AUSTRALASIAN ANTARCTIC EXPEDITION

1911-14.

UNDER THE LEADERSHIP OF SIR DOUGLAS MAWSON, O.B.E., B.E., D.Sc., F.R.S.

SCIENTIFIC REPORTS.

SERIES C.—ZOOLOGY AND BOTANY.

Edited by Professor T. Harvey Johnston,
University of Adelaide.

VOL. IX. PART 4.

HYDROIDA

BY

E. A. BRIGGS, D.Sc.,
Assistant Professor of Zoology, University of Sydney.

WITH TWO PLATES AND THREE TEXT FIGURES.

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NEW SPECIES DESCRIBED IN THIS REPORT.

HYDROIDA

By E. A. Briggs, D.Sc., Assistant Professor of Zoology, University of Sydney.

(Plates XV–XVI.)

INTRODUCTION.

The Hydroida collected by the Australasian Antarctic Expedition (1911–1914), under the leadership of Sir Douglas Mawson, were obtained from three widely separated regions: (1) Tasmania, (2) Macquarie Island, and (3) Commonwealth Bay, King George Land, and the neighbouring antarctic seas.

The Tasmanian specimens were taken in the dredge off Maria Island at depths varying from 65 to 1,300 fathoms. The presence of *Symplectoscyphus columnarius* (Briggs) and *Sertularella geodiae* Totton in these hauls is of interest since these species have recently been recorded from New Zealand waters. A species of *Halicornaria*, *H. comes*, has once again been found in association with *Aglaophenia tasmanica* Bale.

As a result of shore collecting at Macquarie Island there was obtained a new species of *Myriothela*, which is closely related to *M. australis* Briggs from the warm coastal waters of Eastern Australia. The range of *Orthopyxis platycarpa* Bale has been extended from Japan and Victoria to Macquarie Island.

From Commonwealth Bay, King George Land, come new species of *Symplectoscyphus* and *Staurotheca;* a new species of *Oswaldella* is recorded from Station VII, lat. S. 62° 42′, long. E. 92° 10′.

The collection comprises thirty-five species referable to twenty-two genera; four species are described as new, and a new name has been proposed for *Halicornaria furcata* var. *intermedia* (= *Halicornaria comes*).

The athecate forms are poorly represented by three species. The Thecata include thirty-two species distributed among their families as follows: Haleciidae (1 species), Campanulariidae (7 species), Campanulinidae (2 species), Lafoëidae (4 species), Syntheciidae (3 species), Sertulariidae (9 species), and Plumulariidae (6 species).

LIST OF SPECIES.

ATHECATA.

Family MYRIOTHELIDAE.

Myriothela meridiana sp. nov.

Family BOUGAINVILLIIDAE.

Hydronema angustum (Hartlaub).

Family EUDENDRIIDAE.

Eudendrium sp. indet.

THECATA.

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Family CAMPANULARIIDAE.

Orthopyxis platycarpa Bale.
Obelia australis Lendenfeld.
Obelia geniculata (Linnaeus).
Campanularia hicksoni Totton.
Campanularia tincta Hincks.
Campanularia antarctica Ritchie.
Billardia subrufa (Jäderholm).

Family CAMPANULINIDAE.

Campanulina belgicae Hartlaub.
Stegella lobata (Vanhöffen).

Family LAFOËIDAE.

Hebella plana Ritchie.
Lafoëa antarctica Hartlaub.
Lafoëa gracillima (Alder).
Reticularia antarctica (Hartlaub).

Family SYNTHECIIDAE.

Staurotheca antarctica Hartlaub.
Staurotheca dichotoma Allman.
Staurotheca compressa sp. nov.

Family SERTULARIIDAE.

Symplectoscyphus columnarius (Briggs).
Symplectoscyphus articulatus (Allman).
Symplectoscyphus vanhoeffeni Totton.
Symplectoscyphus curvatus (Jäderholm).
Symplectoscyphus glacialis (Jäderholm).
Symplectoscyphus spiralis (Hickson and Gravely).
Symplectoscyphus mawsoni sp. nov.
Sertularella geodiae Totton.
Selaginopsis pachyclada (Jäderholm).

FAMILY PLUMULARIIDAE.

Oswaldella antarctica (Jäderholm).
Oswaldella billardi sp. nov.
Schizotricha unifurcata Allman var. *turqueti* Billard.
Halicornopsis elegans (Lamarck).
Halicornaria comes nom. nov.
Aglaophenia tasmanica Bale.

LIST OF STATIONS.

I. TASMANIA.

A. Off Maria Island, Tasmania, 65 fathoms; 12th December, 1912.
Obelia australis Lendenfeld.
Symplectoscyphus columnarius (Briggs).
Halicornopsis elegans (Lamarck).
Halicornaria comes nom. nov.
Aglaophenia tasmanica Bale.

B. Off Maria Island, Tasmania, 1,300 fathoms; 13th December, 1912.
Sertularella geodiae Totton.
Halicornopsis elegans (Lamarck).

II. MACQUARIE ISLAND.

Myriothela meridiana sp. nov.
Orthopyxis platycarpa Bale.
Obelia geniculata (Linnaeus).
Campanularia tincta Hincks.

III. ANTARCTIC STATIONS.

STATION I.

Commonwealth Bay, King George Land.

Substation A—25 to 30 fathoms.

Ophiodissa arborea (Allman).
Campanularia hicksoni Totton.
Stegella lobata (Vanhöffen).
Reticularia antarctica (Hartlaub).
Staurotheca compressa sp. nov.
Symplectoscyphus articulatus (Allman).
Symplectoscyphus mawsoni sp. nov.

Substation B—45 to 50 fathoms; 14th December, 1913.

Hydronema angustum (Hartlaub).
Billardia subrufa (Jäderholm).

Lafoëa gracillima (Alder).

Substation C—55 to 60 fathoms; 21st December, 1913.

Ophiodissa arborea (Allman).
Billardia subrufa (Jäderholm).
Stegella lobata (Vanhöffen).
Lafoëa antarctica Hartlaub.
Lafoëa gracillima (Alder).
Reticularia antarctica (Hartlaub).
Staurotheca compressa sp. nov.
Symplectoscyphus articulatus (Allman).
Symplectoscyphus spiralis (Hickson and Gravely).
Symplectoscyphus mawsoni sp. nov.

Substation D—350 to 400 fathoms; 22nd December, 1913. Bottom, thick ooze; temperature, —1·85° C.

Staurotheca antarctica Hartlaub.
Staurotheca dichotoma Allman.
Symplectoscyphus glacialis (Jäderholm).
Symplectoscyphus spiralis (Hickson and Gravely).
Oswaldella antarctica (Jäderholm).

STATION II.

Lat. S. 66° 52′, Long. E. 145° 30′, 288 to 300 fathoms; 28th December, 1913. Bottom, thick ooze; temperature, —1·8° C.

Ophiodissa arborea (Allman).
Selaginopsis pachyclada Jäderholm.

STATION III.

Lat. S. 66° 32′, Long. E. 141° 37′, 157 fathoms; 31st December, 1913. Bottom, small amount of ooze; temperature, —1·62° C.

Billardia subrufa (Jäderholm).
Staurotheca antarctica Hartlaub.

STATION VII.

Lat. S. 65° 42′, Long. E. 92° 10′, 60 fathoms; 21st January, 1914. Bottom, small rocks with red algae.

Campanularia hicksoni Totton.
Campanularia antarctica Ritchie.
Staurotheca compressa sp. nov.
Oswaldella antarctica (Jäderholm).
Oswaldella billardi sp. nov.
Schizotricha unifurcata Allman var. *turqueti* Billard.

STATION VIII.

Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914.
Bottom, mainly small rocks, no ooze.

Billardia subrufa (Jäderholm).
Campanulina belgicae Hartlaub.
Stegella lobata (Vanhöffen).
Hebella plana Ritchie.
Symplectoscyphus curvatus (Jäderholm).
Symplectoscyphus glacialis (Jäderholm).
Symplectoscyphus vanhoeffeni Totton.

STATION XII.

Lat. S. 64° 32′, Long. E. 97° 20′, 110 fathoms; 31st January, 1914.
Bottom, rock, with small amount of ooze.

Oswaldella antarctica (Jäderholm).

DESCRIPTION OF GENERA AND SPECIES.

FAMILY MYRIOTHELIDAE.

MYRIOTHELA MERIDIANA *sp. nov.*

(Plate XV., fig. 3.)

The individuals are solitary, growing quite independently of each other, attached to stones below low water at Macquarie Island.

The hydranth consists of an isolated polyp, carrying near its proximal end the blastostyles, which give origin and support to the gonophores. The hydranth is perfectly naked and is highly contractile. There is no hydrocaulus. The proximal end of the hydranth is truncated. There is no investment of chitinous perisarc around the proximal end as in *M. cocksi* and *M. harrisoni*.

The hydranth is elongated, cylindrical in form, and gradually tapers towards the apex. The mouth is a small aperture occupying the summit of a short conical hypostome, behind which the tentacles commence and thence extend over the rest of the body down to the blastostyle-bearing zone. The tentacles are capitate with cylindrical stems, each terminated by a large spherical capitulum which is well defined and distinct from the stem. These tentacles are very numerous—up to eight hundred or more may be counted on a single hydranth. They are set very close to one another and densely cover the hydranth as far as the blastostyle region where they decrease very much in size, but do not encroach upon this portion of the hydranth as they do in the case of *M. austro-georgiae*, in which they are found between the blastostyles. The tentacle-zone of the hydranth is exceedingly long, occupying about five-sixths of the entire length of the extended polyp.

The blastostyle-bearing portion of the hydranth is slightly narrower than the tentacle-zone immediately above it. The blastostyles are grouped at the base of the hydranth, just above its point of attachment to the substratum. This zone occupies about one-sixth of the entire length of the extended hydranth. The blastostyles occur very close together in great abundance and completely obscure the proximal end of the hydranth. They surround the body on all sides, without any very definite arrangement.

The blastostyles are branched and carry the gonophores, which are continued to within a short distance of the attached end. The gonophores are spherical in form, supported on stout cylindrical peduncles which spring without any definite arrangement from the surface of the blastostyles. Tentacles are completely absent from the blastostyles. The remarkable structures to which Allman gave the name of " claspers " in his description of *M. cocksi* do not occur in this species.

Six specimens of this species were collected, ranging from 12 mm. to 30 mm. in height.

Locality.—Macquarie Island. Attached to stones below low water.

Affinities.—*Myriothela meridiana* is readily distinguished from *M. austro-georgiae* by its small size, up to 30 mm. in height, and by the absence of tentacles from the blastostyle-bearing zone. *M. meridiana* is closely related to *M. australis* Briggs, but differs from that species in the following characters: (1) the blastostyles are branched, and (2) the blastostyles are not provided with tentacles.

KEY TO THE SOUTHERN SPECIES OF THE GENUS *Myriothela*.

