f. 12, and *Modiola subsulcata*, Reeve, f. 47, but without bristles, and with a thick epidermis reflected inside; also a variety of the same with obliterated radiating liræ on the dorsal side. This shell is very like to *Vermetus varians*, D'Orb., but the tubes are of a smaller calibre, and the liræ are sharper.

Var. η. WOODWARDI (THYLACODUS).

Differt a præcedente anfractibus amplioribus, nitidulis, liris levioribus; *color brunneus castaneus vel nigrescens*.

Diam. aperturæ circiter 2 m.

Hab. — ? A group about 11 dm. long and 6 broad, with a small *Ostrea* (sp. cardine utrinque denticulato), an example of *Polytrema*

miniaceum, Pall.? and of a species of *Volsella* evidently the same as the smooth variety mentioned above, but partly white (long. $5\frac{1}{2}$ m., alt. $3\frac{1}{2}$ m.).

I have not noticed any internal laminæ, but there is a very feeble median columellar lira. The colour verges towards a dull ochreous in many specimens, and the grey tinge of the preceding is very feeble. It differs not more in size from the latter than the individuals of this group do mutually.

Var. θ . EBENEA (THYLACODUS).

T. solitaria, substantia dura, ebenea, nitidula, spiraliter torta; anfr. contigui, liris parvis remotis, rugis incrementi obsoletissimis, remotis, punctis asperis irregularibus in intersectionibus; anfr. ultimus prælongus glaber, zonis pallidis; columella lira mediana acuta.

Diam. aperturæ 3 m.

Tuyaux de mer nommé ville-brequin, Davila, Cat. i. p. 562. art. 59. pl. iv. f. G (sed specim. paululum majora quam nostra).

Hab. Ins. Philippin.; two agglomerated specimens, one of which has a very long apertural tube.

This shell is perhaps more allied to var. γ ; but I put it here on account of the solid substance of the shell and the dark colour; the first whorls approach strikingly to one of the specimens of the last group.

Var. ι . PICEA (THYLACODUS).

T. solitaria, spiraliter torta, lateraliter affixa; anfr. graciles, parvi, liris validis circiter 4-5, striis incrementi acutis, inde liris subtiliter crenulatis; anfr. ultimus porrectus repens (corrodens?) pentagonus (?) substantia crassa.

Diam. aperturæ vix 1 m.

Vermilia subcrenata, Chenu, Ill. tab. ix. f. F (simillima).

Hab. —? Four or five specimens on a young *Ostrea cumingii*, Dkr., which is found at the Philippines.

I cannot decide whether it is partly overgrown by the oyster, or corroding, which is less probable (*Mus. Cuming*).

Var. κ . INDENTATA (THYLACODUS).

T. succinea, huc illuc badia; anfr. graciles, contigui, irregulariter spiraliter torti, liris validis 4-5, interstitiis plerumque læviusculis; liris transversis æquidistantibus (in locis occultis fortioribus), inde quadratim reticulata; apertura circularis.

Diam. fere 2 m.

Hab. Ins. Philippin. (*Mus. Cuming*), specimen solitarium.

This form corresponds to forma 1 of *V. varians*, D'Orb.

Var. λ . MONILIFERA (THYLACODUS).

T. lateraliter affixa, irregulariter spiraliter torta, pallide aurantiaca; anfr. graciles, contigui, liris 3-4 pulcherrime moniliferis, juxta suturam dilatati, liris transversis confertis; interstitiis

latis, obsoletissime cancellatis; in interstitio juxta umbilicum lirula minuta moniliformi; anfr. ultimus partim solutus, porrectus, cylindricus, læviusculus, albescens; apertura circularis.

Diam. $1\frac{1}{2}$ m.

Hab. Ins. Philippin., specimen solitarium (*coll. Cuming*).

Notwithstanding that the sculpture is very different, I place it for the present in this species. In respect to the sculpture, it corresponds to var. γ of *V. varians*, D'Orb., and to var. ϵ of forma *electrina*, as regards size.

6. VERMETUS NERINÆOIDES, Carp.

T. V. renisecto simili, sed rubro-fusca, rugulis spiralibus pluribus, intus solida; laminae ut in V. renisecto sitæ, sed validæ, labrum versus sæpe biangulata; camera externa minore.

Diam. spiræ $\cdot 3$; aperturæ $\cdot 1$ poll. (*Carp.*).

Petalococonchus nerinæoides, Carp. Proc. Zool. Soc. 1856, p. 316. no. 6, f. 6; Adams, Gen. Supp. p. 626, t. 137. f. 10.

? *Vermicularia glomerata*, var. *1 c*, Gravenh. Tergest. p. 58 (ex spec. orig.).

T. dense agglomerata, irregulariter spiraliter torta, aurantiaca, fere ubique superficialiter cinerascens; anfr. disjuncti sed approximati, liræ compressiusculæ, obsoletissime contracto-nodosæ, interstitiis latiusculis, interdum latissimis; striæ et rugæ incrementi compressæ, confertæ; anfr. ultimus plerumque prælongus, lirulis parvis confertis; laminae internæ validæ, in anfr. primis crassissimæ, margines angulatos sæpe fere attingentes, aperturam versus tenues, latæ.

Hab. Australia (*coll. Cuming, Carpenter*).

In Mr. Cuming's group, which appears to be bleached, were found a *Rissoa*, and a 5 m. long. *Crypta aculeata*, Chemn., or one of the species generally confounded with it. As the latter shell is not known to me as Australian, I suppose the locality assigned to the species is erroneous.

Among the worm-tubes which, through the kindness of Professor Grube, I have on loan, is a group very like that of Mr. Cuming; but I could not discover any sections corresponding to Mr. Carpenter's drawing, although they approached very much to Mrs. Adams's figure, which seems to be taken from the Cumingian group. It is evident to me that the size of the chambers is not constant in one and the same specimen, as a comparison of Carpenter's and Adams's drawings, both very exact, sufficiently proves.

7. VERMETUS OCTOSECTUS, Carp.

Petalococonchus octosectus, Carp. Proc. Zool. Soc. 1856, p. 317, f. 8.

T. solitaria (gemina) lateraliter affixa, albescens, irregulariter spiraliter torta; anfr. obliqui subcontigui, lirulis longitudinalibus valde remotis; liræ et rugæ incrementi regulares, approximatae, validæ, inde superficie reticulata, lineolis transversis aurantiacis remotis; laminae internæ latæ inæquales, camera externa parva

in anfr. primis, magna in anfr. ultimis; lira columellaris acuta, utrinque lirula minuta remotissima.

Diam. anfr. ult. circ. 4 m.

Hab? S. Africa, Mus. Cuming (*Carp.*).

Var. *a.* DILATATA (VERMETUS et ALETES).

Differt a præcedente anfr. planiusculis, sutura dilatata depressa, rugis transversis validis approximatis.

Hab. Mare Rubrum (*Mus. reg.*) on *Arca foliacea*, Forsk., with Nullipores, like the preceding, which I suppose, with more probability, is from this locality.

I have seen specimens with and without internal laminæ attached on the same shell. One specimen shows on the outer wall a sharp keel pointing to the slit between the laminæ, which I have never elsewhere seen so well developed.

According to Carpenter, it differs from the following species in the absence of the "remarkable" structure at the base, and in the comparatively small size of the outer chamber: the former character is probably quite accidental, and the latter is not constant in one and the same species. The variety is still more like the *V. cereus*, which perhaps will itself prove to be merely a variety when more specimens have been compared.

8. VERMETUS CEREUS, Carpenter.

Petalconchus cereus, Carp. Proc. Zool. Soc. 1856, p. 316, f. 7, no. 7.

T. solitaria, spiraliter torta, quondam lateraliter affixa; anfr. depressi, obliqui, planiusculi, contigui, aurantiaci, suturis depressis albis; anfr. ultimus solutus, cylindricus, porrectus, albescens, striis et rugis incrementi irregularibus; lateris affixi verrucis planis confertis in seriebus obliquis digestis (an impressione Corallii?); laminæ parietales sat tenues, breviusculæ; camera externa et interna subæquales; lira columellaris acuta. Aletes quoad magnitudinem.

