

XLI.—*On the Invertebrate Marine Fauna and Fishes of St. Andrews.* By W. C. M'INTOSH.

[Continued from p. 221.]

Subkingdom *MOLLUSCA*.

Section I. *MOLLUSCOIDA*.

Class I. *POLYZOA*.

The majority of the Polyzoa come from the deep water of the bay; and, indeed, there are comparatively few to be met with between tide-marks that do not also occur in the former. The minute animals of the calcareous masses so characteristic of many of this group, perform none of those alterations on the surface of the earth which the equally tiny coral-polyps daily effect; yet their workmanship in our northern waters is as regular and beautiful as that fashioned by the latter in the tropical seas. The patterns of the *Lepraliæ*, for instance, excite admiration; and though the apparent resemblance in growth, superficial aspect, and position may suggest to some an analogy between them and the lichens of our rocks and trees, yet it is remote and unable to bear close criticism. It is true it is difficult to assign an exact function to these organisms; but in some cases the calcareous crust of the *Lepraliæ* affords a better hold to many stationary marine animals than the rock itself. Moreover, after heavy-coated forms (like the *Balani*) have reared themselves on this basis, it frequently happens that the original crust is loosened from its attachment, and both fall off together. The coating of *Lepraliæ*, also, may prevent to some extent the disintegration of soft rocks and stones. By removing a portion of bark with an adherent *Balanus* from a submerged thorn-tree, and carefully detaching the former, a fine network of *Lepralia* is found lowest, then the calcareous coating of the *Balanus*; and if the latter has perished, a rough layer of *Cellepora pumicosa* obliterates all trace of it from without.

The Cheilostomatous Polyzoa are fairly represented; and several, e. g. *Flustra* and *Gemellaria*, occur in vast quantities attached to stones, shells, and corallines on the West Sands after storms. The majority are common to the eastern shores, the west, and the extreme north and south, as shown in the valuable catalogues of Messrs. Alder, Couch, Hincks, and Norman. Many species will doubtless yet be found at St.



Andrews—though at present they appear to be confined to the other areas, which have been more thoroughly investigated by observers specially skilled in this department. *Bicellaria ciliata* and *Bugula purpurotincta* seem to be more common at St. Andrews than in Shetland, the latter form being especially abundant and fine, and apparently taking the place of the *B. plumosa* of the southern shores; *Menipea ternata* and *Bugula Murrayana* are likewise in considerable profusion and in fine condition; while the southern *Flustra chartacea* is wholly absent. The species of the Membraniporidae, perhaps, are more abundant in Shetland; and the *Lepraliæ* are decidedly more numerous there and in the extreme south. Amongst the more conspicuous forms we notice the entire absence of *Lepralia Pallasiana*, so common in the extreme west and south, and of the characteristic *L. innominata* and *L. figularis* of the latter. The Celleporidæ are abundant, but the species are few. *Cellepora avicularis* is exceptionally rich, according to Mr. Hincks; and the same high authority in this department states that the sole specimen of *Eschara Skenei* is fine.

The Cyclostomatous forms are not numerous; but all the examples are abundant; and the same may be said of the Ctenostomata. The late Dr. John Reid mentions *Vesicularia spinosa* as growing near low-water mark; but I have not been successful in finding it. The Zetlandic *Hornera* and the rich tufts of *Amathia lendigera*, so plentiful in the south, are altogether absent.

On the whole it would appear that the Hebridean, Zetlandic, and southern waters furnish a richer field for the Polyzoa than our eastern shores, not only as regards the number of species, but the condition and size of the specimens. I need only allude, for instance, to the luxuriance of the branching Celleporidæ and Reteporæ of the Hebrides and Shetland, and the extraordinary beauty and profusion of the Escharidæ and Lepraliæ, and indeed of the whole group, in the extreme south and in the Channel Islands, both between tide-marks and on the shell-banks around.

The arrangement followed is that of Mr. Busk in his accurate and well-known and beautifully-illustrated 'Catalogue;' and I have further derived great assistance from the valuable Catalogue of the Zoophytes of Northumberland and Durham by the lamented Joshua Alder, and the extensive Zetlandic lists by the Rev. A. M. Norman. I have also to thank Mr. Hincks for his kindness in revising the list and making several additions, and to acknowledge the information derived from his careful and original Catalogue of the southern forms.



