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TRANSACTIONS

OF THE

TYNESIDE

NATURALISTS' FIELD CLUB.

1860-62.

VOLUME V

Newcastle-upon-Tyne:

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XXXVI.—*Supplement to a Catalogue of the Zoophytes of Northumberland and Durham.* By Joshua Alder.

Class. ANTHOZOA, *Ehrenberg.*

Order. HYDROIDA, *Johnston.*

Family. TUBULARIADÆ, *Van Beneden.*

3. HYDRACTINIA, *Van Beneden.*

2. H. areolata, *n. sp.* Pl. IX., fig. 1—4.

Polypary encrusting, consisting of a solid chitinous expansion, from which arise simple linear spines in regular groups, having 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 contractibility. Gonophores (reproductive organs) sessile on the chitinous base, large, globular or slightly pear-shaped, containing each a single medusoid. Height of polype about $\frac{1}{10}$ of an inch.

Medusoid, with a moderately deep, sub-globose 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 four others, almost tubucular. 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 Grœnlandica*, 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*.

3*. PODOCORYNE, *Sars.*

1. P. Alderi, *Hodge.*

Hodge, in Trans. Tynes. Club, v. v., p. 82, t. ii., f. 10—15.

On a *Serpula* from deep water, Seaham Harbour.—*Mr. Geo. Hodge.*

This species differs from the *P. carnea* of Sars, principally in the form of the medusoid, which somewhat resembles that of an *Atractylis*.

4. CORYNE, *Gærtner.*

1. C. eximia, *Allman.*

Coryne Listerii, Alder in Trans. Tynes. Club, v. iii., p. 102.

Coryne eximia, Allm. in Ann. Nat. Hist., 3rd ser., v. iv., p. 141.

At the time of the publication of our local Catalogue of Zoophytes, the British species of *Coryne* were very imperfectly understood, but they have since been more carefully investigated, and several new species have been described. Among these is the one now under consideration, which I had referred to the *Syncoryne Listerii* of Van Beneden. Specimens kindly sent me by Professor Van Beneden, however, prove his species to be synonymous with the *Coryne ramosa* of English authors. I

therefore adopt the name recently given to this species by Professor Allman. Besides the locality formerly given, I have met with *C. eximia* at Cullercoats and Tynemouth, and Mr. Hodge also gets it at Seaham Harbour. It appears to be the most common species of our coast.

3. C. SARSII, *Lovén.*

Syncoryne Sarsii, Lov. in Svenske Vetensk. Acad. Handl., 1835. Sars, Fauna Litt. Norv., pt. i., p. 2, t. i., f. 1—6.

Syncoryne decipiens, Dujardin in Ann. des Sc. Nat., 3rd. ser., v. iv., p. 275, t. xiv., f. B, 1—6.

On the roots of *Laminariæ*; rare. Cullercoats.

I have met with this species only once or twice on our coast. It is the smallest and most delicate of our *Corynes*, seldom rising above a quarter of an inch in height. The stem is not at all annulated.

4. C. IMPLEXA, *Alder.*

Tubularia implexa, Alder in Trans. Tynes. Club, v. iii., p. 108, t. ix., f. 3—6.

Coryne pelagica, idem in Trans. Tynes. Club, v. iii., p. 103, t. ix., f. 1, 2.

Coryne Briareus, Allman in Ann. Nat. Hist., 3rd ser., v. iv., p. 54.

Some confusion has arisen about this species, the polypary of which I described under the name of *Tubularia implexa* in my Catalogue, 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 it to belong to the genus *Coryne*. The *Coryne* figured in my Catalogue under the provisional name of *Coryne pelagica* (t. ix., f. 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 Frith 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. Hodge has lately sent it me from Seaham Harbour, creeping over *Cellularia pumicosa*. As the curious and beautiful medusoid of this species has not yet been figured, I have given a representation of it in Pl. X., fig. 4.

4*. DICORYNE, *Allman*.

1. D. CONFERTA, *Alder*. Pl. VIII., fig. 1, 2.

Eudendrium? confertum, Ald. in Trans. Tynes. Club, v. iii., p. 103, t. iii., f. 5—8.

