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A Revision of some Northern Gymnoblastic Hydroids in the Zoological Museum, Oslo.

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A Revision of some Northern Gymnoblastic Hydroids in the Zoological Museum, Oslo.

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INTRODUCTION

Although much work has been done on North European and Arctic hydroids during this century, some of the hydroids collected by the Norske Nordhavs Expedition, 1876–78, which had been described briefly by KRISTINE BONNEVIE (1898-1899), still required consideration.

Most of this material was available in the Zoologisk Museum, Oslo, together with some of the early collections of MICHAEL SARS from Manger near Bergen, and the material described by his son GEORG OSSIAN SARS in 1873. Among the collections of the older SARS are two rather shrunken specimens of *Corymorpha nutans* which are of considerable historic interest in that they form a link with the first discovery of the alternation of generations in the Hydrozoa by this Norwegian pioneer in a paper published in 1835.

Apart from a consideration of individual species, it has been found necessary to place *Monocoryne* in the Myriothelidae in a sub-family of its own and to make some revision of the family.

I am grateful to Dr. NILS KNABEN, Zoologisk Museum, Oslo, for kindly allowing me to examine the material in his care during my visit to Oslo in September, 1955.

FAMILY CORYNIDAE

Coryne hincksii BONNEVIE

BONNEVIE, 1898*a*, *Z. wiss. Zool.* 63, p. 492, taf. xxvii, figs. 48–49.

Type locality: Hammerfest, 100 fathoms.

Material seen: The type colony (Zoologisk Museum, Oslo).

Coryne hincksii differs from *Coryne pusilla* in having fewer tentacles and the hydranth recalls that of the hydroid of *Sarsia tubulosa* (*Coryne sarsi*

LOVÉN), but it is more robust. The gonophores are styloid but are much larger in proportion to the size of polyp than in *Coryne pusilla*. The stems are occasionally branched and are covered with a pale horn coloured perisarc, which is slightly wrinkled, but non-annulated.

Table I. Dimensions of the type colony of *Coryne hincksii* BONNEVIE.

Measurements in mm.

Total height of colony	30–40
Height of polyp stems	4.0 – 6.6
Diameter of stems	0.385
Diameter of hydranth	0.52–0.875
Length of hydranth	1.0– 1.75
Diameter of capitate heads of tentacles	0.17– 0.21
Length of large gonophores (excluding stalk)	0.94– 1.15
Diameter of large gonophores	0.63– 0.73

The gonophores are borne just in front of, and among, the posterior tentacles from budding areas, and there may be up to 10 gonophores in a cluster. The larger gonophores are rather egg-shaped; each has a prominent spadix, but there is no trace of radial canals. BONNEVIE appears to have erred in describing four radial canals in her text, and her figure (Taf. xxvii, fig. 49) shows no trace of them.

In the hydranth there is an oral whorl of five tentacles; the remaining tentacles are scattered, their total number being 15–20. *Coryne hincksii* is a distinct species easily separable from all other North European species.

Coryne brevicornis BONNEVIE.

BONNEVIE, 1898*b*, *Bergen Mus. Årbok*, No. 5, p. 4, pl. i, fig. 2.

Type locality: Hammerfest (?), 100–200 m.

Material seen: The type colony (Zoologisk Museum, Oslo).

This colony has a more bushy mode of growth than the type colony of *C. hincksii* and the stems are a little more branched and held more vertically. The polyps themselves are very like those of *C. hincksii*, and, in some polyps, the gonophores arise in a similar position, while in others they arise more in the middle of the tentacular region. The perisarc is pale horn coloured, distinctly wrinkled, but cannot be said to be annulated.

Table II. Dimensions of the type colony of *Coryne brevicornis* BONNEVIE

Measurements in mm.

Length of polyp.	0.94 –2.1
Diameter of polyp.	0.42 –0.875
Diameter of capitate heads of tentacles	0.14 –0.17
Length of gonophore	0.875–0.98
Diameter of gonophore	0.6 –0.7
Diameter of polyp stems	0.24 –0.28

The hydranth has about 20 tentacles and the gonophores are styloid. The differences between this species and *hincksii* are so slight that it is proposed to regard them as one species, *C. hincksii*.

FAMILY HYDRACTINIIDAE

Hydractinia allmani BONNEVIE.

BONNEVIE, 1898*a*. *Z. wiss. Zool.*, 63: 485, Taf. xxvi, figs. 36–37.

