III.

The Hydroid Zoophytes of the „Willem Barents" Expedition, 1881.

BY

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The collection of Hydroidea obtained by this Expedition, was forwarded to me for examination in the summer of 1882, by Dr. MAX WEBER, of Amsterdam. I have found no new species in it, — a natural result of the number of Scandinavian and Arctic Hydroids that have been made known to us in late years, by MM. M. and G. O. SARS, ALLMAN, HINCKS, METSCHNIKOFF and others. But the present collection contains several species hitherto rare, it extends greatly the range of many that have formerly been reported from only one or two localities, and it contains also several well marked and peculiar varieties. It includes altogether 24 species from 12 stations, from various depths down to 170 fathoms. The annexed table gives the names of the species with the stations and depths at which they were found.

The most prominent and luxuriant species are Sertularia gigantea, and Lafoëa fruticosa; — of which the former is common everywhere in shallow, the latter in deep water; most of the species are large and strong in comparison with specimens from farther south.

Of the twenty-four species, fifteen are common British forms; of the rest, I have referred two more to British species, but they differ from our common type, and form well-marked varieties.

There remain seven northern species, whose distribution may be summarized as follows:

Sertularia albimaris; White sea, METSCHNIKOFF; Spitzbergen, (?) ALLMAN; off the Petschora, Will. Bar. Exp.

Sertularella gigantea; Iceland, HINCKS; Greenland (?) SARS; Alaska (?) CLARKE; Vardö, Matotschkin Scharr, Petschora, Will. Bar. Exp.

Lafoëa grandis; Lofoten, G. O. SARS; Iceland, HINCKS; Alaska, CLARKE; Barents Sea, Will. Bar. Exp.

Lafoëa capillaris; Christianiafjord, G. O. SARS; Barents Sea, Will. Bar. Exp.

Calycella quadridentata; Christianiafjord, Vadsö, SARS; Barents Sea, Will. Bar. Exp.

Lafoëina tenuis; Christiansund, Lofoten, SARS; Iceland, HINCKS; Petschora, Will. Bar. Exp.

This summary indicates a very wide arctic or cicumpolar distribution for most if not all of the above forms.

	Busse Sound.		Malotschkin Scharr.									
Latitude		69°23′		70°49′	75°49′	71° 8′	70°48′	72°36′	76°51′	72°14′	77° 7′	75°13′
Longitude		54°50′		50°47′	53°41′	44°25′	38°	24°57′	44°21′	22°30′	49°37′	15°46′
Depth in fathoms	—14	16.5	12.37	62	68	80	115	140	145	165	170	175
Thuiaria articulata, var.								+				
T. (Sertularia) argentea			+									
Hydrallmania falcata		+										
Sertularia albimaris		+										
S. filicula	+											
Sertularella gigantea	+	+	+									
S. rugosa, var			+									
S. tricuspidata		+										
Halecium Beanii									+			
H. muricatum				+								
Lafoëa fruticosa				+	+	+	+	+	+	+	+	+
L. grandis										+		
L. capillaris					+							
Calycella quadridentata		+										
C. syringa		+										
C. plicatilis								+	+			
Lafoëina tenuis		+								+		
Campanularia flexuosa	+											
C. verticillata				+						+		
C. volubilis		+	+									
Obelia dichotoma		+										
O. geniculata	+											
Tubularia larynx		+										
Syncoryne Sarsii	+											

THUIARIA ARTICULATA, PALLAS: var.

Plate I. fig. 14. 15.

A single small specimen, which I ascribe to this species, occurs in the collection. It is about three inches high, and destitute of gonangia. It differs from the common from of T. articulata in the complete immersion of the hydrothecaê, whose orifices do not project at all, but lie flush with the sides of the stem and branches; they do not differ in shape or size from those of the common form of the species. The branches are thinner and more delicate than in the common form; but the specimen does not differ so much in appearance from the type-form, as, for instance, the Shetland variety mentioned by Mr. HINCKS (Brit. Hydr. Zooph., p. 278, pl. 60); I inclined at first to think the specimen a young example of T. laxa, Allman [1]), but the hydrothecaê differ in shape from those of the latter species in ALLMAN's figure, being straighter, and square, not rounded, at the base.

