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XXXI.—A catalogue of the zoophytes of South Devon and South Cornwall

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that I was right in the first instance; for although, both in *Eudorina* and *Chlamydococcus*, the peripheral substance, and perhaps the interior of the nucleus itself, becomes purple and blue under the action of iodine, this cell must be considered the nucleus, while the "granules" in the protoplasm should be viewed as the analogues of the "starch-cell" in the plant-cell. Thus the "green cell" of *Eudorina* consists of the cell-wall with its two cilia, which contains the protoplasm and chlorophyll, the nucleus, the granules, or analogues to the starch-grains, the "red spot," and the two contracting vesicles. Such, too, is a list of the normal contents of *Chlamydococcus* and most of these green cells. The spore-cell of *Eudorina*, after impregnation (*Gyges*, Ehr. ?), I am led to think, has four cilia; but of this more hereafter.

Spongilla.

At p. 13 (*ibid.*) there is also a mistake made in a similar way, and arising from a similar cause, viz. a misgiving of the truth of an inference deduced from deliberate examination, corrected by a too short and hasty one. It is stated, respecting the "ampullaceous sac" of *Spongilla*, that it must have its cilia outside, instead of inside as in the first description. A still more recent examination compels me to state that the first description in this respect should stand as it is, and the cilia be considered *inside*, and not outside, the "ampullaceous sac."

XXXI.—*A Catalogue of the Zoophytes of South Devon and South Cornwall.* By the Rev. THOMAS HINCKS, B.A.

[Continued from p. 262.]

8. *Laomedea neglecta*, Alder.

Common: under stones between tide-marks; dredged on other zoophytes, &c., from in-shore to the Coralline region.

This species, in its Campanularian state, is very abundant on the stems of *Phumularia*, *Sertularia*, &c., from deep water. In such situations, so far as my experience goes, it is seldom and sparingly branched.

From a tide-pool at Meadfoot, near Torquay, I have it of large size (about an inch in height), much branched, and bearing capsules. The latter, which have not yet been described, are pyriform, and produced in the axils and on the pedicles which support the cells. The ova are developed into the perfect larval form within an external gelatinous marsupium.

9. *L. lacerata*, Johnston.

Not uncommon: Exmouth, in tufts of *Bowerbankia imbricata* (the erect form), and on weed; dredged in Slapton Bay on *Campanularia verticillata*, &c.

This zoophyte is most commonly found creeping like a *Campanularia*, and seems only under favourable circumstances to assume the arborescent form of the *Laomedæa*. It was only known to Dr. Johnston in its humbler condition. I have met with it most abundantly in this state; but the cases in which it has occurred of larger and more luxuriant growth have been rare. The Exmouth specimens were of this kind, and were laden with gonothecæ, surmounted by the marsupial sacs, in which the ova complete their development.

The inner surface of a shell in my possession, which was dredged, I believe, in Torbay, is invested with this species in its Campanularian state; and in this specimen the reproductive capsules are produced on the creeping stem amongst the polype-cells. We have here, then, the case of a single species exhibiting, in different states of growth, the appearance and the essential characters of the two genera *Campanularia* and *Laomedæa*.

[Filey; Ramsay, Isle of Man; St. Ives, Cornwall.]

2. CAMPANULARIA, Lamarck.

1. *C. volubilis*, Linn.

On zoophytes from deep water, occasionally.

This species is far from common. I have only met with it, in small quantity, on *Sertularia abietina* which had been taken up by the trawlers. As a deep-water form, it is more likely to escape notice than some other species; but there can be little doubt that it is comparatively rare.

[Filey, on *Halecium halecimum*.]

2. *C. Johnstoni*, Alder.

Extremely common, from between tide-marks to deep water. Like other *Campanularia*, it shows a predilection for the red weeds. The ribbon-like leaves of *Zostera marina* are sometimes profusely covered with it. Indeed it is generally distributed, and adorns with its crystal cups and ringed pedicels the most various marine substances.