Diam. aperturæ $4\frac{3}{4}$ m., diam. anfr. penult. 6-7 m.

Hab. Ins. Philippin. (*Cuming*); *Serpula*, Born, p. 435, tab. min., quoad formam.

The surface of Carpenter's above-described specimen looks as if it had been attacked by acid, and shows consequently no sculpture—not even striæ of growth. The small regular nodules on the white attached side, regarded by Carpenter as a distinguishing character between this species and *V. octosectus*, are no doubt the cast of an *Astæa*.

Var. *a.* GYMNOSTRA (VERMETUS).

T. solitaria, lateraliter affixa, irregulariter spiralis, flava; anfr. contigui lati, suturis expansis depressis, liris parvis confertis æqualibus; rugæ incrementi leviter flexæ, suturam versus incrassatæ; umbilicus apertus angulatus; laminæ internæ brevissimæ; lira columellaris valida acuta.

Diam. aperturæ 4 m., anfr. ult. 5 m., anfr. penult. fere 7-8 m. *Aletes* quoad magnitudinem.

Hab. Ins. Philippin. (Mus. Cuming). The affixed side does not show any trace of the nodules of the type.

Var. β . TENUIS (ALETES).

T. late aurantiaca, tenuiuscula, lateraliter affixa, irregulariter spiralis; anfr. contigui convexi, suturis dilatatis albescentibus crenulati, liris parvis remotis; striæ et rugæ incrementi validæ, suturam versus incrassatæ, dilatatæ, planæ; anfr. ultimus longus, solutus, rugis incrementi expressis, liris longitudinalibus obsoletissimis; apertura deflexa; lira columellaris compressa acuta.

Diam. anfr. ult. 4-4½ m., anfr. penult. 5-6 m.

Hab. Ins. Philippin. (Mus. Cuming), on a *Heteropora*.

This variety is much thinner in the shell than the two preceding.

9. VERMETUS (THYLACODUS ?) CARINATUS, Q. & G. 1833.

T. glomerata, ovata, triquetra, carinata, transversim striata, cinerascens; apertura intus rotunda.

“L’animal (dans l’esprit de vin) a une teinte brune, et d’assez longs tentacules pour sa grandeur, portant une ligne noire sur leur longueur.

“L’opercule est ‘long’ et peu profond.”—Q. & G. (fig. 26 enlarged).

Vermetus carinatus, Q. & G. Voy. l’Astr. ii. p. 298, t. 67. f. 24-26.

Vermetus carinatus, Mrs. Gray, Figs. i. t. 56. f. 1, 1 a.

Siphonium carinatum, Gray, fig. 4. p. 82; Adams, Gen. i. p. 357. lin. 12 (non lin. 6).

Hab. Island of Guam (Q. & G.).

I have seen forms, which I regard as intermediate between *V. octosectus*, Carp., and *V. cereus*, Carp., approaching to this.

10. VERMETUS LILACINUS, Mörch.

T. aggregata, subcylindrica, spiraliter torta, pulcherrime lilacina; anfr. teretes contigui, ultimi sæpe soluti; sutura dilatata alba; liræ longitudinales obsoletæ remotæ parvæ; rugæ incrementi remotæ vel interdum approximate, suturam versus incrassatæ et furcatæ; anfr. ultimus solutus breviusculus; laminæ parietales brevissimæ (fractione?), ad columellam approximate; lira columellaris mediana acutiuscula.

Diam. aperturæ fere 3 m.

Hab. Zanzibar (Coll. Dunkeri). A group of about sixteen specimens, attached to a *Bivonia*.

Var. α . (THYLACODUS).

Serpula, Humphrey, Conch. t. xi. f. 17.

Hab. Zanzibar (Mus. Cuming); one small group of nine specimens, and a larger group composed of about thirty-five specimens, with some agglutinated green pebbles. The columellar lira is well marked, but I cannot discover any laminæ as in Professor Dunker’s specimens. The young shells show a strong tint of brownish, and the adult have sometimes a few spots of the same colour. *Verm.*

glomerata, Sow. Gen., belongs perhaps to this species, according to the colour ; but the liræ are too strong.

Subgenus 2. PETALOCONCHUS, Lea.

Laminis ab axi procedentibus.

The typical species and the following are unknown to me ; but I suppose, from their external similarity to *V. contortus*, that the position of the laminæ is similar, as it would seem to be from the section represented by Lea.

11. VERMETUS (PETALOCONCHUS) SCULPTURATUS, Lea.

T. vel contorta vel turrita, crassa, costulis longitudinalibus noduliferis, laminis internis politis, lævibus, ad aperturam obsoletis ; apertura rotunda.

Diam. .20 inch.

P. sculpturatus, Lea, Philad. Trans. 1843, ix. p. 230, t. 3. f. 54 ; Woodward, Man. p. 462.

Hab. Miocene of Petersburg, U.S. (*Lea*).

12. VERMETUS (PETALOCONCHUS) DOMINGENSIS, Sow.

T. contorta, crassa, tubulo plerumque spirali, anfractibus ad marginem inferiorem angulatis, angulo costulisque longitudinalibus graniferis, costulis nonnullis etiam infra angulum anfractuum graniferis.

P. domingensis, Sow., Quart. Geol. Journ. 1850, vi. p. 51, t. 10. f. 9.

? *Steinkern ähnlich Nerinea*, Merian, Bericht Naturforsch. Basel, 1844, vi. p. 64.

Hab. Tertiary beds of St. Domingo (*T. S. Henniker*) ; ? Jamaica or Antigua (*Merian*).

Seems to be near *P. sculpturatus* (*Lea*), only his species does not appear from his figure to have any granular longitudinal ridges below the angle of the convolutions (*Sow.*).

13. VERMETUS (PETALOCONCHUS) INTORTUS, Lam.

"*T. tereti-angulata, subcontorta, in spiram deformem contorta, subglomerata, plicis transversis crebris.*"—Lam.

Serpula intorta, Lam., 1818, v. p. 365. no. 16.

Vermetus ? intortus, Desh. v. p. 623. no. 16.

Serpula intorta, Chenu, Ill. pl. 1. f. 6 et forte 6 a.

Petalconchus intortus, Sow., Moore, Lond. Quart. Geol. Journ. 1850, vi. p. 39 : Bronn, Jahrb. 1852, p. 509.

Hab. Fossile des environs de Plaisance, et se trouve en France, près de Dax (*Lam.*).

Var. a. SUBAPENNINICA.

T. subsolitaria, irregulariter spiraliter torta ; anfr. contigui subquadrangulares, latere externo rectangulato, liris tribus æquidistantibus obsoletis, rugis transversis decussatis, inde obsoletissime foveolati ; columella laminis duabus validis usque in

aperturam decurrentibus; laminæ superioris margine deflexo; varices maniciformes brevissimæ.

Wurmformige Wurmrohre, Knorr, Samml. v. Merkw. d. Natur, 1769, ii. 2. Abth. p. 288, t. 1 a. f. 9 (verisimiliter), from Piedmont.

Serpula lumbricalis, Brocchi, Conch. Subapenn.

Vermetus intortus, Bronn, Lethæa, iv. p. 283, t. 36. f. 18; Phil. Enum. ii. p. 144.

Serpula lumbricalis, Bronn, 269, Mus. Min. Hafn.

Vermetus subglomeratus, D'Orb. Prod. iii. p. 169 (ex Bronn).

Hab. Subapennine beds of Italy (Piedmont).

Var. β . CANCELLATA*.

T. irregulariter spiraliter torta; anfr. contigui, suturis depressis, planiusculi, latere externo superne lirulis duabus obsoletis interruptis, inferne liris duabus validis inæqualibus, lira superiore sæpe interrupta, latere umbilicali liris 3-4 æqualibus; laminæ internæ tenues inæquales, in anfr. primis a columella remotæ, in anfr. sequentibus in columella instructæ; rugæ incrementi prominentes approximatae, inde interstitiis foveolatis.