A. Perisarc present, forming an investment over the hydrorhiza ... *M. harrisoni* Briggs.
AA. Perisarc absent, hydrorhiza naked.
B. Tentacles of hydranth present on blastostyle-bearing zone ... *M. austro-georgiae* Jäd.
BB. Tentacles of hydranth absent from blastostyle-bearing zone.
C. Blastostyles unbranched, terminal tentacles present ... *M. australis* Briggs.
CC. Blastostyles branched, terminal tentacles absent ... *M. meridiana* sp. nov.

FAMILY BOUGAINVILLIIDAE.

HYDRONEMA ANGUSTUM (*Hartlaub*).

Hydractinia angusta Hartlaub, Result. Voyage du " Belgica," Zoologie, Hydroiden, 1904, p. 7, pl. IV, figs. 1–7.

Hydractinia dendritica Hickson and Gravely, National Antarctic Exped., Nat. Hist., III, Hydroid Zoophytes, 1907, p. 9, pl. ii, figs. 7–10.

Hydronema dendriticum Stechow, Archiv für Naturgeschichte, Berlin, 1921, p. 252; *Id.*, Stechow, Zool. Jahrb., 1923, p. 67, fig. F.

Hydronema angustum Stechow, Zool. Jahrb., 1923, p. 67; *Id.*, Totton, Brit. Antarct. ("Terra Nova") Exped., Zool., Nat. Hist. Rep. v, 5, 1930, p. 138.

The entire length (65 mm.) of a tube containing a polychaete worm, is encrusted by *Hydronema angustum* (Hartlaub). The majority of the polyps are retracted and very macerated, but the gastrozooids and the skeletal features agree very closely with Hartlaub's description and figures.

In referring *Hydractinia dendritica* H. and G. to *Hydronema angustum* (Hartlaub), I have followed Totton who has examined Hickson and Gravely's type material of "Specimen A" and "Specimen B" collected by the "Discovery" Expedition.

Locality.—Commonwealth Bay, King George Land, 45 to 50 fathoms; 14th December, 1913.

Distribution.—Previously recorded from antarctic seas by Hartlaub (1904), Hickson and Gravely (1907), and Totton (1930).

Family EUDENDRIIDAE.

Genus Eudendrium *Ehrenberg* (in part).

Eudendrium *sp. indet.*

Poor specimens, without coenosarc, represent an indeterminable species of *Eudendrium.*

Locality.—Commonwealth Bay, King George Land, 55 to 60 fathoms, 21st December, 1913.

Family HALECIIDAE.

Genus Ophiodissa *Stechow.*

Ophiodes Hincks, Ann. Mag. Nat. Hist., (3), xviii., 1866, p. 422 (name preoccupied).

Ophiodissa Stechow, Zool. Jahrb., xlii., Abt. für Syst., 1919, p. 41.

Ophiodissa arborea (*Allman*).

Halecium robustum Allman, Rep. Sci. Results "Challenger" Exped., Zool., xxiii., Hydroida, pt. ii., 1888, p. 10 (name preoccupied).

Halecium arboreum Allman, Rep. Sci. Results "Challenger" Exped., Zool., xxiii., Hydroida, pt. ii., 1888, Explanation of Plate iv., figs. 1–3. *Id.*, Hickson and Gravely, National Antartic Exped., Nat. Hist., iii., Hydroid Zoophytes, 1907, p. 27, pl. iv., figs. 27–29.

Ophiodes arboreus Billard, Ann. Sci. Nat., Zool., (9), xi., 1910, p. 4. *Id.*, Ritchie, Proc. Roy. Soc. Edinb., xxxiii., 1, 1913, p. 15, figs. 2, 3. *Id.*, Stechow, Abh. Math.-phys. Klasse K. Bayer Akad. der Wissensch., iii., Suppl.-Bd., 1913, p.

87. *Id.*, Billard, Deux. Expéd. Antarctique Française, Hydroides, 1914, p. 8. *Id.*, Jäderholm, Arkiv för Zool., K. Svenska Vet. Akad., xii., (9), 1919, p. 6, pl. i., fig. 6.

Ophiodissa arborea Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v., 5, 1930, p. 142, text-fig. 2a.

Not *Halecium robustum* Ritchie, Trans. Roy. Soc. Edinb., xlv., 2, 1907, p. 524.

Not *Halecium robustum* Vanhöffen, Deutsche Südpolar-Exped., Bd. xi., Zool., iii., Die Hydroiden, 1910, p. 319, fig. 35.

Not *Halecium arboreum* Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., Bd. v., Zool. i., Hydroiden, 1905, p. 11, pl. v., fig. 4.

Colonies of this remarkably robust species occur in the collection from several localities. Although somewhat broken, the largest specimen rises to a height of 170 mm. from a thick hydrorhizal plexus. The trophosomes are in poor condition, with scarcely a trace of hydrothecae, and in most instances the nematophores have completely disappeared. A few fragments, however, are sufficiently well preserved to show the characters of the trophosomes, which agree with Ritchie's description and figures of colonies collected by the " Nimrod " in the open waters of McMurdo Sound, and southwards from Cape Royds. The nematophores resemble those in the figure by Hickson and Gravely, rather than those in Ritchie's drawings, although their dimensions are somewhat smaller than those recorded in the " Discovery " Report.

The colour of the perisarc of the colony from Station 2 is unusual, the stem and branches, and even the ultimate twigs appearing very dark brown. The remaining forms are of a uniform light greenish-brown colour.

Dimensions—

Internode, length	1·00–1·48 mm.
Internode, diameter...	0·31–0·32 mm.
Hydrotheca, diameter	0·31–0·32 mm.
Hydrotheca, depth	0·06–0·07 mm.
Nematophore, diameter	0·10–0·12 mm.
Nematophore, length	0·10–0·12 mm.

Localities.—Commonwealth Bay, King George Land, 25 fathoms; 3rd and 4th September, 1912.

Commonwealth Bay, King George Land, 55–60 fathoms; 21st December, 1913. Station 2, Lat. S. 66° 52′, Long. E. 145° 30′, 288–300 fathoms; 28th December, 1913. Bottom, thick ooze. Temperature, –1·8° C.

Distribution.—Previously recorded from Station 149j, Off Cumberland Bay, Kerguelen Island. 105 fathoms (Allman); McMurdo Bay, from shallow water to 130

fathoms (Hickson and Gravely); McMurdo Sound, 25–50 fathoms; Cape Royds, 20–80 fathoms (Ritchie); Milieu du chenal Peltier, entre l'îlot Goetschy et l'île Doumer, 92 metres (Billard); Okinose Bank, Sagami Bay, Japan (Stechow); Sagami, Misaki, 200 fathoms; Kiushiu, Goto Island, Japan (Jäderholm); McMurdo Sound, 50–300 fathoms (Totton).

Family CAMPANULARIIDAE.

Genus Orthopyxis *Agassiz.*

Orthopyxis Bale, Proc. Roy. Soc. Vict., xxvii., (n.s.), 1, 1914, pp. 72–74.

Trophosome.—Colony consisting of smooth or undulated pedicels springing from a creeping stolon and supporting each a single hydrotheca; hydrothecae campanulate, with lower part compressed, but usually circular above, the perisarc varying much in thickness, but always greatly thickened inwards near the base so as to form a floor on which the hydranth is supported; hydranth radially symmetrical with about 24–32 tentacles; hypostome large and trumpet-shaped.

Gonosome.—Gonangia ovoid or compressed; gonozooid a modified medusa, without tentacles or manubrium, but with four branched radial canals and sometimes with marginal sense-organs.

Orthopyxis platycarpa *Bale.*

Orthopyxis platycarpa Bale, Proc. Roy. Soc. Vict., xxvii., (n.s.), 1, 1914, p. 79, pl. xi., fig. 3, pl. xii., fig. 3. *Id.*, Stechow and Uchida, Sci. Rep. Tohoku Imp. University, 4th series, Biol., vi., 3, 1931, p. 548, text-fig. 2, pl. xv., fig. 2.

To this species I refer a number of specimens, without gonosome. The characters of the trophosome agree with those of this species as described by Bale, and the hydrothecae in general approach closest to Bale's figure (the fourth from the left) on Plate xi. The margins of the hydrothecae, however, appear to be a little more abruptly everted than in the Victorian specimens. From a stout creeping stolon arise numerous unbranched pedicels which are slightly to strongly waved throughout their length. The pedicels, which are thick-walled, are one and one-half to three times as long as the hydrothecae. Immediately below the base of the hydrotheca is a small spherule which is slightly narrower than the pedicel on which it is supported. The hydrothecae are large, wide-based in the broader aspect, with the walls somewhat thickened, principally in the form of a convex sub-marginal band. The walls are greatly thickened inwards near the base so as to form an annular shelf on which the hydranth is supported. The margin of the hydrotheca is plain and distinctly everted.

Dimensions—

Stolon, diameter	0·14–0·17 mm.
Pedicel, length	0·65–1·24 mm.

Pedicel, diameter	0·07–0·10 mm.
Hydrotheca, depth	0·40–0·51 mm.
Hydrotheca, diameter at mouth	0·28–0·42 mm.

These measurements are somewhat larger than those of the type specimen, in which the hydrothecae are 0·33–0·43 mm. in depth, with a diameter at the border of 0·32–0·39 mm.

Locality.—Macquarie Island, littoral zone.

Distribution.—Hitherto recorded only from "In or near Port Phillip," Victoria (Bale); Mutsu Bay, Japan (Stechow and Uchida).

Genus OBELIA *Péron and Lesueur.*

OBELIA AUSTRALIS *Lendenfeld.*

Obelia australis Lendenfeld, Proc. Linn. Soc., New South Wales, ix, 1884, p. 604; *Id.*, Lendenfeld, *Ibid.*, p. 920, pl. xliii, figs. 19–22. *Id.*, Bale, Proc. Linn. Soc., New South Wales, (2), iii, 1888, p. 753, pl. xii, figs. 1–2. *Id.* Marktanner-Turneretscher, Ann. K.K. Hofmus. Wien, v, 1890, p. 209. *Id.*, Hartlaub, Zool. Jahrb., Syst., xiv, 1901, p. 367. *Id.*, Thornely, Ceylon Pearl Oyster Fisheries, pt. ii, Suppl. Rep., viii, Hydroida, 1904, p. 113.

Locality.—Off Maria Island, Tasmania, 65 fathoms; 12th December, 1912. Rare, on the stem of *Aglaophenia tasmanica* Bale.

Distribution.—This species is new to the fauna of Tasmania. Previous records are from New Zealand (Lendenfeld; Hartlaub); Port Jackson, New South Wales (Lendenfeld; Marktanner-Turneretscher); Cheval Paar, Gulf of Manaar, Ceylon (Thornely).

OBELIA GENICULATA (*Linnaeus*).

Sertularia geniculata Linnaeus, Systema Naturae, 10th ed., 1758, p. 812.

Obelia geniculata Nutting, American Hydroids, pt. iii, Campanularidae and Bonneviellidae, 1915, p. 73, pl. xviii, fig. 1–5 (synonymy).

