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# XIII. *An Account of some new and rare marine British Shells and Animals.* *By George Montagu, Esq. F.L.S.*

*Read March* 5, 1811.

Since the publication of the Supplement to *Testacea Britannica*, a few highly interesting species of shells having come under my inspection, together with some of the animals to which they belong, I am induced to lay them before the Linnean Society, in order that the Conchologist may reap the earliest advantage of my researches; and that they may be added to the catalogue already given to the public in the abovementioned work.

In addition to these I beg leave also to submit to the Society an account of some animals of the division *Mollusca* and *Intestina*, which for the first time will claim a place in the British Fauna; and whose beauty and singularity cannot fail to attract the attention of the Helminthologist.

## VERMES TESTACEA.

### Lepas cornuta.

### Tab. XII. Fig. 1.

Lepas aurita. *Chem. Conch.* viii. *p.* 345. *t.* 100. *f.* 857. 858. *Ellis, Phil. Trans.* 1758. *t.* 34. *f.* 1? *Nat. Misc.* 16. *t.* 672?

Ovate, fleshy, and very slightly compressed, with five very small valves, besides two tubular fleshy projections like ears at

the top: the peduncle is longer than the body, increasing in size towards the base, where it spreads considerably for the purpose of adhesion: the colour is white, clouded or rather irregularly marked with three broken stripes of purplish-brown on each side the body; the peduncle is also similarly striped: at the lower part of the aperture on each side is a small linear valve; on the upper part are two others much smaller, linear, and curved; and on the middle of the back is a very minute dorsal valve, scarcely visible to the naked eye; these valves are chiefly distinguished by being white. The horns or auricles are large, and convex in front, where they are mottled with purplish-brown; behind they are canaliculated.

Length of the body three-fourths of an inch; of the auricles three-eighths; of the peduncle an inch and a quarter. In some points of view, when examined by a lens, a fine iridescent colour is observable.

Taken alive from the bottom of a transport stranded on the coast of Devon.

The scientific Conchologist will at first conceive that he has in this species identified *Lepas aurita* of Linnæus: be that as it may; it would be totally inconsistent with the present view of the subject, to doubt that that species did actually possess eight valves round the mouth: unless, therefore, it can be imagined that Linnæus was deceived, the present species cannot be referred to the *L. aurita* of that author. Chemnitz appears to have given a bad figure of our shell, which he refers to the Linnæan *L. aurita*, although he could not discover more than two valves, and those were at the opening; but probably was induced so to do from no other cause than that his species had auricles; for he expresses his surprise that Linnæus should have discovered no less than eight valves round the mouth, and which seems to have left some

doubt

doubt upon his mind about their being actually of the same species, especially as he examined several.

It may indeed be urged, that it is not less extraordinary (if the species given by Chemnitz be the same as mine) he should have overlooked the other three valves; but as those valves are extremely small, it is probable they would be unobserved in badly-preserved specimens, which it is most likely that author described from, judging from his figure.

With respect to the species here described, it may be proper to remark, that it was examined with the greatest care and attention while alive, and a drawing taken while it was in sea water; and that the two superior valves, as well as the dorsal one, have been represented in the figure that accompanies this, fully as large as they actually are, in order that they may be distinguished without the assistance of a glass. Considering, therefore, the minuteness of these valves, it will not appear extraordinary that Chemnitz should have overlooked them in badly-preserved specimens.

Besides the *Lepas nuda carnosa aurita*, figured in the 50th vol. of the *Phil. Trans.*, and the Eared Barnacle represented in the *Naturalist's Miscellany*, (which I can only refer to with doubt for the present subject,) Gmelin has quoted Seba and Edwards for the Linnæan *L. aurita*.

Whether any of these be really the *Lepas aurita* possessing the character of *ore octovalvi dentato*, as originally described by the Swedish Naturalist, I shall leave to others to determine, since some of them are so miserably executed as not to represent the smallest appearance of belonging to the division *Testacea*, being destitute of visible valves.

Whether this may really be considered as distinct from any or either of the species here enumerated it is difficult to determine;

but I am confident, that it is quite impossible it should be the shell which Linnæus has so strongly stamped the character of by these words: *apertura clausa valvulis testaceis octo.*

### LEPAS MEMBRANACEA.

TAB. XII. Fig. 2.

*Test. Brit. Sup. p.* 164.

It will be observed in *Testacea Britannica* that this species was described from a dried specimen, the only one that had been procured; but having since been so fortunate as to obtain a great many fresh, and some not dispossessed of vitality; and conceiving that a correct figure of it might be highly acceptable to the scientific, it has been delineated with that view. It is however essential that a little alteration should be made in the original description, since in the dried specimen of this very membranous species, not only the colour was vanished, but also by contraction the sides had become unnaturally wrinkled.

Sub-parallelopipedal, sub-compressed, fleshy, with five small valves: peduncle cylindric, as long as the body; colour pale blue, with three broad stripes of dark blue on each side, running from the summit to the base of the peduncle: the plumes of the animal's tentacula purplish-blue: on each side of the lower part of the aperture is a triangular valve; on the top are two small linear valves; and a similar dorsal valve is on the upper part of the back. Length of the largest specimen, including the peduncle, nearly three inches; breadth above half an inch.

Many of this elegant species of *Lepas* were discovered on the bottom of a transport stranded on the coast of South Devon in January 1809; she had been to the north of Europe, and was last from Portugal.

BULLA.

## Bulla.

It has been long known that one of the Linnæan species of this genus of *Testacea*, instead of being the external covering of the animal to which it is attached, is concealed within. The *Bulla aperta* is so completely concealed by its animal, that there is not the smallest appearance of it: dissection, therefore, probably brought it first to light. The animal has been distinctly described by several authors under different names, and lastly by Muller under the title of *Lobaria quadrilobata*.