Vermetus intortus, Hörnes, Geol. Reichanstalt Wien, t. . p. 16.

V. rugosus, Grateloup, Act. Bordeaux, ii. p. 161 (ex Bronn).

Hab. Tertiary beds of Baden, Lower Austria.

Var. γ . WOODII.

T. plerumque gregaria, teres, subquadrata, arcte spirata, fere tota affixa, repens, striis transversis undulato-rugosis, lineis tribus longitudinaliter instructis, extremitate antica aliquando libera, porrecta.

Diam. ap. $\frac{1}{2}$ lin. (*S. Wood*).

Dale, Hist. and Antiq. of Harwich, 1730, t. xiii. f. 1.

Vermetus intortus, S. Wood, Cat. Annals, 1842; Wood, Crag, 1848, p. 113. t. 12. f. 8 a. vix f. 8 b.

Hab. Coralline Crag (*S. Wood*).

The centre line is the most prominent, and forms the base or keel of the volutions; so that only two are visible where the shell is regularly spiral, and one upon the base below. The shell, when perfect, is covered with rugæ in a transverse direction; but the terminal portion is smooth and free. In large masses the volutions are irregular and inconspicuous, though the young shell may frequently be traced by its regularly spiral form (*Wood*). The fig. 8 a seems to show moniliform liræ; fig. 8 b, from a group of the Red Crag, looks to be entirely different, and is probably a *Serpula*.

14. VERMETUS (PETALOCNCHUS) PACHYLASMA, Mörch.

T. solitaria, subcylindrica, irregulariter spiraliter torta, perforata, albescens; anfr. contigui planiusculi, inferne angulati, latere externo liris tribus pallide fuscis æquidistantibus, lira suturali parva, lira angulari validiore, interstitio superiore lirula parva

* *Vermetus intortus*, Karsten, Verz. Verst. d. Sternb. Gestein., 1849, p. 19, is perhaps to be referred to this variety.

*interrupta, latere basali plerumque occulta, interdum lirula parva; rugæ incrementi prominentes approximata continuæ; anfr. ultimus candidus lævigatus, strato interno (casu?) denu-
datus; columella superne lamina spirali validissima, margine deflexo acuto parietem interdum approximante; inferne carina rectangulata acuta in anfr. ultimis evanescente; lira mediana obsoletissima; apertura irregulariter pentagona, columella su-
perne carina valida acuta (i. e. laminæ superioris terminatione)
inferne liris duabus remotis.*

Diam. aperturæ circ. 4 m.

Hab. Guinea?

In the Royal Museum there is a dissected specimen, with the first whorls broken, very like Hörnes's figure, but somewhat larger, about 29 m. long., and 11 broad, with about sixteen whorls. It looks like a fossil; but the keels are feebly coloured, and the inside is glossy; on the third whorl from the aperture is a varix. The sculpture and form are quite those of the preceding; the chief difference is the enormous development of the superior lamina, which, in the first whorls (the seventh and sixth from the aperture), are rather thin, very thick in the middle whorls, and thinner again in the last whorls.

15. VERMETUS (THYLACODUS) SUBCANCELLATUS, BIVON.

T. solitaria, rarius gregaria, teres, arcte spirata, fere tota affixa, repens, fusca, striis transversis longitudinalibus subcancellata, extremitate antica aliquando libera, porrecta.

*T. subspiralis, gyris frequentibus, fere tota adnata, repens, aut saltem antice breviter tantum porrecta, lineis elevatis trans-
versis et longitudinalibus cancellata, fusca, rufa, aut lutescens.*

Diam. 1'''.

*Animal atropurpureum, tentaculis cylindricis, retractilibus, su-
perioribus longiusculis, inferiora fere æquantibus. Operculum
completum, tenue, planum.*

Tubulus, Buonanni, Recr. p. 93. ii. t. 2. f. 20 g.

Le Gâteau des Vermisseaux, Fav. i. p. 654 (non t. 10. f. 3).

Tubuli vermiculares, Petiver, Gazoph. i. t. 151. f. 11 (copy).

Serpula glomerata, Linn. S. N. xii. p. 1266. no. 80 (non edit. 10,
nec Faun. Suec. nec Mus. Ludov. Ulr.).

Vermetus glomeratus, Hanl. Ips. Linn. Conch.

Vermetus subcancellatus, Bivona, l. c. p. 12 (ex Phil.); Phil.
Enum. i. p. 172. no. 5, t. 10. f. 20; ii. p. 144; Poli & Delle Chiaje,
t. 57. f. 18.

Vermetus subcancellatus, Mrs. Gray, Figs. i. t. 58. f. 3.

Bivonia subcancellata, Adams, Gen. i. p. 358; Gray, Guide,
p. 127.

Hab. Frequentissima in toto littore Siciliæ (*Philippi*). Mediter-
anean (*coll. Cuming, Dunker, et Mus. Min. Hafn. sp. orig. Phi-
lippii*).

I have examined five or six groups without finding any internal
laminæ, as Sowerby and Moore appear to have done. In a com-

paratively few specimens I have found a distinct medial lira on the columella.

Var. α . OCCLUSA.

Apertura clausa, septo convexo; foramen centrale parvum quadridentatum, prout ex figura videtur (Poli & Delle Chiaje, t. 57. f. 19; Mrs. Gray, Figs. t. 58. f. 3).

Vermetus subcancellatus?, Gray, Annals, 1851, viii. p. 479, pl. 17 B. figs. 4-6; Froriep, Jahresb. 1852 (translation and copy).

Hab. African coast of the Mediterranean (Gray).

I have never met with this form among the numerous specimens I have seen. Sowerby's figure, of a bright-violet colour, showing very strong grooves, is very likely that of another species.

Var. β . SUTURALIS (PETALOCONCHUS).

T. solitaria, lateraliter affixa, irregulariter spiraliter torta; anfr. plerumque contigui, obliqui, leviter depressi, flavi, versus suturam et umbilicum purpurascens, longitudinaliter regulariter tirati; liræ versus umbilicum fortiores, rugis transversis approximatis expressis decussatæ, inde granulatæ in intersectionibus; lamina internæ inæquales; lamina superior plana vel leviter deflexa, juxta columellam instructa, lamina inferior suberecta, leviter arcuata, ad basin columellæ instructa; laminarum acie acuta, interdum leviter reflexa; lira mediana columellæ valida, acuta, alba, utrinque liris duabus obsoletissimis inæqualibus.

Diam. aperturæ $2\frac{3}{4}$; diam. anfr. ult. $3\frac{1}{2}$ m.

Hab. On an old *Spondylus gæderopus*, L., probably from Morocco (*Mus. Reg.*).

This form is very like *V. nerinæoides*, Carp., in size and sculpture; but the grooves are more distinctly granulated, and the sutures with a dark-purplish band. The preceding form is very rarely of the size of this variety, which perhaps will prove to form a distinct species with the following.

Var. γ . SCOLOPENDRINA (VERMETUS vel PETALOCONCHUS).

T. solitaria, lateraliter affixa, subregulariter spiralis; anfr. graciles, numerosi (circiter 36), obliqui, teretes, subæquales; anfr. primi triginta plani, liris tribus castaneis æquidistantibus, harum duabus suturalibus; anfr. ultimi sex convexi, liris 6-7 parvis inæqualibus; liræ incrementi approximatae, prominentes, regulares, intersectionibus nodiferis; interstitiis pallidis, sutura linea castanea; columella lira elevata mediana, superne lamina concava fere parietali, inferne lamina inflexa columellari.

Goldfuss, t. 70. f. 18 b, quoad formam et magnitudinem.

Hab. On the same old *Spondylus gæderopus* as the preceding.