Loc. lat. 72° 99′ N, 25° 58′ E, rather more than a hundred miles north of the North Cape; depth, 140 fathoms.

[1]) Hydr. of Porcupine Exp., Tr. Zool. Soc. Lond., VIII, p. 472, 1874.

THUIARIA (SERTULARIA) ARGENTEA, ELLIS.

I follow Allman [1]) in relegating this species to Thuiaria. One or two specimens, with gonangia, occur in the collection. They were got in 10 fathoms water, in Matthew's Straits (Matotschkin Schaar), Novaya Zemlya.

This species was found by Sars [2]), near the North Cape, while its close ally T. (S e r t.) c u p r e s s i n a does not occur in Sars' list as a Norwegian hydroid at all. The latter species, however, has been recorded by Hincks [3]) from Barents Sea.

HYDRALLMANIA FALCATA, L.

Fine specimens of this species were got in 16.5 fathoms, near the mouth of the Petschora.

SERTULARIA ALBIMARIS, METSCHNIKOFF. (*Ann. and Mag. of Nat. Hist. ser.* 5, *vol. I, p.* 331, 1878).

Plate I. fig. 1, 2, 3.

S. a r c t i c a, Allman (?)

Several specimens occur from the prolific locality near the mouth of the Petschora (16 fathoms). They undoubtedly belong to Metschnikoff's species, though the curious hydrorhiza, on which Metschnikoff rests much importance, is preserved in none of them. But they present this very curious and anomalous character, not mentioned by Metschnikoff, that the branches are frequently prolonged into long tendril-like shoots, bare of hydrothecaê. These tendrils have usually one joint at the base, but no more, and they very much resemble the tendrils of T h u i a r i a p e r s o c i a l i s, a species described by Allman [4]), from Natal. How they end, and whether they serve for attachment, I do not know.

The hydrothecaê very much resemble those of S. a r c t i c a, Allman [5]), from Spitzbergen; and the two species are probably identical, in which case Allman's name has the priority. But the hydrothecaê in Allman's figure are considerably longer than those in any of my specinens. The gonangia, which might have decided the point, are wanting both in my specimens and in Metschnikoff's type.

Sars' S. t e n e r a, of which I have examined specimens from the Vega collection, is distinct from this species.

SERTULARIA FILICULA, ELLIS AND SOLANDER.

A single well-marked specimen (without gonangia) was got in shallow water in Busse Sound.

SERTULARELLA GIGANTEA, METSCHNIKOFF (*loc. cit.*)

Plate I. fig. 4, 5, 6, 8.

S. p o l y z o n i a s, var. r o b u s t a, Sars. (Nyt. Mag. for Naturvidensk. 1857. p. 163).
S. p o l y z o n i a s, var. g i g a n t e a, Hincks. (Ann. and Mag., Ser. 4, vol. XIII, p. 151, 1874).
S. q u a d r i c o r n i s. Hincks (Ibid., Ser. 5, vol. VI, p. 277. 1880).

There is some confusion in regard to the large northern Sertularellaê, allied to S. p o l y z o n i a s The present collection contains a number of specimens, whose calycles show very considerable limits of variation. After an examination of thse. I am inclined to think that the above three forms are all referable to one species, the S. g i g a n t e a of Metschnikoff.

1) Proc. Linn. Soc., XII, p. 267, 1875.
2) Vidensk. Selsk. Forhandl., 1873.
3) Ann. and Mag. of Nat. Hist., ser. 5, vol. VI, p. 269. 1880.
4) Proc. Linn. Soc. Lond., vol. XIII, 1875.
5) Ibidem.

Hincks figured specimens from Iceland, under the name of S. polyzonias, var. gigantea, — and Metschnikoff figured others from Siberia, which he identified with Hincks zoophyte, under the name of S. gigantea. Metschnikoff's specimens were marked by the existence of a number of ledges below the mouths of the hydrothecaê, which do not occur in Hincks' figures; but Metschnikoff is careful to state that they are present only in adult individuals.