Dicoryne stricta, Allm. in Ann. Nat. Hist., 3rd ser., v. iv., p. 370.

Dicoryne conferta, Allm. in Ann. Nat. Hist., 3rd ser., v. viii., p. 168.

Professor Allman established the genus *Dicoryne* for a zoophyte dredged in Orkney, in the summer of 1859, which proves to be identical with my *Eudendrium confertum*, a circumstance not at first recognised on account of the absence of reproductive capsules in the specimens I described from. Having since found several specimens at Cullercoats, with both male and female gonophores, the identity of the two supposed species has been placed beyond a doubt. I have, therefore, adopted Dr. Allman's genus, though not without some misgivings as to the characters on which it is founded. The diversity of the reproductive organs is so remarkable, both in this family and in the *Campanulariadæ*, even where the genus is evidently natural—as in *Coryne*, for instance—that it seems impossible to found new genera on these organs alone, without having recourse to endless subdivisions. I am, therefore, more inclined to take the character of the polypes as the basis of generic grouping in this family, allowing other characters to modify this view according to their importance or permanency. The form and position of the tentacles are of great importance in a generic point of view, and where these are simply

linear, and placed in a single verticil, as in the present section of the family, lately included under *Eudendrium*, the form of the mouth and the power of retraction of the polype within the tubular polypary, may be taken into consideration, as well as the character of the polypary itself. In *Eudendrium*, as now restricted, the polypes are non-retractile, and have a broad trumpet-shaped mouth. In the *Atractylis* of Dr. Wright, the polypes are retractile, and have a conical mouth. The polype in *Dicoryne* has also a conical mouth, but is non-retractile. Upon these characters, therefore, I should be inclined to found this genus; and it becomes a question whether other genera lately proposed ought not to be included in it; as, for instance, the *Corymbogonium*, proposed by Professor Allman, for my *Eudendrium capillare*, which I believe to have a non-retractile polype with a conical mouth; and the *Garveia* of Dr. Wright, in which the same characters are found. These genera can only be kept apart from the circumstance of some diversity in the gonophores or their products. But even in the gonophores the discrepancy is not great. The reproductive organs in *Corymbogonium* are produced at the ends of separate branches, and also arise from the creeping base. In this they agree with those of *Dicoryne*, but they differ from that genus in their bilocular character, and in the absence of the central prolongation (gonoblastidia of Allman), which homologically is considered to represent a polype destitute of tentacles and mouth. Professor Allman, however, very correctly remarks that the enlarged basis, to which these gonophores are attached in *Corymbogonium*, is manifestly the representation of a polype, and corresponds to the gonoblastidia of *Dicoryne*. It is also worthy of remark that moniliform gonophores, exactly similar to those of *Corymbogonium*, and arising from short branches, have been found by Dr. Wright on a true *Eudendrium*, his *E. arbuscula*, and that the *E. rameum* has also moniliform gonophores, but in a different position, being in this instance placed below the tentacles of the polype. The gonophores of *Garveia nutans*, Wright (*Eudendrium bacciferum*, Allman), though produced only singly, also terminate arrested lateral branches. I am disposed, therefore, to consider these

three genera as constituting only one, unless some further distinction can be pointed out between them.

The free natatory zooid of *Dicoryne conferta*, lately discovered by Professor Allman, is of a very peculiar form, and partakes but slightly of the medusoid character.

2. D. CAPILLARE, *Alder*.

Eudendrium capillare, Ald. in Trans. Tynes. Club, v. iii., p. 105, t. iii., f. 9—12.

Corymbogonium capillare, Allm. in Ann. Nat. Hist., 3rd ser., v. viii., p. 168.

For the reason stated above I have placed this species provisionally in the same genus as the last. Its mode of reproduction has not yet been ascertained.

4**. ATRACTYLIS, *Strethill Wright*.

The genus *Atractylis* has been established by Dr. T. Strethill Wright, for a group of Hydroid Zoophytes resembling *Eudendrium* in many of its characters, but differing in the conical form of the mouth of the polype, and its retractibility (partial or complete), within the tubular polypary. They are generally of small size and seldom branched.