It differs chiefly from var. β . in its more slender whorls. *Vermetus renisectus* is very like it. In one specimen the first whorls are white and densely annulate, without longitudinal liræ.

16. VERMETUS (PETALOCOCHUS?) PARVULUS, Münster.

T. exigua, in *spiram conico-elongatam deformem convoluta, anfractibus irregularibus contiguis creberrimis*.

Serpula parvula, Münster., Goldf. Petr. i. p. 239, t. 70. f. 18, no. 66; Chenu, Illustr. Serp. t. 7. f. 7 a-c; M.-Edw., Lam. ed. 2. v. p. 631, t. 59.

Hab. In collibus Westphalicis. From the Greensand at Essen an der Ruhr, attached to the spines of *Echini*. Very small and brittle (Goldf.).

I refer this shell to the present place on account of its great exterior resemblance to the last.

17. VERMETUS (PETALOCOCHUS?) VERMICELLA, Lam.

"*Testis filiformibus, teretibus, transversim rugosis, flexuosis, in massam crassam congestis*."—Lam.

"La coquille du Lispe, sur une longueur égale à la Vermet, a tout au plus une ligne de diamètre, et souvent beaucoup moins. Elle n'est tournée en spirale que dans sa partie inférieure, qui fait deux ou trois tours au plus. Sa surface n'est point cannelée, mais légèrement ridée en travers; et son ouverture ne débordé que de quelques lignes au dessus des corps qui lui servent d'appui. Sa couleur est jaunâtre."—Adanson.

Le Lispe, Adanson, Senegal, p. 164. no. 2, pl. 11. f. 2.

Vermichelle de mer, Fav. 1780, i. p. 649, t. 6. f. B. (copy).

Vermetus glomeratus v. *Lispe*, Daudin, Rec. p. 35.

Serpula vermicella, Lam. 1818, v. p. 365. no. 13; ed. 2. p. 622.

Vermetus (Serpula) vermicella, Blv. Dict. Sc. 1827, t. xlviii. p. 556.

Vermetus Lispe, Desh., Lam. ed. 2. ix. p. 65.

Hab. Ile de Gorée (Lam.).

"Elle est aussi commune que le Vermet autour de l'île de Gorée; mais on ne la trouve qu'entre les rochers sur lesquels la mer bat avec violence. Les masses qu'elle forme sont fort compactes, d'environ un à deux pieds de diamètre, et de 5 à 6 pouces d'épaisseur."—Adanson.

I have not seen any specimens from the quoted locality; but the great resemblance of Adanson's figure (chiefly the specimens at the top) with the next, induce me to refer it to this genus.

The variety *b* of Lamarck, "*Testis brevioribus, laxioribus, varie contortis*"—very likely the very shell represented in Chenu's Illustr. pl. 2. f. 8—is probably a *Serpula*. (Cfr. Blv. Dict. Sc. Nat. t. xlviii. p. 557.)

Var. α. FILARIS (PETALOCOCHUS).

T. parva sordide alba, interdum partim lilacina, præsertim intus, pulcherrime tincta, agglomerata vel solitaria, cylindrice vel laqueatim torta; anfr. teretes, gracillimi, plerumque contigui, substantia crassa læviuscula opaca; anfr. ultimus partim solutus, porrectus, interdum repens; rugæ incrementi obsoletissimæ vel omnino evanescentes, interdum prominulæ, annulatæ; intus lamina plana distinctissima juxta medium columellæ instructa.

Diam. ap. circ. $\frac{1}{2}$ m. ; axis long. 6-9 m. ; diam. anfr. ult. circ. $\frac{3}{4}$ m.

Hab. On the same old *Spondylus gæderopus* as *V. subcancellatus*, β & γ .

This shell has quite the aspect of a *Serpula* ; but it differs in the manner of its contortion and the internal lamina on the columella, which I have only seen in the middle whorls of three or four specimens. It answers quite in form, and nearly in position, to that in *V. subcancellatus* ; but I am not able to find the opposite one. The walls of the shell are exceedingly thick in proportion to the aperture, nearly corresponding to the radius of the aperture ; in a few specimens they are rather thin. Some specimens are coloured inside with a beautiful lilac, which is to be seen outside, but is there more feeble ; but I am not quite sure if this is not caused by the dying animal, as may sometimes be seen in shells, chiefly of *Purpura*. The reason why I do not distinguish this shell specifically is, partly because it differs only from "*le Lispe*" in its colour and locality, and partly because it may possibly be only the young stage of *V. subcancellatus*, var. *scolopendrina*, the first whorls of which show the same dull-white colour, but which is much more strongly annular. I have seen from ten to fifteen specimens. (*Mus. Reg.*)

18. VERMETUS (PETALOCONCUS?) SCALATUS, Eichwald.

Tubulo cochleatæ scalæ instar contorto, sæpe angulato, erecto, basi affixo, anfractibus invicem concretis transversimque costatis, costis singulis, ternis quaternisve striis tenuissimis decussatis extremo apice in tubulum exiguum rectumque excurrente.

Long. 2-3, raro 6'', et lat. 2''.

Serpula scalata, Eichw. Naturh. Skizze, p. 199 ; Lethæa Rossica, 1852, i. p. 49, pl. 3. f. 8.

Vermetus intortus, Bronn, Index, ii. p. 1362 ; ? Guettard, Mém. Acad. Roy. 1760, pl. 2. f. 11.

Hab. Tertiary beds near Zukowie, and in other parts of Volhynia.

"Les tubes sont toujours petits et contournés en spirale verticale : les tours sont également élargis, et tellement rapprochés qu'ils se réunissent les uns aux autres ; ils sont cylindriques, quelquefois un peu anguleux à cause de 2 ou 3 petites côtes longitudinales qui occupent toute la longueur des tubes ; les interstices entre les côtes sont striés transversalement, les stries sont très-fines, souvent à peine visibles ; on compte 8 tours sur la longueur du tube de 5 lignes ; quelquefois les tours sont encore plus étroits, et de 10-12 sur la même longueur. Selon Bronn *V. intortus*, Lam., quoique elle ne soit jamais fixée par le côté, comme celui-ci, mais par la base, de laquelle elle s'élève verticalement, n'est jamais comprimée comme celui-ci, mais cylindrique, également grosse dans toute sa longueur, et par conséquent pas plus grosse à l'extrémité supérieure. Outre cela, celui-ci n'atteint jamais au-delà de 6 lignes, le *V. intortus*, au contraire, est très-long. L'extrémité supérieure offre un bout tout droit, mais de la même dimension que les tours précédents ; il est lisse ou très-

finement strié, comme ceux-ci ; je n'ai jamais trouvé le bout comme dans les *Serpula tubulus* (Eichw.), avec lequel M. Bronn l'a réuni." —*Eichw.*

Note.—I place here the three following forms, only known to me from single specimens. They have some resemblance to the genus *Anellum* of the family *Cæcidæ*, which seems to have the same relation to *Vermetus* as *Spirorbis* to *Serpula*. Notwithstanding the peculiar annular sculpture and hyaline texture, I suppose they will prove to be forms of *Vermeti*, modified from growing in sheltered places. I have sometimes seen a somewhat similar sculpture and colour on the first whorls of *Vermeti conicus*, *varians*, and *renisectus*, but not so distinctly that I could with perfect security refer them to any fixed species.

19. VERMETUS (THYLACODUS) BALANI-TINTINNABULI.

T. solitaria, lateraliter affixa, alba, nitescens ; anfr. teretes, contigui, suturis profundis, costis acutis parvis subremotis æquidistantibus ; anfr. ultimus partim solutus, suberectus, læviusculus ; umbilicus pervius.

Diam. ap. circ. $1\frac{1}{4}$ m.

Hab. On a valve of *Balanus tintinnabulum* (Mus. Reg.).

Var. a. CRYSTALLINA.

T. anfr. obliquis costis acutissimis, regularibus.

Hab. Ins. Philippin.