Type locality: 67° 24′ N., 8° 58′ E., 827 m. (*Norske Nordhavs Expedition*, 1876–1878, St. 137).

Material seen: The type colony (Zoologisk Museum, Oslo).

This species has already been re-described by me from the rich collections of the Naturhistoriska Riksmuseum, Stockholm, but the following notes on the type material may be worth recording.

This colony possesses a few (very few) smooth simple spines. No tentaculozooids or spiral zooids were noticed. The nutritive polyps are tall and columnar, but are contracted in spirit; they have a height of 2.1–6.3 mm.

The reproductive hydranths usually have two gonophores each, and of these one is often large and the other very small. These polyps have a well formed proboscis with rudiments of 1–4 tentacles; and they have a height of 0.35–0.52 mm. Large gonophores have a diameter of 0.6–0.87 mm.; they are cryptomedusoids with well developed radial canals, raised ring canal and rudiments of 4 radial and 4 interradial tentacular bulbs. In this colony no gonophore is fully mature and there are no projecting teat-like tentacle rudiments as reported by Rees (1956 p. 354) in a colony from Mackenzie Bay, East Greenland. As noted on p. 112 *H. ornata* is referred to this species.

Hydractinia humilis BONNEVIE.

BONNEVIE 1898*a*, *Z. wiss. Zool.*, 63: 486, Taf. xxvi, figs. 39–40.

Type locality: Manger, near Bergen (M. SARS).

Material seen: The type material (Zoologisk Museum, Oslo).

This colony is not in very good condition. There are about 20 tubular nutritive hydranths and many reproductive hydranths. The reproductive polyps have well developed probosces and about five tentacles, but give the appearance of being reduced by reproductive exhaustion from larger polyps. The reproductive polyps have 2–5 gonophores and a typical one with 2 gonophores had a height (contracted) of 0.73 mm. and a stem diameter of 0.35 mm., while the two gonophores had diameters of 0.28 and 0.35 mm.

This species approaches very closely to *H. carica* BERGH but BONNEVIE (1898*a*, p. 487) declares that the gonophores are hermaphroditic with developing sperms and eggs in the same gonophore. I was not able to investigate this feature during my visit to Oslo and the validity of the species depends on the confirmation of Professor BONNEVIE's observations.

Hydractinia minuta BONNEVIE.

BONNEVIE, 1898*a*, *Z. wiss. Zool.*, 63: 487, Taf. xxvi, fig. 38.

Type locality: 78° 16′ N., 15° 33′ E., 110 m. (Norske Nordhavs Expedition, 1876–1878) St. 374, 22 August, 1878).

Material seen: The type material (Zoologisk Museum, Oslo).

The nutritive hydranths are too contracted to yield measurements of value but they have whorls of 10–12 tentacles each. The encrusting base has smooth, simple, bluntly-pointed spines 0.24–0.45 mm. in length, which are about 0.175 mm. wide at the base. In this colony the spines are fairly numerous.

BONNEVIE (1899, p. 48) states that this species "is distinguished by the complete atrophy of the gonophore-bearing hydranths." This is true for a good many of the reproductive polyps on this shell, but close to the columellar aperture of the shell there are some polyps which bear 2–4 tentacles, and their hypostomes are distinct. Some polyps are greatly reduced with only minute tips to the blastostyles visible between the gonophores. There are 2–5 gonophores, each 0.24–0.31 mm. in diameter, on each reproductive polyp.

This re-examination confirms the views of BROCH (1916) and REES (1956) that *H. minuta* is identical with *Hydractinia carica* BERGH.

Hydractinia ornata BONNEVIE.

BONNEVIE, 1898*a*, *Z. wiss. Zool.*, 63: 485, Taf. xxvi, fig. 41.

Type locality: 72° 27′ N., 35° 1′ E., 249 m. (Norske Nordhavs Expedition, St. 270).

Material seen: The type material (Zoologisk Museum, Oslo).

The material consists of five fragments of encrusting base with polyps and gonophores. The encrusting base is thick and spongy without large spines, and I saw only two very small smooth spines of 0.23 mm. in height. The nutritive polyps are tall and columnar with whorls of 12–16 tentacles each; these polyps range from 1.68 mm. to 5.6 mm. in height.