A number of macerated fragments of this shallow-water hydroid were found among the stomach contents of a specimen of *Notothenia macrocephala* Günther, captured in the littoral zone at Macquarie Island. The trophosomes are in poor condition, the majority of the hydrothecae being detached from their pedicels. The stems are usually unbranched and the outer side of each stem-internode shows the characteristic thickening of the perisarc, which reaches its maximum development just below the insertion of the pedicel. The pedicels are moderately long, decreasing rapidly in diameter from the proximal to the distal end, and ornamented with five tonine strongly-marked annulations.

Locality.—Macquarie Island. From the stomach of a fish, *Notothenia macrocephala* Günther.

Distribution.—The distribution of this species is world-wide.

CAMPANULARIA HICKSONI *Totton.*

Campanularia hicksoni Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., v, 5, 1930, p. 148, text-fig. 7a–e.

Campanularia laevis Hickson and Gravely, National Antarctic Exped., Nat. Hist., iii, Hydroid Zoophytes, 1907, p. 25, pl. iv, fig. 26. *Id.*, Vanhöffen, Deutsch Südpolar-Exped., xi, Zool. iii, Die Hydroiden, 1910, p. 298, fig. 18a–c. *Id.*, Ritchie, Proc. Roy. Soc. Edinb., xxxiii, 1, 1913, p. 19, fig. 5.

Not *Campanularia laevis* Hartlaub, Zool. Jahrb., Suppl. vi, 1905, p. 565, fig. p.

A colony consisting of a slender smooth stolon from which unbranched pedicels arise, was found creeping upon the stem of *Staurotheca.*

The pedicels are long, reaching a height of 10 mm.; they are smooth, except for a trace of faint annulation at the base, and in one case the distal end is divided by transverse nodes into a series of short internodes which become broadened at their upper extremity. Below each hydrotheca is a small but distinct disc-shaped annulation. The hydrothecae are large and tubular, the sides being nearly parallel for the greater part of their length, and the lower portion forming a semicircular outline. The margin of the hydrotheca is divided into 14 to 16 deeply-cut teeth, each of which is flattened on top and has a considerable portion of its opposite sides parallel. The teeth are separated by deep, semicircular embayments.

Gonosome.—Creeping over the stem of a specimen of *Oswaldella antarctica* are several stolons from which arise unbranched pedicels and numerous gonangia borne on moderately long stalks at short irregular intervals. Although the trophosomes are in so bare a condition that no trace of hydrothecae can be discovered, the gonangia belong, without doubt, to *Campanularia hicksoni* since they are in complete agreement with Ritchie's description and figures of the female gonangia of that species :—"In shape they are flask-like, and exceedingly graceful, widening from the stalk into a long body, one of the profiles of which is usually more convex than the other. This tapers gradually upwards into a distinct neck, which widens slightly again before the truncated termination is reached. The aperture is circular and lies at right angles to the long axis of the gonangium." The gonangia are supported on moderately long stalks which bear strongly-marked twists varying from three to five in number.

Dimensions—

Stolon, diameter	0·29–0·32 mm.
Pedicel of hydrotheca, length	Up to 10 mm.
Pedicel of hydrotheca, diameter	0·20–0·26 mm.

Hydrotheca, length	2·10–3·50 mm.
Hydrotheca, diameter	1·10–2·00 mm.
Gonangium, length	Up to 5 mm.
Gonangium, maximum diameter	1·32–1·56 mm.
Gonangium, length of stalk	0·39–0·54 mm.

Localities.—Commonwealth Bay, King George Land, 25 fathoms; 3rd September, 1912, on *Staurotheca.*

Station 7, Lat. S. 65° 42′, Long. E. 92° 10′, 60 fathoms; 21st January, 1914. Bottom, small rocks with red algae.

Distribution.—Previously recorded from McMurdo Bay, 20 fathoms, and Flagon Point (Hickson and Gravely); Gauss Station, 385 metres (Vanhöffen); Bay (east of Cape Royds), 7–8 fathoms; McMurdo Sound, 25–50 fathoms; Off Cape Royds (south), 30–60 fathoms (Ritchie). Off Cape Adare, 45–50 fathoms, and off entrance to McMurdo Sound, 50 fathoms (Totton).

Campanularia tincta *Hincks.*

Campanularia tincta Hincks, Ann. Mag. Nat. Hist., (3), vii, 1861, p. 280, pl. xii. *Id.*, Bale, Cat. Austr. Hydroid Zoophytes, 1884, p. 57, pl. i, figs. 4–6, pl. xix, fig. 29. *Id.*, Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., Bd. v., Zool. i, Hydroiden, 1905, p. 14, pl. v, fig. 5. *Id.*, Warren, Ann. Natal Govt. Mus., i, 1908, p. 337, fig. 18. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., Bd. xi, Zool. iii, Die Hydroiden, 1910, p. 296, fig. 17a–e. *Id.*, Ritchie, Mem. Austr. Mus., iv, 16, 1911, p. 814. *Id.*, Jäderholm, Arkiv för Zool., K. Svenska Vet.-Akad., xii, 9, 1919, p. 12, pl. iii, fig. 3.

? Campanularia tincta Hartlaub, Zool. Jahrb. Suppl. vi, 1905, p. 557, figs. Da, E. *Id.*, Nutting, American Hydroids, pt. iii,—Campanularidae and Bonneviellidae, 1915, p. 41, pl. iv, figs. 6, 7.

Hincksia tincta Agassiz, Cont. Nat. Hist. U.S., (2), iv, p. 355.

Several small colonies, apparently belonging to this species, consist of smooth creeping stolons from which spring unbranched pedicels with a single terminal hydrotheca. No gonothecae are present to confirm this identification, but the characters of the trophosome agree on the whole fairly closely with Hincks' original description and figures of Victorian specimens. The pedicels are longer than the hydrothecae, and are marked by definite undulations throughout their whole length. There is a small, somewhat compressed spherule immediately below the base of the hydrotheca with a slightly smaller diameter than that of the pedicel. The hydrothecae are tubular and deep, with the sides approximately parallel. The margin is cut into eight rather large, rounded teeth, which are separated by shallow, semicircular embayments. The diaphragm is

placed very close to the bottom of the hydrotheca. These structural details correspond more closely with Warren's figures of Natal specimens than with those given by Hartlaub and Nutting.

There are differences in size to be noted, for while the measurements of the Macquarie Island specimens agree fairly closely with those deduced from Hincks' magnified figure, and with those given by Warren and Ritchie, yet they are considerably smaller than those recorded by Vanhöffen for Antarctic specimens, and by Jäderholm for representatives of this species from the Falkland Islands, from Tierra del Fuego, and from Japan.

Dimensions—

Stolon, diameter	0·09–0·10 mm.
Pedicel, length	0·57–1·20 mm.
Pedicel, diameter	0·06–0·07 mm.
Hydrotheca, depth	0·37–0·40 mm.
Hydrotheca, diameter at mouth	0·18–0·23 mm.

Locality.—Macquarie Island, littoral zone.

Distribution.—Previously recorded from Port Phillip (Hincks), and Portland, Victoria (Bale); Falkland Islands (Jäderholm; Ritchie; Hartlaub ?); Straits of Magellan (Hartlaub ?; Jäderholm); Natal (Warren); Antarctica (Vanhöffen); New South Wales (Ritchie); Lord Howe Island (Briggs); Japan (Jäderholm).

Campanularia antarctica *Ritchie.*

Campanularia volubilis (Linnaeus) var. *antarctica* Ritchie, Proc. Roy. Soc. Edinb., xxxiii., 1, 1913, p. 22, fig. 6.

Campanularia antarctica Stechow, Zool. Anz., lvi., 1923, p. 3.

Although no gonothecae are present to confirm this determination, the Mawson specimens are without doubt identical with those collected by the British Antarctic Expedition (1908) and named by Ritchie *Campanularia volubilis* (Linnaeus) var. *antarctica*. The long unbranched pedicels, smooth except for a few (three to five) annulations at the base, the hydrothecae of the *volubilis*-type, twice as deep as wide, with the margin cut into twelve to fourteen rounded teeth, and the prolonged base of the hydrotheca, are characters which agree in detail with Ritchie's description and figure of this antarctic species. The diaphragm separates the hydrotheca from its prolonged base, which rests upon a very definite spherical internode intervening between the hydrotheca and the pedicel.

Dimensions—

Stolon, diameter	0·14–0·15 mm.
Pedicel, length	1·56–2·00 mm.
Pedicel, diameter	0·06–0·07 mm.
Hydrotheca, depth	0·78–0·90 mm.
Hydrotheca, diameter at mouth	0·39–0·51 mm.

Locality.—Station 7, Lat. S. 65° 42′, Long. E. 92° 10′, 60 fathoms; 21st January, 1914. Bottom, small rocks with red algae.

Distribution.—This species has hitherto been recorded only from Bay (east of Cape Royds), 7–20 fathoms; Cape Royds (south), 20–30 fathoms (Ritchie).

Genus Billardia *Totton.*

Billardia Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v., 5, 1930, p. 150.

Genotype.—Billardia novae-zealandiae Totton.

Billiardia subrufa (*Jäderholm*).

Campanularia subrufa Jäderholm, Arch. de Zool. exp. et gén., (4), iii., 1904, Notes et Revue, p.v.; *Id.*, Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., Bd. v., Zool. i., Hydroiden, 1905, p. 15, pl. vi., figs. 4–6. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., Bd. xi., Zool. iii., Die Hydroiden, 1910, p. 296, fig. 16a-c. *Id.*, Nutting, American Hydroids, pt. iii.,—Campanularidae and Bonneviellidae, 1915, p. 42, pl. v., figs. 2, 3.

Billardia subrufa Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep. Zool., v., 5, 1930, p. 151, text-fig. 8b.

A number of fragments and a single robust colony from Station 8 represent this typically antarctic species. The largest specimen is 195 mm. in height, thus exceeding in size the specimens originally described by Jäderholm (180 mm.), and those collected by the "Gauss" Expedition (165 mm.). The thick, strongly-fascicled stem, 5 mm. in diameter at the base, divides almost immediately into several stout branches, and from these spring irregularly disposed branches, which are mainly lateral in position. The ultimate branches are monosiphonic and are divided into internodes which, in some cases, fall roughly into two size-groups—those on the lower part of the branch which bear two hydrothecae, and those on the distal part which bear only a single hydrotheca each, and are about half the length of the former. The hydrothecae agree in detail with the descriptions and figures given by both Jäderholm and Vanhöffen.

Gonosome.—The gonangia are borne on the branches and each springs, without a definite stalk, from a strong process near the distal end of the branch-internode. They are long, cylindrical in form, and gradually increase in diameter, attaining their maximum width about two-thirds of their length from the proximal end, and then gradually decreasing towards the distal extremity. Their walls are regularly and extensively annulated, being marked by a series of eighteen to nineteen strongly-defined, complete rings.

The gonangia reach a length of 3·5 mm., with a maximum diameter of 1·12 mm. about two-thirds of the length of the body from the proximal end. The gonangial contents appear to be a much-decomposed mass of spermatozoa, but are not sufficiently well-preserved to allow of accurate determination.