In *Testacea Britannica* two other species of Bulla have been given, whose nature it is to be concealed by the animals to which they belong; and since the publication of the Supplement to that work, two other species of a similar nature have occurred that appear to be undescribed. These four possess characters sufficiently similar to determine them to be of the same genus; but, as they cannot be arranged with *Lobaria* nor any other genus in the divisions of *Vermes*, *Mollusca* or *Testacea*, I have thought it proper to form these animals into a new genus, under the title of *Lamellaria*.

The animals of this genus are more nearly allied to *Aplysia* in some particulars than to *Lobaria*, to which they are only connected by being testaceous Vermes; but they differ from the former in not having reflected membranes, and in the shell being testaceous, and spirally formed at one end, which in that is corneous and destitute of convolution. From *Lobaria* they also differ in being formed of two fleshy laminæ, and not into lobes or lateral divisions. It is not improbable that some species of *Lamellaria* might be mistaken for *Dorides*, but there are sufficient distinguishing characters obvious to the Helminthologist.

There appear to be two natural divisions in this genus of Vermes,

Vermes, those with a plumous appendage on the right side, answering the purpose of branchiæ or pulmonary organs, and those destitute of such an apparatus for absorbing oxygen (by the decomposition of the water in which they reside) for recruiting vital energy.

In order to prevent confusion, I have suffered the animals and their respective shells to bear the same trivial names, so that they may be readily recognised in the present system, where Conchology makes one of the primary divisions, and independently treats of the testaceous part of a large portion of Vermes.

For the two species of *Lamellaria* already described I beg leave to refer to *Bulla Haliotoidea* and *B. plumula* in *Testacea Britannica*, where the animals are figured: the former is of that division which is destitute of the plumous appendage; the latter is possessed of it.

### LAMELLARIA.

Body formed of two fleshy lamellæ; the vitals protected by a convoluted shell concealed beneath the skin: foramen on the right side.

#### * *With a plumous Appendage.*

#### LAMELLARIA MEMBRANACEA.

TAB. XII. Fig. 3.

Body sub-orbicular, greatly depressed, but convex above, and usually scalloped or irregularly indented on the margins of both laminæ: the superior lamina is of a brownish colour in streaks and lines, covered with larger and smaller intermediate conic papillæ: the inferior lamina extends considerably beyond the other, and forms a broad base or sustentaculum; this is of a pale colour, spotted with blueish gray: the head is usually concealed between the two laminæ, but is occasionally exposed by contracting

tracting the upper lamina, as represented in the annexed figure: the front is formed into a bifid process, like two angulated tentacula: behind, originating from the base of this, are two tentacula of a sub-cylindric form, truncated at the end, canaliculated beneath, and uniting towards their base: eyes two, very small and black, placed contiguous at the base of the tentacula: the plumous appendage on the right side originates near the head immediately behind the foramen. In one instance a cylindric proboscis was observed to be protruded half an inch in length, but the animal died with it retracted: the genitals of one specimen were also very evident immediately before the lateral foramen, and appeared slender, and sub-spiral, as in the common garden snail. Diameter of the largest upwards of two inches.

The shell, or *Bulla membranacea*, *Tab.* XII. *fig.* 4. is sub-membranaceous, ovate, and greatly depressed, with a minute lateral volution. It is nearly allied to *Bulla plumula*, but is more membranous, rather more convex, the small volution and apex more prominent, and not placed so lateral: it is wrinkled concentrically, and covered with a silvery epidermis tinged with pink, changeable in different points of view, occasionally appearing nacred or metallic. As the shell dries it usually cracks about the margin, which is extremely delicate; and the contraction of the epidermis gives it a more wrinkled appearance. The size of the largest shell taken is nearly an inch and a half in length, and an inch in breadth.

It is remarkable that this very singular animal, and highly interesting shell, should have evaded the researches of naturalists so long, especially as they are of considerable magnitude. Probably however the shell, independently of the animal, would never have come to light, since it appears to be too delicate to bear the agitation of the waves upon the finest sandy shore. Dissection of

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the animal, therefore, is the only probable means of obtaining the shell. But what is most extraordinary, the place where these *Lamellariæ* are only found (the salt rock in the estuary of Kingsbridge) has been a favourite place of research for a great many years; and yet not a single specimen was ever taken till the year 1809, about the latter end of which several were found in one day, and many others of various sizes on subsequent visits to the same spot. The locomotion of this species of Vermes is not very considerable; but it is extremely amorphous when in progressive motion. In a quiescent state, or when disturbed, the lamellæ are contracted, and the inferior or sustentaculum is nearly obscured by the superior.

* * *Without a plumous Appendage.*

LAMELLARIA TENTACULATA.

TAB. XII. Fig. 5, 6.

Body sub-orbicular, depressed, convex above: the superior lamina is yellowish, sprinkled with bright brimstone colour, and marked with round pustules interspersed with a few black spots: in the front is a sinus: tentacula two, long and filiform, placed one on each side the front of the head: eyes two, black, situated at the base of the tentacula on the outside, but usually concealed by the anterior margin of the superior lamina; they are however sufficiently conspicuous on the under side of the animal by reason of the transparency of that part: the inferior lamina or sustentaculum is ovate, attenuated at the posterior end, projecting a little beyond the shield or upper lamina, when the animal is in progressive motion, but which conceals the head or anterior part, except about three-fourths of the tentacula.

A variety is destitute of the black spots, and the yellow are more

more conspicuous. This specimen was considerably larger, being three quarters of an inch in diameter.