The reproductive polyps are small and individual polyps often have the upper half pushed out of the vertical by the large gonophores. The basal part of the reproductive polyps below the point of origin of the gonophore is usually short, rarely exceeding the diameter of the gonophore in length. The larger gonophores have a diameter of 0.98–1.12 mm.; these are almost spherical with slight apical depressions. The gonophores are cryptomedusoids, each with 4 radial canals and a ring canal, and there are four rudiments of tentacular bulbs and smaller rudiments of interradial ones. These features are indicated in BONNEVIE's drawings (1899, pl. i, fig. 2). In this material there are no projecting papillae on any gonophore, but the ring canal area is raised up forming a ring with a depression centrally.

As has been noted in other *Hydractinia* (REES, 1956) the proboscis of the reproductive hydranth accumulates nematocysts as the tentacles shorten and are resorbed.

There is no difference between this species and *H. allmani*, except in the degree of maturity of the gonophore and the species is therefore placed in the synonymy of *Hydractinia allmani* BONNEVIE.

FAMILY BOUGAINVILLIIDAE

Bougainvillia muscoides M. SARS.

Perigonimus muscoides M. SARS, 1846, *Fauna Littoralis Norvegiae*, Heft 1: 8, Tab. 1, figs. 19–21.

Type locality: Mangerfjord, 20–30 fms. on *Ascidia mentula* and *Tubularia.*

Material seen: Grønholmen, Manger S[ARS]. (Zoologisk Museum, Oslo).

This material consists of some typical upright rhizocaulome formations with numerous medusa buds. It is not certain whether the material seen was part of the type material although it was collected by MICHAEL SARS. It differs in no way from the material described by me (1938) from the same locality.

Bougainvillia obscura BONNEVIE.

Bougainvillia obscura BONNEVIE, 1898*b*, *Bergens Mus. Årb.* No. 5, p. 7, Taf. 1, fig. 4.

Type locality: Unknown.

Material seen: The type colony.

The colony bears no medusa buds. The stems are rigid and not flexible and the terminal hydranth is larger than the lateral ones. There is a pseudohydrotheca which is fairly closely adherent and stops short of the base of the tentacles. The lateral polyps have short stems which are distinctly, but irregularly, wrinkled; they merge abruptly into the dilated polyp.

As HARTLAUB suggested (1911 p. 192, footnote) this colony appears to be a young one of *Bougainvillia muscoides* before the growth of the colony into an upright rhizocaulome formation. I propose therefore to place it in the synonymy of *B. muscoides.*

Bougainvillia vanbenedenii BONNEVIE.

Bougainvillia benedenii BONNEVIE, 1898*a*, *Z. wiss. Zool.*, 63: 484, Taf. 26, fig. 34, 35.

Type locality: Espevær, near the Hardangerfjord, W. coast of Norway.

Material seen: The type material (Zoologisk Museum, Oslo).

HARTLAUB (1907) and BRINK (1925) have suggested that this species is identical with *Bougainvillia ramosa* VAN BENEDEN and it is placed in the synonymy of this species by RUSSELL (1953). My own observations on the larger medusa buds confirm that there are two tentacles to each perradial bulb but no ocelli are visible. The oral tentacles on the manubrium are short and unbranched. The medusa buds are borne singly or in groups on the hydranth stems just proximal to the hydranth itself.

I see no reason for not regarding this species as identical with *B. ramosa*, but the hydroid of *B. superciliaris* undoubtedly occurs also in Norwegian waters (because its medusa has often been recorded) and the two species are very alike. In both, the medusa buds are often borne in clusters and the young medusae are very similar at liberation (see BRINK, 1925, Taf. 1, figs. 1–4 and BERRILL 1949, p. 1, figs. 1–6).

Rhizorhagium roseum M. SARS.

Rhizorhagium roseum M. SARS, 1877, *Fauna Littoralis Norvegiae*, Heft III: 28, Tab. II, figs. 37–43.

Perigonimus sarsii BONNEVIE, 1898*b*, *Bergens Museums Årb.* No. 5: 6, Taf. 1, fig. 3.

Type locality: Bongnestrømmen, Mangerfjord, 20 fathoms on *Tubularia indivisa.*

Material seen: The type material and BONNEVIE's type of *Perigonimus sarsii* from Kristiansund (Zoologisk Museum, Oslo).

According to the ~~original~~ label SARS seems to have collected his material at Bongnestrømmen, an exceptionally rich locality for hydroids and it was also at this spot that I took it in 1937. In 1938, I expressed the opinion that BONNEVIE's *P. sarsii* would prove to be this species and an examination of her type material from Kristiansund confirms this. The stems and stolons of this hydroid have a diameter of about 0.1 mm. and are growing over the dead stems of a larger hydroid (an *Eudendrium*) in which the stems have diameters of 0.2 mm. even at the tip.

