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XXXVII.—*Descriptions of some New and Rare Zoophytes found on the Coast of Northumberland.* By JOSHUA ALDER, Esq.

[Plates XIII. XIV. & XV.]

Order HYDROIDA.

Fam. Tubulariadae.

Hydractinia areolata, n. sp. Pl. XIII. figs. 1-4.

Polypary encrusting, consisting of a solid chitinous expansion, from which arise simple linear spines in irregular groups, leaving areolar spaces between them. *Polypes* naked, small, white, columnar, slightly enlarging above, and terminating in a conical mouth, below which is a single circle of from six to ten linear tentacles, appearing of different lengths from their varying contractility. Gonophores (reproductive organs) sessile on the chitinous base, large, globular, or slightly pear-shaped, containing each a single medusoid. Height of polype about $\frac{1}{10}$ inch.

Medusoid with a moderately deep subglobose umbrella, having four golden-yellow radiating canals, at the bulbous bases of which, on the margin of the umbrella, are four rather short tentacles; four shorter ones alternate with them; and intermediate

between these are eight others, almost tubercular. The peduncle is rather long and columnar, with four tufts of thread-cells surrounding the mouth.

A single specimen only of this interesting little *Hydractinia* was obtained, parasitical on a dead shell of *Natica Alderi*, brought in by the fishing-boats at Cullercoats. I have since seen a dead and rather worn specimen, upon *Natica Grælandica*, among the Zoophytes collected in Shetland by the Rev. A. M. Norman. The species differs from *H. echinata* in its much smaller size, the simple linear form of its spines, their irregular grouping, and more especially in its bearing medusoids; these latter spring from the encrusting base. No capsule could be detected, but this might possibly arise from its great transparency. The medusoids bear a great resemblance to those of *Podocoryne carnea*, Sars, the only difference being in their having eight intermediate tubercular tentacles. In this respect they also differ from the medusoid of a Hydroid polype described by Professor Lovén, and referred by him to *Hydractinia*, but which appears rather to belong to the genus *Podocoryne*, as the base was not horny or spinous. As far as I am aware, therefore, this is the only instance in which medusoids have been ascertained to be produced by a true *Hydractinia*.

Coryne implexa, Alder.

Some confusion has arisen about this species, the polypary of which I described under the name of *Tubularia implexa* in my 'Catalogue of the Zoophytes of Northumberland and Durham,' not having at that time been able to ascertain the character of the polypes, from which alone the genus in this group can be properly determined. Dr. T. Strethill Wright, however, has since met with it in a living state, and has found that it belongs to the genus *Coryne*. The *Coryne* figured in my 'Catalogue' under the provisional name of *Coryne pelagica* (pl. 7. fig. 2) appears, in fact, to be the young of it. I have lately met with it again in this state at Cullercoats, and have ascertained that its medusoid is similar to the one described by Professor Allman as that of his *C. Briareus*, which I now think, with Dr. Wright, must also be referred to the same species. Specimens sent me from the Firth of Forth by the latter gentleman are intermediate in size between my *Tubularia implexa* and *Coryne pelagica*. The more humble growth appears to be not uncommon on our coast, as I have met with it several times on old crusted shells of *Fusus antiquus*, and Mr. G. Hodge has lately sent it me from Seaham Harbour, creeping over *Cellepora pumicosa*. As the curious and beautiful medusoid of this species has not yet been figured, I have given a representation of it in Pl. XIV. fig. 4.

Atractylis arenosa, n. sp. Pl. XIII. figs. 5-7.

Polypary minute, consisting of a creeping fibre, from which arise short funnel-shaped tubes, rather irregular in form, but always expanding more or less at the top, from which the polypes issue; generally covered with minute grains of sand. *Polypes* entirely retractile, with long, slender, strongly muricated tentacles, varying in number, according to age, from six to twelve.