The shell, or *Bulla tentaculata*, is so extremely similar to *Bulla Haliotoidea*, that the figure of it has been omitted as useless, since it could not convey the nice distinction; and the shell to which it is so nearly allied has already been given in *Testacea Britannica*, together with the animal to which it belongs. It is rather depressed, and more opaque than the shell of *L. Haliotoidea*, but would not be generally discriminated independently of the animal. To the animal, therefore, we must look for the actual identity of its shell; and by so doing no confusion will occur, since there is a material distinction between *Lamellaria tentaculata* and *L. Haliotoidea;* the colour is different, especially the more extended membranous margin of the superior lamina of the former, which, with the long and slender tentacula, are obvious marks of distinction. In the few specimens examined there did not appear to be any arm or appendage as in *L. Haliotoidea*, and yet a similar sinus in the anterior margin of the upper lamina indicates an occasional protrusion of some similar process, which may possibly be only exerted in the season of love. A comparison of the figure which accompanies this, with that of the animal of *Bulla Haliotoidea* in the vignette of the second part of *Testacea Britannica*, *fig.* 6. will be sufficient for future discrimination.

The discovery of this species so recently in the same place with the last described, after such repeated examination of the spot for so many years, is an additional proof of the inexhaustible stores that lie hidden in the deep, and that by some fortuitous circumstance are brought to light. Of this species very few have been taken; but as none of the genus appear to possess any great powers of locomotion, it is probable they have their natural beds, where they congregate in great abundance, (a circum-

stance common in aquatic hermaphroditical Vermes,) and become a delicious repast to a variety of fishes.

### MYA STRIATA.

TAB. XIII. Fig. 1.—A.

Shell sub-pellucid, white, of a delicate texture, finely striated longitudinally: the shape is sub-parallelogramical; the anterior end is truncated, and the valves reflect, forming a hiatus when the shell is closed; the posterior end is rounded; the umbo is small, and placed nearest the posterior end. The inside is white, and slightly reflects a nacred hue: the hinge is simple, and completely that of a true Mya, possessing one erect broad tooth in one valve, that locks into a corresponding cavity in the other valve.

Length half an inch; breadth one inch.

This new and interesting species, it appears, was discovered by Mr. Lyons in Tenby-bay, on the south coast of Wales, from whence specimens were sent to Mr. Norris, who obligingly favoured me with that from which the above description is taken; and I have been assured by the Rev. Mr. Bingley that several more have been very recently taken by the same gentleman after a storm, which were all alive. Round the anterior end of my specimen there is a portion of agglutinated sand, which induces an opinion that, like most others of the same genus, it resides imbedded in the sand at the bottom of the sea.

### TEREBRATULA CRANIUM.

TAB. XIII. Fig. 2.—B.

Terebratula Cranium. *Mull. Zool. Dan. Prodr.* 3006.
Anomia Cranium. *Gmel. Syst.* vi. *p.* 3347.

Shell ovate, convex, equilateral, inequivalve, the upper valve projecting considerably beyond the lower at the beak, where there is a small

small perforation. It is thin, except about the hinge, sub-pellucid and brittle, but not glabrous; for by the assistance of a powerful lens the whole surface is observed to be minutely striated in a decussated order, appearing like fine shagreen: there are also some irregular concentric wrinkles very obvious to the naked eye: the margin is not regularly rounded, but in the front two sub-angles are formed by the line of regular curvature becoming less flexuous.

The inside is of a singular structure about the hinge: beneath the beak of the upper or perforated valve the shell is very thick, rising on each side into a process that forms the inseparable joint or hinge, which firmly unites the two valves: this contrivance also forms a channel of communication with the aperture in the beak, adapted to the tube or syphon of the animal: further within the shell, but connected with the channel, is a depression which is roughened by two or three very slight longitudinal ridges. The lower valve is also much thickened at the beak, and rises into a transverse ridge, standing above the plane of the margin, in the middle of which there is a groove corresponding with the channel to the perforation in the beak of the other valve, and the sides reflect for the purpose of receiving the fangs of the opposite valve; and by such contrivance they are similarly and as firmly articulated as the joint of the claw of a crab, without the assistance of a connecting cartilage, of which it seems to be destitute: from each side of the interior part of the transverse ridge, a sub-arcuated compressed process or tooth projects inwards nearly to the middle of the shell, their points reflecting and a little diverging; at the base of each of these another similar process, but smaller, stands erect. The colour of the shell is pale brown, or sullied white. Length of the superior valve nine-

eighths of an inch, that of the inferior valve one inch; breadth seven-eighths.

I have great pleasure in recording this rare shell as a production of the British seas: three of them were taken up on the codlines in the deep, eastward of Bressay, in Zetland, by the Rev. Mr. Fleming, minister of that place, who favoured me with the specimen represented in the annexed plate. This attentive naturalist assures me that the three specimens were firmly affixed to each other by the tube through the perforation at the beak.

Muller appears to have described this species as an inhabitant of the Norwegian sea; at least his *Terebratula Cranium* seems so nearly allied to it, that I have ventured to consider it as the same shell. This great naturalist is silent with respect to the internal structure of the shell, or conformation of the animal. From what I have been able to ascertain from moistening the dried specimen which came to me in its shell, it seems nearly allied to a *Tethys*, possessing but one tube or syphon, which it protrudes through the aperture in the beak, and which serves the triple purpose of mouth, foot and sucker, or instrument of adhesion. In the fins or margin of the animal there were several slender arcuated testaceous plates serving as bones, but their exact situation and peculiar office could not be ascertained.

It must be admitted by every Conchologist, that the Linnæan arrangement of *Anomia* is defective, and the characteristic description of the genus, as well as of the animal inhabitant, is vague and indefinite.

With respect to the species of shells at present arranged under the title of *Anomia*, some are destitute of any perforation, some have an opening close to the hinge in the under valve, and others are perforated in the beak of the upper valve. Such an essential

difference

difference in the formation of these shells must occasion a very material dissimilarity in the situation and structure of the teeth, as well as in the conformation of the animals that inhabit them. What those fossil shells really may be, or to what genus in conchology they might be referred, which are destitute of any perforation, and which have been placed amongst the *Anomiæ*, is not to be determined, since the structure of the teeth is concealed from our view, as the greater part of them are complete petrifactions, and have their valves closed. We may, however, be assured that the animal which inhabited such imperforate shells, must have been very different from those which are known to inhabit such as are perforated.