The gonophores are large and many are ripe and at full size. After many years in alcohol they have shrunken to 1.3–1.68 mm. in diameter. *P. sarsii* can now be placed in the synonymy of *Rhizorhagium roseum.*

FAMILY PANDEIDAE

Leuckartiara abyssi (G. O. SARS).

Perigonimus abyssi G. O. SARS, 1873, *Forh. Vidensk. Selsk. Krist.*, 1873: 126, Tab. V, figs. 27–30.

Type locality: Hvitingsø, 80–200 fathoms on *Dentalium entale.*

Material seen: A colony from Hvitingsø (part of the original type material) (Zoologisk Museum, Oslo).

There are no colonies on *Nucula tumidula* from the collections of G. O. SARS and the above colony may be designated lectotype. The dimensions of a typical polyp are given below.

Measurements in mm.

Total height	1.05
Height of perisarc	0.7
Length of hydranth	0.35
Diameter of hydranth	0.175
Diameter of stem	0.05
Diameter of stolon	0.05

The species which I described from Herdla in 1938 differs in no way from this type material.

FAMILY MYRIOTHELIDAE

Consideration of *Monocoryne* and its place among the Myriothelidae has involved a brief review of the characteristics of these aberrant hydroids and has necessitated a re-definition of the family and the creation of two subfamilies, the Monocoryninae and the Myriothelinae. As *Monocoryne* must now be placed in the Myriothelidae the family has been re-defined to take this species.

Myriothelidae HINCKS 1868

Solitary polyps with simple or modified anchoring filaments, with or without a proximal adherent perisarc sheath. Tentacles all capitate, numerous, scattered, simple or compound. Gonophores borne either in the axils of the tentacles or on special blastostyles.

Type species: Lucernaria phrygia FABRICIUS 1780.

In addition to *Monocoryne* now placed in the family, six Southern Ocean species of *Myriothela* (described by JÄDERHOLM, 1905; BRIGGS, 1928, 1938, and MANTON, 1940) belong to it together with the two well known N. Atlantic species *M. phrygia* FABRICIUS and *M. cocksi* (VIGURS). The additional species reported by BONNEVIE (1898*a*, 1899) can be disregarded for they appear to be mutilated specimens of *M. phrygia*, and my re-examination in September, 1955 (of the fragments still preserved in the Zoologisk Museum, Oslo) has convinced me that they cannot be positively identified with any other species.

I propose to recognize two subfamilies, the Monocoryninae and the Myriothelinae which can be separated by the use of the following simple key.

Body tentacles simple .. .. Myriothelinae
Body tentacles compound (trifid) .. .. Monocoryninae

MONOCORYNINAE SUBFAMILY NOV.

Type species: Coryne gigantea BONNEVIE, 1898*b*.

Myriothelid polyp with basal perisarc sheath and a few stout anchoring filaments. Capitate, trifid body tentacles. Gonophores borne in the axils of the tentacles all over the body of the polyp. Each gonophore is hermaphroditic.

The sole genus is *Monocoryne* BROCH, 1909, with one species, *M. gigantea*, known only from Hammerfest and Trondheim.

MYRIOTHELINAE SUBFAMILY NOV.

Type species: Lucernaria phrygia, FABRICIUS 1780.

Myriothelid polyp, with or without basal perisarc sheath, with simple or modified anchoring filaments. Simple, capitate body tentacles. Gonophores borne on special blastostyles which may be simple or branched.

There is no perisarcal sheath in *Myriothela austrogeorgiae* JÄDERHOLM, *M. penola* MANTON, *M. australis* BRIGGS and *M. capensis* MANTON—as in the type species, *M. phrygia*, so that all these may be retained in *Myriothela*. The position of *M. meridiana* BRIGGS, 1938, requires further consideration when more material is available.

The British species *cocksi* VIGURS and the Australian *harrisoni* BRIGGS, 1938, both have a basal perisarc covering the lower end of this polyp and should be separated from *Myriothela* proper. VIGURS created the genus *Arum* for *cocksi* but since HINCKS (1868), the species has been referred to *Myriothela*. STECHOW (1923 p. 38) is the only author in recent years to recognize *Arum* and I propose to follow this arrangement. The two genera may be separated as follows:—

Proximal end of polyp naked; perisarc present only at tips of anchoring filaments .. .. *Myriothela*
Proximal end of polyp sheathed in tubular or lamellar perisarc, anchoring filaments also clothed in perisarc .. .. *Arum*

The following diagnoses will suffice for the genera.