The genus *Atractylis* has been established by Dr. Strethill Wright for a group of Hydroid Zoophytes resembling *Eudendrium* in many of their characters, but differing in the conical form of the mouth of the polype, and its retractility (partial or complete) within the tubular polypary. They are generally of small size, and seldom branched. Their reproduction is usually by medusoids; but Dr. Wright, who has lately met with the present species in the Firth of Forth, has ascertained that it produces planuloid young direct from the summit of the ovarian sac. This affords another proof of the difficulty of establishing a genus from the mode of development.

I have met with this species occasionally, for some years past, on stones and the roots of *Laminariae* at Cullercoats and Tynemouth. From its minute size, it requires to be carefully looked for.

Atractylis linearis, n. sp. Pl. XIV. figs. 1-3.

Polypary linear, horn-coloured, unbranched (?), nearly smooth, a little undulating and slightly wrinkled on the lower part; the stems united together by reticulated creeping tubes at the base. *Polypes* slender, retractile, with eight long muricated tentacles, held alternately up and down. Gonophores pear-shaped or sub-globular, set two or three together on the stem of the polypary, each capsule containing a single medusoid. Height a quarter of an inch.

Medusoid globose, slightly truncated below, with a contracted aperture; four moderate-sized subclavate tentacles arise from four semicircular yellowish lobes at the margin of the umbrella: sub-umbrella small, with four radiating canals, the centre occupied by a mass of yellowish or orange granules, apparently ova; peduncle inconspicuous, branched at the base.

On *Turritella communis*, *Astarte Damnoniae*, and other shells from deep water, Cullercoats.

This species has considerable resemblance to *A. repens*, Wright, but its polypary rises much higher, is proportionally more slender, and not so much expanded at the aperture. In the young state, however, it is difficult to distinguish them. Their medusoids, nevertheless, are very different, and prove them to be distinct species. I have never met with *A. linearis* branched, though it is possible it may occasionally be so in luxuriant specimens.

Corymorpha nana. Pl. XV. figs. 1-5.*Corymorpha nana*, Alder in Tynes. Club Trans. vol. iii. p. 108.

It is now nearly twenty years since I first met with this interesting little species, at Newbiggin, from which time I had looked for it often without success until the summer of 1860, when I fortunately obtained two living individuals at Cullercoats. This puts me in a position to add considerably to the information hitherto published concerning the species, as well as to give more correct drawings of it in the living state. *Corymorpha nana* is a very active animal, constantly changing its form and the proportions of its parts. Sometimes the head is elongated into a slender tube, sometimes contracted so as to become nearly globular. The tentacles and body are equally subject to dilatation and contraction in their different parts. In many of its states it bears a considerable resemblance to a miniature *Corymorpha nutans*, from which, however, it differs not only in its diminutive size, but in the smaller number of tentacles, and in the gonophores being sessile (not pedunculated or branched as in the latter), and large in proportion to the size of the animal. The medusoid differs from that of *C. nutans* in having the umbrella rounded at the top; in other respects it is very similar. The following detailed description will show the characters of this species more distinctly:—

Head subtubular, yellowish, the mouth conical, surrounded by about sixteen or eighteen short tentacles, forming two imperfect rows. A single circle of fifteen to twenty long filiform tentacles surrounds the base of the head, immediately above which the gonophores form another circle of urn- or bell-shaped bodies, in different stages of development; these are sessile, and in their more advanced state assume the perfect medusoid form, showing lively motions of systole and diastole for some time before becoming free. The body of the polype is elongated, tubular, and tapering to a point at the base; it is soft and flexible, transparent, white or yellowish, with opaque, white lines. It is enclosed in a transparent filmy sheath, ending at the base in a gelatinous mass (colletoderm of Wright?) by which the animal is attached, though slightly, the pointed base of the fleshy body (cœnosarc) being free. Tubercles arise from the lower ends of the opaque white lines, which frequently enlarge into linear processes, whose use is not very apparent. They may possibly form additional organs of attachment, but in the specimens examined their ends were free. Length of the polype $\frac{1}{2}$ to $\frac{3}{4}$ inch.

Medusoid with a rather deep, semiglobose, transparent, white umbrella, having four yellowish radiating canals; three of them ending in a yellow bulb at the margin of the umbrella, the

fourth produced into a club-shaped tentacle, apparently not capable of much extension. The peduncle is rather long and thick, terminating in a plain rounded mouth.

