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XXIII.—Note on Selaginopsis (= *Polyserias Hincksii*, *Mereschkowsky*), and on the circumpolar distribution of certain Hydrozoa

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From the preceding it appears that the physiological conditions of the oyster, and especially its power of propagation, may be changed or checked through modifications of circumstances, such as admixture of fresh water or greater tranquility of the water, in respect of which there may be notable differences between localities situated at short distances from one another; and it is evident that this circumstance must act as a bar to its diffusion over a wider area, particularly because it is combined with this other peculiarity, that the brood of oysters is capable of surviving, freely drifting about, only for a short time after having left the mother; it must sink to the bottom after a certain time, and remain where it sinks, whether the place is favourable for its development or not. A very gradual modification of the kind indicated occurs in the water of the Kattegat, where the salt water of the North Sea meets and is gradually mixed with the fresher water of the Baltic; and accordingly the oyster becomes more and more rare as we proceed southwards. At the entrance to the Sound and the Belts the species ceases to occur, though the water is not fresher than it might survive and even thrive in; but it could not propagate there; and the nearest place where the physical conditions of the water permit it to do so, viz. the Bay of Aalbæk, just south of the Skaw, is so far away that the spat, drifting with the current, must, as a rule, sink before it arrives so far. Between these banks and the southern limits of the oysters in the Kattegat they occur only seated on large stones, singly or rarely three or four together. These scattered individuals are often large and fat, but they are barren.

With regard to parks for fattening oysters the main result of these considerations is, that they may be established in places where the water is much less salt than on the natural banks, if otherwise the conditions are favourable, as to temperature, quality of the bottom, quantity of food, &c.; but they cannot be made self-supporting. If artificial banks are to be self-supporting the water must not be much less salt than on the natural banks from which they are stocked.

XXIII.—*Note on Selaginopsis (=Polyserias Hincksii, Mereschkowsky), and on the Circumpolar Distribution of certain Hydrozoa.* By the Rev. A. M. NORMAN, M.A.

THE *Polyserias Hincksii* of Mereschkowsky, recently figured in the 'Annals' (ser. 4, vol. xx. pl. vi. figs. 15, 16), from the White Sea, is, I think, unquestionably identical with

Diphasia mirabilis, Verrill, described originally from Le Have and St. George's Banks, on the New-England coast, and subsequently figured by Clark from the Alaskan Sea.

The genus *Polyserias* will also be synonymous with *Selaginopsis*, lately described by Prof. Allman, with a type (*S. fusca*) found in Japan *. The White-Sea species will therefore be *Selaginopsis mirabilis* (Verrill).

Until quite recently the Hydrozoa have been almost entirely neglected in all seas except our own, though we must not forget the important investigations of L. and A. Agassiz. We thus know very little of the geographical distribution of the species. *Selaginopsis mirabilis* is the first arctic Hydrozoon which has been described from the east and west coasts of North America and subsequently found in the north of Europe. It is no wonder, therefore, that Mr. Mereschkowsky, having examined European literature without finding his species, should have supposed that it was new. The researches of Verrill on the New-England coast are materially extending our knowledge of the distribution of many classes, including the Hydrozoa, on the western side of the Atlantic; and Mr. S. F. Clark's admirable report on the Hydrozoa of Alaska has special interest. In it he figures, and describes when necessary, forty-two species as inhabiting the district. No less than sixteen of these are Arctic species which reach the British coast, and the circumpolar distribution of which has now been established. They are:—

Obelia longissima (Pallas).
Clytia Johnstoni (Alder).
Campanularia integra, Macgill.
Gonothyrea hyalina, Hincks.
Lafoëa pocillum?, Hincks.
 — *gracillima* (Alder).
 — *dumosa* (Fleming).
 — *fruticosa*, Sars.

Calycella syringa (Linn.).
Coppinia arcta (Dalyell).
Halecium muricatum, Johnst.
Sertularia filicula, E. & S.
Sertularella tricuspidata, Alder.
 — *rugosa* (Linn.).
 — *polyzonias* (Linn.).
Tubularia indivisa, Linn.

Add to these *Selaginopsis mirabilis* and we have two fifths of the Alaskan species with a known circumpolar distribution.