## Order GYMNOLEMATATA.

## Suborder CHEILOSTOMATA.

## Family Salicornariadæ.

## Genus CELLARIA, Lamarck.

*Cellaria farciminoides*, Ellis & Solander ; Busk, Catal. p. 16, pl. 64. f. 1-3, pl. 65 (bis). f. 5.

Attached to the roots of *Flustra foliacea* and other corallines ; abundant in deep water.

## Family Cellulariadæ.

## Genus MENIPEA, Lamx.

*Menipea ternata*, Ellis & Solander ; Busk, Catal. p. 21, pl. 20. f. 3-5.

Fine tufts on *Sertularia filicula* and other corallines from the deep water of the bay.

## Genus SCRUPOCELLARIA, Van Beneden.

*Scrupocellaria scruposa*, L. ; Busk, Catal. p. 25, pl. 22. f. 3 & 4.

Abundant under stones between tide-marks, and ranging to deep water. In October many are marked with the reddish orange ova ; there are also many brownish black specks on these specimens.

## Genus CANDA, Lamx.

*Canda reptans*, Pallas ; Busk, Catal. p. 26, pl. 21. f. 3 & 4.

Found by Dr. John Reid near low-water mark (Anat. and Pathol. Observat. p. 602).

## Family Scrupariadæ.

## Genus SCRUPARIA, Oken.

*Scruparia chelata*, L. ; Busk, Catal. p. 29, pl. 17. f. 2.

Common on *Ceramium rubrum*, *Sertularia pumila*, and other algæ and zoophytes between tide-marks.

## Genus HIPPOTHOA, Lamx.

*Hippothoa catenularia*, Jameson ; Busk, Catal. p. 29, pl. 18. f. 1 & 2.

On stones and shells from deep water ; less common than the following species.



*Hippothoa divaricata*, Lamx. ; Busk, Catal. p. 30,  
pl. 18. f. 3 & 4.

On stones and shells from deep water ; abundant.

Family **Gemellariadæ**.

Genus GEMELLARIA, Sav.

*Gemellaria loricata*, L. ; Busk, Catal. p. 34, pl. 45. f. 5 & 6.

Abundant in deep water, and thrown on shore in masses after storms.

Family **Bicellariadæ**.

Genus BICELLARIA, De Blainville.

*Bicellaria ciliata*. L. ; Busk, Catal. p. 41, pl. 34.

Frequent on stones and shells from the coralline ground.

Genus BUGULA, Oken.

*Bugula flabellata* (J. V. Thompson, MS.), Gray ; Busk, Catal.  
p. 44, pls. 51 & 52.

On *Flustra foliacea* from deep water ; rather rare.

*Bugula avicularia*, Pallas ; Busk, Catal. p. 45, pl. 53.

From the coralline ground, on *Flustra truncata* ; not common.

*Bugula purpurotinctoria*, Norman, Quart. Journ. Micr. Sci.  
n. s. vol. viii. p. 219.

Abundant on the same ground, attached to shells.

*Bugula Murrayana*, Bean ; Busk, Catal. p. 46, pl. 59.

Plentiful on the beach after storms, and at all times from the coralline ground.

Family **Flustridæ**.

Genus FLUSTRA, L.

*Flustra foliacea*, L. ; Busk, Catal. p. 47, pl. 55. f. 4 & 5,  
pl. 56. f. 5.

Very abundant on the sands after storms.

*Flustra truncata*, L. ; Busk, Catal. p. 48, pl. 56. f. 1 & 2,  
pl. 58. f. 1 & 2.

Common in the laminarian and coralline zones.



## Genus CARBASEA, Gray.

*Carbasea papyrea*, Pallas ; Busk, Catal. p. 50, pl. 50. f. 1-3.  
After storms, and from the fishing-boats ; not abundant.

## Family Membraniporidæ.

## Genus MEMBRANIPORA, De Blainville.

*Membranipora membranacea*, L. ; Busk, Catal. p. 56, pl. 68. f. 2.  
Abundant on the fronds of *Laminaria digitata* and other algæ.

*Membranipora pilosa*, L. ; Busk, Catal. p. 56, pl. 71.

Very common on the stems and fronds of *Delesseria*, *Laminaria*, and other seaweeds between and beyond tide-marks, and on shells and stones from the coralline ground.

*Membranipora Flemingii*, Busk ; Catal. p. 58, pl. 61. f. 2,  
pl. 84. f. 4-6, pl. 104. f. 2-4.

Common on stones and shells from the coralline ground.