These gonangia (male ?) differ from those originally described and figured by Jäderholm, since they do not possess a broad truncated distal end. In this respect they agree with Vanhöffen's specimens from the " Gauss " Expedition. The female gonangia of *B. subrufa* are described by Jäderholm as follows :—" Diese sind gross, 2,2–2,5 mm. lang mit schmaler, gespitzter Basis und werden allmählich breiter gegan die Spitze, wo sie breit abgestutzt sind. Die Gonothekenwand ist scharfeckig geringelt mit unter einander nahezu parallelen Ringelungen."

Vanhöffen has already drawn attention to the dissimilarity which exists between the gonangia described and figured by Jäderholm and those found by himself in the " Gauss " collection. In this connection he notes that " Sie weichen von denen der Schwedischen Expedition insofern ab, als sie nicht oben abgestutzt sind, sondern sich allmählich zu kurzer, röhrenförmiger, mit Ringkragen versehener Mündung verengen."

The differences between the gonangia found among the Mawson material and those formerly described by Jäderholm may be due to sexual dimorphism. On the other hand, Jäderholm's drawing appears to me to represent a damaged specimen in which the distal one-third of the gonangium is missing. This view is supported by his measurements, 2·2–2·5 mm. in length, as against a length of 3·5 mm. in the case of the " Aurora " specimens.

Dimensions—

Hydrotheca, length	0·93–1·09 mm.
Hydrotheca, diameter at mouth	0·49–0·62 mm.
Hydrotheca, diameter at base	0·20–0·21 mm.
Gonangium, length	Up to 3·5 mm.
Gonangium, maximum diameter	1·12 mm.

Affinities.—In his monograph on the American Campanularidae and Bonnevillidae, Nutting states, in reference to the retention of this hydroid in the genus *Campanularia*, that " This species, having no diaphragm, goes with doubt into the family

of Campanularidae. The form of the proboscis, however, seems to the writer more important than the presence or absence of the disphragm, and hence he places it in the Campanularidae, and in the genus *Campanularia* on account of its producing ova without the intervention of medusae."

Totton has retained Jäderholm's *C. subrufa* in the Family Campanulariidae, but has erected for its accommodation a new genus, *Billardia*, with *Billardia novae-zealandiae* as its genotype.

Localities.—Commonwealth Bay, King George Land, 45–50 fathoms; 14th December, 1913.

Commonwealth Bay, King George Land, 55–60 fathoms; 21st December, 1913. Station 3, Lat. S. 66° 32′, Long. E. 141° 37′, 157 fathoms; 31st December, 1913. Bottom, small amount of ooze. Temperature, -1·62° C. Station 8, Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914. Bottom, mainly small rocks, no ooze.

Distribution.—Previously recorded from Cape Seymour, Seymour Island, 150 metres; South-west of Snow Hill Island, 125 metres; Shag Rocks, west of South Georgia, 160 metres; North of Joinville Land, 104 metres (Jäderholm); Gauss Station, 385 metres; Gauss-Berge, 150 metres (Vanhöffen); McMurdo Sound, 100 fathoms ("Discovery" Exped.); McMurdo Sound, 140 fathoms and 207 fathoms; south-west of the Falkland Islands, 175 fathoms (Totton).

Family CAMPANULINIDAE.

Genus Campanulina *Van Beneden.*

Campanulina belgicae *Hartlaub.*

Campanulina belgicae Hartlaub, Résult. Voyage du Belgica, Zoologie, Hydroiden, 1904, p. 10, pl. i., figs. 8, 9. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., Bd. xi., Zool. iii., Die Hydroiden, 1910, p. 308, fig. 28a-c. *Id.*, Ritchie, Proc. Roy. Soc. Edinb., xxxiii., 1, 1913, p. 24. *Id.*, Billard, Deux. Expéd. Antarctique Française, 1914, p. 12. *Id.*, Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v., 5, 1930, p. 152, text-fig. 9.

Campanulina A Hickson and Gravely, National Antarctic Exped., Nat. Hist., III., Hydroid Zoophytes, 1907, p. 31.

Only a few badly-broken hydrothecae, apparently belonging to this highly variable species, have been observed on a fragment of *Symplectoscyphus vanhoeffeni*. Some of the pedicels are almost smooth, although the base is generally ornamented by a few annulations, while others are marked by a distinct spiral twist throughout their length. Owing to the collapsed and damaged condition of the hydrothecae it is impossible to determine with certainty the form of the hydrothecal margin.

Locality.—Station 8, Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914. Bottom, mainly small rocks, no ooze. Growing on *Symplectoscyphus vanhoeffeni*.

Distribution.—Previously recorded from various stations between 70° and 71° 19′ S. Lat., and 80° to 89° 14′ W. Long., 400–550 metres (Hartlaub); McMurdo Bay, 5–20 fathoms (Hickson and Gravely); Gauss Station, 385 metres (Vanhöffen); Bay (east of Cape Royds), 7–20 fathoms; McMurdo Sound, 25–50 fathoms (Ritchie); Baie de l'Amirauté, Lat. S. 62° 12′, Long. W. 60° 55′ (Billard); Entrance to McMurdo Sound, 50 fathoms; McMurdo Sound, 207 fathoms (Totton).

Genus STEGELLA *Stechow.*

Stegella Stechow, Sitzungsberich. der Gesellschaft für Morphologie und Physiologie, München, 1919, p. 8 (reprint).

The genus *Stegella*, with *Campanularia verticillata* (Linn.) var. *grandis* Hickson and Gravely for its type, was instituted by Stechow with the following characters:—"Theken konisch mit wenigen grossen Zähnen am Rand, gestielt und frei, ohne jede Spur eines Septums zwischen Theka und Stiel, ohne Basalraum, gegan den Stiel nicht abgesetzt, sondern in ihn ohne Grenze übergehend. Zwischen den Zähnen des Thekenwandes und der Seitenwand den Theka keine scharfe Kante. Hydranthen sehr gross, Haleciumähnlich, nicht völlig in die Theka retrahierbar. Hypostom konisch. Gonotheken einzeln, nicht in Anhäufungen (keine Coppinien)." I follow Stechow in referring this genus to the family Campanulinidae.

STEGELLA LOBATA (*Vanhöffen*).

Campanularia verticillata (Linn.) var. *grandis* Hickson and Gravely, National Antarctic Exped., Nat. Hist., iii, Hydroid Zoophytes, 1907, p. 23, pl. iv, fig. 25.

Campanularia lobata Vanhöffen, Deutsche Südpolar-Exped., Bd. xi, Zool. iii, Die Hydroiden, 1910, p. 294, fig. 15a–d. *Id.*, Ritchie, Proc. Roy. Soc. Edinb., xxxiii, 1, 1913, p. 21.

Stegella grandis Stechow, Sitzungsberich. der Gesellschaft für Morphologie und Physiologie, München, 1919, p. 8 (reprint), fig. 1. *Id.*, Totton, Brit. Antarct. ("Terra Nova") Exped., Zool., v, 5, 1930, p. 153, text-fig. 10.

Many specimens of this highly characteristic species were obtained from several localities. The trophosomes are much broken, but as regards the fasciculation, the arrangement of the pedicels in verticels, the details of the large, four-lobed hydrothecae, and the annulation of the pedicels, they are in perfect agreement with Vanhöffen's account of the colonies from the "Gauss" Station collected by the German South Polar Expedition.

Gonangia are present on the specimens from Station 8.

Gonosome.—The gonangia spring abundantly from the hydrocaulus. They are supported on short curved stalks, which arise from directly above the verticels of pedicels. These stalks are ornamented by a few, usually four or five, distinct undulations, and on them the gonangia stand erect and parallel to the hydrocaulus. The gonangia are large, and in lateral aspect the profile is distinctly compressed towards the distal extremity. In frontal view they are flask-shaped, gradually widening from below to a median cylindrical portion which tapers upwards into a distinct, narrow neck terminated by an oval aperture. This compressed aperture lies at right angles to the long axis of the gonangium, and with its elongated axis parallel to the front and back walls, which are carried upwards above the aperture so that each expands into a large rounded lobe or lip. The surface of the distal third of the gonangium is faintly ornamented by a few delicate, arched ridges which are frequently almost obsolete.

In their original account of the gonosome Hickson and Gravely merely mention that the gonangia "are at first 0·8 x 2·5 mm. in size and pear-shaped, but later, when fertilisation has been effected, become flask-shaped and 0·6 x 3·0 mm. in size. They are supported by short spirally marked pedicels." Stechow who has examined the co-type of *C. verticillata* (Linn.) var. *grandis* Hickson and Gravely, figures a gonangium which is truncated at the distal end, with a rounded lobe arising from within the aperture. My specimens are different from either, and thus agree with Vanhöffen's figure (15d) and his description: "Sie erscheinen seitlich flachgedrückt, erheben sich einzeln, anscheinend an Stelle eines ausgefallenen Hydroiden, im Quirl auf sehr kurzem, schwach geringelten, Stiel, erweitern sich dann zu einem eiförmigen, mittleren Teil und endigen über halsartiger Einschnürung mit einer Verbreiterung, welche in der Form an die alte, als Dreimaster bekannte Kopfbedeckung erinnert (Fig. 15d), während die Gonotheken von *Campanularia verticillata* eine enge, einem Flaschenhals ähnliche Mündung haben."

Nomenclature.—Hickson and Gravely originally described this hydroid under the name of *Campanularia verticillata* (Linn.) var. *grandis*. Vanhöffen, however, recognised that their variety should rank as a distinct species; the name *Campanularia grandis* is preoccupied in the genus and, therefore, he substituted *Campanularia lobata*.

Stechow instituted the genus *Stegella* with *Campanularia verticillata* (Linn.) var. *grandis*, Hickson and Gravely for its type, and returned to the specific name *grandis*, remarking that "Die vorliegende Form muss den Namen Stegella grandis und nicht Stegella lobata führen, da nach den Internationalen Regeln der zool. Nomenklatur der Unterartnamen zum artnamen wird, wenn die Unterart zur Art wird." This view cannot be maintained. *Campanularia verticillata* (Linn.) var. *grandis* Hickson and Gravely falls into the synonymy of *Campanularia lobata* Vanhöffen, and as a synonym of the latter its name, therefore, cannot stand. As a consequence the species must bear the name of *Stegella lobata* (Vanhöffen).

Dimensions—

Hydrotheca, depth	0·71–0·73 mm.
Hydrotheca, greatest diameter	0·46–0·53 mm.
Pedicel, length	1·38–2·00 mm.
Pedicel, diameter	0·12–0·14 mm.
Gonangium, length	Up to 2·41 mm.
Gonangium, maximum diameter	0·81–0·84 mm.

Localities.—Commonwealth Bay, King George Land, 25 fathoms; 3rd and 4th September, 1912.

Commonwealth Bay, King George Land, 55–60 fathoms; 21st December, 1913. Station 8, Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914. Bottom, mainly small rocks, no ooze.