The *Mya inæquivalvis* of *Testacea Britannica* is in the fossil state considered as an *Anomia*, though it has strictly the hinge of a *Mya*, and the animal inhabitant is materially different from what is observed in either of the perforated recent *Anomiæ*.

But let us go further, and examine the structure of some of the recent shells together with their animals, and I doubt not that most Conchologists will agree with me, that there is a much greater natural division between those which have the under valve perforated, and such as have a perforation in the beak of the upper valve, than there is between a *Tellen* and a *Venus*, or indeed between any two genera of the Linnæan system. We have only to look to the natural habits of these two kinds of shells, including their animal inhabitants; and if those, together with the external appearance, be not sufficient, let us have recourse to the internal structure, and especially the great leading characters, the hinge and teeth, and we shall find that the more strictly and accurately the comparison is made, the further will these shells appear to be separated from each other. If, for instance, the *Anomia Ephippium* be examined, it will be found that the animal is totally destitute

destitute of locomotion, and is immovably fixed from its earliest infancy to whatever chance has thrown in its way: to this substance, be what it may, it throws out from the perforation in the under valve a ligamentous pedicle or foot, which becomes firmly attached; and in the course of time, as the animal grows, a testaceous plug is formed on the object of its adhesion, and as firmly connected to a rock or other substance, as it is to the pedicle or part which has secreted the testaceous fluid; and no separation can ever take place without external violence and consequent mutilation. On the contrary, if we attend to the habits of *T. Cranium*, *Vitrea*, or any of those Linnæan *Anomiæ* with a perforation in the beak of the upper valve, I am persuaded that we shall find all of them to be inhabited by animals capable of a certain degree of locomotion; and that, instead of being moored fast for life by a pedicle issuing from the perforated valve, these animals receive all their nourishment through this aperture by means of a tubular mouth, which has also the property of adhesion when required, either for the purpose of securing them stationary, or to acquire locomotion by extension and contraction, as I have observed in the animal of *Mya suborbicularis*, and one or two others, which appear to be inhabited by a *Tethys*.

From what has been related, it may naturally be imagined that the internal structure of the shells in question must materially differ, and such is actually the case, without the exception of one solitary character; but this I shall not here enlarge upon, as a comparison is readily obtained by the scientific Conchologist.

Lamanon, as well as some other French naturalists, have considered some shells similar to this, perfectly distinct from *Anomia*; and that very judicious physiologist Muller has separated them, and has adopted the generic title of *Terebratula* for those of

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the Linnæan *Anomiæ* with the beak of the superior valve perforated.

So little are we acquainted with the animal inhabitants of the greater part of *Testacea*, that it has been usual to follow Linnæus in assigning to each genus of shells, as arranged by him, animals of a similar nature; but later observations have proved that nothing can be more distinct than many of the animals which inhabit shells of the same family under the Linnæan arrangement. The animals of the Linnæan *Anomiæ* are as different as the shells, and do not correspond with the general characters assigned to the genus: in fact, the animal appears to be so indefinable, that no name has been given to it.

Lamanon gives a long description of the animal of a species of *Terebratula* which was found on the coast of Tartary by the unfortunate Peyrouse, in his voyage of discovery, in which he observed several bones (testaceous plates) that support the ears (the membranaceous rays or fins ?). This writer speaks of the syphon or tube merely as a pedicle or foot of adhesion, not having seen it in the light of a mouth, through which all nourishment is taken, (as in the greater part of the Vermes found to inhabit bivalve shells,) but speaks of a mouth with a transverse opening, which is ill defined, and I have little doubt he was mistaken. The great powers of adhesion ascribed to the tube of this animal can only be in proportion to the diameter of the cup of the tube, in which a vacuum is formed, which cannot exceed two lines: the philosophical naturalist may therefore judge of the extent of the adhesive power these animals possess. The shell of this Tartarian species appears to be in many respects allied to the *Terebratula Cranium* in the hinge, and processes thereto attached, but externally is much more wrinkled: besides, it is thick, and somewhat different in colour. This appears also to be essentially different

from

from the Gmelinean *Anomia vitrea*, as it has neither the hyaline nor glossy appearance which that species is said to possess, nor has it the internal midrib in the lower valve, which Chemnitz's figure bespeaks, and which seems to have been drawn from a specimen in his own cabinet.

Upon the whole, I cannot liken the present subject to any species so nearly as to the Mullerian *Terebratula Cranium*; and there is the greater probability that it really is that shell, when it is considered that the distance is not great between Zetland and the coast of Norway, where Muller's shell was found.

I trust I shall be excused for having been thus diffuse on so interesting an acquisition to the catalogue of British Testacea. I was enticed to this by the opportunity of examining and comparing a recent *Terebratula* containing the animal, with that of *Anomia*, and from that comparison I have been induced to adopt the judicious division of Muller.

### TURBO ZETLANDICUS.

### TAB. XIII. Fig. 3.

Shell with five tumid volutions, furnished with spiral ridges; which are decussated with longitudinal elevated striæ, that rise into angular tubercles at the points of decussation; at the base of the shell the spiral elevations are very prominent, and destitute of striæ: the apex is obtuse; aperture nearly orbicular and marginated.

Length two lines: the colour is white.

This very elegant little shell is another new species, for which we are indebted to the researches of the Rev. Mr. Fleming, who found it on the shore of the isle of Noss in Zetland; a situation which has been little explored with a scientific eye. From this quarter many of the marine productions described by Muller and other northern continental writers may be expected, especially in the

the class *Zoophyta*, of which I have already been favoured with a few of a very interesting nature, either entirely new, or not described as British.