*Membranipora Lacroixii*, Sav. ; Busk, Catal. p. 60, pl. 69,  
pl. 104. f. 1.

On the inner surface of a valve of *Cyprina islandica* from deep water.

*Membranipora spinifera*, Johnst. ; Alder, Catal. Zooph. p. 53,  
pl. 8. f. 2, 2 a.

Abundant on the under surface of stones between tide-marks.

*Membranipora Dumerillii*, Aud. ; Alder, Catal. Zooph. p. 56,  
pl. 8. f. 5.

Not uncommon on bivalves from deep water. As Mr. Alder observes, it may occasionally be seen in company with *M. Flemingii*.

*Membranipora unicornis*, Flem. ; Alder, Catal. Zooph. p. 56,  
pl. 8. f. 6.

On bivalves from deep water ; not very common.

*Membranipora craticula*, Alder ; Catal. Zooph. p. 54, pl. 8. f. 3.  
Occasionally in deep water.



## Genus FLUSTRELLA, Gray.

*Flustrella hispida*, Fab. ; Johnst. Brit. Zooph. p. 363,  
pl. 66. f. 5.

Abundant on the stems of Fuci and other seaweeds, and on stones between tide-marks.

## Genus LEPRALIA, Johnst.

*Lepralia Brongniartii*, Aud. ; Busk, Catal. p. 65,  
pl. 81. f. 1-5.

Rather plentiful on laminarian roots thrown on shore after storms. Often forms a basis for other growths, and may be seen on their under surface when detached from seaweed or rock.

*Lepralia reticulata*, J. Macgillivray ; Busk, Catal. p. 66,  
pl. 90. f. 1, pl. 93. f. 1 & 2, pl. 102. f. 1.

Not uncommon in the siphons and inside the mouth of *Fusus antiquus*, and also on *Cardium echinatum* from deep water.

*Lepralia concinna*, Busk, Catal. p. 67, pl. 99.

Very abundant on stones and shells from the coralline ground. A well-marked variety, with perforations round the cells, is not uncommon.

*Lepralia verrucosa*, Esper ; Busk, Catal. p. 68, pl. 87. f. 3 & 4,  
pl. 94. f. 6.

Occurs rather abundantly on the roots of *Laminaria digitata* and on stones near low-water mark.

*Lepralia unicornis*, Johnst. ; Brit. Zooph. p. 320, pl. 57. f. 1.

A common littoral species, everywhere abundant, and in large patches on the under surface of stones. The colours vary, probably in some cases from the ova.

*Lepralia spinifera*, Johnst. ; Busk, Catal. p. 69, pl. 76. f. 2 & 3.

Very common on the under surface of stones near low-water mark.

*Lepralia trispinosa*, Johnst. ; Busk, Catal. p. 70,  
pl. 85. f. 1 & 2, pl. 98, pl. 102. f. 2.

Abundant on stones and shells from the coralline zone.



*Lepralia coccinea*, Abildgaard ; Busk, Catal. p. 70, pl. 88.

On sandstone, shale, and laminarian roots from the East Rocks, and on shells from deep water. Also found by Prof. J. Reid. Rare as contrasted with its profusion on our southern shores.

*Lepralia linearis*, Hassall ; Busk, Catal. p. 71, pl. 89. f. 1-3.

Common on shells and stones from deep water.

*Lepralia ciliata*, Pallas ; Busk, Catal. p. 73, pl. 74. f. 1 & 2,  
pl. 77. f. 3, 4, 5.

Occasionally on the under surface of stones near low-water mark ; more frequently on stones and shells from the coralline ground.

*Lepralia variolosa*, Johnst. ; Busk, Catal. p. 75, pl. 74.  
f. 3, 4, 5, pl. 75.

On shells and stones from deep water ; not uncommon.

*Lepralia nitida*, Fab. ; Busk, Catal. p. 76, pl. 76. f. 1.

Abundant both between tide-marks and in deep water, on stones and shells. The spines are in general less developed than in those from the Channel Islands.

*Lepralia annulata*, Fab. ; Busk, Catal. p. 76, pl. 77. f. 1.

Instead of being partial to the laminarian blades, as on the west coast, this species is not uncommon on the under surface of stones between tide-marks, generally in small patches ; and also occurs on shells and stones from deep water. Some dried specimens are of a pinkish colour.

*Lepralia Peachii*, Johnst. ; Busk, Catal. p. 77, pl. 82. f. 4,  
pl. 97.