MYRIOTHELA M. SARS, 1851.

Myriotheline polyp without adherent basal perisarc sheath, anchoring filaments with perisarc only at tips. Simple capitate tentacles. Blastostyles branched or unbranched.

Type species: Lucernaria phrygia FABRICIUS 1780.

ARUM VIGURS, 1849

Myriotheline polyp with tubular or lamellar perisarc sheath; anchoring filaments in form of processes covered with perisarc. Simple capitate body tentacles. Blastostyles, branched or unbranched.

Type species: Arum cocksi VIGURS.

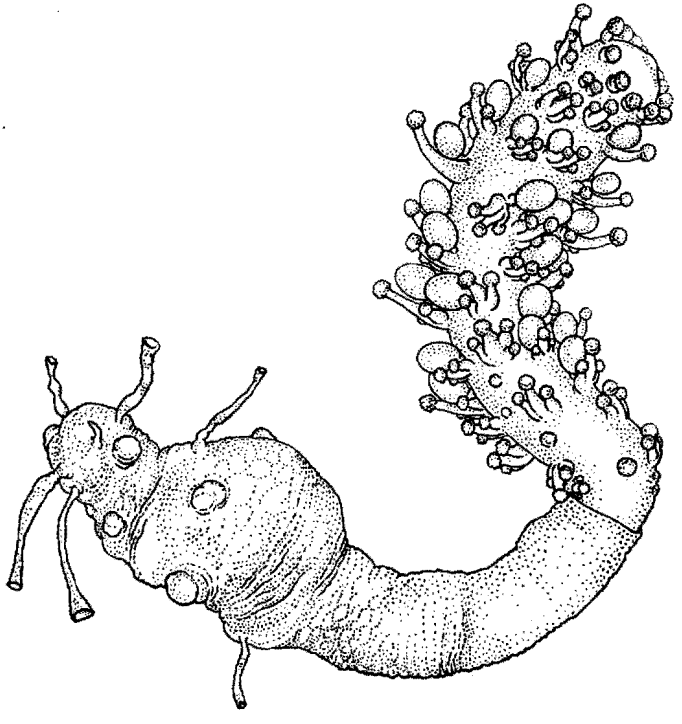

Figure 1. *Monocoryne gigantea* (BONNEVIE): a syntype from Hammerfest in the collections of the Zoologisk Museum, Oslo.

MONOCORYNE GIGANTEA (BONNEVIE)

Coryne gigantea BONNEVIE, 1898*b*, Bergens Mus. Årb., No. 5: 4, Taf. 1, fig. 1.

Type locality: Hammerfest, 50–100 fms.

Material seen: The type material (Zoologisk Museum, Oslo).

This species bears a superficial resemblance to *Myriothela* and on closer examination has many points of general structure in common with that genus.

The lower part of the polyp is enclosed in a moderately firm perisarcal tube, which is fairly close fitting as in *Myriothela cocksi*, but unlike that species *Monocoryne* has a few large, distinct, anchoring filaments. They arise from the proximal end and up to nearly half way up the perisarcal sheath. The latter is wrinkled and dilated near the posterior end. As far as can be judged, the distal ends of the anchoring filaments are swollen for attachment but as their ends have been torn off, the exact mode of attachment cannot be described (Figure 1).

The distal portion of the polyp is cylindrical and vermiform. Professor HJALMAR BROCH informs me (personal communication) that this species is constantly in motion when alive and that its tentacles are long and active.

The mouth is terminal and seems to be surrounded by a circle of about 8 simple capitate tentacles. The rest of the body is covered with irregularly arranged compound tentacles (Figure 2). These are very contracted but a tentacle consists of a larger central portion, and two shorter lateral branches, each ending in a capitate head. The lateral branches are fused at their base to the central one.

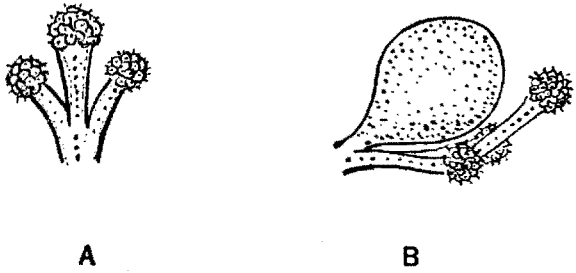

Figure 2. *Monocoryne gigantea* (BONNEVIE): *a.*, a trifid body tentacle seen from below; *b.*, side view of a trifid tentacle and a gonophore.