Selaginopsis and *Pericladium* are apparently Arctic genera which have reached Japan by way of Kamtschatka and the Kurile Islands—the course of distribution which has caused, I believe, the striking resemblance in many features between the British and Japanese marine faunas; and I venture to predict that many genera which are common to Japan and Euro-

* Linn. Soc. Journ. vol. xii. (1876) p. 272. Another of Clark's Alaskan species, *Thuraria cylindrica*, belongs to Allman's genus *Pericladium*, described in the paper just quoted, p. 273.

pean seas will be found to have their relationship based on a common arctic origin.

Mereschkowsky states that he has "found several other species of this genus (*Polyserias*) in the collection of Hydroids in the St.-Petersburg Museum of the Academy of Sciences, brought from the sea of Ochotsk and Kamtschatka." It is not unlikely that the typical species of *Selaginopsis* may be found in the localities referred to; and the genus *Pericladium* is also almost sure to live in seas which are midway between Alaska and Japan.

Sertularia fusca, Johnston, of the British seas, is a connecting link between the ordinary species of *Sertularia* and the typical *Selaginopsis fusca*.

Selaginopsis fusca of Japan is a connecting link between *Sertularia fusca*, Johnston, and *Polyserias Hincksii*, Mereschkowsky.

Each of these *might* be made the type of a separate genus; but Allman's genus as characterized will include all; and it seems best so to retain it.

Genus SELAGINOPSIS, Allman.

"*Trophosome*.—Hydrophyton consisting of a single axile tube, to which the hydrothecæ are adnate, and on which they are disposed in several longitudinal rows."

"*Gonosome*.—Not known." [In the British *S. fusca*, Johnston, the gonotheca is pyriform, and borne as in *Sertularia*].

1. *Selaginopsis fusca* (Johnston).

Sertularia fusca, Johnston et auctorum.

In this species the hydrothecæ, instead of being placed on the face of the branch as in *Sertularia*, are inserted on the side, the thickness of the branch being much greater in proportion to its breadth than in that genus. On each of the sides the hydrothecæ are biserial, so far that they are decidedly alternate, bending to the right and left, in such a way that the mouths of one half only of the cells on each flank are seen when one face of the branch is looked at, and the other half when the opposite face is examined. It is, in fact, a double arrangement of a *Sertularella*, each *lateral* view exhibiting a series of hydrothecæ corresponding to that of the *front* aspect in *Sertularella*.

Hab. Distribution as known very limited; confined to east coast of the north of England and Scotland.

2. *Selaginopsis Allmani*.

1876. *Selaginopsis fusca*, Allman, Linn. Soc. Journ. vol. xii. p. 272, pl. xii. fig. 1, and pl. xix. figs. 1, 2.

This Japanese species has similarly the hydrothecæ arranged in double file on each *side* (as opposed to the face) of the branchlets; but they are here distinctly in two lines at their bases as well as at their apices, the arrangement of cells being, as it were, that of a double *Sertularia* (e. g. *S. abietina*); instead of a double *Sertularella* as in the last case.

3. *Selaginopsis mirabilis* (Verrill).

1873. *Diphasia mirabilis*, Verrill, Amer. Journ. Science, ser. 3, vol. v. p. 9 (note).

1876. *Diphasia mirabilis*, S. F. Clark, in Scientific Results of Exploration of Alaska, vol. i. p. 15, pl. vii. fig. 36.

1877. *Polyserias Hincksi*, Mereschkowsky, Ann. Nat. Hist. ser. 4, vol. xx. p. 228, pl. vi. figs. 15, 16.

Hab. New-England coast (*Verrill*), Alaska (*Clark*), White Sea (*Mereschkowsky*).

Here we find the process of multiplication of cells carried still further, and what was in the former instances comparable to a double *Sertularian*, is here equivalent to a triplicate *Sertularian*, an extra pair of hydrothecæ being introduced.

The general aspect of the hydrophyton, as represented in fig. 15 ('Annals'), reminds us strikingly of that of *S. fusca*, Johnston, in mode of ramification, in general aspect of the branchlets, and in their great slenderness at the point of attachment to the main stem.

XXIV.—*Descriptions of new Species of Heterocera from Japan*.—Part II. *Noctuities*. By ARTHUR G. BUTLER, F.L.S., F.Z.S., &c.

[Continued from p. 169.]

Cosmiidæ.

105. *Cosmia distincta*, n. sp.

Primaries grey, crossed by two blackish-edged white lines, much as in *C. affinis*; an abbreviated basal white litura; central area more or less clouded with ferruginous, with a central brown angulated belt; external area dusky, limited internally by an irregular whitish streak; a semicircular whitish-bordered costal brownish spot, much like that of *C.*