In a later paper (October, 1880), Hincks describes another large arctic Sertularella (from Barents Sea) under the name of S. quadricornis; and states his belief that his S. polyzonias, var. gigantea, and Metschnikoff's S. gigantea are really distinct, though the latter and S. quadricornis may be identical. Now I have no hesitation in saying that the former two belong to one and the same form, while the last probably does so, though not quite certainly. The ledges below the hydrothecal orifices are, as Metschnikoff stated, only present in old individuals; in my plate, figs. 4 and 8 are both taken from the same colony. There is also much variation in the extent to which the hydrothecaê are immersed: sometimes they are almost completely free and sessile. as in fig. 6, which is almost the exact counterpart of Hincks' figure (loc. cit., pl. VII, 1874); in other cases, in the same colony or even on the same shoot, they are attached for half their length, as in fig. 4. But I have seen no specimens that can be called intermediate between this arctic form and the typical S. polyzonias. I reproduce Hincks' figure of S. quadricornis for comparison; it only differs from those under consideration in the marked constriction in the middle of the hydrotheçaê. I have searched all my specimens in vain for gonangia, to compare with those figured by Hincks in S. quadricornis.

S. gigantea occurs in the collection from all three stations in which hydroids were obtained in shallow water: viz., at Bussö Sound, Vardö, in Matotschkin Scharr (10 fathoms), and near the mouth of the Petschora (16.5 fathoms).

SERTULARELLA RUGOSA, L. var.

Plate I. fig. 10, 11, 12, 13.

This zoophyte is very remarkable for the long, bare, tendril-like shoots into which its stems are prolonged, resembling very much the tendrils described above in the case of Sertularia albimaris. The calycles are distinctly larger than those of British specimens of S. rugosa, the neck is more distinct, and the teeth longer. Nevertheless, they can only be classed as a single species. Defective nutrition or low temperature may perhaps account for this production of bare shoots in two different northern varieties.

Locality. Matotschkin Scharr, 10 fathoms.

SERTULARELLA TRICUSPIDATA, ALDER.

Strong and robust specimens of this species were got abundantly in 16.5 fathoms, at the station near the mouth of the Petschora. The specimens have no gonangia. The species does not occur in Sars' Norwegian list, but is reported from Iceland by Hincks.

HALECIUM BEANII, JOHNSTON.

A specimen, without gonangia, occurs from a depth of 145 fathoms in lat. 76° 51′, long. 44° 21′.

HALECIUM MURICATUM, ELLIS AND SOLANDER.

A good specimen, bearing gonangia, was got in lat. 70° 49′ N., long. 50° 47′ E., at a depth of 62 fathoms.

LAFOËA GRANDIS, HINCKS. (*Ann. and Mag., ser.* 4, *vol. XIII, p.* 148, 1874).

Lafoëa fruticosa, G. O. Sars. (Vid. Selsk. Forh., 1873); not M. Sars, ibid., 1862.
L. fruticosa, S. F. Clarke (Exploration of Alaska. 1876).

Plate I. fig. 16.

The task of identifying the varions species of Lafoëa, especially the erect, shrubby forms, of which this is one, is rendered somewhat difficult by the want of exact measurements of the calycles, or of comparative series of figures, drawn to scale.

Mr Hincks (loc. cit.) seems however to have cleared up the synonymy of this species satisfactorily, showing it to be identical with G. O. Sars' but distinct from M. Sars' L. fruticosa.

This species is a well-marked one, the calycles being very much larger than those of its allies, and possessing a characteristic campanulate shape, by which the species is easily to be recognized in G. O. Sars' figures.

The calycles are about 8—9 mm. long.

This species occurred sparingly in lat. 76° 51′ N., long. 44° 21′ E. (145 fathoms).

LAFOËA FRUTICOSA, M. SARS. (*Vid. Selsk. Forh.*, 1864).

Campanularia gracillima, Alder. (Trans. Tyneside Field Club, III, p. 129, 1857).
Lafoëa gracillima, G. O. Sars. (Vid. Selsk. Forh., 1873).
L. gracillima, S. F. Clarke. (Exploration of Alaska, 1876).

Plate I. fig. 17, 18.

This species occurred very abundantly in several localities: lat. 72° 14′ N., long. 22° 30′ E., (165 fathoms); lat. 75° 49′ N., long 53° 41′ E., (68 fathoms); lat. 76° 51′ N., long. 44° 21′ E., (145 fathoms).