These medusoids were produced from one only of the individuals obtained; the other had gonophores of a different shape, having tuberculated lobes rising somewhat irregularly from the upper part, as represented in fig. 5. These reproductive bodies were also sessile, and remained attached during the whole time that the polype continued to live—about ten days—without showing the least signs of assuming the medusoid form. Indeed their appearance was very different from that of the same organs in the medusa-bearing individual, and I have little doubt of their remaining permanently fixed. This difference in the reproductive organs in different individuals of the same species has not been before observed, as far as I am aware, in this genus. They probably represent a sexual distinction. Professor Sars has met with a *Corymorpha* on the Norwegian coast (*C. glacialis*, Sars), in which the gonophores are persistent, and apparently somewhat similar to the non-medusoid form of this species; but in the Norwegian Zoophyte both sexes were found to have the same character.

Family Sertulariadae.

Halecium filiforme, n. sp.

Polypary very slender, flexible, simple or consisting of a single tube throughout; the stem not much branched; the branchlets short, alternate, arising from the side of a cell; the internodes rather long. Cells rather slender, tubular, with a slightly everted rim. Length $4\frac{1}{2}$ inches.

From the fishing-boats, Cullercoats.

This species is distinguished from all those of a similar size, belonging to the same genus, by having the stem simple and uncompounded throughout its whole length, as well as by its very slender thread-like form and great flexibility; most of the species of this genus becoming rigid when dry. It has occurred to me only once, when I obtained a few specimens together, apparently torn from the same base. The reproductive capsules were absent, but there can be little doubt of its distinctness from any described species.

Family Campanulariadae.

Campanularia raridentata, n. sp. Pl. XIV. f. 5.

Polypary with a creeping stem, from a slight bulbous expansion of which arise at intervals rather short pedicles, ringed above and below, and terminated by a single cell. Cells rather long and narrow, tapering a little below, and with 5 or 6 deep pointed crenulations round the margin. Height $\frac{1}{20}$ inch.

Parasitical on other Zoophytes, from deep water, Cullercoats ; occasionally.

This delicate little *Campanularia* bears great resemblance to *C. Johnstoni*, from which it is distinguished by its much smaller size, by its cell being much narrower, and not having more than half the number of denticles on the margin, and also from the pedicles springing from a bulb at the base. It is sometimes associated with *C. Johnstoni* and other closely allied species, but may generally be detected at once by its greater minuteness and delicacy. Mr. Hincks states that this species is not uncommon on the Devonshire coast.

Order ASTEROIDA.

Family Pennatulidæ.

Virgularia Christii, Koren and Danielssen.

Virgularia Christii, "Kor. and Dan. in Magaz. f. Naturv. (Christiania, 1847);" idem in Fauna Litt. Norv. pt. 2. p. 91, t. xii. f. 7-12; Sars in Fauna Litt. Norv. pt. 2. p. 71.

A notice of the occurrence of this fine species on the Northumberland coast was inserted in the 'Transactions' of the Tyneside Naturalists' Field Club (vol. v. p. 60), and some account of it was then given. As, however, our specimens differ in some respects from the description given by MM. Koren and Danielssen in the 'Fauna Littoralis Norvegiæ,' I have thought it necessary to describe the British form more at length, premising that, as the specimens were obtained from the fishermen in a dried state, the account of them must necessarily be somewhat imperfect.