Distribution.—Previously recorded from McMurdo Bay, 20 fathoms, and Flagon Point, 20 fathoms (Hickson and Gravely); "Gauss" Station, 385 metres (Vanhöffen); Bay (east of Cape Royds), 7–8 fathoms; Off Cape Royds (south), 20–30 fathoms (Ritchie); Ross Sea, 160 fathoms (Totton).

Family LAFOËIDAE.

Genus Hebella *Allman.*

Hebella plana *Ritchie.*

Hebella striata Allman var. *plana* Ritchie, Trans. Roy. Soc. Edinb., xlv, 2, 1907, p. 530, pl. 1, fig. 8. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., Bd. xi, Zool. iii, Die Hydroiden, 1910, p. 314. *Id.*, Billard, Deux. Expéd. Antarctique Française, 1914, p. 9. *Id.*, Jäderholm, Arkiv för Zool., Stockholm, xviiiA, 14, 1926, p. 4.

Hebella plana Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., v, 5, 1930, p. 156, text-fig. 12a–b.

The material of this species is scanty, consisting of a small colony creeping upon a fragment of *Symplectoscyphus vanhoeffeni*. The hydrothecae are large, 0·95 mm. in length, and 0·26 mm. in diameter, with perfectly smooth walls and a definitely everted margin. They are cylindrical in form and are borne on short smooth hydranthophores which reach a length of 0·35 mm. The measurements of parts are slightly smaller than those recorded by authors.

The gonosome was not observed.

Dimensions :—

Hydrotheca, length	0·95 mm.
Hydrotheca, diameter at mouth	0·26 mm.
Hydranthophore, length	0·35 mm.

Locality.—Station 8, Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914. Bottom, mainly small rocks, no ooze. Growing upon *Symplectoscyphus vanhoeffeni*.

Distribution.—This species has previously been recorded from Lat. 74° 1′, Long. W. 22° 0′, 161 fathoms (Ritchie); near Gauss Station (Vanhöffen); Baie Marguerite, 176 metres (Billard); Ross Sea, Discovery Inlet, 550 metres (Jäderholm); McMurdo Sound, 207–300 fathoms (Totton).

Lafoëa antarctica *Hartlaub*.

Lafoëa antarctica Hartlaub, Résult. Voyage du Belgica, Zoologie, Hydroiden, 1904, p. 11, pl. ii, fig. 2. *Id.*, Ritchie, Trans. Roy. Soc. Edinb., xlv, 2, 1907, p. 530. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., Bd. xi, Zool. iii, Die Hydroiden, 1910, p. 311, fig. 31a-c.

Creeping over the stems of *Stegella lobata* (Vanhöffen) are slender stolons from which hydrothecae spring at short irregular intervals. The bodies of the hydrothecae are cylindrical and lie closely adpressed to the stolon for a portion of their length. Their free portions are long and slender, bending gracefully away from the stolon so that the axis of the terminal portion of a hydrotheca usually faces away from the support at an angle of about 90°. The aperture of a hydrotheca is round, 0·15 to 0·18 mm. in diameter. The margin is smooth and slightly everted and there is a tendency to regeneration of the hydrotheca, for usually three reduplicated margins occur. Regeneration, however, is not present to the same extent as in the specimens figured by Hartlaub where some of the hydrothecae show as many as eight successive margins.

The dimensions of the parts agree approximately with those calculated from Hartlaub's figure, and with those given by Vanhöffen, but they are much smaller than the measurements recorded by Ritchie for his Burwood Bank specimens, in which the hydrothecae average 5 or 6 mm. in length, while the diameter is about 1·25 mm.

There is no trace of gonosome.

Locality. — Commonwealth Bay, King George Land, 55–60 fathoms; 21st Decebmer, 1913, on *Stegella lobata* (Vanhöffen).

Distribution.—Previously recorded from Lat. S. 70° 23′, Long. W. 82° 47′, about 500 metres (Hartlaub); Burwood Bank, Lat. S. 54° 25′, Long. W. 57° 32′, 56 fathoms (Ritchie); Gauss Station, 350–400 metres (Vanhöffen).

LAFOËA GRACILLIMA (*Alder*).

Campanularia gracillima Alder, Ann. Mag. Nat. Hist., (2), xviii, 1856, p. 361, pl. xv, figs. 5, 6. *Id.*, Alder, Trans. Tynes. Nat. F. Club, iii, 1857, p. 129, pl. vi, figs. 5, 6.

Calicella fruticosa Hincks, Ann. Mag. Nat. Hist., (3), viii, 1861, p. 293.

Lafoëa fruticosa Hincks (in part), Hist. Brit. Hydroid Zoophytes, 1868, p. 202, pl. xli, fig. 2. *Id.*, Bale, Cat. Austr. Hydroid Zoophytes, 1884, p. 64, pl. ii, fig. 1.

Lafoëa capillaris Sars, Forhandl. Vidensk. Selsk. Kristiania, 1873, p. 115, pl. iv, figs. 22–24.

Lafoëa gracillima Sars, Forhandl. Vidensk. Selsk. Kristiania, 1873, p. 115, pl. iv, figs. 19–21. *Id.*, Bonnevie, Norwegian North Atlantic Exped., Zool., Hydroida, 1899, p. 65, pl. v, fig. 2a. *Id.*, Jäderholm, Kungl. Svenska Vet.-Akad., Handl., xlv, 1909, p. 74, pl. vii, figs. 6–8. *Id.*, Broch, Die Hydroiden der arktischen Meere in Fauna Arctica, v, 1909, p. 156, figs. 17, 18. *Id.*, Ritchie, Mem. Austr. Mus., iv, 16, 1911, p. 817. *Id.*, Billard, Deux. Expéd. Antarctique Française, Hydroides, 1914, p. 10. *Id.*, Bale, Biological Results "Endeavour," iii, 5, 1915, p. 255. *Id.*, Jäderholm, Arkiv. för Zool., K. Svenska Vet.-Akad., Bd., xii, 9, 1919, p. 7, pl. i, fig. 8.

Several writers have previously recorded the occurrence of this cosmopolitan species in Antarctic waters. The specimens before me consist of several fragments and a single complete colony, which reaches a height of 38 mm. The stem and branches are fascicled, except towards the tip where they become monosiphonic. The hydrothecae are long narrow cylinders arising irregularly from all sides of the hydrocaulus. They are quite typical in their structural details, and are borne on hydranthophores which are marked by two or three loose twists. The trophosomes are more robust than in typical examples of *L. gracillima*, but the fasciculation, the shape and irregular arrangement of the hydrothecae, and the loosely-twisted hydranthophores, are in complete agreement with European specimens of forma *typica*. As the following measurements show, the dimensions of the hydrothecae are much greater than those of North Sea and Mediterranean specimens. In this respect the Mawson examples approach closest to an Indian Museum specimen recorded by Ritchie from the Arabian Sea, near the Gulf of Aden.

For comparison, the dimensions of the Indian Museum specimen and of a typical North Sea form are given along with those of the single complete colony collected by the Mawson Expedition.

Dimensions—

	Mawson Specimen.	Indian Museum Specimen.	North Sea Specimen.
Hydrotheca, length*	0·87–0·98	0·87–0·95	0·57–0·76
Hydrotheca, diameter at mouth ...	0·15–0·18	0·20–0·24	0·11
Stem tube, diameter	0·14–0·15	0·11	0·10

All measurements are in millimetres

* Including hydranthophore.

In the great length of the hydrothecae and the robustness of the stem tubes, the Mawson specimens approach *L. gracillima* (Alder) var. *benthophila* Ritchie, from south of the South Orkneys, but otherwise do not possess any of the salient characters which distinguish this Antarctic variety.

Localities.—Commonwealth Bay, King George Land, 45–50 fathoms; 14th December, 1913.

Commonwealth Bay, King George Land, 55–60 fathoms; 21st December, 1913.

Distribution.—The distribution of this species is world-wide.

Genus Reticularia *Thomson.*

Reticularia antarctica (*Hartlaub*).

Reticularia antarctica Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. His. Rep., Zool., v, 5, 1930, p. 160, text-fig. 17 (synonymy).

Many hydrothecae of *R. antarctica* (Hartlaub) were observed attached to *Campanularia hicksoni* Totton and to several other hydroids from Commonwealth Bay, King George Land.

The mouth of the hydrothecae has a diameter of 0·13 to 0·15 mm. In Totton's specimens the margins of the hydrothecae are 0·15 mm. in diameter; Vanhöffen, however, gives the width as about 0·24 mm.

Locality.—Commonwealth Bay, King George Land.

Distribution.—This species has previously been recorded from antarctic seas by Hartlaub, Vanhöffen and Totton.

Family SYNTHECIIDAE.

Genus Staurotheca *Allman.*

Staurotheca antarctica *Hartlaub.*

Staurotheca antarctica Hartlaub, Rés. Voy. du Belgica, Zool., Hydroiden, 1904, p. 16, pl. i, fig. 4, pl. ii, fig. 4. *Id.*, Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. His. Rep., Zool., v, 5, 1930, p. 178, pl. ii, fig. 6, text-fig. 28.

Staurotheca dichotoma Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., v, Zool. i, Hydroiden, 1905, p. 33, pl. xiv, fig. 1, 2 (not *S. dichotoma* Allman).

Numerous specimens of *S. antarctica* Hartlaub were collected at two stations; those from Station I bear male and female gonangia, while those from Station III bear only female gonangia.

The male gonangia are very similar to those of *S. dichotoma*, but are smaller. The female gonangia are highly characteristic; each arises from near the proximal end of a curved, finger-shaped process which stands out horizontally from the hydrocaulus. At its distal extremity this process is generally bifid, with one of its divisions better developed than the other. The outer surface of the gonangium, in its distal half, is covered with longitudinal rows of irregular processes, except on the lower surface, which is occupied by a round aperture guarded by the bifid end of the large finger-like process.

Localities.—Station I (substation D), Commonwealth Bay, King George Land, 350–400 fathoms; 22nd December, 1913. Bottom, thick ooze. Temperature, −1·85° C.

Station III, Lat. S. 66° 32′, Long. E. 141° 37′, 157 fathoms; 31st December, 1913. Bottom, small amount of ooze. Temperature, —1·62° C.

Staurotheca dichotoma *Allman.*

Staurotheca dichotoma Allman, Rep. Sci. Res. "Challenger" Exped., Zool., xxiii, Hydroida, pt. ii, 1888, p. 76, pl. xxxvi, fig. 1–1a. *Id.*, Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v, 5, 1930, p. 178, pl. ii, fig. 9, text-fig. 27a–c.

This species is represented by a single specimen, which bears vase-shaped female gonangia similar to those figured by Totton in the "Terra Nova" Report.

Locality.—Station I (substation D), Commonwealth Bay, King George Land, 350–400 fathoms; 22nd December, 1913. Bottom, thick ooze. Temperature, —1·85° C.