### Turbo dispar.

Tab. XIII. Fig. 4.

Shell strong, short, conic, of a blueish-gray colour, with four spires; the lower volution is very large, obsoletely striated in a spiral direction, wrinkled obliquely, and sub-carinated at the base; the superior volutions are very small, making together about one-fourth the length of the shell, and are usually decorticated: aperture sub-orbicular, within of a dark purple, with one pale band near the lower extremity; inner lip spreading.

Length a quarter of an inch; breadth very little less.

This species has somewhat the habit of *Turbo ziczac*, but is proportionally shorter, more obtuse, has a greater disproportion between the body and superior volutions, and does not possess the zigzag markings usually attendant on that shell, nor the two pale bands generally exhibited within the aperture, but invariably one only. The operculum is corneous, and of a dusky colour, and was attached to all the specimens examined; an indubitable evidence of a living shell, or of containing the animal.

I was favoured with a few specimens of this shell from the Rev. Mr. Bingley, who found them at Poole.

### Patella distorta.

Tab. XIII. Fig. 5.

Shell rugged and distorted, without regularity; rather depressed, with an irregular margin, and very small papillæform vertex, not central: the inside is not glossy, but appears through a lens to be minutely granulate.

This is another Zetlandic production discovered by Mr. Fleming, who assures me that it is not uncommon on stones in deep water, and was first noticed on the stones attached to the codlines which had lain long under water. The colour is invariably brown, as well on the inside as without; and when examined by a glass appears papillous.

The largest specimens are about half an inch in diameter.

## VERMES MOLLUSCA.

### DORIS.

Since the writings of Linnæus, it is not surprising that the rapid cultivation of the science of Natural History should have extended the field so greatly as to call for some new arrangements in this branch as well as in all the others. It is true that with some alterations in the leading characters of the Linnæan genera, many of the more recently discovered animals might still have found a place in the arrangement of that great naturalist: but systematic physiologists are as verbally tenacious as lawyers; and therefore, where the generic characters do not exactly apply to the object, a new genus is formed for the purpose. It appears that the genus under consideration admits of three or four natural divisions; and, as the number in this genus is not very extensive, such a division into families might have answered all the purposes of identifying species, without too greatly multiplying genera, which in the end will frustrate the intention of systematic arrangement.

It must be acknowledged that there are several animals arranged with the Gmelinean *Doris*, which want the essential Linnæan characters of that genus: for instance, *Doris clavigera* is destitute of vent on the back surrounded by a fringe. This, therefore, (as well

well as *papillosa* and some other of the Linnæan *Dorides*,) has been removed and formed into a new genus, and is described by Bosc under the title of *Tritonia*. The *Phyllidium* of Cuvier appears to be formed from another division of *Doris*: and the *Scyllæa*, which was constituted by Linnæus, does not appear to be at greater variance with some of the animals placed under the title of *Doris*, than many species of *Doris* are with each other.

It must be admitted that Linnæus, and after him many other able naturalists, placed in the genus *Doris* many animals wanting the leading characters which should constitute them of the same family; we need only refer to the multivalve shell *Chiton*, which that great naturalist says is inhabited by a *Doris*, to prove how incongruous are some of the species of the same genus; and yet how implicitly have succeeding writers continued these errors!

The two following animals, according to the more modern system, will appear to belong to *Tritonia;* or perhaps one of them is so nearly allied to *Scyllæa* as to create some difficulty to determine in which of those genera it ought to be placed. In the present instance I shall continue them in the genus in which I had originally placed them, amongst the fasciculate species of *Doris*, as belonging to the same family I had the honour of laying before the Linnæan Society upon a former occasion, and reserve a different arrangement for future consideration.

### Doris pedata.

### Tab. XIV. Fig. 1.

Body long, slender, and acuminated behind; the front rounded: tentacula four, large, subclavated and wrinkled; two are situated in front rather projecting forwards; the others stand nearly erect at a little distance behind: papillæ or cirri on the back numerous, long, and subclavated when contracted, but nearly filiform

when extended; these in appearance are disposed in four fasciculi on each side of the back, and are occasionally divided, or connected transversely: the sustentaculum is slender, from which in front issue two laterally recurved, fleshy members, that seem to assist progressive motion: behind the two posterior tentacula are two very minute black eyes, generally obscured by the anterior fasciculate papillæ, which are so nearly connected with those tentacula as might occasion their being confounded, did not their wrinkled summits bespeak their distinction: the colour of the whole body of the animal is purplish pink, the papillæ more of a scarlet, inclining to orange towards their ends, the tips white.

Length full half an inch. Devon coast: rare.

This extremely beautiful animal is without doubt a *Tritonia* of the new school: the body is not bilaminated, or covered with a marginal membrane like that which is now essential to constitute a true *Doris;* nor has it the anus on the back, nor ventral plumes; but the tentacula are retractile within receptacles.

### DORIS BIFIDA.

### TAB. XIV. Fig. 2.

Body linear, posteriorly acuminated: the front rounded, with two broad erect bifid tentacula, the divisions of which are obtuse and unequal: along each side are about twelve pedunculated appendages of different sizes, three pair of which are greatly superior to the rest; these, when examined by a microscope, show the clavate part to be ramified, but the ramifications appear to be connected by, and enveloped with, a fine transparent membrane: behind the tentacula two black eyes are very evident; beneath these a pink spot was observed to be moveable beneath the skin: the colour is whitish, with a reddish-brown

line

line on each side of the back; between these lines, the dorsal ridge and the peduncles are spotted with the same: vent on the right side.

Length scarcely a quarter of an inch. Amongst fuci, on the coast of Devon: rare.

This elegant little animal would probably be considered by the French naturalists to belong to the same genus as the last; but the tentacula not appearing to be retractile, and its being destitute of anal plumes on the back, together with the disposition of the lateral appendages, lead me to consider it as constituting a link between the *Tritonia* and the *Scyllæa*.