Polypary about 17 inches long, very slender, linear, with the upper part curved into an arch. The lower and sterile portion of the stem, occupying from a fourth to a fifth of the entire length, is slender and cylindrical above, and scarcely more than a tenth of an inch in diameter (when dry); about three-quarters down, however, it swells abruptly to three times that breadth, and is a little flattened, tapering from thence to an obtuse recurved point. About three-fourths of the upper portion of the polypary is covered with rather small, sessile polype-cells, which are arranged in two very oblique rows in front, sloping upwards towards the centre. At first these rows have a central space between them, but higher up they approach so close as to touch each other. The upper rows contain 5 or 6 cells each, decreasing in number below. The dorsal ridge is bare, but the polype-cells twist once round the axis during their course. The curved portion of the stem does not occupy more than a tenth part of the whole length; and at that part the fleshy base of the cells

extends into a web-like expansion. The cells are conical, terminating in two unequal points above. Their walls contain linear calcareous spicula in bundles converging to these points. The polypes also contain spicula. The osselet or central bony axis, extending the whole length of the polypary, is linear, cylindrical and very slender, but becomes thicker and fusiform towards the base. It terminates above in a fine curved filament.

In the Norwegian specimens the polypary is 26 inches in length, and the curve occupies about one-third of the whole, whereas in British examples the entire length (in the three specimens obtained) is not more than 17 inches, and the curve does not exceed a tenth of the whole length. A more striking peculiarity consists in the web-like expansion of the polypiferous base in the curved portion; but this may possibly be occasioned by the contraction of the fleshy part in drying; and as dead specimens only have been obtained, these small discrepancies cannot be considered sufficient to constitute a specific distinction.

Professor Sars describes a fine *Virgularia*, 40 inches in length, belonging to this section of the genus, in the 'Fauna Littoralis Norvegiæ,' under the name of *V. Finmarchica*. It was obtained by him in Finmark, and approaches very closely in many of its characters to *V. Christii*. These species differ from *Virgularia mirabilis* in containing calcareous spicula.

EXPLANATION OF THE PLATES.

PLATE XIII.

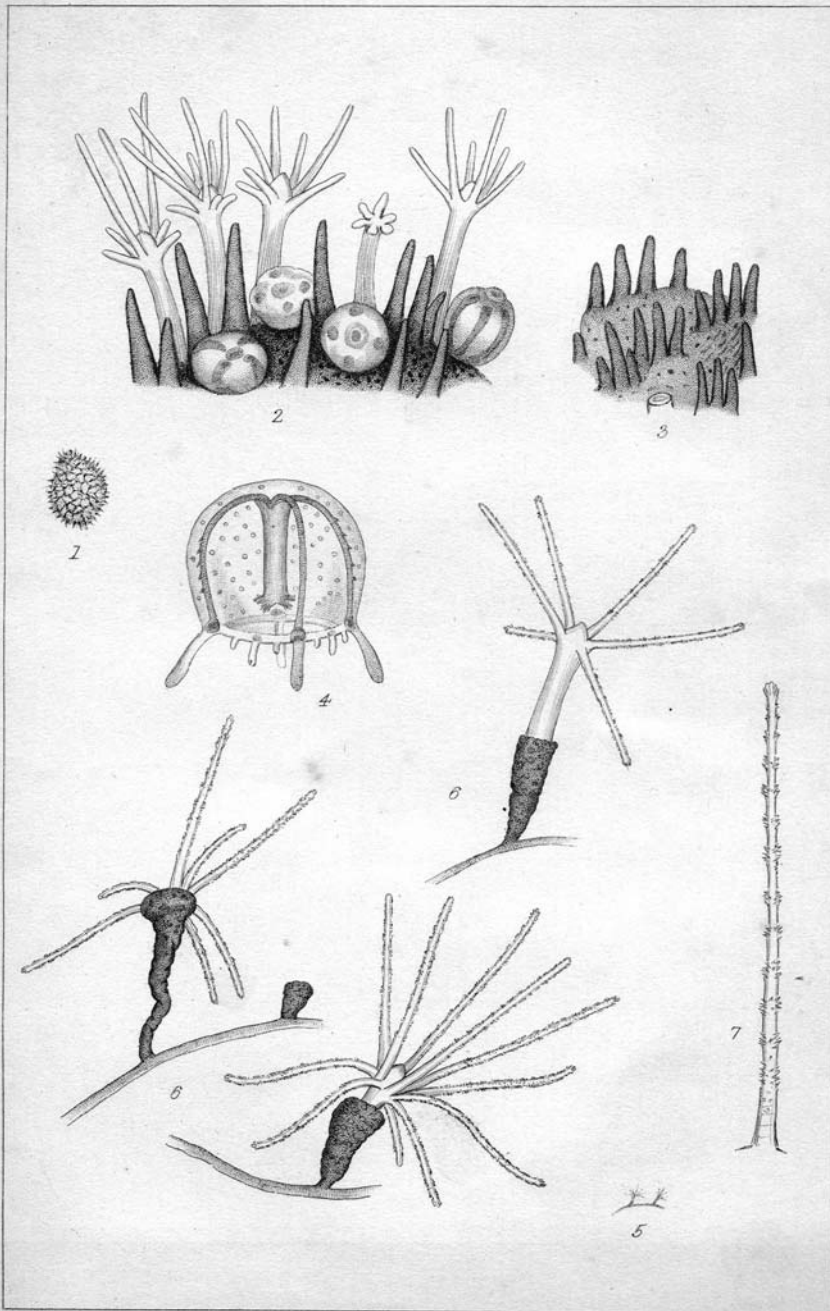
- Fig. 1. Polypary of *Hydractinia areolata* on *Natica Alderi*, natural size.
 Fig. 2. *Hydractinia areolata*, highly magnified.
 Fig. 3. A portion of the polypary of the same, highly magnified.
 Fig. 4. Medusoid of the same, highly magnified.
 Fig. 5. *Atractylis arenosa*, natural size.
 Fig. 6. The same, highly magnified.
 Fig. 7. A tentacle of the same, much enlarged.