Staurotheca compressa *sp. nov.*

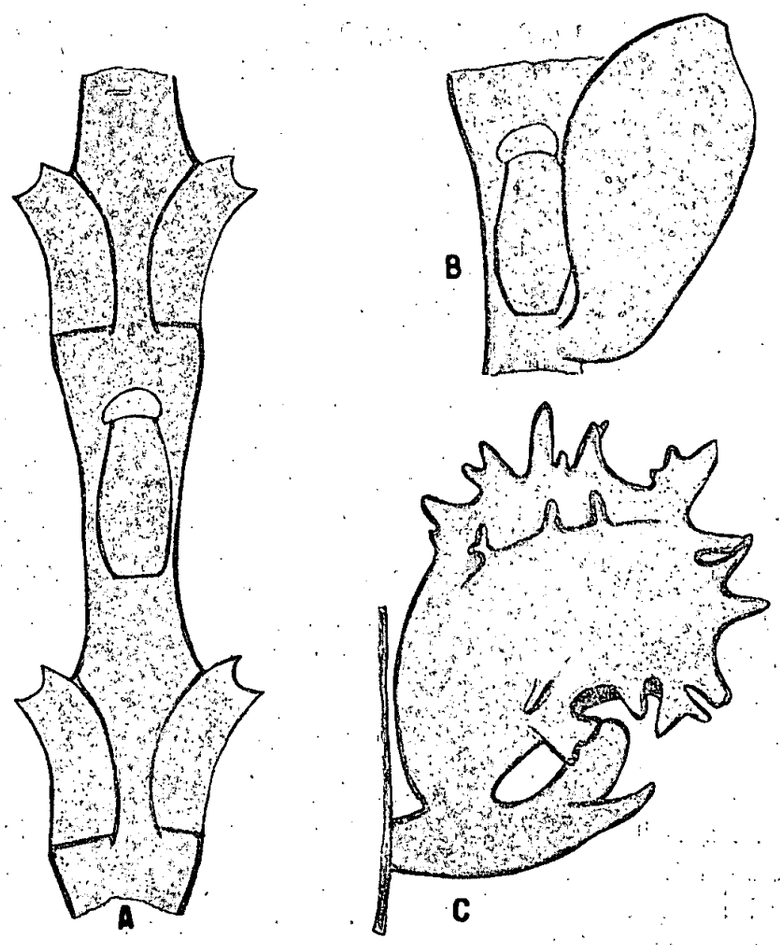
(Plate XV., fig. 2; text-fig. Ia–c.)

Trophosome.—The colony consists of numerous non-fascicled branches, which anastomose frequently to form an irregular net-work. The internodes are irregular; in the older branches the internodes generally carry several pairs of hydrothecae, while in the younger ones there is frequently a node between each pair.

The hydrothecae are arranged in longitudinal rows along the branches. There are four rows of hydrothecae, which are arranged in opposite pairs, placed alternately at right angles with one another. The hydrothecae are cylindrical and deep, with the orifice compressed from above downwards, so that when viewed from in front the upper margin of the orifice appears convex and the lower margin concave. In lateral view the upper and lower margins are seen to be separated by fairly deep lateral embayments.

Gonosome.—Dioecious; the male gonangia arise from directly below the bases of the hydrothecae. Each male gonangium has a short narrow stalk above which the walls expand into an ovoid body terminated distally by a small, circular, obliquely-placed orifice.

The female gonangia are carried on stout curved processes which arise from directly below the bases of the hydrothecae and stand out horizontally from the hydrocaulus. At its distal extremity each process is bifid forming a pair of finger-like processes. The female gonangium springs from the upper surface of the curved process, close to its proximal end, and forms a large sub-spherical body covered in its distal half with irregular rows of finger-like processes, many of which are bifid at their extremities.



Text fig. I.

Staurotheca compressa, sp. nov. A.—Hydrothecae. B.—Male gonangium. C.—Female gonangium.

Dimensions—

Hydrotheca, length adnate	0·36–0·45 mm.
Hydrotheca, length free	0·18–0·19 mm.
Hydrotheca, diameter of mouth (frontal aspect)	0·18–0·21 mm.

Colour.—Some of the specimens are very pale and transparent, while others are dark brown in colour.

Localities.—Commonwealth Bay, King George Land, 25 fathoms. Commonwealth Bay, King George Land, 55 to 60 fathoms, 21st December, 1913. Station VII, Lat. S. 65° 42′, Long. E. 92° 10′, 60 fathoms; 21st January, 1914. Bottom, small rocks with red algae.

Family SERTULARIIDAE.

Genus Symplectoscyphus *Marktanner.*

Symplectoscyphus columnarius (*Briggs*).

Sertularella columnaria Briggs, Rec. Austr. Mus., x, 10, 1914, p. 293, text-fig. 1.
Id., Bale, Trans. N.Z. Instit., lv, 1924, p. 239.

Symplectoscyphus columnarius Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep.. Zool., v, 5, 1930, p. 180, pl. I, fig. 10; text-fig. 30a–c.

Trophosome.—A sterile fragment, 68 mm. in height, alone represents this species originally described by myself from a specimen dredged at a depth of one hundred fathoms, seven miles east of Cape Pillar, Tasmania. The characters of the trophosome are identical with those of the type specimen, but there are differences in the size of the hydrothecae to be noted. The measurements of the adnate and free portions agree fairly closely with the minimum recorded for the type, yet the diameter of the hydrothecae at the mouth is much smaller, being only 0·42–0·43 mm. as against 0·50–0·53 mm.

Gonosome.—The gonangia have been described and figured by Totton from a specimen obtained by the "Terra Nova" Expedition off Three Kings Islands, New Zealand, at a depth of 100 fathoms. Totton states that the gonangia of *S. columnarius* "are much like those of *S. meridionalis* Nutting, except that the terminal portion flares open gradually, there being no distinct intermediate tubular portion. They are somewhat flattened, and have three distal corrugations."

Dimensions—

	"Aurora" Specimen.	Type Specimen.
Hydrotheca, length adnate	0·62–0·65	0·64–0·70
Hydrotheca, length free	0·62–0·71	0·70–0·76
Hydrotheca, diameter at mouth ...	0·42–0·43	0·50–0·53

Measurements in millimetres.

Locality.—Off Maria Island, Tasmania, 65 fathoms; 12th December, 1912.

Distribution.—Previously recorded from 7 miles east of Cape Pillar, Tasmania, 100 fathoms (Briggs); New Zealand (Bale); off Three Kings Islands, New Zealand, 100 fathoms (Totton).

Symplectoscyphus articulatus (*Allman*).

Sertularia articulata Allman, Rep. Sci. Results "Challenger" Exped., Zool., xxiii, Hydroida, pt. ii, 1888, p. 61, pl. xxix, fig. 3, 3a.

Sertularella articulata Hartlaub, Abh. Nat. Ver. Hamburg, xvi, 1900, p. 24. *Id.*, Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., Bd. v, Zool. i, Hydroiden, 1905, p. 29, pl. xi, fig. 4, pl. xii, figs. 1–3. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., Bd. xi, Zool. iii, Die Hydroiden, 1910, p. 328, fig. 42a–d. *Id.*, Billard, Ann. Sci. Nat., Zool. (9), xi, 1910, p. 10; *Id.*, Billard, Deux. Expéd. Antarctique Française, Hydroides, 1914, p. 29. *Id.*, Jäderholm, Redogörelse för Norrköpings H. Allm. Läroverk Läsaret, 1916–1917, p. 9 (reprint), pl. i, fig. 7.

Sertularella elongata Jäderholm, Arch. de Zool. exp. et gén., (4), iii, 1904, Notes et Revue, p. x.

Many specimens of this species were obtained at various depths in Commonwealth Bay, King George Land. The general habit of the colonies agrees with Jäderholm's description and figure of the characteristic type of ramification of this species. As regards the minute structural details, the hydrothecae approach closest to those described by Vanhöffen, although their dimensions are very much smaller than those of the "Gauss" specimens as a comparison of Vanhöffen's measurements with those given below shows. The hydrothecae lie towards the distal ends of the internodes from which they are free for about two-thirds of their length. They reach a maximum diameter at the point where they become free, tapering downwards towards the base and less markedly towards the mouth. The margin of the hydrotheca is divided into three large, narrow and pointed teeth, one adcauline, central and projecting, the others forming an abcauline lateral pair. The teeth are separated by fairly deep embayments. The margin has three opercular flaps, but there is no trace of internal teeth. There is a slight tendency to regeneration of the hydrothecae, some of the margins being repeated once or twice.

The gonosome is not represented.

Dimensions—

Internode, length	0·63–1·04 mm.
Internode, diameter	0·14–0·18 mm.
Hydrotheca, length adnate	0·18–0·26 mm.
Hydrotheca, length free	0·29–0·37 mm.
Hydrotheca, diameter at mouth	0·18–0·20 mm.

Vanhöffen (1910, p. 328) identifies *Sertularella spiralis* Hickson and Gravely with *Sertularella articulata* (Allman). I cannot agree with Vanhöffen's view that these species are identical and in the following pages I have given the reasons which lead me to retain Hickson and Gravely's *Sertularella spiralis*, regarding it as a species distinct from *Sertularella articulata* (Allman).

Localities.—Commonwealth Bay, King George Land, 25 fathoms; 3rd and 4th September, 1912.

Commonwealth Bay, King George Land, 55–60 fathoms; 21st December, 1913.

Distribution.—Previously recorded from Royal Sound, Kerguelen Island, 28–60 fathoms (Allman); Graham Region, Erebus and Terror Gulf, 360 metres; Shag Rocks, east of South Georgia, 160 metres; South Georgia, 75–310 metres (Jäderholm); Gauss Station (Vanhöffen); Port Foster (île Déception); Lat. S. 62° 55′, Long. W. 63° 00′, 170–140 metres (Billard); Graham Land, about 12 miles east of Robertson Island, 400 metres (Jäderholm).

Symplectoscyphus vanhoeffeni *Totton.*

Symplectoscyphus vanhoeffeni Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v, 5, 1930, p. 187, text-fig. 38a–d.

Sertularella subdichotoma Vanhöffen, Deutsche Südpolar-Exped., xi, Zool. iii, Die Hydroiden, 1910, p. 326, fig. 41a–e. (Not *S. subdichotoma* Kirchenpauer).

The trophosome of the Mawson specimens agrees very closely with the description and figures by Vanhöffen of a colony from "Gauss" Station. In the older portions of the hydrocaulus, owing to the great thickness of the perisarc, the nodes become obscured, although a very slight constriction immediately distal to a hydrotheca usually indicates their position. The primary hydrothecae are free for a length of 0·15 to 0·20 mm., being strongly exserted, and narrowing to the orifice. There is consequently a very pronounced angle between the axis of the distal half and that of the proximal portion of the hydrotheca. Regeneration of the hydrothecae is frequent, many of the margins being repeated as often as six times, so that the free portion of a hydrotheca may reach a length of 0·45 mm., and project almost at right angles from the internode.

Dimensions—

Hydrotheca, length adnate	0·28–0·31 mm.
Hydrotheca, length free	0·15–0·20 mm.
Hydrotheca, diameter at mouth	0·12–0·14 mm.