1. A. REPENS, *Wright*.

Eudendrium repens, Wright in Edin. N. Phil. Journ. 2nd ser., v. vi., t. ii., f. 8, 9.

Atractylis repens, Wright in Edin. N. Phil. Journ., 2nd ser., v. ix., p. 108, t. i., f. 4, 5.

On *Dentalium entalis* and other shells from the fishing boats, Cullercoats.

Atractylis repens is of humble growth, and very rarely branched. Its mitre-shaped medusoid, which I have occasionally had the opportunity of examining, is remarkable for the length of its two filiform tentacles.

2. A. LINEARIS, *n. sp.* Pl. X., fig. 1, 2, 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 moderately sized, sub-clavate tentacles arise from four semi-circular 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 Danmoniæ*, and other shells from deep water, Cullercoats.

This species has considerable resemblance to *A. repens*, but its polypary rises much higher, is proportionately 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 seen *A. linearis* branched, though it is possible it may occasionally be so in luxuriant specimens.

3. A. ARENOSA, *n. sp.* Pl. IX., fig. 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, muricated tentacles, varying in number according to age from six to twelve.

On the under side of stones and the roots of *Laminariæ*, at Tynemouth and Cullercoats, occasionally.

All the hitherto described *Atractyles* are propagated by medusoids, but this species proves to be an exception, as Dr. Wright,

who has lately met with it in the Frith 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 in this tribe.

4. A. RAMOSA, *Van Beneden.*

Eudendrium ramosum, Van Ben. Rech. sur les Tubul. p. 56, t. iv. Dalyell Rare and Rem. Anim. Scotl., v. i., p. 64, t. 11.

Atractylis ramosa, Wright in Edin. N. Phil. Journ., new ser., v. ix., p. 108, t. viii., f. 1—3. Hincks in Ann. Nat. Hist., 3rd ser., v. viii., p. 160.

Fine specimens of this species have been procured from the deep-water boats, but unfortunately in a dead state. The polypary, from its numerous branches and compound stem, has very much the appearance of an *Eudendrium*. This species must not be confounded with the *E. ramosum* of Johnston, which is a true *Eudendrium*.

6. TUBULARIA, *Linnæus.*

2. T. SIMPLEX. Pl. VIII., fig. 3, 4.

Tubularia Dumortierii, Johns. Brit. Zooph., p. 50, t. vii., f. 1, 2. Alder in Trans. Tynes. Club, v. iii., p. 106.

Polypary, a slender, smooth, unbranched tube, without annulations ; generally a little bent or angulated at intervals, and tapering towards the base ; of a horn colour, but appearing orange or scarlet when alive, from the contained animal; usually solitary and attached by a short creeping base. *Polype* terminal, slender, rose-coloured ; the tentacles whitish, the upper circle biserial, shorter and less numerous than in *T. indivisa*, the lower circle containing about twenty to twenty-four in a single series, and moderately long. Height of polypary 2 to $2\frac{1}{2}$ inches.

On shells and other marine bodies from deep water, Cullercoats.

Following the opinion of Dr. Johnston, I had formerly con-

sidered this species to be the *T. Dumortierii* of Professor Van Beneden; specimens sent me by that distinguished naturalist, however, prove that his *T. Dumortierii* is different from this; being a much smaller species, not more than three quarters of an inch high, and annulated at the base. The head also is proportionally larger.

T. simplex is not unfrequently met with from deep water at Cullercoats, and is distinguished from *T. indivisa* by its solitary character, and much smaller size; from *T. gracilis*, by being unbranched and without annulations.

A large *Tubularia*, twelve to fifteen inches in length, resembling *T. indivisa*, but generally solitary and unbranched, with the young adhering to the side of the adult, occurs not unfrequently on this coast. This appears to be the *Tubularia gigantea* of Lamouroux, which Dr. Johnston considered to be a variety of *T. indivisa*. There is some reason, however, to think that it may be a distinct species, and it is therefore desirable that it should be examined in a perfect state.

7. CORYMORPHA, *Sars*.

1. C. NUTANS, *Sars*.

Forb. and Goods. in Ann. Nat. Hist., v. v., p. 310.
Johns. Brit. Zooph., p. 54., t. vii., f. 3—6.

