

HYDROIDS

FROM DEPTHS EXCEEDING 6000 METERS

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The hydroids found by the "Galathea" Expedition at depths exceeding 6000 m were very few, and they were in a more or less fragmentary condition, which was not astonishing considering the great technical difficulties connected with trawlings at such enormous depths. Only by an extremely careful examination of the meshes of the trawl was it possible to detect and secure these delicate creatures, and apparently none of the large colonies, as we know them in more shallow areas, were present on the clayey bottom of the deep trenches examined by the Expedition. Nevertheless, the few specimens found are of considerable interest, because no hydroids have ever been taken at such depths before, the maximal depth up to now being 5304 m. Altogether five species were found, two of them are only represented by indeterminable fragments, one is certainly a new species *Halisiphonia galathea*, one is provi-

sionally described as a new species *Aglaophenia* (?) *galathea*, and one may with some probability be referred to *Aglaophenia tenuissima* Bale, previously known from the Great Australian Bight.

Fig. 1 shows the racemous hydrocaulus of an athecate hydroid; the perisarc is very thin and delicate, somewhat wrinkled; no hydranths or gonophores are present. It was taken in the Kermadec Trench, at St. 654, 32°10'S. 175°54'W., 18th February 1952, depth 5800 m, bottom brown clay with pumice, to a piece of which the colony was attached.

On another piece of pumice from the same locality was a stolon with some pedicels, annulate at their bases, evidently belonging to some thecaphore hydroid; it is seen in fig. 2.

Halisiphonia galathea n. sp.

Textfig. 3.

Stat. 649, Kermadec Trench, 35°16'S. 178°40'W. 14th February 1952, depth 8210-8300 m, bottom gray clay with pumice.

From an open net of very thin and delicate stolons issue a considerable number of long pedicels, very thin and completely smooth apart from some irregular wrinkles at their base, many of them more than 20 mm, some as much as 25 mm long. The pedicels are about 0.08 mm in width and pass gradually into the very elongated, funnel-shaped hydrothecae, the aperture of which is about 0.4 mm. The length of the hydrothecae may be estimated as about 1.2 mm, but it cannot be measured exactly, because the hydrotheca is not distinctly limited from the pedicel. A very slight internal thickening may sometimes indicate the base of the hydrotheca, and in a few cases an extremely delicate diaphragm may be discerned. The aperture is not everted. Renovation occurs rather frequently, and two, three or four hydrothecae may be seen inside each other,

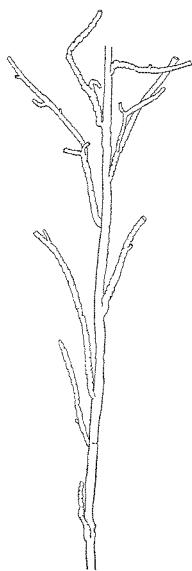


Fig. 1.

Fig. 1. Undetermined athecate hydroid. Kermadec Trench, St. 654. $\times 9$.

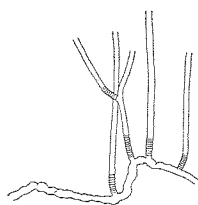


Fig. 2.

Fig. 2. Undetermined thecaphore hydroid. Kermadec Trench, St. 654. $\times 9$.

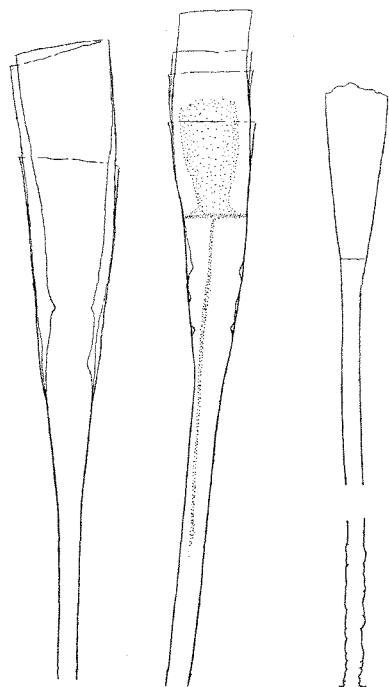


Fig. 3. *Halisiphonia galathea* n. sp. Kermadec Trench, St. 649. $\times 30$.

but as a rule the extremely delicate walls are more or less torn. No gonothecae were present.