Locality.—Station 8, Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914. Bottom, mainly small rocks, no ooze.

Symplectoscyphus curvatus (*Jäderholm*).

Sertularella curvata Jäderholm, Redogörelse för Norrköpings H. Allm. Läroverk Läsaret, 1916–1917, p. 11 (reprint), pl. i, figs. 11, 12.

Symplectoscyphus curvatus Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v, 5, 1930, p. 192, pl. ii, figs. 1–3; text-fig. 40a–b.

Only a few fragments of this species were collected by the Australasian Antarctic Expedition from a single locality. Unfortunately, there is no gonosome present, but as regards the minute characters of the unfascicled trophosome, the structure of the internodes, the details of hydrothecal shape, the proportions of the hydrothecae (" always free to more than half of their length, and with their distal portion strongly bent out "), and the extremely thin hydrothecal walls, they are in perfect agreement with Jäderholm's description and figure of this rare species.

The stem is divided into regular internodes separated by strong oblique joints which slope successively in opposite directions. The hydrothecae are alternate and lie towards the distal ends of the internodes to which they are adnate for less than half of their length. The margin of the hydrotheca is divided into three large, narrow and pointed teeth, one adcauline, central and projecting, the others forming an abcauline lateral pair. The teeth are separated by deep embayments. There is a tendency to regeneration of the hydrothecae, many of the margins being repeated three or four times, with the result that the free portion of a hydrotheca may reach a length of 0·70 mm. A difference in the colour of the specimens is to be noted for whereas the type is " yellowish white," the fragments before me are brown to dark brown in their general colouration.

Dimensions—

Internode, length	0·73–1·00 mm.
Internode, greatest diameter	0·28–0·35 mm.
Hydrotheca, length adnate	0·29–0·31 mm.
Hydrotheca, length free	0·32–0·40 mm.
Hydrotheca, diameter at mouth	0·20–0·23 mm.

Locality.—Station 8, Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914. Bottom, mainly small rocks, no ooze.

Distribution.—Hitherto recorded only from Graham Land, south of Snow Hill, 125 metres (Jäderholm), and off Cape Adare, 45–50 fathoms (Totton).

Symplectoscyphus glacialis (*Jäderholm*).

Sertularella glacialis Jäderholm, Arch. de Zool. exp. et gén., (4), iii, 1904, Notes et Revue, p. ix; *Id.*, Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., Bd. v, Zool. 1, Hydroiden, 1905, p. 26, pl. x, figs. 3–7. *Id.*, Ritchie, Proc. Roy. Soc. Edinb., xxxiii, 1, 1913, p. 29, fig. 10. *Id.*, Billard, Deux. Expéd. Antarctique Française, Hydroides, 1914, p. 23. *Id.*, Jäderholm, Redogörelse för Norrköpings H. Allm. Läroverk Läsaret, 1916–1917, p. 11 (reprint), pl. 1, fig. 9.

Not *Sertularella glacialis* Vanhöffen, Deutsche Südpolar-Exped., Bd. xi, Zool. iii, Die Hydroiden, 1910, p. 325, fig. 40a–c (= *S. plectilis* Hickson and Gravely).

Symplectoscyphus glacialis Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v, 5, 1930, p. 188, pl. i, figs. 8, 9; pl. ii, fig. 7; text-fig. 39a–b.

Several small and sterile fragments, entangled with other hydroids from two localities, are referred to this Antarctic species. There is no trace of gonosome to confirm this identification, so that the characters of the trophosome alone have to be relied upon. These, however, agree well with those of the above species, for the colonies exhibit a lax habit of growth, and the stem and branches are divided into long internodes by very clearly-defined nodes. The hydrothecae are narrow at the base and widen upwards, reaching their greatest breadth about the middle and then narrow somewhat towards the distal end. They are free for half or a little more than half of their length, and their distal portion is generally considerably bent outwards from the internode. Although the measurements of parts are larger than those of the type, they correspond with those given by Ritchie and Billard, and with the dimensions published later by Jäderholm (1916–1917) for specimens from Graham Land, south of Snow Hill.

Ritchie lays stress on the colour of his colonies—"brown to dark brown."—but my specimens are a very light brown and agree with Billard's material in which the colour is "jaune brun clair et non brune ou brun foncé comme dans les échantillons types et dans ceux de l'expédition Shackleton."

For comparison the measurements of the Mawson specimens are given alongside those recorded by Ritchie (1913) and Billard (1914) for this species.

Dimensions—

	Mawson Specimens.	Ritchie's Specimen.	Billard's Specimen.
Internode, length	0·62–1·10	0·64–1·15	0·61–0·84
Internode, diameter	0·13–0·17	0·14–0·16	0·13–0·16
Hydrotheca, length adnate ...	0·20–0·26	0·20–0·27	0·23–0·27
Hydrotheca, length free	0·24–0·29	0·24–0·30	0·21–0·27
Hydrotheca, diameter at mouth...	0·15–0·18	0·17–0·20	0·13–0·15

All measurements are in millimetres.

Localities.—Commonwealth Bay, King George Land, 350–400 fathoms; 22nd December, 1913.

Station 8, Lat. S. 66° 8′, Long. E. 94° 17′, 120 fathoms; 27th January, 1914. Bottom, mainly small rocks, no ooze.

Distribution.—Previously recorded from Graham Region, Seymour Island, Cape Seymour, 150 metres (Jäderholm); Cape Royds, 10–80 fathoms (Ritchie); Entrée de la baie Marguerite, entre l'île Jenny et la Terre Adélaide, 253 metres (Billard); Graham Land, south of Snow Hill, 125 metres (Jäderholm); McMurdo Sound, 190–250 fathoms; off Cape Adare, 45–50 fathoms; entrance to McMurdo Sound, 50 fathoms; off Oates Land, 180–200 fathoms (Totton).

Symplectoscyphus spiralis (*Hickson and Gravely*).

Sertularella spiralis Hickson and Gravely, National Antarctic Exped., Nat. Hist., iii, Hydroid Zoophytes, 1907, p. 19, pl. iii, figs. 19, 20. *Id.*, Totton, Brit. Antarct. ("Terra Nova") Exped., Nat. Hist. Rep., Zool., v, 5, 1930, p. 197, pl. i, fig. 7; pl. iii, fig. 5; text-fig. 44b–d.

Several large colonies referable to Hickson and Gravely's *Symplectoscyphus spiralis* were obtained at various depths in Commonwealth Bay, King George Land. Unfortunately, this species has been confused with *Symplectoscyphus articulatus* (Allman), but I cannot agree with Vanhöffen in regarding these species as identical. Although there is little to choose between the general characters of the trophosomes, the proportions of the hydrothecae, and the structure of the teeth on the hydrothecal margins definitely separate the two species.

The finest colony, although incomplete, measures 270 mm. in height. There are no gonangia present, but the slender monosiphonic hydrocaulus, the type of ramification, the arrangement of the hydrothecae, and the presence of a loose sheath of ectoderm enveloping the base of the hydranths, are characters which agree in detail with those described by Hickson and Gravely.

The hydrothecae of *Symplectoscyphus spiralis* are very characteristic. They attain a maximum width about the middle, from which they narrow somewhat towards the distal as well as the proximal ends. They are free for half or less than half of their length, and their distal portion generally projects from the internode at an angle of about 50°–55°. The margin of the hydrotheca is divided into three teeth, one adcauline and one abcauline, pointed, separated from each other along the back of the hydrotheca by a very shallow embayment, while the third tooth, which is small and rounded, occupies the middle of the front of the margin and is separated from the other teeth by fairly deep embayments. The margin has three opercular flaps, and there are three chitinous knob-like internal teeth alternate with those on the margin. I have noticed no tendency to regeneration of the hydrothecae. Unfortunately, in their description of the hydrothecae Hickson and Gravely do not mention the form of the hydrothecal margin, but their figure (pl. iii, fig. 19) shows clearly the arrangement of the teeth and the opercular flaps, with indications of the positions of the internal teeth.

For comparison, the dimensions of *S. spiralis* Hickson and Gravely are given along with those of *S. articulatus* (Allman).

Dimensions—	*S. spiralis.*	*S. articulatus.*
Internode, length	0·74–0·85 mm.	0·63–1·04 mm.
Internode, diameter...	0·18–0·21 mm.	0·14–0·18 mm.
Hydrotheca, length adnate... ...	0·26–0·34 mm.	0·18–0·26 mm.
Hydrotheca, length free	0·20–0·26 mm.	0·29–0·37 mm.
Hydrotheca, diameter at mouth ...	0·14–0·17 mm.	0·18–0·20 mm.

Synonymy.—Vanhöffen (1910, p. 328) identifies Hickson and Gravely's *Sertularella spiralis* with *Sertularella articulata* (Allman), and Billard (1914, p. 21) falls into the same error when he remarks "ainsi que l'ont indiqué Hickson et Gravely pour leur espèce *Sertularella spiralis*, identique au *S. articulata*, comme l'a reconnu Vanhöffen."

The proportions of the hydrothecae differ in the two species: in *S. spiralis* a hydrotheca is free for half or less than half of its length; in *S. articulatus* always more than half (up to two-thirds) is free. The teeth on the hydrothecal margin also differ: in *S. spiralis* the teeth are reduced in size and comprise one adcauline, one abcauline, and one in the middle of the front of the margin; in *S. articulatus* the teeth are large, narrow and pointed, one adcauline, central and projecting, the others forming an abcauline lateral pair. The teeth are separated by fairly deep embayments. Lastly, in *S. spiralis* there are three knob-like internal teeth alternate with those on the margin, whereas internal teeth are absent in *S. articulatus*. In view of these constant differences I retain Hickson and Gravely's *S. spiralis*, regarding it as a species distinct from *S. articulatus* (Allman).

Billard (1914, p. 22) has described, under the name of *Sertularella bifurca*, a hydroid in which the ramification is similar to that of *S. articulatus*, but differs from the latter species "par le faible développement des dents des hydrothèques et par la présence des trois saillies internes." In these respects *S. bifurca* agrees with *S. spiralis*, and may ultimately prove to be a synonym of Hickson and Gravely's species, although Billard describes the presence of four or five hydrothecae near the base of the hydrocaulus, and, according to his measurements, a hydrotheca is free for more than half of its length.

Localities. — Commonwealth Bay, King George Land, 55–60 fathoms; 21st December, 1913.

Commonwealth Bay, King George Land, 350–400 fathoms; 22nd December, 1913. Bottom, thick ooze. Temperature, —1·85° C.