It has been often a matter of wonder, why these and many other similar aquatic Vermes should be furnished with such ramified or fasciculate appendages, which, to a common observer, seem to be destitute of use; but, by the assistance of modern philosophy, we are led to believe that they are of such essential service as to constitute the principal agent of vital action, being to them what pulmonary organs are to terrestrial warm-blooded animals and some others, but peculiarly constructed for the separation of oxygen gas or vital air, from the medium in which they reside; and thus, like the gills or respirative organs in fishes, constituting their principal branchiæ or breathing apparatus.

### Spio crenaticornis.

Tab. XIV. Fig. 3. a.

Spio filicornis. *Gmel. Syst.* vi. *p.* 3110?

Body slender, much resembling that of a *Nereis*, tapering a little, and furnished with about sixty joints, terminating posteriorly with two short styles; the joints are furnished with peduncles and fasciculi; upon the upper part of the former are long cirri standing erect, with their points usually reflecting over the back,

back, and nearly meeting those on the opposite side: the two tentacula are not quite filiform, but taper a little, and are articulated, or furnished with numerous joints, which gives them a crenated appearance; their length is nearly half as long as the body: between the tentacula, but generally obscured by them, are four black eyes, placed in pairs: on the front of the head is a short bifid snout, connected at the base.

The tube or case in which these animals reside is extremely tender, composed of minute adventitious matter slightly agglutinated together; it is usually attached to *Sertularia*. Like most of the *Amphitrites*, the body of this animal is concealed within its tube, and the feelers or tentacula alone are displayed; and these are in constant motion, being thrown about in all directions, though they are capable of instantaneous contraction. When the animal had been divested of its covering, and suffered to be quiescent, the tentacula were generally coiled up spirally, and then appeared much wrinkled. The largest I have observed did not exceed half an inch independent of its feelers; the colour is pale, with pink cirri.

This species, which is not an uncommon inhabitant of our coasts, is without doubt a *Spio*, although it does not strictly accord with the Gmelinean characters, being possessed of four eyes: to this family the *Polydore cornue* of Bosc, *tom.* i. *pl.* 5. *fig.* 7. belongs, by reason of the same number of eyes; in other respects it does not sufficiently correspond with the present subject to induce an opinion that they are the same species. In some respects this appears to be somewhat allied to *Spio filicornis*, but I have referred to it with considerable doubt.

MEDUSA

## Medusa pocillum.

### Tab. XIV. Fig. 4.

Body campanulate, furnished on the top with a sub-ovate, flat, and extremely thin striated crest or sail. The cup is whitish, with a broad striated border of purplish-brown, margined with bright blue; the edges crenulated: within the cup are about ten larger sub-clavated tentacula, and many intermediate smaller ones of a fine dark blue colour, which surround a central aperture.

Length, including the crest, about three lines. Coast of Devonshire.

This exquisitely beautiful little animal was discovered on a piece of *Spongia*, where it attracted the eye by its brilliant colour. When placed under a microscope in sea water, it was observed to float on the surface reclining, so that the crest was never erect above the water; but it was doubtless in a relaxed state, having been carried some distance for examination.

Whether the flat appendage in such a small *Medusa* can be of any use as a sail, to give it progressive motion by means of the wind, is very doubtful; but, like the dorsal fin of a fish, it must be most essential to keep it upright in the water. It evidently moved the crest or fin as well as the tentacula, and by their joint efforts obtained a slow progressive motion. The longer tentacula were seen to move to and from the central mouth.

To this crested or finned division of *Medusa* belong the *Medusa Velella* and the *Holothuria spirans* of Gmelin; the former of which is the *Velelle tentaculée* of Bosc, figured in *Histoire Naturelle des Vers*, tom. ii. But those who wish to make a comparison we refer to the coloured figures of these two species in *vol.* vii. *Nat. Miscel. tab.* 247 and 250. Both these *Medusæ* are ovate in the cup, and not orbicular as in the present species.

## VERMES INTESTINA.

### BRANCHIARIUS.

Body irregular, sub-pellucid, destitute of eyes, tentacula, or any other appendage, but distinguished by lateral branchiæ.

It has fallen to my lot to discover several species of marine Vermes that belong to the same family, but which differ so essentially from any thing that characterizes the present formed genera within my knowledge, that I have ventured to place them by themselves under the title annexed. As a specimen I have selected the following.

### BRANCHIARIUS QUADRANGULATUS.

TAB. XIV. Fig. 5.

Body long, nearly of equal size throughout, quadrangular, and furnished with tubercles along the angles; the sides with branchiæ; both the extremities are truncated, that of the anterior quadrilobated: the colour is pale orange, with two rows of curved black spots, one along each side; these in the contracted state of the animal appear like lineations, but when extended are observed to be distinct on each articulation.

Length exceeding two inches.

This species has but rarely occurred on the south coast of Devon, and its history is of course imperfectly known. I first discovered it amongst fuci at low water, destitute of any covering; but as the locomotion of all the species hitherto noticed is extremely limited, their principal action consisting of bringing the two extremities together, and straightening alternately, it may be presumed that they form some case or covering for protection.

Their

Their general appearance has a strong resemblance to some of the naked larvæ of winged insects.

### Diplotis.

Body gelatinous, anterior end truncated, from which issue two auricular appendages; posterior end acuminated: mouth small.

### Diplotis hyalina.

Tab. XIV. Fig. 6, 7.

Body taper from the anterior to the posterior end; the front truncated, and furnished with two earlike projections pointing forwards; these are also truncated and concave, the margin ovate and purple, the concavity orange with a central dark spot: beneath these, at the lower extremity, the mouth is situated, which is small, and a little protruded: along the sides is a faint line forming a slight angle with the under part of the body: the back is a trifle convex; the sides and belly are wrinkled: the posterior end is pointed and slightly tridentate. The colour is hyaline, with a few undulating intestinal markings of a yellowish appearance.