20. VERMETUS (STREBLOCERAS ??) ANELLUM, Mörch.

T. sinistralis, candida, spira affixa, spirorbiformis, umbilico aperto ; anfr. pauci, ultimus solum adspectabilis, rapide crescens, peripheria dilatata, costis transversis acutis validis, leviter flexis ; apertura soluta, subovalis, latere interno dilatato, recto, superne et inferne angulo recto.

Diam. testæ circ. 2 m. ; diam. ap. $\frac{3}{4}$ m.

Var. a. *Costis acutis parvis confertis.*

Diam. testæ fere $3\frac{1}{4}$ m. ; aperturæ 1 m.

Hab. California, on *Haliotis tuberculatus* (Reeve), with *Siphonium megamastus* (Mörch).

This shell, which perhaps will prove to be the type of a new genus, is very like a large *Spirorbis* in shape ; but it looks to me in the texture quite a Vermetid. The shape of the inside of the aperture is exceedingly like that of a *Separatista*. I refer this species provisionally to the genus *Strebloceras*, which I only know from Carpenter's description in these 'Proceedings,' 1858, p. 440.

Subgenus 3. MACROPHRAGMA, Carp. Cat. p. 308 (olim).

Laminæ internæ versus medium columellæ instructæ ; lamina superior acie angulata deflexa, extus bicarinata.

Operculum (specierum duarum) parvum, tenuissimum, corneum, leve, subplanatum, vix spirale. (Carp. Cat. p. 308.)

21. VERMETUS (MACROPHRAGMA) MACROPHRAGMA, Carp. 1857.

T. parva badia lateraliter affixa, sæpe erodens, spiraliter torta; anfr. primi planiusculi contigui, ultimi teretes laxè contorti, liris longitudinalibus satis expressis et approximatis, rugæ incrementi expressæ approximatae; anfr. mediani laminati, lamina superior latissima, primum simplex, dein angulo recto deflexo, extus carinis 1-3, harum 2 acutissimis; lamina inferior simplex, lirula mediana acuta, ad laminam inferiorem approximans.

Diam. aperturæ .07; spiræ .23 poll. (Carp.).

Petalococonchus macrophragma, Carp. Cat. p. 309. no. 359; Proc. Zool. Soc. 1856, p. 313. fig. 1; 1856, p. 226; Mörch, Mal. Blätter, 1860, p. 670.

Hab. Mazatlan, not uncommon on *Uvanilla*, *Cuma*, *Murex princeps*, &c. Panama, on *Margaritifera*, Mus. Cuming (Carp.); on *Vermiculus eburneus*, Reeve (*Coll. Cuming*). Realejo, on stones, Oersted (*Mus. Reg.*). S. Diego, *Euraphia hembelii* adhærens, Carp. Proc. Zool. Soc. 1856, p. 226 (*Mus. Nuttall*).

The *V. contortus*, Carp., is perhaps the adult stage of this species, which again possibly may be a form of *Aletes centiquadrus*, according to the analogy with the forms of *Vermetus conicus*, Dill., described above.

Sect. a, *lamina columellaris infima intus laminam minorem gerens.*

22. VERMETUS (MACROPHRAGMA) COCHLIDIUM, Carp.

T. conferte agglomerata, subcylindrica, irregulariter spiraliter torta, badia; anfr. plerumque contigui convexiusculi, liris longitudinalibus validis regularibus, rugis incrementi angustis regularibus, intersectionibus sæpe nodiferis, interstitiis lirarum plerumque quadratim foveatis; anfr. ultimus partim solutus, porrectus, tortus, intus laminis duabus ab axi procedentibus, tenuissimis, superiore majore, huc illuc latissima, acie acuto, vel in angulum obtusum curvata, carinis duabus validis labrum versus instructa; inferiore minore plana, intus lamina parva obliqua instructa.

Diam. spiræ .2; aperturæ .08 poll. (Carp.).

Hab. Australia (*Mus. Cuming*).

It appears that Mr. Carpenter regards the "third" smaller lamina "growing out of the lower flat lamina as homologous with the columellar median lira," which I do not believe is correct. I have not been able with certainty to ascertain the presence of the latter.

Var. a. (THYLACODUS).

T. spiraliter torta, anfr. ultimo recto, longissimo, partim adnato, plerumque pallido, albescente, intus nudo; anfr. mediani columellæ lira submediana acuta, compressa, valida, perobliqua, superne et inferne lirula obsoletissima, callo obsoletissimo lineari (lacteo?) utrinque in parietibus versus columellam instructo.

Petalococonchus, sp., Carpenter, Proc. Zool. Soc. 1856, p. 317. n. 9.

Hab. Tahiti (*Mus. Cuming*).

A small group, mostly composed of long, transversely wrinkled

tubes, broken at both ends, loosely agglomerated, of a pale colour, and without longitudinal liræ, shows a few spiral specimens, which in the exterior form quite agree with the preceding in sculpture and colour. It seems to me that the columellar and subparietal liræ correspond very well to the position of the laminæ in the *P. cochlidium* from Australia. As Tahiti by all Continental authors is regarded as an Australian island, both groups are possibly from the same locality.

23. VERMETUS (MACROPHRAGMA) FLAVESCENS, Carp.

T. dense agglomerata, parva, cylindrica vel laxè contorta pallide aurantiaca; anfr. plerumque contigui, liris validis æquidistantibus 3 vel interdum 4 in latere umbilicali; anfr. ultimi liris 4 vel 5 expressis; liræ incrementi regulares, expressæ, regulariter approximatae, inde liris crenulatis et interstitiis cancellatis et pulcherrime foveolatis; apertura subquadrangularis, soluta (in speciminibus incompletis), lamina valida, columellari; laminæ internæ fere ut præcedentis speciei.

Diam. spiræ $\frac{1}{4}$, aperturæ .06 poll. (Carp.).

Petalconchus flavescens, Carp. Proc. Zool. Soc. 1856, p. 314. no. 3. fig. 3.

Hab. Sicilia (*Mus. Cuming*), loc. verisimiliter erroneo.

This differs from the preceding chiefly in its smaller size, and in the colour appearing bleached as in younger specimens of *V. cochlidium*. The indicated locality is very likely erroneous. In the inside were found two young specimens of *Vermiculus dimorphus* (Mörch), a *Rocellaria** near *R. cuneiformis* (Spgl.), and a *Diplodonta*, closely allied to *D. semiaspera* (Phil.), but thicker in the shell, with thicker and more approached concentric ribs, but with feebler and indistinct granules. None of these genera appears to be known from the Mediterranean, except the second.

Subgenus 4. ALETES, Carp. Cat. p. 300.

T. differt a præcedentibus anfr. amplioribus, columella lira mediana obsoletissima; color plerumque rufescens, anfr. primi badii.

Operculum superne concavum, lamina spirali, anfr. 5-6, ultimo abrupto; inferne convexum nitidum, liris spiralibus irregularibus; area muscularis opaca, sæpe irregularis (morbo?).

Animal ut Vermeti.

The lid seems to me only different from that of *Vermetus* in size, in consequence of the larger calibre of the shell.

The variety γ of *Vermetus conicus*, Dill. (p. 342), would be referable to this subgenus, if I had not seen one and the same specimen successively in the different whorls change from *Vermetus* (*Petalconchus*) to *Thylacodus*, and ultimately to *Aletes*. *Vermetus cereus*, has the size of an *Aletes*, but shows well-developed internal laminæ.

* In the calcareous tube, at some distance from the aperture, there is a ring of small-branched tubercles, not unlike those in the fleshy tubes of some *Solenes*.

24. VERMETUS (ALETES) CENTIQUADRUS, Val.

T. lateraliter affixa, spiraliter torta; anfr. primi sat angusti, anfr. ultimus ampliatus, marginibus utrinque compressis, inde apertura utrinque auriculatim effusa; color pallide rufescens, fasciis angustis obscuris, interstitia lirarum impresso-punctata.

Vermetus centiquadrus, Val. Voy. Venus, pl. 11. f. 1, 1 a, 1 a bis.