This fine species has been dredged in considerable numbers by Mr. George Hodge, in from six to ten fathoms water, on a sandy bottom, at Seaham Harbour. (See p. 80 of the present volume.)

2. C. NANA, *Alder*. Pl. XI.

Alder in Trans. Tynes. Club, v. 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 indivduals 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 a living state. *Corymorpha nana* is a very active animal—constantly changing its form, and the

proportion 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 *C. nutans*, from which, however, it differs not only in its diminutive size, but 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 character of this species more distinctly.

Head sub-tubular, 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, shewing 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 (coletoderm 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 polype $\frac{1}{2}$ to $\frac{3}{4}$ of an inch.

Medusoid, with a rather deep, semi-globose, 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 shewing 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. SERTULARIADÆ, *Johnston.*

8. HALECIUM, *Oken.*

4. H. LABROSUM, *Alder.*

Ald. in Trans. Tynes. Club, v. iv., p. 178, t. xii.

This species has not been met with again since the notice of it appeared in these Transactions.

5. H. TENELLUM, *Hincks.*

Hincks in Ann. Nat. Hist., 3rd ser., v. viii., p. 252. t. vi., f. 1—4.

Parasitical on other zoophytes from deep water; occasionally.

I had at first considered this as probably a very young state

of *H. labrosum*, and as such had noticed it in my description of that species (v. iv., p. 179). It has since been described by Mr. Hincks under the above name, in his excellent "Catalogue of the Zoophytes of South Devon and South Cornwall," and on a further examination of additional specimens, I now agree with that gentleman in considering it a distinct species. It is very minute, and of great delicacy; the polypary being perfectly transparent and nearly colourless. North country specimens have the stem more strongly ringed and wrinkled than those figured by Mr. Hincks from the Devonshire coast—a circumstance that adds much to the elegance of their appearance.

6. H. FILIFORME, *n. sp.*

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

This species is distinguished from all those of 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.

9. SERTULARIA, *Linnæus.*

1*. S. GAYI, *Lamouroux.*

Sertularia Gayi, Lamx. Exp. Meth., p. 12, t. lxvi., f. 8, 9. Hincks in Ann. Nat. Hist., 3rd ser., v. viii., p. 252.

Sertularia polyzonias, var. β, Johns. Brit. Zooph., p. 61, t. x., f. 2.

From the deep-water boats; occasionally.

Until lately this species has been confounded by British

authors with the *S. polyzonias*, from which it is distinguished by its more robust and rigid habit, and its compound stem. The cells also frequently assume a wrinkled appearance. The observations in my Catalogue (v. iii., p. 111) on *S. polyzonias* apply more properly to this species.

12. PLUMULARIA, *Lamarck.*

9. P. HALECIOIDES, *Alder.*

Ald. in Ann. Nat. Hist., 3rd ser., v. iii., p. 353.

Idem in Trans. Tynes. Club, v. iv., p. 177, t. xi*a*.

Since my former notice of this interesting zoophyte, it has been met with by Mr. Barlee in Shetland, and occasionally again on this coast, but it is by no means common.

FAMILY. CAMPANULARIADÆ, *Johnston.*

13. LAOMEDEA, *Lamouroux.*

2. L. LONGISSIMA, *Pallas.*

In attempting to discriminate several species of *Laomedea* that had previously been confounded, I pointed out (Trans. T. C., v. iii., p. 121) that the *L. longissima* (Pallas) had a denticulated cell, while that of *L. dichotoma* is smooth. The figure there given (t. v., f. 4), however, is erroneous, and was probably taken by mistake from a branched variety of *Camp. Johnstoni.* The crenulations of the cells in *L. longissima* are shallow and truncated at the apex, as has been ascertained by Mr. Hincks from fresh specimens got on the Devonshire coast. I have since obtained young individuals with the same characters at Cullercoats.

5. L. NEGLECTA, *Alder.*

I have lately met with a few individuals of this species, at Cullercoats, bearing ovicapsules. Mr. Hincks has ascertained that "the ova are developed into the perfect larval form within an external gelatinous marsuphium."