Four other species of *Halisiphonia* have been described, all of them from deep water. The history of the genus has previously been dealt with by me (KRAMP 1932 p. 40). *H. arctica* Kramp (1932) from Baffin Bay, 1200 m, is distinguished from all the other species by the basal part of the pedicels being spirally coiled and by the hydrotheca margin being distinctly everted. In *H. nana* Stechow (1921 and 1925) the hydrothecae are small, about 0.45 – 0.6 mm long, and borne upon very short pedicels; it was found east of Bouvet Island in the Antarctic at a depth of 457 m. *H. megalotheca* Allman (1888), which was described from very deep water, 4750 m, south of Australia and later recorded from the neighbourhood of St. Paul in the southern part of the Indian Ocean, 672 m (STECROW 1925) resembles the present species in shape and size of the hydrothecae, but the pedicels are much shorter, 0.74–1.20 mm, and renovation of the hydrothecae was not observed. *H. spongicola* Haeckel (1889) from the central and northern Pacific, 4200–4750 m, is similar to *H. megalotheca*, but differs from it in the shape of the gonothecae. The present species *H. galathea*, is mainly characterized by its very long pedicels in conjunction with the frequent renovation of the hydrothecae and the non-everted hydrotheca margin.

Aglaophenia tenuissima Bale

Textfigs. 4 and 5.

Stat. 658, Kermadec Trench, 35°51'S. 178°31'W. 20th February 1952, depth 6660–6720 m, bottom brown sand with clay and stones. One sterile colony.

The colony, which is somewhat mutilated, is 13 cm high and has been attached to the clayey bottom by a large basal tuft of branched and intertwined stolons. The stem is fascicled, 2 mm in diameter near its base; three lateral branches have been present, but only the uppermost is retained, and all the hydrocladia are broken short, so that only the first

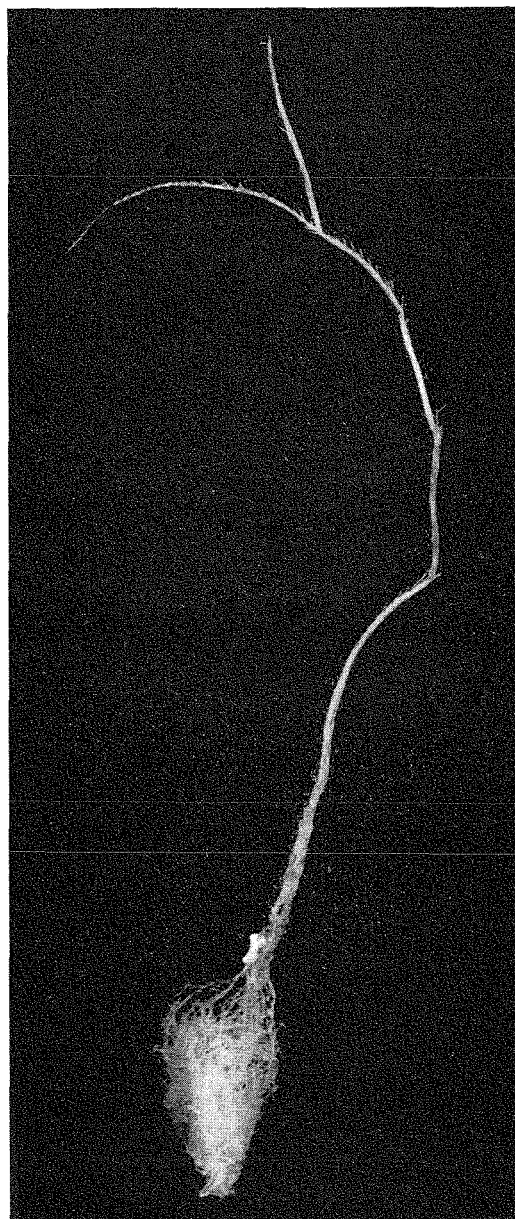


Fig. 4. *Aglaophenia tenuissima* Bale. Entire colony. Kermadec Trench, St. 658.

2-5 hydrothecae are left, in one instance as many as seven. The stem and the primary branches carry no hydrothecae, but longitudinal rows of sarcothecae separated by about their own length or a little more. Hydrocladia arise not merely from the primary branches, but also the main stem carries some scattered hydrocladia.

The hydrocladia arise alternately in one plane from a frontal tube which is not divided into internodes; it carries a sarcotheca immediately below and above each hydrocladium. The basal node of each hydrocladium is short and carries a sarcotheca but no hydrotheca. The internodes of the hydrocladia are separated by a distinct, ring-shaped constriction, but no internal septum; each of them carries a hydrotheca with a mesial and two lateral sarcothecae.