Vermetus effusus, Val. pp. , ; Chenu, Ill. pl. 5. f. 4 (the same specimen!).

Aletes centiquadrus, Val. Carp. Cat. p. 301. no. 352.

Vermetus (Aletes) centiquadrus, Mörch, Mal. Blätter, 1860, no. 70.

Hab. Puntarenas (Oersted).

The first whorls are of a dark-brown colour, and strongly sculptured with longitudinal liræ and transverse rugæ exceedingly like *V. contortus*, Carp., which I suppose to be only a form of this shell, judging from analogy with *V. conicus*, Dillwyn. The columella shows one exceedingly feeble median lira, scarcely to be seen except in a very favourable light, and two very conspicuous lateral liræ which seem to answer to the laminæ in *V. macrophragma*, but they must perhaps be more properly regarded as the margins of a thin layer covering all the interior of the whorls, except the larger medial part of the columella, which shows a slight difference in colour.

Animal violaceum, capite obscuro antice rotundato, tentaculis breviusculis roseis; dorso convexo, utrinque acute carinato, a mesopodio canali profundo lato separato; propodium planum, foliaceum, parvum; tentacula pedalia remota (contracta) breviuscula, curvata, latere interno profunde longitudinaliter fissis, mamilla intermedia parva perforata; mesopodium minutum, cordiforme, bipartitum; pallium simplex, acutum, linea coccinea marginatum.

The colour is deepest on the back, and more feebly bluish towards the margins of the foot.

Var. α. MAXIMA.

Vermetus panamensis, Rousseau, Chenu, Ill. pl. 5. f. 1, 1 a, 1 b; Adams, Panama Shells, p. 216. no. 324; Menke, Zeitschr. f. Mal. 1850, p. 165. no. 13; Adams, Gen. p. 358.

Hab. Panama (Adams); Mazatlan (Melchers).

This seems only to differ from the preceding in its smooth surface and deep transverse furrows. In Mr. Cuming's collection is a specimen labelled "Philippines," which I cannot distinguish from the fig. 1 b of Chenu. The *V. angulatus*, Rousseau, Chenu, Ill. pl. 5. f. 2 (copied Chenu, Manuel, p. 320. f. 2300), is possibly a white variety of this form. In Dr. Chenu's plates are two marked "pl. 5," which I suppose have given rise to the observations of Carpenter (Cat. p. 306), who very likely has not seen the plate with the name *V. panamensis* as rightly quoted by Menke and C. B. Adams.

Var. β. *Punctis impressis destituta.*

Vermetus peronii, Val. Voy. Venus, pl. 11. f. 2 (on *Strombus galea*?).

Aletes centiquadrus, Val. Carp. Cat. p. 302.

This shell scarcely differs from the type, except in the absence of the punctures; but as both states are frequently found on the same specimen, this cannot warrant specific separation. I have a slight doubt respecting this species, arising from the locality being only known from the shell on which it is represented, which perhaps is as likely to be a *Melo* as *Strombus galea*. It seems to me curious that a shell named after Péron should be from a place that he never visited.

Var. γ . SIPHONATA.

T. rufa subcylindrica, spiraliter torta, verticaliter affixa; anfr. contigui, sutura dilatata, liris confertis obsoletissime nodulosis, interstitiis angustissimis sæpe impresso-punctatis; anfr. ultimus porrectus, solutus, leviter flexus, concentrice rugosus.

Diam. aperturæ $5\frac{1}{2}$ m.

Vermetus peronii, Rouss., Chenu, Ill. t. 4. f. 6.

Hab. Puntarenas (*Oersted*).

This variety is closely allied to *V. conicus*, Dill., var. γ , from which it only differs in its deeper colour and more irregular sculpture.

Var. δ . TULIPA.

T. lateraliter affixa, irregulariter spiraliter torta; anfr. obliqui, plerumque contigui; anfr. primi liris sat expressis, subremotis rugisque transversis æquidistantibus decussati, inde interstitiis regulariter scrobiculatis; anfr. mediani lati, læviusculi, sculptura evanescente, albo et violaceo variegati; anfractus ultimus castaneus, liris confertis obsoletis, rugis incrementi sigmoideis, irregulariter corrugatus, aperturam versus pallidus, lineis et tæniis pulcherrimis badiis vel ferrugineis, huc illuc lactescentibus.

Diam. aperturæ circ. 12 m.; axis longitud. circ. 65 m.

Vermetus tulipa, Rousseau, Chenu, Ill. pl. 1. f. 2 (an 1 & 3?); Adams, Genera, p. 358.

Hab. Gulf of California, on a piece of a black *Pinna* (Mus. Cuming).

The figure 2 of Chenu is a pretty good representation of the colour of the last part of the last whorl; fig. 3 looks very different, but approaches in appearance that of the middle whorls of the described specimen.

Var. ϵ . BRIDGESII.

T. agglomerata, verticaliter affixa, irregulariter spiraliter torta; anfr. latiusculi plerumque contigui, liris et tæniis sæpe evanescentibus, rugæ incrementi versus marginem prominentes crassæ; anfr. primi 10-12 angusti, obliqui, depressiusculi, læviusculi, badii, liris obsoletissimis vel omnino evanescentibus, suturis pallidis.

Diam. ap. 5-9 m.

Hab. Panama, on *Margaritifera* (Mus. Cuming); very likely the

group of Mr. Bridges mentioned by Carpenter, Cat. p. 306, in the note.

This variety is very like the last; but the colour is much obliterated, and the last whorl is partly free and erect. It is chiefly notable for the resemblance of the first whorls to *Vermetus contortus* and *V. macrophragma*, some specimens of which are found on the same shell.

25. VERMETUS (ALETES) SIPHO, Lam.

"*T. tereti, longa, undato-curva, basin versus obsolete cancellata; spira baseos congesta, subius planulata.*"—Lam.

Serpula siphon, Lam. Hist. v. p. 367. no. 25; ed. 2. v. p. 626; Blainv. Dict. Sc. t. 48. p. 588.

Vermetus siphon, Rousseau, Chenu, Ill. pl. 4. f. 3 superior (nec 3 sinistr.).

Hab. L'Océan des Indes, à Timor (*Mus. nostr.*). Elle varie beaucoup, et néanmoins je la crois distincte de la *S. arenaria*, Lam.

Of the figures quoted by Lamarck, none agree with the description. Gualt. tab. x. f. L, is *V. arenarius*, L.; and *le Massier* of Adanson, regarded by Deshayes (Lam. ix. p. 65) as the type, is not from Timor. *Siphonium nebulosum*, Dillw., cannot be called *longa, undato-curva*.

The upper figure 3 of Chenu's plate seems to me to correspond exactly with Lamarck's description; the figure 3 (left) is very likely *le Massier* of Adanson, and does not agree with the description, although it is possible Lamarck regarded it as a variety, as it really approaches to *V. arenarius*, to which Lamarck likens it.

26. VERMETUS (ALETES?) GRANIFER, Say.

Covered with longitudinal, contiguous, slightly elevated, granulated striæ. Shell subcylindric, contorted; inferior side flat; the whole surface is composed of very numerous, small, contiguous striæ, each consisting of a single row of granules; these series are alternately smaller. The continuity of the tube within is interrupted by oblique diaphragms: it sometimes approaches the spiral form; and one specimen has three complete volutions of much regularity.

Diam. of the largest specimen $\frac{2}{5}$ inch.

Serpula granifera, Say, Philad. Journ. iv. i. p. 154, t. 8. f. 4.

Vermetus? granifera, M.-Edw., Lam. ed. 2. v. p. 632.

Serpula granifera, Bronn, Index, pl. 2. p. 1137.

Hab. Tertiary-beds of Maryland (*Say*).

According to the figure, this species must be closely allied to *V. centiquadrus*, var. *peronii*.