5*. L. LOVENI, *Allman.*

Allm. in Ann. Nat. Hist., 3rd ser., v. iv., p. 137.

Several specimens of this species were found on the outside of stones between tide-marks, at Cullercoats, in the summer of 1860; and I also met with it more sparingly in the following year. They were of the small variety mentioned by Professor Allman, and shewed the peculiar mode of reproduction for which this species is remarkable.

6. L. LACERATA, *Johns.*

Besides the locality formerly given, this species has been met with occasionally at Cullercoats.

7. L. ACUMINATA, *Ald.*

Specimens kindly sent me by Professor Van Beneden prove that this is the species on which he has founded his genus *Campanulina* (Bull. Acad. Roy., Belg., v. xiv.); a distinction which the peculiar form of the polypes and polype-cells may be considered to warrant. An interesting account of the development of *L. acuminata* is given by Dr. T. Strethill Wright, in the Edinburgh New Philosophical Journal, n. s. v. vii. p. 108.

14. CAMPANULARIA, *Lamarck.*

2. C. JOHNSTONI, *Alder.*

It has been satisfactorily ascertained that a deep-water variety of this species is undoubtedly branched, a circumstance considered probable at the time of the publication of my Catalogue. As before stated, the figure there given as the young of *L. longissima* turns out to be the branched variety of *C. Johnstoni*, several examples of which have since been found. The more advanced specimen mentioned in the Catalogue, probably belongs to some species yet undescribed.

3*. C. RARIDENTATA, *n. sp.* Pl. X., fig. 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 five or six deep pointed crenulations round the margin. Height $\frac{1}{20}$ of an 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.

8. C. FRUTICOSA, *Sars.*

Campanularia fruticosa, Sars in Nyt. Mag. Naturr. (Christiania), v. vi., p. 138.

Campanularia gracillima, Alder in Trans. Tynes. Club, v. iii., p. 129, t. vi., f. 2-5.

This species, which I described under the name of *C. gracillima*, is apparently the same as the *C. fruticosa* of Sars, previously published in a Norwegian periodical, which I had not until lately the opportunity of seeing.

9. C. HUMILIS, *Hincks.*

Calicella humilis, Hincks, *m.s.*

On other Zoophytes from deep water occasionally.

16. GRAMMARIA, *Stimpson.*

G. ROBUSTA, *Stimpson.*

Grammaria robusta, Stimp. Invert. of Grand Manan, p. 9, t. i., f. 3*a*, 3*b*.

Campanularia abietina, Sars in Nyt. Mag. Naturv., v. vi., p. 139.

Grammaria ramosa, Ald. in Trans. Tynes. Club, v. iii., p. 130., t. vi., f. 1—4.

I adopt the opinion of M. Sars, lately communicated to me by letter, that this species, which we had each described by a different name, must be referred to the *G. robusta* of Stimpson.

The specimens from which Professor Stimpson described, however, were of very humble growth compared with individuals got on this coast. Fine examples, nearly four inches in height and much branched, have occurred to me from the deep-water boats. My lamented friend, Mr. Barlee, also met with it in Shetland. As no gonophores have yet been discovered in this species, its mode of reproduction still remains in obscurity.

Order ASTEROIDA, *Johnston.*

Family. PENNATULIDÆ, *Fleming.*

20. VIRGULARIA, *Lamarck.*

V. Christii, *Koren and Danielssen.*

Kor. and Dan. in Mag. f. Naturv., 1847, p. 269, f. 3. Idem in Fauna Litt. Norv., 2nd Pt., p. 91, t. xii. f. 7—12. Sars in Fauna Litt. Norv., 2nd Pt., 7. 71.

A notice of the occurrence of this fine species on our coast was inserted in the present volume, p. 60, and some account of it was there given. As, however, our specimens differ in some respects from the description given by Messrs. 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 dead 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 part of the entire length, is slender and cylindrical above, and scarcely more than one 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 into 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 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 five or six cell 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 a 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 is not more than one-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. Finmarchia*. 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.

Order. HELIANTHOIDA, *Johnston*.

Family. ZOANTHIDÆ.