The dimensions of the calycles vary within small limits; their length is about 5—6 mm.

A small specimen (fig. 18) from lat. 72° 36′ N., long. 24° 57′ E., (140 fathoms) is rather strikingly different from the rest, the hydrothecaê being considerably smaller (4 mm.) and without amy trace of widening at the mouth. It is intermediate in appearance between L. fruticosa and L. capillaris, and may belong to a distinct species. But for the present I prefer merely to record and figure it.

LAFOËA CAPILLARIS, G. O. SARS. (*Vid. Selsk. Forh.*, 1873.)

Plate I. fig. 19.

The slenderness and length of the hydrothecaê render this species unmistakable.

It occurred in lat. 75° 49′ N., long. 53° 41′ E. (68 fathoms). Sars found it in the Christianiafjord, at a depth of 50—60 fathoms. Though scarce, it is therefore very widely distributed. The calycles are about 8 mm. long.

CALYCELLA QUADRIDENTATA, HINCKS (*Ann. and Mag. of Nat. Hist., ser.* 4, *vol. XIII, p.* 149, 1874).

Plate I. fig. 20.

This very pretty species, described from Reykiavik (100 fathoms) by Hincks, was got in 16.5 fathoms near the mouth of the Petschora.

The calycles vary somewhat in shape, some being considerably longer and thinner than others. They are about 4 to 5 mm. long, and considerably wider than those of C. syringa.

CALYCELLA SYRINGA, L.

Plate I. fig. 21.

This species occurs from several stations, including that in lat. 72° 14′ N., long. 22° 30′ E., where it is parasitic on Lafoëina tenuis at a depth of 165 fathoms. HINCKS has recorded it from a depth of 100 fathoms, off Iceland.

CALYCELLA (LAFOËA) PLICATILIS, M. SARS (*Vidensk. Forhandl.*, 1862).

This remarkable species was got abundantly at a depth of 145 fathoms in lat. 76° 51′ N., long. 44° 20′ E. According to G. O. SARS, it ranges from 20 to 200 fathoms.

LAFOËINA TENUIS, M. SARS (*G. O. Sars, Vidensk. Forhandl.*, 1873).

This species was found by SARS at various depths ranging from 50 to 300 fathoms. In the present collection it occurs from 16 fathoms, near the Petschora, to 165 fathoms, north of the North Cape.

CAMPANULARIA FLEXUOSA, HINCKS.

This exclusively littoral species was got at Vardö.

CAMPANULARIA VERTICILLATA, L.

Some specimens occur from the unusual depth of 165 fathoms, in lat. 72° 14′, north of the North Cape.

CAMPANULARIA VOLUBILIS, L.

Common near the Petschora, in 16.5 fathoms, and in Matotschkin Scharr, 34 fathoms.

OBELIA GENICULATA, L.

Very abundant specimens, on Laminaria, from Vardö.

OBELIA DICHOTOMA, L.

Several small pieces occur among the numerous hydroids from the station near the mouth of the Petschora (16.5 fathoms). The species does not occur in SARS' Norwegian list.

TUBULARIA LARYNX, ELLIS AND SOLANDER.

The tubes of a small species of Tubularia occur among the material from near the mouth of the Petschora, in 16.5 fathoms. They have all the habit of this species, to which I have no doubt they belong, but they are very slightly and irregularly ringed, in a manner more like T. coronata.

SYNCORYNE SARSII, LOVÉN.

Very abundant specimens from shallow water in Busse Sound, Vardö.

PAPERS

ON

Scandinavian and Arctic Hydroids. [1])