27. VERMETUS (ALETES?) TORTRIX, Goldfuss.

T. lævis, elongata, irregulariter in spiram convoluta vel glomerata, antice ampliata, tumida, striis transversis subrugosis.

Vermicularia lumbricalis, Münster, Petrefact. Deutschl. 1828, vi. p. 98.

Serpula tortrix, Goldf. i. p. 242, t. 71. f. 15; Bronn, Ind. ii. p. 1140.

Vermetus, sp., M.-Edw., Lam. ed. 2. v. p. 632.

Serpula tortrix, Chenu, Ill. t. 6. f. 7 a, b.

Hab. In tertiary sandstone near Traunstein, Bavaria (*Münster*); Nummulitique (*Bronn*).

The figure seems to be reversed. I refer this species to *Aletes* on account of its resemblance to the last species.

The following lists of the additions made to the Menagerie during the months of June, July, August, September, and October were read to the meeting :—

JUNE.

		Presented by
1 Black-backed Gull	<i>Larus marinus</i>	W. H. Leach, Esq.
1 Rhesus Monkey	<i>Macacus rhesus</i>	— Dyer, Esq.
11 Australian Finches	<i>Estrela bichenovii</i>	A. Denison, Esq., F.Z.S.
	— <i>phaeton</i>	
	<i>Poëphila cincta</i>	
1 Water Tortoise	<i>Emys</i> — ?	A. Russell, Esq., M.P., F.Z.S.
1 Capuchin Monkey	<i>Cebus capucinus</i> ?	J. H. Gurney, Esq., M.P., F.Z.S.
1 Hen Harrier	<i>Circus cyaneus</i>	
3 Water Ouzels	<i>Cinchus aquaticus</i>	John Hancock, Esq.
1 Laughing Kingfisher	<i>Dacelo gigas</i>	Alexander Huth, Esq.
1 Macaque Monkey	<i>Macacus cynomolgus</i>	Charles Simpson, Esq.
1 Great Black Cockatoo	<i>Microglossa alecto</i>	Capt. Denham, R.N.
1 White-crested Cockatoo	<i>Cacatua cristata</i>	T. J. Arnold, Esq., F.Z.S.
1 Green Fruit-eating Pigeon	<i>Treron bicincta</i> ?	The Maharajah Duleep Singh, F.Z.S.
1 Green-winged Pigeon	<i>Chalcophaps indica</i>	
1 Necklace Dove	<i>Turtur suratensis</i>	
4 Rain Quails	<i>Coturnix coromandelica</i>	H.R.H the Prince of Wales.
1 Indian Paradoxure	<i>Paradoxurus typus</i> ?	
1 American Grey Squirrel	<i>Sciurus cinereus</i>	W. Duncan Stewart, Esq.
2 Crested Curassows	<i>Crax alector</i>	
2 Red-billed Tree-Ducks	<i>Dendrocygna autumnalis</i>	Mrs. Hopper.
1 Spotted Salamander	<i>Salamandra maculata</i>	
1 Proteus	<i>Proteus anguinus</i>	Dr. Hugh Falconer, F.Z.S.
1 Brown Bear	<i>Ursus arctos</i>	Madame Didiée.
2 Haw Finches	<i>Coccothraustes vulgaris</i>	Purchased.
2 Japanese Deer	<i>Rusa japonica</i>	
4 Spotted Woodpeckers	<i>Picus major</i>	
1 Red-winged Parrakeet	<i>Aprosmictus erythropterus</i>	
1 Brazilian Macaw	<i>Ara severa</i>	Received in exchange.
1 Lory	<i>Eos</i> — ?	
1 One-streaked Falcon	<i>Astur monogrammicus</i>	
1 Snow-Bunting	<i>Plectrophanes nivalis</i>	
2 Butcher Birds	<i>Lanius excubitor</i>	
2 Hoopoes	<i>Upupa epops</i>	
2 White-fronted Geese	<i>Anser albifrons</i>	
2 Brent Geese	<i>Bernicla brenta</i>	
1 Young Caiman	<i>Jacare</i> — ?	

Of these, *Estrela bichenovii*, *Estrela phaeton*, *Poëphila cincta*, *Microglossa alecto*, *Rusa japonica*, and *Astur monogrammicus* were stated to be exhibited for the first time.

JULY.

		Presented by
1 Indian Snake	<i>Chrysopelea ornata</i>	A. W. W. Bandermaike, Esq.
2 Chinese Sheep	<i>Ovis aries</i> , var.	The Secretary at War.
1 Scotch Hare	<i>Lepus variabilis</i>	R. Drummond, Esq., F.Z.S.
1 Laughing Kingfisher	<i>Dacelo gigas</i>	Capt. Watson.
1 Boa	<i>Boa</i> — ?	H. Justins, Esq.
8 Snakes	<i>Ablabes punctatus</i>	A. Downes, Esq.
	<i>Chlorosoma vernale</i>	
	<i>Tropidonotus fasciatus</i> ..	
5 Bull-frogs	<i>Rana mugiens</i>	F. J. Rooper, Esq., F.Z.S.
8 Frogs	<i>Rana sylvatica</i>	
2 Seals	<i>Phoca vitulina</i> , juv.	
1 Vervet Monkey	<i>Cercopithecus delalandii</i> ..	J. R. A. Douglas, Esq.
1 Genet	<i>Genetta abyssinica</i> (?) ..	J. Monteiro, Esq.
1 Vulpine Phalanger	<i>Phalangista vulpina</i> ..	A. M. Harris, Esq.
1 Curassow	<i>Crax alector</i>	Sir William Holmes.
1 Trumpeter	<i>Psophia crepitans</i>	
7 Hoopoes	<i>Upupa epops</i>	
1 Phalanger	<i>Phalangista vulpina</i> ..	Purchased.
1 Vervet Monkey	<i>Cercopithecus delalandii</i> ..	
2 Common Wrens	<i>Troglodytes parvulus</i> ..	
1 Raccoon	<i>Procyon lotor</i>	In exchange.
1 Bay Antelope	<i>Cephalophus badius</i>	
1 Australian Hawk	<i>Hieracidea berigora</i> ..	
1 Japanese Eel	<i>Anguilla</i> — ?	In exchange.
2 Leverets	<i>Lepus timidus</i>	
1 White-crested Cockatoo ..	<i>Cacatua cristata</i>	
1 Philantomba Antelope ..	<i>Cephalophus maxwellii</i> ..	In exchange.
3 Scarlet Tanagers	<i>Pyrranga rubra</i>	
2 Blue Robins	<i>Sialia wilsoni</i>	
1 Pine Grosbeak	<i>Corythus enucleator</i> ..	In exchange.
1 Aoudad, fem.	<i>Ovis tragelaphus</i>	
1 Blood-breasted Pigeon ..	<i>Phlogænas cruenta</i>	
1 Curassow	<i>Crax globicera</i>	

Of these, *Chrysopelea ornata*, *Cephalophus badius*, *Hieracidea berigora*, and *Phlogænas cruenta* were stated to be exhibited for the first time.

AUGUST.

		Presented by
1 Peregrine Falcon	<i>Falco peregrinus</i>	Dr. Bree.
1 American Black Bear ..	<i>Ursus americanus</i>	G. R. Faulkner, Esq.
1 Ursine Opossum	<i>Dasyurus ursinus</i>	F. J. C. Wildash, Esq.
1 Rhesus Monkey	<i>Macacus rhesus</i>	C. A. Long, Esq.
1 Marmozet Monkey	<i>Hapale ædipus</i>	H. Probyn, Esq., R.N.
2 Common Macaques	<i>Macacus cynomolgus</i> ..	Capt. Barwood.
6 Natterjack Toads	<i>Bufo calamita</i>	Dr. Lankester.
1 Peregrine Falcon	<i>Falco peregrinus</i>	H. B. Bingham, Esq.
3 Wood Owls	<i>Syrnium aluco</i>	Percy S. Godman, Esq.
2 Honey Buzzards	<i>Pernis apivorus</i>	
1 Toco Toucan	<i>Ramphastos toco</i>	H. E. Governor Wodehouse.
1 Curassow	<i>Crax alector</i>	Dr. W. Huggins, Corr. Mem.
1 Tortoiseshell Turtle	<i>Chelonia imbricata</i>	Admiral Sir H. Keppell.
3 Marmozet Monkeys	<i>Hapale iacchus</i>	
1 Touraco	<i>Corythaix buffoni</i>	

AUGUST (continued).