Length half an inch. Devon coast: rare.

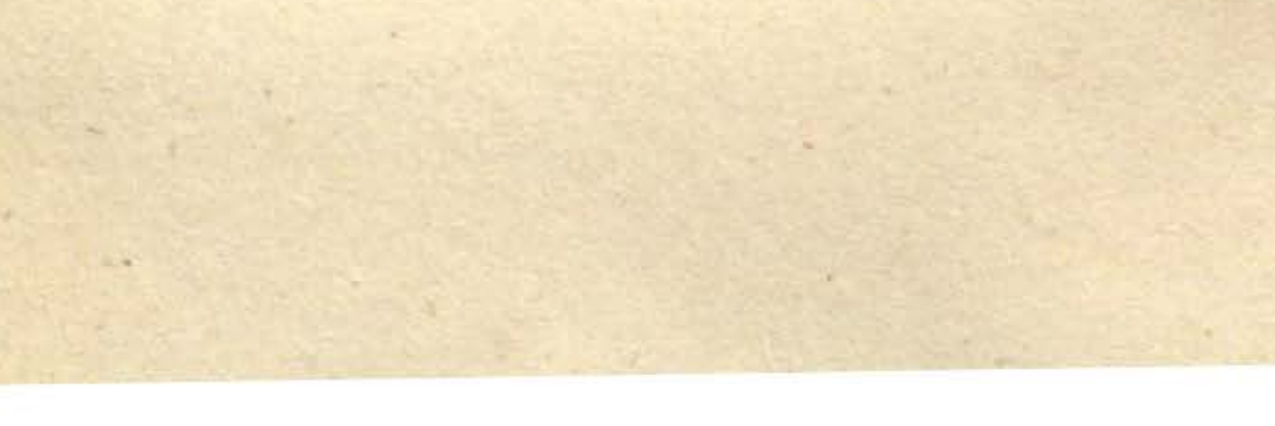
This is another Vermis of the order *Intestina*, which cannot be referred to any one of the present genera. In its general appearance there is so much resemblance to the larva of some insect, that, had any such ever been known to undergo their transformation in the marine element, some suspicion might have arisen with respect to the rank to which it should be consigned. But besides there being no well authenticated account of any insects changing their form in sea water, the situation in which this animal was found would be the strongest evidence of its marine origin.

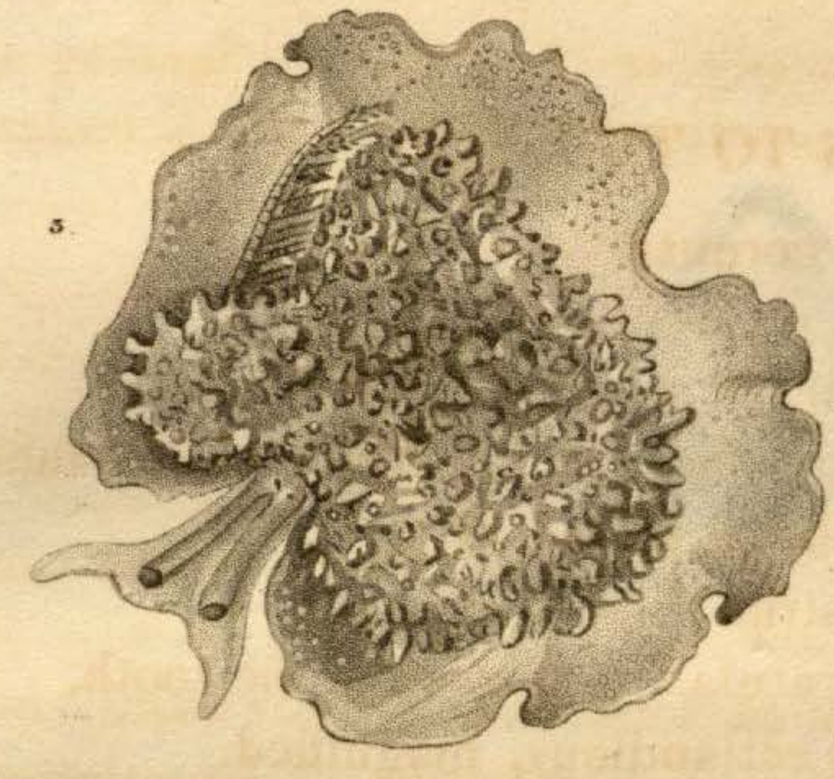
## REFERENCES TO THE FIGURES.

TAB. XII. *Fig.* 1. Lepas cornuta.
2. Lepas membranacea.
3. Lamellaria membranacea.
4. Shell of the same, or Bulla membranacea.
5, 6. Lamellaria tentaculata.

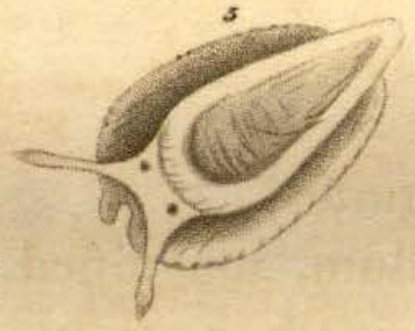
TAB. XIII. *Fig.* 1. Mya striata—A. the tooth.
2. Terebratula Cranium—B. the tooth.
3. Turbo zetlandicus, magnified.
4. Turbo dispar.
5. Patella distorta.