PLATE XIV.

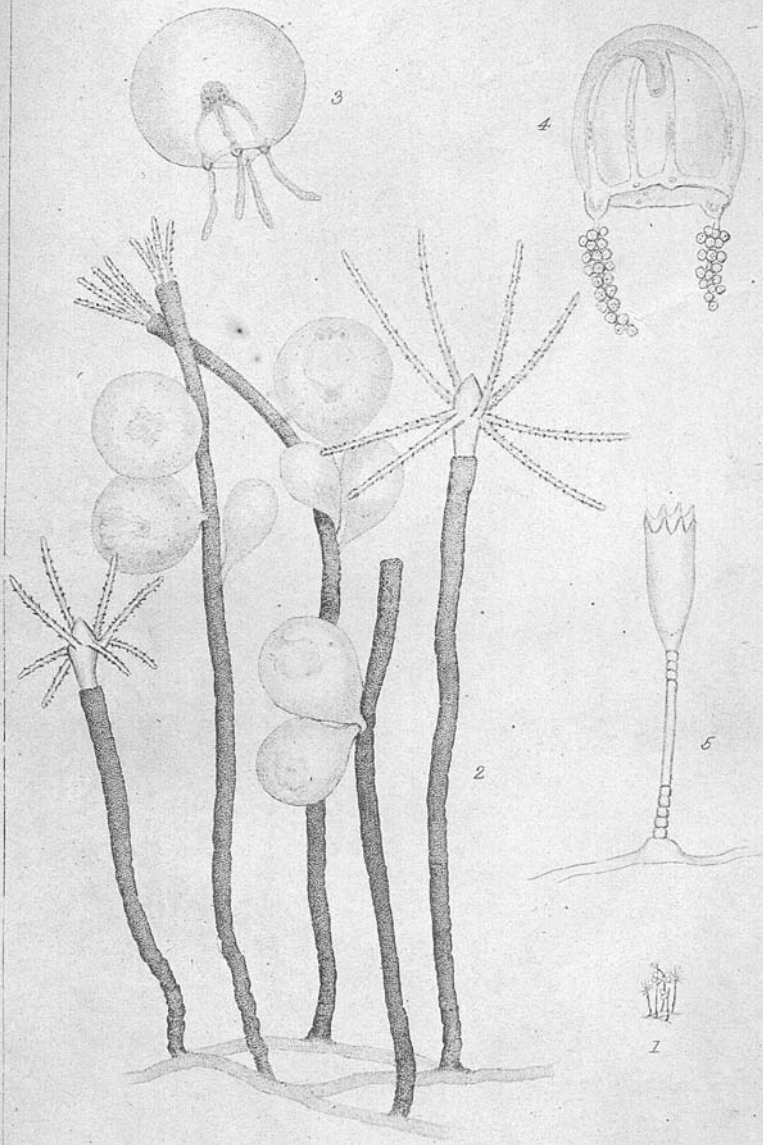
- Fig. 1. *Atractylis linearis*, natural size.
 Fig. 2. The same, highly magnified.
 Fig. 3. Medusoid of the same, highly magnified.
 Fig. 4. Medusoid of *Coryne implexa*, highly magnified.
 Fig. 5. *Campanularia raridentata*, highly magnified.