Large, pear-shaped, smooth gonophores are borne in the axils of these compound tentacles and are present right up to the oral whorl of tentacles, but in the two specimens examined, are not present in the region immediately distal to the end of the perisarc. JOHANNSEN (1924) examined the structure of the gonophores and found that both eggs and sperm may be formed in the same gonophore.

Although BONNEVIE (1898*b*) recognized that her species *gigantea* had affinities with the Myriothelidae, she, nevertheless, placed it in the genus *Coryne*. Later BROCH (1909, 1916) gave this species the generic name

Table III. *Monocoryne gigantea* BONNEVIE. *Measurements of type material* from Hammerfest.

Measurements in mm.

Total length of polyp.	14.7	12.1
Length of perisarc-covered portion	8.4	5.8
Length of naked portion of polyp	6.3	6.3
Maximum diameter of perisarc	2.24	2.38
Minimum diameter of perisarc	0.98–1.0	1.12
Diameter of naked part of polyp	1.68	1.4
Length of gonophores	0.7 –0.73	0.59–0.73
Diameter of gonophores	0.38–0.42	0.38–0.4
Length central branch of tentacle	0.87–0.98	0.7 –0.77
Diameter of capitate head of tentacle	0.21	0.21–0.24
Length of filament	1.4 –1.45	–
Diameter oral capitate tentacles	0.14	0.175
Diameter lateral capitate tentacles	0.175	0.175

Monocoryne in recognition of the fact that the species is a solitary non-colonial form, and although recognizing its Myriothelid affinities, retained it in the Corynidae. STECHOW (1923) placed it in the Corynidae (p. 36) and in *Candelabrum* (i.e *Myriothela*) on page 45!

The Corynidae are recognized to-day as a fairly compact group of colonial hydroids giving rise to Sarsid medusae. *Monocoryne* cannot be retained in it as a solitary hydroid whose morphology clearly demonstrates it to be a myriothelid hydroid with some special features. These exclude it from *Myriothela*, and, in my opinion justify the creation for it of a separate subfamily, the Monocoryninae as defined above.

Monocoryne has the vermiform appearance of a myriothelid but it is distinctive in several features. Unlike *Myriothela** (*s.str.*) it has a well developed perisarc tube and this is provided with a few, stout, perisarc-covered, anchoring filaments. This perisarc sheath is fairly closely adherent and moderately chitinized and represents a transitional phase between the lower Corymorphines and the highly specialized *M. phrygia*. It does, however, possess special features of its own, notably, its trifid tentacles and its hermaphroditic gonophores, and all these features considered together justify the creation of a subfamily of Myriothelidae, called the Monocoryninae as defined on page 115.

SUMMARY

This revision of some North European hydroids described by KRISTINE BONNEVIE is based on a re-examination of the type material in the Zoological Museum, Oslo.

Coryne brevicornis BONNEVIE is demonstrated to be synonymous with *Coryne hincksii* BONNEVIE, the latter species being distinct from other European species.

Hydractinia ornata BONNEVIE is placed in the synonymy of *Hydractinia*

* It must be admitted that *Candelabrum* BLAINVILLE, 1830, antedates *Myriothela* SARS, 1851, but I do not propose to discard this well established name.

allmani BONNEVIE. *Hydractinia humilis* BONNEVIE is shown to be very similar to *H. carica* BERGH, and will have to be referred to the latter species if BONNEVIE's assertion that each gonophore is hermaphroditic proves incorrect.

Bougainvillia obscura BONNEVIE proved to be a young colony of *B. muscoides* M. SARS; some material of the latter species collected by MICHAEL SARS was available for comparison. There is no reason why *Bougainvillia vanbenedenii* BONNEVIE should not retain its place in the synonymy of *B. ramosa*, although the possibility of confusion with *B. superciliaris* L. AGASSIZ exists.

BONNEVIE's *Perigonimus sarsii* has been compared with SARS's type colony of *Rhizorhagium roseum* and is referred to that species.

Monocoryne gigantea (BONNEVIE), proves on re-examination to be a Myriothelid hydroid worthy of a sub-family of its own (Monocoryninae sub-family nov.), all other Myriothelid hydroids being referred to the Myriothelinae. The genera, *Monocoryne* BROCH, *Myriothela* M. SARS and *Arum* VIGURS are re-defined.

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