Common on stones near low-water mark, and on stones and shells from deep water.

*Lepralia ventricosa*, Hassall ; Busk, Catal. p. 78, pl. 82. f. 5 & 6,  
pl. 83. f. 5, pl. 91. f. 5 & 6.

Not uncommon on stones and shells from deep water.

*Lepralia punctata*, Hassall ; Busk, Catal. pl. 90. f. 5 & 6,  
pl. 92. f. 4, pl. 96. f. 3.

Everywhere abundant on the under surface of stones in pools and elsewhere near low-water mark, and also on shells and stones from deep water.



*Lepralia Malusii*, Aud. ; Busk, Catal. p. 83, pl. 103. f. 1-4.

Not uncommon on shells and stones from deep water.

*Lepralia granifera*, Johnst. ; Busk, Catal. p. 83, pl. 77. f. 2,  
pl. 95. f. 6 & 7.

Abundant on the under surface of stones near low-water mark in considerable patches. The aspects of the old and new cells differ much. The new cells glisten like those of *L. hyalina*, have a number of opaque white granules, a D-shaped aperture, and a distinct mucro ; the transverse wrinkles of the cells are also apparent ; and in some very new ones the granules are also glistening and hyaline, and show the perforations. In the old cells the walls are opaque, whitish, or yellowish, the granules still more opaque, perhaps larger, but less defined and beautiful.

*Lepralia hyalina*, L. ; Busk, Catal. p. 84, pl. 82. f. 1-3,  
pl. 95. f. 3-5, pl. 101. f. 1 & 2.

Common on laminarian roots and stems, on *Delesseria* and other algæ, and on stones near and beyond low-water mark.

### Family Celleporidæ.

#### Genus CELLEPORA, Fab.

##### Section A. *Incrusting, adnate.*

*Cellepora pumicosa*, L. ; Busk, Catal. p. 86, pl. 110. f. 4-6.

Very abundant on stones, shells, zoophytes, and seaweeds—generally from deep water.

*Cellepora avicularis*, Hincks ; Catal. Zooph. Devon,  
Ann. & Mag. Nat. Hist. 3rd ser. ix. p. 304.

Occasionally on zoophytes.

##### Section B. *Erect, branching.*

*Cellepora ramulosa*, L. ; Busk, Catal. p. 87, pl. 109. f. 1-3.

Attached to the stems of zoophytes &c. in deep water ; common.

*Cellepora dichotoma*, Hincks, Catal. Zooph., *loc. cit.* p. 305.

On zoophytes ; abundant and fine.

*Ann. & Mag. N. Hist.* Ser. 4. Vol. xiii.



Family **Escharidæ**.Genus **ESCHARA**, Ray.

*Eschara Skenei*, Ellis & Sol. ; Busk, Catal. p. 88, pl. 122.

A remarkably beautiful specimen on *Cyprina islandica* from the coralline ground.

Suborder **CYCLOSTOMATA**, Busk.Family **Tubuliporidæ**, Johnst.Genus **TUBULIPORA**, Lamarck.

*Tubulipora serpens*, L. ; Johnst. Brit. Zooph. p. 275,  
pl. 47. f. 4-6.

On zoophytes and shells from deep water ; very abundant and characteristic.

Genus **ALECTO**, Lamx.

*Alecto granulata*, M.-Ed. ; Johnst. Brit. Zooph. p. 280,  
pl. 49. f. 1 & 2.

On stones and shells from deep water ; not rare.

Family **Diastoporidæ**, Busk.Genus **DIASTOPORA**, Lamx.

*Diastopora obelia*, Flem. ; Johnst. Brit. Zooph. p. 277,  
pl. 47. f. 7 & 8.

On shells and stones from deep water.

Genus **PATINELLA**, Gray.

*Patinella patina*, Lamarck ; Hincks, Catal. Zooph.,  
*loc. cit.* p. 468.

Abundant on corallines and shells from deep water, especially on *Mytilus modiolus*.

Genus **HETEROPORELLA**, Busk.

*Heteroporella hispida*, Flem. ; Hincks, *loc. cit.* p. 469.

On stones and shells from deep water ; rather rare.

Family **Crisiadæ**.Genus **CRISIA**, Lamx.

*Crisia eburnea*, L. ; Johnst. Brit. Zooph. p. 283, pl. 50. f. 3 & 4.

On the under surface of stones between tide-marks, often



with many parasitic hydroids and Confervæ, and on zoophytes and seaweeds from deep water. Abundant.