PLATE XV.

- Fig. 1. *Corymorpha nana*, with medusoid gonophores, magnified.
 Fig. 2. Another individual, with persistent (non-medusoid) gonophores, magnified.
 Fig. 3. Medusoid gonophores, more highly magnified.
 Fig. 4. Free medusoids, more highly magnified.
 Fig. 5. Non-medusoid gonophores, more highly magnified.

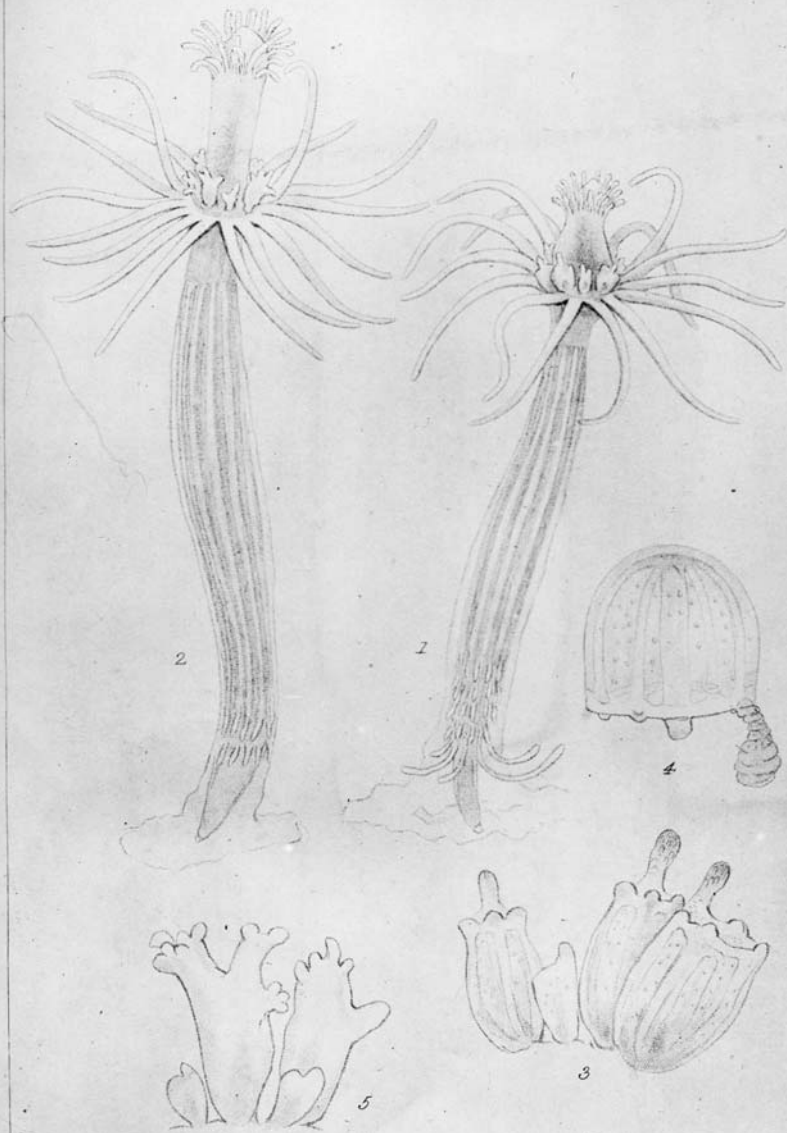


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