		Presented by
1 Marmozet Monkey	<i>Hapale iacchus</i>	C. A. Staples, Esq.
1 Virginian Owl	<i>Bubo virginianus</i>	J. Radford, Esq.
3 Musk-Deer	<i>Moschus stanleyanus</i>	Hon. J. C. Ellis.
3 Land Tortoises	<i>Testudo</i> — ?	
2 Water Tortoises	<i>Emys</i> — ?	Mrs. Charles Wheeler.
2 Pennantian Parrakeets	<i>Platycercus pennantii</i>	
3 Rhesus Monkeys	<i>Macacus rhesus</i>	J. Bardsley, Esq.
2 American Alligators	<i>Alligator lucius</i>	Capt. George Bruce.
1 Vulpine Opossum	<i>Phalangista vulpina</i>	C. C. Dawson, Esq.
1 Sparrow-Hawk	<i>Accipiter nisus</i>	Samuel Smith, Esq.
1 Turtle Dove	<i>Turtur risorius</i>	J. W. Larking, Esq.
1 Eagle from Vancouver's Island.	<i>Haliaeetus leucocephalus</i> ?	— Lambe, Esq., R.N.
2 Seals	<i>Phoca vitulina</i>	Purchased.
2 Titlarks	<i>Anthus pratensis</i>	
1 Flamingo, young	<i>Phœnicopterus</i> — ?	Received in exchange.
4 Oortolan Buntings	<i>Emberiza hortulana</i>	
4 Leverets	<i>Lepus timidus</i>	Received in exchange.
1 Hobby	<i>Falco subbuteo</i>	
5 Noctule Bats	<i>Vesperugo noctula</i>	Received in exchange.
1 Young Bear	<i>Ursus isabellinus</i> ?	
1 Javan Brahmin Kite	<i>Haliastur indus</i>	Received in exchange.

SEPTEMBER.

		Presented by
4 Magellanic Geese	<i>Chloëphaga magellanica</i>	His Excellency Capt. T. E. L. Moore, R.N.
1 Steamer Duck	<i>Micropterus cinereus</i>	
1 Japanese Deer	<i>Cervus sika</i>	E. Blyth, Esq., Corr. Mem.
1 Jerboa	<i>Dipus jaculus</i>	Hon. Mrs. Stuart.
1 Indian Parrakeet	<i>Palæornis alexandri</i>	G. Dann, Esq.
1 Marmozet Monkey	<i>Hapale iacchus</i> ?	T. Young, Esq.
1 Sloth Bear	<i>Prochilus labiatus</i>	Capt. Stanley.
1 Bonnet Monkey	<i>Macacus pileatus</i>	H. N. Dupree, Esq.
2 Small Guans	<i>Ortalida katraca</i>	Dr. Wm. Huggins, Corr. Memb.
1 Painted Sun-Bittern	<i>Eurypyga helias</i>	
1 West-Indian Rail	<i>Aramides cayanensis</i>	W. Shorto, Esq.
10 Chameleons	<i>Chamæleo africanus</i>	
1 Kestrel	<i>Tinnunculus alaudarius</i>	A. Dodd, Esq.
1 Land Rail	<i>Crex porzana</i>	Purchased.
1 Red Antelope	<i>Cephalophus rufilatus</i>	
1 Plantain-Eater	<i>Musophaga violacea</i>	Purchased.
1 Blue Water-Hen	<i>Porphyrio martinica</i>	
1 Sable Antelope	<i>Hippotragus niger</i>	Received in exchange.
6 Garter Snakes	<i>Tropidonotus ordinatus</i>	
1 Indian Rat-Snake	<i>Coluber blumenbachii</i>	Received in exchange.
4 Little Bustards	<i>Otis tetraz</i>	

Of these, *Micropterus cinereus* and *Hippotragus niger* were stated to be exhibited for the first time.

OCTOBER.

		Presented by
1 Ichneumon.....	<i>Herpestes griseus</i>	} C. Clifton, Esq., F.Z.S.
2 Nightingales	<i>Luscinia philomela</i>	
4 Bohemian Chatterers	<i>Ampelis garrula</i>	E. S. Preston, Esq.
2 European Wolves	<i>Canis lupus</i>	Capt. Spain, R.N.
1 Pig-tailed Macaque	<i>Macacus nemestrinus</i>	W. Brooks, Esq.
7 Loach.....	<i>Cobitis barbatula</i>	W. Rose, Esq.
1 Bonnet Monkey.....	<i>Macacus pileatus</i>	Mrs. Charles Foster.
1 Domestic fowl (cock in hen plumage).	<i>Gallus domesticus</i>	R. F. Tones, Esq.
1 Entellus Monkey	<i>Presbytes entellus</i>	Charles Ashby, Esq.
1 American Black Bear ...	<i>Ursus americanus</i>	} Capt. Herd, H.B.C.S.
1 Musquash	<i>Fiber zibethicus</i>	
1 Golden Agouti	<i>Dasyprocta aguti</i>	Capt. M. O. Stewart.
2 Dormice.....	<i>Myoxus avellanarius</i> ...	G. R. Lake, Esq.
1 Common Swan	<i>Cygnus olor</i>	Duke of Northumberland.
1 German Fox	<i>Vulpes vulgaris</i>	Mrs. Barston.
1 Alexandrine Parrakeet ...	<i>Palæornis alexandri</i> ...	P. Jolin, Esq.
1 Rhesus Monkey.....	<i>Macacus rhesus</i>	— Brooke, Esq.
1 Herring Gull.....	<i>Larus argentatus</i>	E. T. D. Cotton, Esq.
2 Canadian Geese.....	<i>Anser canadensis</i>	Capt. Wishart.
1 Rhesus Monkey.....	<i>Macacus rhesus</i>	Capt. Rainy.
2 Marmozet Monkeys	<i>Hapale iacchus</i>	Capt. N. F. Edwards, R.N.
2 Bearded Titmice	<i>Paroides biarmicus</i>	} Purchased.
1 Merlin	<i>Falco aesalon</i>	
1 pair of Sand Grouse	<i>Pterocles alchata</i>	
4 Cedar-Birds	<i>Ampelis cedrorum</i>	
1 Yellow-bellied Snake ...	<i>Hoplocephalus superbus</i> ..	
2 Australian Vipers	<i>Pseudechis porphyriaca</i> ..	
2 Flying Opossums	<i>Petaurus breviceps</i>	
1 Bonnet Monkey.....	<i>Macacus pileatus</i>	
2 Mealy Redpolls	<i>Linota canescens</i>	
1 Domestic Turkey	<i>Meleagris gallopavo</i>	}
1 Sparrow-Hawk	<i>Accipiter nisus</i>	

November 26, 1861.

Dr. J. E. Gray, V.P., in the Chair.

Mr. B. Leadbeater exhibited the heads of three stags shot by Lieut.-Col. Sarel, F.Z.S., in the Gardens of the Imperial Summer Palace at Pekin. The species to which they were referable seemed to be a true *Cervus*, allied to, if not identical with, *C. elaphus* of Europe, and chiefly differing from that species in the shortness of the head.

Dr. P. L. Sclater exhibited original drawings, by Mr. G. T. Vigne, of the Koch or Wild Sheep of the Sulimani range (*Ovis cycloceros*) and the Sha of Little Thibet (*Ovis vignii*), the distinctions between which had been pointed out by Dr. Sclater in his article on this subject in the P.Z.S. for 1860 (p. 126). In reference to these animals, Mr. Vigne observed that he had always supposed the *Koch* and the