The hydrothecae are about 0.27 mm in length and a little more than half as wide at the aperture, the base is broadly rounded, the abcauline wall almost parallel to the internode or a little diverging upwards, slightly convex; the aperture is somewhat oblique, its angle with the internode rather variable; the median tooth is pointed, but not very prominent; the lateral teeth are short and broad, three on each side are distinct, a fourth, adcauline tooth slightly indicated. The intrathecal ridge near the bottom of the hydrotheca is faintly developed, and there are two septal ridges in the internode, one opposite the intrathecal ridge, the other at the base of the lateral sarcothecae. The mesial sarcotheca is about half as long as the hydrotheca, adnate throughout its length, canaliculate, without any distal projection; its base is separated from the internode by an incomplete septum, and halfway up its abcauline side is an internal, oblique ridge. The lateral sarcothecae are small, backward curved, with an abcauline transversal ridge in the middle portion, projecting about halfway above the margin of the hydrotheca.

Gonosome not present.

This specimen agrees in all essential features with *Aglaophenia tenuissima*, which was taken by the "Endeavour" in two localities in the Great Australian Bight at depths of 293 and 348-585 m and was thoroughly described by BALE (1914 p. 179, pl. 37 figs. 1-2). There is also agreement as to the way in which the branches of the colony are developed, with one exception. In *A. tenuissima* "the stem is formed primarily by the proximal portions of a succession of alternate branches. The primary shoot, after giving off a lateral branch, continues on its course for per-



Fig. 5. *Aglaophenia tenuissima* Bale. Hydrothecae. Kermadec Trench, St. 658. $\times 75$.

haps an inch or two, bearing hydrocladia, and then terminates; the lateral branch then becomes the axial one, growing for some distance . . . without hydrocladia, . . . it then in turn gives off a lateral branch on the opposite side to that on which it commenced, after which it produces hydrocladia, while the new lateral branch takes up the role of continuing the axial column." – So far the agreement is complete. But BALE further adds: "A lateral offshoot is much slenderer at its origin than the branch from which it springs, but it grows thicker upwards till at the next furcation it is as thick as its predecessor." In the present colony the lateral branches, which in succession constitute the actual, thorough-going stem, become gradually thinner upwards, and the base of each branch consists of continuations of the tubes of the preceding portion. In spite of this slight difference in the formation of the branches it seems to me most probable that the colony from the Kermadec Trench belongs to the same species as that described by BALE from the Australian Bight.

***Aglaophenia (?) galatheae* n. sp.**

Textfigs. 6 and 7.

Stat. 465, Java Deep, 10°20'S. 109°55'E. 5th September 1951, depth 6930-7000 m, bottom bluish clay. One sterile colony.

The colony is 10 cm high, with a small basal tuft of intertwined stolons. The stem is fascicled, but thin, about 0.25 mm at the base, unbranched, without hydrothecae, but with rows of sarcothecae separated by about twice their length.

Hydrocladia alternate, distantly placed in the lower portion of the stem, in the upper portion regularly arranged at distances of about 2.5 mm on each side, issuing at very acute angles, the longest hydrocladia 16 mm in length with 34 hydrothecae. The basal joint, which arises from a tiny apophyse, carries a hydrotheca. The internodes are very indistinctly separated by a mere indication of an annular furrow opposite the aperture of the hydrothecae.

The hydrothecae are very elongate, about 0.33 mm in length, the sagittal width of the aperture less than half the length of the hydrotheca. The bottom of the hydrotheca is narrow, the abcauline wall slightly convex. The aperture is perpendicular to the internode, the median tooth is small and pointed, and there are four low and blunt teeth on each side. An intrathecal ridge is slightly indicated, and the two septal ridges in the internode are likewise very



Fig. 6. *Aglaophenia galatheae* n. sp. Entire colony. Java Deep, St. 465.

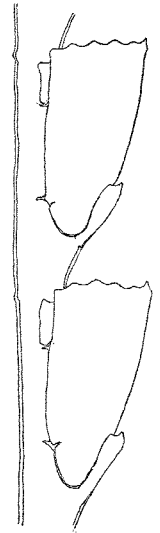


Fig. 7. *Aglaophenia galatheae* n. sp. Hydrothecae. $\times 75$.

insignificant, one a little above the intrathecal ridge, the other at the level of the bottom of the lateral sarcothecae. The mesial sarcotheca is small, hardly reaching to the lower one-third of the wall of the hydrotheca, adnate throughout its length, canaliculate, with a faintly developed median tooth; there is only a very slight indication of an internal ridge at the bottom of the sarcotheca, or none at all. The lateral sarcothecae are small, and they do not reach the level of the aperture of the hydrotheca.

Since no gonosome is present, the genus cannot be determined with certainty. I had to look through the descriptions of all known species of Aglaopneidiids, and I found no species to which the present specimen could be referred. I therefore describe it provisionally as a new species.

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