21*. ZOANTHUS, *Cuvier*.

1. Z. Couchii, *Johns*.

Johns. Brit. Zooph., p. 202., t. xxxv., f. 9.

Couch. Corn. Fauna, 3rd pt., p. 73., t. xv., f. 3.

Var. *Dysidea papillosa*, Johns. Brit. Spong., p. 190, wood-cut, f. 18.

Mammillifera incrustata, "V. Duben and Koren," Sars in Nyt. Mag. f. Naturv., v. vi, p. 140.

The typical form of the *Z. Couchii* has not been found on our coast, but the curious northern variety, *Mammillifera incrustata* of Norwegian authors, considered by some to be a distinct species, has occurred two or three times from deep water, forming a continuous crust moulded on shells, the substance of which has almost invariably disappeared, shewing an eroding or solvent power in the zoophyte.

This form had long been a puzzle to naturalists before its living polype had been discovered. It was before generally thought to be a sponge, and was introduced, with doubt, by Dr. Johnston into his "History of British Sponges," under the name of *Dysidea? papillosa*.

2. Z. Alderi, *Gosse*.

Zoanthus Alderi, Gosse, Act. Brit., p. 305, t. ix., f. 8, and t. xii., f. 5.

On the under surface of a stone at extreme low water mark, near the "Bear's Back," Cullercoats.

A single group of specimens of this delicate little milk-white zoophyte occurred to me in the above locality in the summer of 1857, since which time I have searched for it several times without success. It is very desirable that it should be again met with, as the specimens found were in a sickly state, and had not the tentacles expanded.

Family. ACTINIADÆ, *Gray*.

22*. STOMPHIA, *Gosse*.

1. S. Churchiæ, *Gosse*.

Gosse, Actin. Brit., p. 222, t. viii., f. 5.

This species was found by Mr. J. Stanger, at Craster, in 1859 (see Trans. Tynes. Club, v. iv., p. 189). I believe he has since found it at Cullercoats, where I have also met with one or two specimens.

Class. POLYZOA, *J. V. Thompson.*

Order. INFUNDIBULATA, *Gervais.*

Sub-order. CYCLOSTOMATA, *Busk.*

Family. TUBULIPORIDÆ, *Johnston.*

27. ALECTO, *Lamouroux.*

3. A. granulata, *M. Edw.*

Johns. Brit. Zooph., p. 280, t. xlix., f. 1, 2.

On old shells from deep water; rather rare.

Sub-order. CHEILOSTOMATA, *Busk.*

Family. EUCRATEIDÆ, *Johnston.*

30*a*. HIPPOTHOA, *Lamouroux.*

1. H. catenularia, *Jameson.*

Johns. Brit. Zooph., p. 291, t. l., f. 9, 10.

On *Modiola vulgaris* from deep water; rare.

Family. MEMBRANIPORIDÆ, *Busk.*

34. LEPRALIA, *Johnston.*

20. L. auriculata, *Hassall.*

Johns. Brit. Zooph., p. 310, t. liv., f. 8.

Busk, Catal., p. 67, t. xc., f. 1, t. xciii., f. 1, 2, and t. cii., f. 1.

On shells from deep water; rare.

35. MEMBRANIPORA, *Blainville.*

9. M. Lacroixii, *Audouin.*

Flustra distans, "Hassall," and *Flustra fallax*,

Johns. Brit. Zooph., p. 350, t. lvii., f. 11, 12.

Membranipora Lacroixii, Busk, Catal., p. 60, t. lxix.

A single fine specimen has occurred to me on a stone at low water mark, Tynemouth. The more recent cells had delicate

marginal spines on each side, which are not figured by Professor Busk, but are apparently represented in Dr. Johnston's t. lvii., f. 11.

Family. CELLULARIADÆ, *Busk.*

37. CELLULARIA, *Pallas.*

1. C. Peachii, *Busk.*

This zoophyte proves to be much more common in deep water than at first supposed. Numerous specimens have been obtained from the five-men boats.

37*a*. BICELLARIA, *Blainville.*

1. B. ciliata, *Linn.* (*Cellularia ciliata*, Catal., p. 148.)

Very fine specimens of this species have been got by Mr. Geo. Hodge, within tide marks at Seaham Harbour, where it appears to be not uncommon.