The branched form, figured by Ellis and Solander (tab. 4. figs. E, F), has occurred on *Sertularia argentea* from Torbay. I have not seen more than a single branch in any case—an exact copy of the original stock, but generally bearing a small and imperfectly formed capsule. Sometimes, however, as I learn from Dr. Strethill Wright (*in lit.*), two or three branches spring

from a little below the polype, and "these secondary stems in like manner give off tertiary stems," the capsules being often in such cases axillary. In the compound specimens of *Campanularia*, as I have before pointed out (Report of Brit. Assoc. for 1858), a near approach is made to *Laomedea*, the leading characters of which are here assumed. On the other hand, in the *L. angulata*, described in a previous portion of this catalogue, and in one state of *L. lacerata*, the capsules are no longer axillary, but are produced on the creeping stem.

The *Laomedea gracilis* of Sars is a species which exactly resembles, in habit and mode of branching, the compound form of *Campanularia Johnstoni*; and he seems to have had much difficulty in deciding under which genus to rank it. The branching of *Campanularia* is simply a form of luxuriant growth, due, no doubt, to favourable conditions of life.

In the 'Edinb. New Phil. Journ.' for April 1858, Dr. Wright has given an interesting account of the production of ova by the medusoid of this species. In the same year in which his paper appeared, I had made, but not published, similar observations. It will complete the history to mention that I noticed the *spermary* as well as the ovary. In some of the globular enlargements on the radiating canals, a rapid movement of extremely minute bodies (spermatozoa) was visible, whilst others contained the ova as described by Dr. Wright.

3. *C. Hincksii*, Alder.

Common: very fine on Sponge, &c., Salcombe Bay; Torbay, very abundant on other zoophytes, in moderate depths (8 to about 15 fathoms).

The cells of this species are remarkable for their size. Mr. Alder's otherwise excellent figure hardly does justice to this characteristic. The gonothecæ are elongate-oval and *smooth*.

4. *C. raridentata*, Alder, MS.

Not uncommon: between tide-marks, on Coralline and *Coryme*, Torquay; on zoophytes, amongst the Brixham trawl-stuff.

This species has not yet been published. The pedicles are short, and there is a curious enlargement at the base of them; the cells are elongate, narrow, and with six pointed crenations round the margin.

5. *C. verticillata*, Linn.

Very common in the Coralline zone: of great size amongst the refuse of the trawl-boats; dredged in Slapton Bay.

[Lamlash; Filey.]

3. CALICELLA (nov. gen.), Hincks.

Polypary filiform, creeping or erect; cells somewhat densely corneous, tubular, sessile or very slightly pedunculate.

Type-species, *C. dumosa*.

The reproduction of this section of the Campanulariadae has been very little studied as yet. I have described the gonophore of *C. syringa*, and the structure of its reproductive organs (female), in the 'Annals' for August 1852; but I am not aware that similar observations have been made in the case of any other member of this genus. This is not a little remarkable, as the *C. dumosa* is widely distributed, and occurs in profusion. Amongst some thousands of specimens, examined from time to time, I have never met with anything that threw light on the history of its reproduction.

The gonophore of *C. syringa* resembles in structure that of *Laomedea lacerata*, *L. neglecta*, and some of the Sertulariadae, the ova being matured in extracapsular marsupia.

I find that, in constituting a genus for *C. dumosa* and its allies, I have the support of Professor Reid, who, in his valuable paper entitled "Anatomical and Physiological Observations on some Zoophytes" ('Annals' for 1845, vol. xvi. p. 385), has remarked upon this species, that "the characters of the polypidom separate it from the genus *Campanularia*."

1. *C. dumosa*, Flem.

Very common in deep water: on *Pinna* from 60 fathoms, off the Deadman (the erect form); amongst the trawl-refuse, &c.

A slender and delicate variety occurs occasionally.

2. *C. fruticosa*, Sars, Beretning om en Zoologisk Reise i Lofoten og Finmarken, pp. 18, 19.

Syn. *Campanularia gracillima*, Alder, Catal. p. 39.

Mr. Alder has received specimens from Plymouth or its neighbourhood.

Sars's name has precedence. His description of the species appeared, many years since, in a paper which is now only to be obtained with difficulty, and which is written in Danish. It is very desirable that all new discoveries should be put on record in some journal which has a European circulation, and that there should be a freer and more spontaneous interchange of publications amongst those who cultivate the same branches of science. Much waste of time and perplexing multiplication of names might thus be prevented.