Suborder CTENOSTOMATA, Busk.

Family Alcyonidiadæ.

Genus ALCYONIDIUM, Lamx.

*Alcyonidium gelatinosum*, Pallas; Johnst. Brit. Zooph.  
p. 358, pl. 68. f. 1-3.

On stones and bivalve shells from deep water; common.

*Alcyonidium hirsutum*, Flem.; Johnst. Brit. Zooph. p. 360,  
pl. 69. f. 1 & 2.

Abundant on seaweeds near and beyond low-water mark.

*Alcyonidium parasiticum*, Flem.; Johnst. Brit. Zooph.  
p. 362, pl. 68. f. 4 & 5.

Frequent on the stems of zoophytes from deep water; very characteristic.

Genus ARACHNIDIA, Hincks.

*Arachnidia hippothooides*, Hincks; Ann. & Mag. Nat. Hist.  
3rd ser. ix. p. 471, pl. 16. f. 2.

On *Ascidia sordida* from deep water; in abundance.

Family Vesiculariadæ.

Genus VESICULARIA, J. V. Thompson.

*Vesicularia spinosa*, L.; Johnst. Brit. Zooph. p. 370,  
pl. 72. f. 1-4.

Found near low-water mark by the late Prof. John Reid.

Genus BOWERBANKIA, Farre.

*Bowerbankia imbricata*, Adams; Johnst. Brit. Zooph.  
p. 377, pl. 72. f. 5 & 6.

Abounds on the under surface of stones, on the stems and branches of littoral zoophytes, and on the tests of *Cynthia grossularia* under shelving rocks. Also found by Prof. J. Reid.



## Order PHYLACTOLÆMATA.

## Suborder PEDICELLINEA.

## Family Pedicellinidæ.

## Genus PEDICELLINA, Sars.

*Pedicellina echinata*, Sars ; Johnst. Brit. Zooph. p. 382,  
pl. 70. f. 5.

On the branches of *Ceramium rubrum* and other littoral algæ and zoophytes ; abundant.

## Class II. TUNICATA.

Comparatively few Ascidians have been procured ; indeed the department is in such a condition at present (as to specific identification) that a much greater amount of time would have been required for their elucidation than was available. The late Mr. Joshua Alder most kindly looked over the collection, and named those requiring identification in his usual conscientious manner ; and it is to be hoped that the work on these forms by him and the late Mr. Hancock (one of the best minute anatomists this country has produced) will soon be published. The most abundant simple form is the *Ascidia sordida* of Alder and Hancock, which is thrown by storms on the West Sands in large numbers, attached to seaweeds, sticks, shells, and other objects. *A. intestinalis* is also procured in this manner as well as between tide-marks ; *Pelonaia corrugata* and *Molgula arenosa*, A. & H., affect deep water only, and rarely occur during storms. The compound forms are common under stones between tide-marks and in the laminarian region : but much yet remains to be done in this respect at St. Andrews. Though Ascidians on the exposed parts of the east coast of Scotland are for the most part rare in the laminarian region and between tide-marks, they are common in still muddy waters on the west coast and in the Hebrides, and in water which cannot but be slightly brackish, as at the head of Loch Portan near Lochmaddy, where they are both abundant and large ; they are also numerous and large between tide-marks at Herm and in the rich waters around the Channel Islands, as well as in the Zetlandic voes.



## Family Botryllidæ.

Genus LEPTOCLINUM, M. Edwards.

*Leptoclinum durum*, M. Ed.; Forbes & Hanley, Brit. Mollusca, i. p. 17 (as *L. aureum*, a misprint).

Common under stones in rock-pools between tide-marks. Dull yellowish white, with white specks from stellate calcareous crystals.

*Leptoclinum punctatum*, Forbes; F. & H. Brit. Moll. i. p. 18.

Not uncommon under stones between tide-marks.

Genus BOTRYLLUS, Gærtner.

*Botryllus Schlosseri*, Pallas; F. & H. Brit. Moll. i. p. 19, pl. A. fig. 7, pl. B. fig. 7.

Occasionally under stones between tide-marks. The red spot in the centre is not very visible in these specimens. On tearing, a dark brownish digestive system appears.

*Botryllus polycyclus*, Sav.; F. & H. Brit. Moll. i. p. 21.

Frequent near low-water mark on the under surface of stones, on Fuci and *Corallina officinalis*.

Genus BOTRYLLOIDES, M. Edwards.