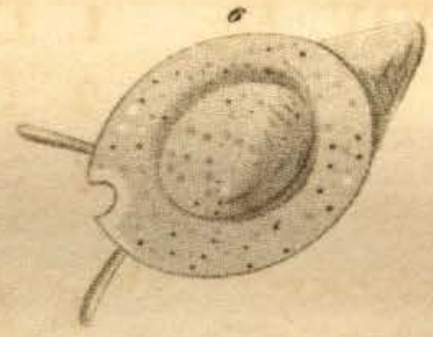
TAB. XIV. *Fig.* 1. Doris pedata, magnified.
2. Doris bifida, magnified.
3. Spio crenaticornis—two segments more highly magnified.
4. Medusa pocillum, magnified.
5. Branchiarius quadrangulatus.
6, 7. Diplotis hyalina, magnified.
8. &c. Cancer salinus. See page 206.

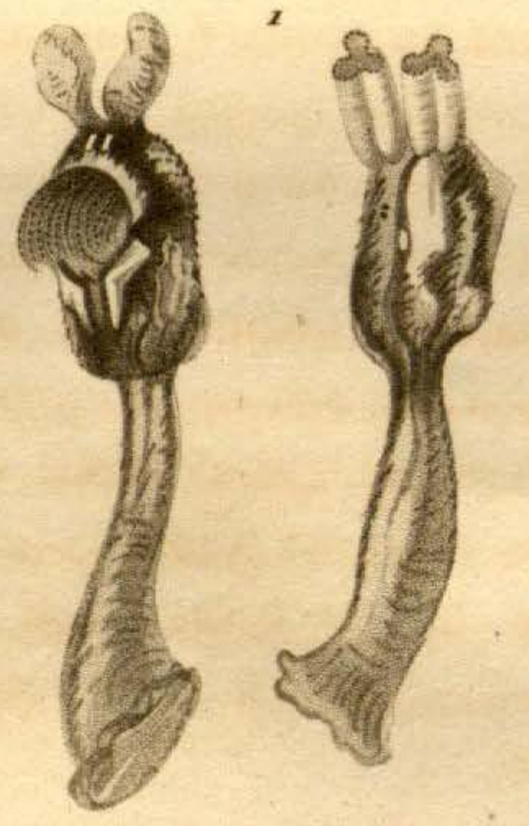






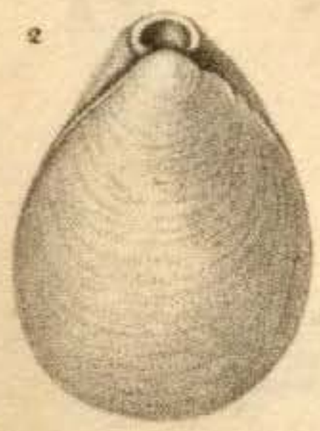


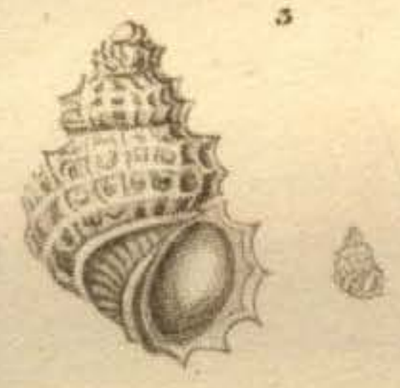





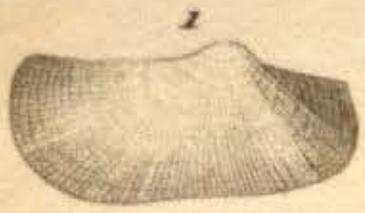
Weddell, Sculp'











Weddell Sculp.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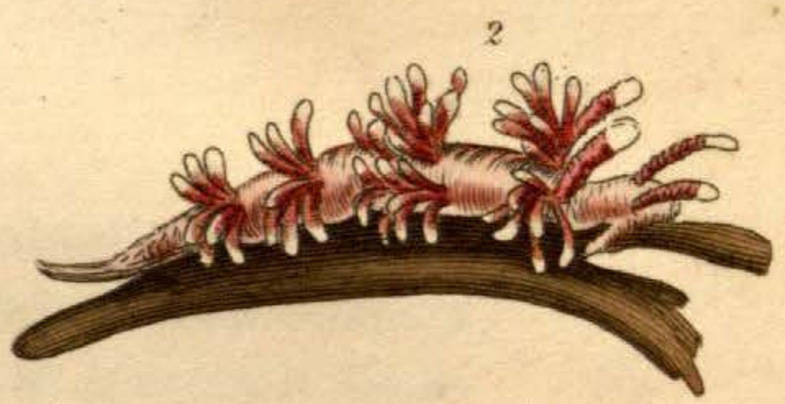
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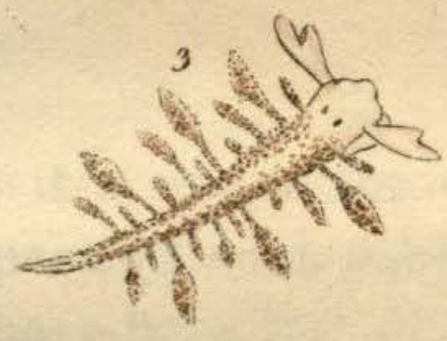
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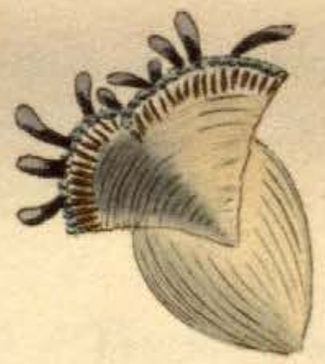


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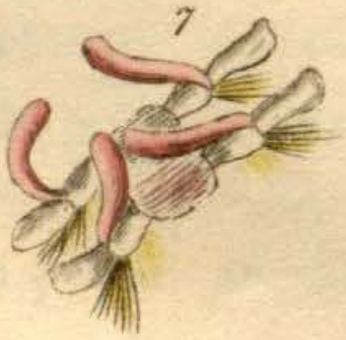
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