3. *C. syringa*, Linn.

Common, on other zoophytes, &c.

4. RETICULARIA, Wyville Thomson.

R. serpens, Hassall.

Very common: on the stems of the larger Sertulariadae, especially of *S. abietina*; on the surface of bivalve shells.

The species presents a very different appearance in these two habitats*. When developed on shell, there is none of the crowding of the cells which makes it so difficult to distinguish their form and arrangement.

Reticularia is nearly allied to *Calicella dumosa*. Its reproductive organs have not been observed; but an apparently kindred Australian form, which I have lately described under the name of *Lineolaria* (Annals for April 1861), produces very large spinous capsules, which are decumbent and adnate, like the cells.

5. COPPINIA, Hassall.

C. arcta, Dalyell.

Not uncommon in deep water, on the stems of *Plumularia falcata* and *Sertularia abietina*.

Order HYDRIDÆ, Huxley. Fam. Hydriadae.

HYDRA, Linnæus.

1. *H. viridis*, Linn.

In the neighbourhood of Exeter.

2. *H.* —.

I can only state at present that a second species of *Hydra* occurs near Exeter; but whether it be the *vulgaris* or the *oligactis*, or whether both these species occur, I cannot say with confidence.

A very large and handsome *Hydra*, tapering (I think) towards the base, is met with on water-plants in the Exeter Canal, which may prove to be the latter of these two species. Another, found some years ago in pits at Exwick, I supposed at the time to be *H. vulgaris*. I must leave the point for future settlement.

* Vide "Note on *Reticularia immersa*," &c., Ann. & Mag. Nat. Hist. for 1856, vol. xviii. p. 469.

Supplementary.

CORYNE, Gaertner.

C. vaginata, n. sp.*

Polypary branched, annulated; branches alternate, giving off polypiferous ramuli. Polypes fusiform, prolonged below into a slender neck, which is invested by a delicate, membranous, cup-like extension of the polypary. Tentacles 15–20, short, bent inwards when at rest; extremities rose-coloured. Gonothecæ spherical, produced on the lower half of the body, containing a single ovisac or sperm-sac.

Torbay, between tide-marks.

This well-marked form has hitherto been confounded with the *C. ramosa*. The *Coryne* mentioned by Mr. Lister (Phil. Trans. for 1834) must, no doubt, be referred to it. His figure (pl. 10. fig. 3) is an admirable representation of *C. vaginata*; and he makes special reference in the text to the "small cell" which protects the basal portion of the polype-body.

The Devonshire *Coryne* described by Dr. Johnston (2nd edit. p. 42), and represented on pl. 6. figs. 4, 5, I have no hesitation in identifying with the present form. He refers it to the *C. ramosa* of Ehrenberg; but his description—"polype oblong, freer than ordinarily from the tube, and separated by a narrow neck, with from ten to twelve or more short tentacula scattered over the surface"—applies not to that species, but to the *C. vaginata*.

The *Syncoryna Listerii* of Van Beneden (pl. 3. figs. 11, 12) appears to be the *C. ramosa*. Neither his description nor his figure agrees with Lister's species.

The *Coryne* beautifully figured in Gosse's 'Devonshire Coast,' under the name of *ramosa*, is also evidently the *C. vaginata*.

I feel more doubtful about the *Hermia glandulosa* of Hassall's Irish Catalogue (Annals for 1841, vol. vi. pl. 6. fig. 2); but his figure bears a closer resemblance to the present species than to any other with which I am acquainted.

Dujardin has described a species of *Syncoryna*, under the name of *S. glandulosa* (Ann. des Sc. Nat. sér. 3. Zool. vol. iv. p. 257, &c. pls. 14, 15), which presents some striking points of resemblance to *C. vaginata*. The polypes are represented as fusiform, and "the corneous covering of the stems" is said to "expand into the form of a transparent cup at the base of each head." But, besides other differences, it is propagated by means of medusoids (to which Dujardin has given the name of *Callichora*), and is therefore a distinct form.

* A figure of this species will be given hereafter.

The synonymy of the present species will stand as follows:—

C. vaginata, n. sp., Hincks.

Coryne, Lister, "Observat. on the Struct. and Functions of Polypi and Ascidiæ," Phil. Trans. 1834, pl. 10. fig. 3.