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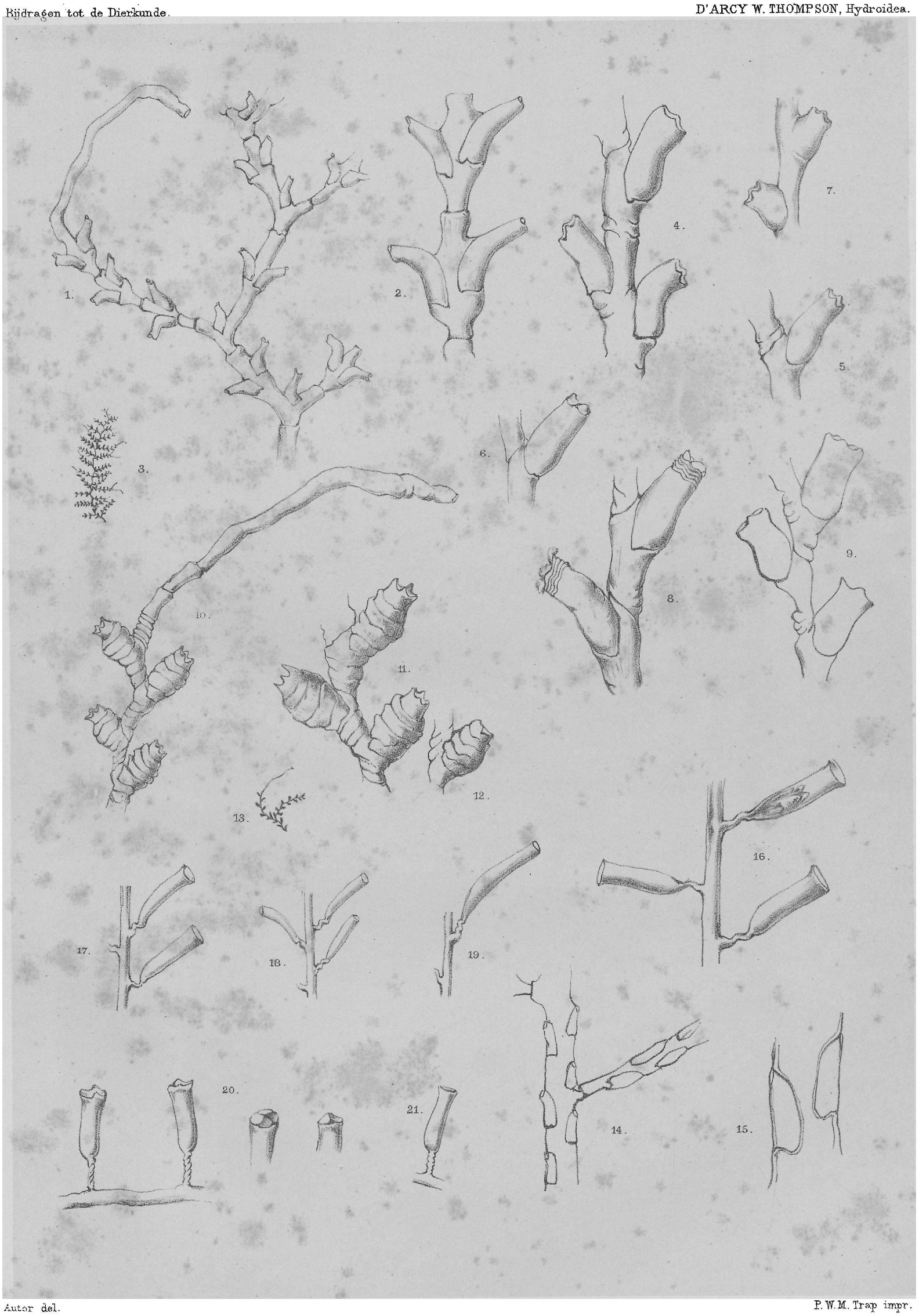
[1]) Not including those named in Hincks' list., Brit. Hydr. Zooph. Appendix.

FIGURES.

1. Sertularia albimaris.
2. do. more magnified.
3. do. natural size.
4, 5, 6. Sertularella gigantea, showing variations in the shape and attachment of the calycles.
8. do. old specimen, showing ridges round the mouth, as described by Metschnikoff.
7. S. Polyzonias, L,
9. S. quadricornis, Hincks } for comparison.
10. Sertularella rugosa, var.
13. do. natural size.
11. do. calycles more magnified.
12. S. rugosa. An English specimen, magnified to the same scale as 11.
14, 15. Thuiaria articulata, var.
16. Lafoëa grandis.
17. L. fruticosa.
18. L. fruticosa, var. (?), vide p. 7.
19. L. capillaris.
20. Calycella quadridentata.
21. C. syringa, drawn to the same scale as 20.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