*Botrylloides Leachii*, Sav.; F. & H. Brit. Moll. i. p. 23.

Common in the laminarian region attached to seaweeds.

Numerous other species of *Botrylloides* and a *Didemnum* are common under stones in the rock-pools.

Genus PARASCIDIA, Alder.

*Parascidia Flemingii*, Alder, Ann. & Mag. Nat. Hist. 1863, xi. p. 172.

Occasionally on laminarian roots near low water. Mr. Alder was of opinion that the drawing represented a young form of this species. It consisted of cylindrical animals with a transparent investment. On the summit of each are several long, ovate, reddish orange structures marked with yellowish white grains, showing at the free extremity an oral aperture surrounded by eight small papillæ.



## Family Clavelinidæ.

Genus CLAVELINA, Sav.

*Clavelina lepadiformis*, O. F. Müller; F. & H. Brit. Moll. i. p. 26.

Occasionally between tide-marks.

## Family Ascidiadæ.

Genus ASCIDIA, Baster.

*Ascidia intestinalis*, L.; F. & H. Brit. Moll. i. p. 31.

Abundant on the roots of tangles thrown on the West Sands after storms, and also under stones between tide-marks. Evinces considerable and spasmodic muscular contractions.

*Ascidia sordida*, Ald. & Hanc.

Very plentiful in the deeper water attached to stones, shells, sticks, and seaweeds. One has placed itself on the anterior end of an empty tube of *Pectinaria belgica* and quite filled it up. An elongated (club-shaped) variety is not uncommon.

*Ascidia depressa*, Ald. & Hanc.

Not uncommon on the under surfaces of large stones in tide-pools. In November specimens are often loaded with a pinkish-white creamy fluid, which appears to be made up chiefly of ova. The cellular border of each ovum is faintly greenish by transmitted light.

Genus MOLGULA, E. Forbes.

*Molgula arenosa*, Ald. & Hanc.; Alder, *op. cit.* p. 160.

Abundant in deep water, and in the stomach of the cod and haddock.

Genus CYNTHIA, Sav.

*Cynthia*, n. sp.

A nodulated Ascidian like a raspberry or small bramble occurred on the West Sands after a storm. Mr. Alder stated that it was not *C. morus*, but a species unknown to him.

*Cynthia grossularia*, Van Beneden; F. & H. Brit. Moll. i. p. 40.

Very common on the roofs of rocky ledges, between tide-marks, where it becomes incrustated by many parasites. The development of this species is easily observed.



Genus PELONAIA, Forbes & Goodsir.

*Pelonaia corrugata*, Forbes & Goodsir; F. & H. Brit. Moll.  
i. p. 43, pl. E. f. 4.

Frequent in deep water, and occasionally in the stomachs of the cod and haddock.

[To be continued.]

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XLII.—On the Spongozoa of *Halisarca Dujardinii*.

By H. J. CARTER, F.R.S. &c.

IN the 'Annals' for last year (vol. xii. p. 17) I published a paper on two new species of Gummineæ, with special and general observations. I had not then seen *Halisarca Dujardinii* of our shores, but have since met with it several times, always small, never more than from a quarter to three quarters of an inch in diameter.

I have also stated somewhere lately, with reference to the spongozoa, that what I claim is not to have shown that they were ciliated, but that they took in crude food and threw off the undigested portions like *Amœba*. This I have now also proved to be the case in *Halisarca Dujardinii*, in the following manner :—

Yesterday (March 19th) I went to the rocks here (Budleigh-Salterton), and found a specimen of *Halisarca Dujardinii*, about a quarter of an inch in diameter, on a bit of dead stick about the size of a tobacco-pipe. The stick was cut off to a convenient length and placed in sea-water; and thus, the following morning, it was brought under an inch compound power, when, seeing the particles of refuse matter actively issuing from the vent, I rubbed up a little indigo also in sea-water and, with a camel-hair brush, dropped it on the specimen, leaving it there about an hour, until I saw particles of the indigo itself issuing from the vent.

The water was then agitated so as to float away the superincumbent indigo, when it was observed that some of the *Halisarca* had become deeply coloured by it.

Now, taking off a portion of the coloured part, and tearing it to pieces with needles on a slide in sea-water, this was covered with a bit of thin glass, and placed under a  $\frac{1}{4}$ -inch compound power.

Thus the spongozoa of the *Halisarca* were brought into view. Some were isolated, others still remaining in their





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