C. ramosa, Johust. Brit. Zooph. 2nd edit. p. 42, pl. 6. figs 4, 5.

C. ramosa, Gosse, 'Devonshire Coast.'

?*Hermia glandulosa*, Hassall, Annals for 1841, vol. vi. pl. 6. fig. 2.

The polypes of *C. vaginata* are slender and fusiform, tapering off towards the mouth and downwards, and prolonged below into a narrow neck of some length. The upper extremity of the body is opaque-white, and the central portion of a reddish-brown colour. The tentacles, which are less numerous than in *C. ramosa*, are commonly bent inwards, and have roseate tips. The slender base of the polype is surrounded by a membranous cup-like sheath or dilatation of the polypary, which extends nearly to the lowest tentacles. This is a very striking character.

There is always a small, definitely-shaped portion at the base of the *branches* which is not annulated. The capsules present no peculiarity. The ova are large, and have a conspicuous germinal vesicle.

This species attains a very considerable size. I find that the specimen from Torbay, mentioned under *C. ramosa* as being nearly four inches in height, and referred to that species, is in reality the *C. vaginata*.

[Common at Ilfracombe and along the neighbouring coast.]

Note on Coryne Cerberus, Gosse.

During the past summer I have enjoyed at Ilfracombe very favourable opportunities for the study of the *Stauridia producta* of Wright, and have satisfied myself that the *Coryne Cerberus* of Gosse is founded on an immature specimen of this zoophyte. The arms of the *Stauridia*, as of the Corynoids generally, increase in number with the age of the polype. The young are found with only two, three, or four of the capitate tentacles, placed a little below the oral aperture. After a time, the second verticil is developed, and then the third. The lower row of *fili-form* tentacles seems to be produced contemporaneously with the first series of capitate arms. The *C. Cerberus* is, no doubt, a young *Stauridia* with only three of the latter developed. I have had a specimen of the last-named zoophyte which was quite undistinguishable from the species figured by Mr. Gosse. I may also mention that the habit of distending and flattening the mouth, which Mr. Gosse noticed in the case of his *Coryne*, is that of the *Stauridia*.

The *Stauridia producta* must therefore be added to the Cata-

logue, and the *Coryne Cerberus* withdrawn from it and from the list of British species.

Eudendrium insigne, Hincks.

Since the description of this species was published ('Annals' for August 1861), I have met with it in some abundance at Ilfracombe, and have had the opportunity of making a careful examination of the gonophores. They surround the base of the polype to the number of five or six, and present the same essential structure as those of *Eudendrium rameum*, described and figured by Dr. Strethill Wright (Edin. New Phil. Journ. for Jan. 1859). The ovarian sac contains a single ovum, which is partially enclosed by a looped process derived from the endoderm. This loop overarches the egg and surrounds it, with the exception of its lower extremity, which is in immediate contact with the wall of the sac. The gonophore is convex on both sides, and presents a narrow edge when viewed in front. It differs in form from that of *E. rameum*, which is oval, and in the size of the endodermic band, which in the latter species almost entirely encircles the ovum. The polype of *E. insigne* has the proboscis white and the rest of the body of a dark-red colour.

[To be continued.]

XXXII.—*Report of the Results of Deep-sea Dredging in Zetland, with a Notice of several Species of Mollusca new to science or to the British Isles.* By J. GWYN JEFFREYS, F.R.S., F.G.S.

To the Editors of the Annals of Natural History.

GENTLEMEN,

Many scientific friends, who did not attend the last Meeting of the British Association, wish to know the result of my dredging expedition to the "far North" of our coast-line; and as the Report will not be published for a long time, will you kindly allow me to satisfy their inquiries by inserting an abstract of the communication which I made to the Association? I am quite aware that I make this request at a late period, and that I can only hope to have a corner of your valuable publication.

I am, Gentlemen,

Yours faithfully,

J. GWYN JEFFREYS.

25 Devonshire Place,
Sept. 24, 1861.

The Report was submitted by the author, as one of the General Dredging Committee, not so much for the sake of announcing his discovery of new species, as of maintaining certain views which he