37*b*. MENIPEA, *Lamouroux.*

1. M. ternata, *Ellis* and *Sol.* (*Cellularia ternata*, Catal., p. 148.)

The same remark may be made of this species as of *Cellularia Peachii*. It is far from rare in deep water.

38. BUGULA, *Oken.*

5. B. Turbinata, *Alder.*

Ald. in Micros. Journ., v. v., p. 174, t. 17.

The first intimation of the occurrence of this beautiful species on our coast, was received from the Rev. G. C. Abbes, who kindly forwarded a specimen obtained at Whitburn. Mr. Hodge has since obtained very fine specimens from the rocks at low-water mark, Seaham Harbour.

6. B. plumosa, *Pallas.*

Soft Feather Coralline, Ellis. Corall., p. 33, t. xviii., f. *a*. A.

Cellularia plumosa, Pallas, Elench., p. 66,

Bugula plumosa, Busk, Catal., p. 45, t. liv.

The distinction between this species and the *B. fastigiata*, Linn., with which it had been previously confounded, has been already pointed out (Trans. Tynes. Club, v. iii., p. 150); but I was not at the time aware of its existence on our coast. Since then, however, specimens have been obtained from the deep water boats, and Mr. Hodge has also found it between tide-marks, at Seaham Harbour. Its range in depth appears, therefore, to be considerable.

Sub-Order. CTENOSTOMATA, *Busk.*

Family. ALCYONIDIADÆ. *Johnston.*

44. ALCYONIDIUM, *Lamouroux.*

8. A. lineare, *Hinks*, M.S.

This encrusting *Alcyonidium* occurs not unfrequently from deep water at Cullercoats, running over shells in lines, generally branching from a central mass. The cells are oval, with prominent tubular apertures.

44*a*. ARACHNIDIUM, *Hincks.*

1. A. hippothooides, *Hincks*,

Hinks in Ann. Nat. Hist., 3rd ser., v. ix., p. 471, t. xvi., f. 2.

On the tests of Ascidiæ, shells, &c., from deep water, Cullercoats.—J. A. Seaham Harbour—George Hodge.

The appearance of this species is somewhat between *Hippothoa divaricata* and *Buskia nitens*, having much the habit of the former, with occasional lateral processes like the latter; but it differs from both in having the walls of the cells soft and membranous. From *Alcyonidium lineare* it differs in the cells being rather distant and united by a creeping fibre; in *Alcyonidium* they are contiguous.

Sub-Order. PEDICELLINEA, *Gervais.*

Family. PEDICELLINIDÆ, *Johnston.*

52. PEDICELLINA, *Sars.*

2. P. Belgica, *Van Beneden.*

Van. Ben. Rech. Bryoz., 2nd Pt. t. ix.

Johns. Brit. Zooph., p. 385.

On other Zoophytes, Cullercoats ; rare.—J. A.

3. P. GRACILIS, *Sars.*

H. Goodsir in Ann. Nat. Hist., v. xv., p. 382.

Gosse, Ramb. Devon. Coast, p. 217, t. xii., f. 5.

On the under side of stones, and on the stems of Zoophytes, Cullercoats and Tynemouth ; common.—J. A.

This species, though by no means uncommon between tide-marks, and occasionally in deeper water, has been, until lately, overlooked on account of its diminutive size. The bulbous swelling at the base of the stem has been very appropriately called bottle-shaped. It affords a good distinctive character.

Mr. H. Goodsir observes that the propagation of *Pedicellina* is accomplished only by shoots coming directly from the root ; but I have met with two individuals of *P. echinata*, in which the case was otherwise. In one, the young arose from the body of the animal, and at right angles to it ; in the other, from the stem a little below the body. These cases, however, are rare.

EXPLANATION OF THE PLATES.

PLATE VIII.

Fig. 1. *Dicoryne conferta*, natural size.
2. The same, magnified.
3. *Tubulari simplex*, natural size.
4. A head of the same, magnified.

PLATE IX.

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

Plate X.

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

Plate XI.

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