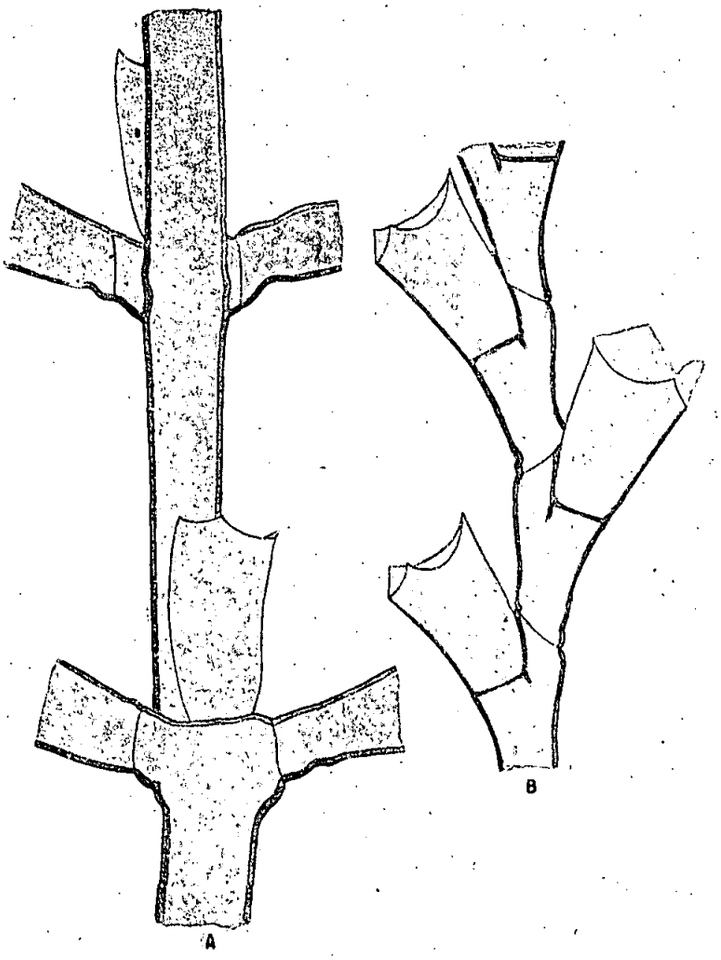
Distribution.—Hitherto recorded from McMurdo Bay, 130 fathoms (Hickson and Gravely); off Cape Adare, 45–50 fathoms; McMurdo Sound, 207 fathoms; off Oates Land, 180–200 fathoms (Totton).

Symplectoscyphus mawsoni *sp. nov.*

(Plate XVI, figs. 1–2; text-fig. 2A–B.)

Trophosome.—The main stem is monosiphonic, unbranched, and divided into long internodes. Each stem-internode is narrow at its proximal end, and gradually increases in diameter up to the distal extremity. The internodes follow one another in a zig-zag manner. At its distal end each stem-internode bears two hydrocladia and a hydrotheca. The two hydrocladia arise almost at right angles from the stem, while between their bases is situated a large hydrotheca. The pairs of hydrocladia spring alternately from the front and back of the internodes throughout the entire length of the stem.

The hydrocladia are unbranched, and divided into internodes, each of which bears a hydrotheca towards its distal end. The hydrothecae are arranged in an alternate manner. The major portion of each hydrotheca is free; from its rather narrow base the hydrotheca gradually increases in diameter, reaching its maximum at the mouth, which is provided with three pointed teeth. One tooth is adcauline, while the other two form an abcauline lateral pair. The teeth are separated from one another by fairly deep embayments. There are no internal teeth. The operculum consists of three flaps.



Text-fig. 2.

Symplectoscyphus mawsoni sp.nov. A—Stem showing arrangement of the hydrocladia. B—Hydrothecae.

Gonosome.—Unknown.

Dimensions—

Stem-internode, length	Up to 2 mm.
Hydroclade internode, length	0·75–0·82 mm.
Hydrotheca, length adnate	0·15–0·18 mm.
Hydrotheca, length free	0·60–0·62 mm.
Hydrotheca, diameter at mouth	0·51–0·54 mm.

Localities.—Commonwealth Bay, King George Land, 25 fathoms. Commonwealth Bay, 55 to 60 fathoms, 21st December, 1913.

Many fragments of a pale straw colour (in alcohol) represent this new species. The specimens have been torn from their base of attachment; each appears to consist of a main stem, up to 95 mm. in length. The arrangement of the hydrocladia and the form of the hydrothecae at once distinguish this new species from the other representatives of the genus *Symplectoscyphus*.

Genus Sertularella *Gray.*

Sertularella geodiae *Totton.*

Sertularella geodiae Totton, Brit. Antarct. ("Terra Nova") Exp., Nat. Hist. Rep., Zool., v, 5, 1930, p. 196, pl. iii, figs. 7, 8; text-fig. 43.

A number of fragments, consisting of polysiphonic stems and branches, are referable to this species, originally described by Totton from specimens collected in New Zealand waters by the "Terra Nova" Expedition.

The largest specimen is 60 mm. long, and represents portion of a stout fascicled stem, bearing polysiphonic branches. In the hydrothecae, the free portion of the adcauline wall is marked by several definite undulations, which are more pronounced than those shown in Totton's figure (text-fig. 43).

As the accompanying table of comparative measurements shows, the dimensions of the hydrothecae are smaller than those recorded by Totton for the "Terra Nova" specimens from New Zealand.

Dimensions—

	Tasmanian Specimens.	New Zealand Specimens.
Hydrotheca, length adnate	0·60–0·63	0·68–0·76
Hydrotheca, length free	0·27–0·33	0·47–0·55
Hydrotheca, diameter at mouth	0·30–0·34	0·38–0·40

Measurements in millimetres.

Gonosome.—The gonangia are ovate, with three blunt apical teeth. The proximal portion of the gonangium is smooth, but towards the distal end the surface is generally faintly rugose.

Locality.—Off Maria Island, Tasmania, 1,300 fathoms; 13th December, 1912.

Distribution.—Hitherto recorded only from off Three Kings Islands, New Zealand, 100 fathoms; and off North Cape, New Zealand, 70 fathoms (Totton).

Genus Selaginopsis *Allman.*

Selaginopsis pachyclada *Jäderholm.*

Selaginopsis pachyclada Jäderholm, Arch. de Zool. exp. et gén., (4), iii, 1904, Notes et Revue, p. x; *Id.*, Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., Bd. v, Zool. i, Hydroiden, 1905, p. 33, pl. xiii, figs. 2, 3.

A solitary but magnificent colony represents this rare species originally described by Jäderholm from a specimen 90 mm. in length. While there is very little to add to his description of the detailed characters of the trophosome and the gonangia, the following observations supplement Jäderholm's account of the general habit of this species, which is imperfectly known owing to the fragmentary nature of the type specimen. The colony, which is 280 mm. in height, consists of a main stem, 5 mm. in diameter at the base, expanding downwards into a root-mass composed of a dense plexus of hydrorhizal tubes. The main stem is polysiphonic, and at a height of 32 mm. from the base gives rise to three branches, which are at first fascicled but become monosiphonic towards their distal extremities. Each of these branches carries a series of stout monosiphonic pinnules which are arranged alternately. Such a branch may bear secondary branches, and these again branches of the third degree. They are pinnately branched. The branching takes place in one plane and forms a fan-shaped colony which measures about 280 mm. from side to side. No anastomosing, either of the branches or the pinnules, was observed in any portion of the colony.

The hydrothecae are similar to those described by Jäderholm. They are almost entirely adnate, only the margins being free. The aperture is circular and is provided with an operculum consisting of a single abcauline flap.

Gonosome.—The gonangia are borne in rows on the upper surface of the pinnules, each being inserted just below the base of a hydrotheca. They are pear-shaped, with a short neck terminated by a small circular aperture which lies at right angles to the long axis of the gonangium. The walls of the gonangium are smooth except for a few feeble ring-like markings on the distal extremity.

The colour of the colony is very dark brown; the gonangia are almost colourless.

Dimensions—

Hydrotheca, length	0·82–0·87 mm.
Hydrotheca, greatest diameter	0·45–0·46 mm.
Hydrotheca, diameter at mouth	0·31–0·35 mm.
Gonangium, length	2·00–2·30 mm.
Gonangium, greatest diameter	1·00–1·06 mm.

Locality.—Station 2, Lat. S. 66° 52′, Long. E. 145° 30′, 288–300 fathoms; 28th December, 1913. Bottom, thick ooze. Temperature, —1·8° C.

Distribution.—Hitherto recorded only from Graham Region, Seymour Island, near Cape Seymour, 150 metres (Jäderholm).

Family PLUMULARIIDAE.

Genus Oswaldella *Stechow.*

Oswaldella antarctica (*Jäderholm*).

Schizotrichia antarctica Jäderholm, Arch. de Zool. exp. et gén., (4), iii, 1904, Notes et Revue, p. xii; *Id.*, Jäderholm, Wissensch. Ergeb. schwedischen Südpolar-Exped., v, Zool. i, Hydroiden, 1905, p. 35, pl. xiv, figs. 6–8.

Schizotricha antarctica Billard, Expéd. Antarctique Française, Hydroides, 1906, p. 14.. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., xi, Zool. iii, Hydroiden, 1910, p. 336, fig. 48a–c.

Oswaldella antarctica Stechow, Sitzungsberich der Gesellschaft für Morphologie und Physiologie, München, 1919, p. 32. *Id.*, Totton, Brit. Antarct. (" Terra Nova ") Exped., Nat. Hist. Rep., Zool., v, 5, 1930, p. 209, text-fig. 51.

Polyplumaria antarctica Jäderholm, Arkiv. för Zool., Stokholm, xviiiA, 14, 1926, p. 6.

Not *Polyplumaria antarctica* Billard, Deux. Expéd. Antarctique Française, Hydroides, 1914, p. 28, fig. 17.

Several very fine colonies of this species are of special interest since some of them bear sexually mature gonangia. These structures have so far escaped observation, although Totton has recorded the presence of immature gonangia on specimens collected on January 3rd by the " Terra Nova " Expedition off Cape Adare, Ross Sea, at a depth of 45 to 50 fathoms.

The present specimens are much larger than those originally described by Jäderholm, reaching a height of 260 mm., but are exceeded in height by the "Terra Nova" specimens, which measured up to 350 mm. The structure and measurements of the hydrothecae and associated parts agree fairly closely with those of authors generally for Jäderholm's *O. antarctica*.

The single specimen taken by the Second French Antarctic Expedition in the " Pourquoi Pas ? " off Port Lockroy, and identified by Billard (1914, p. 28) as *Polyplumaria antarctica?*, appears to me to differ so widely from Jäderholm's description and figures, especially in the size and shape of the hydrothecae, that it must be considered as a distinct species. In the following pages I have given the reasons which lead me to regard Billard's specimen as identical with numerous colonies collected by the " Aurora " Expedition, and here referred to a new and well-marked species, for which I propose the name of *Oswaldella billardi* (see p. 40)

Gonosome.—The gonangia are carried on the middle line of a hydroclade and its first branch. They form a row of flattened receptacles, each one springing from beneath, and slightly to one side of, the process which carries the infra-thecal nematotheca.

The gonangium, when viewed in its broader aspect, exhibits a short peduncle; above the point of attachment the walls of the gonangium gradually diverge, forming a cone-shaped structure, which reaches its maximum width at the distal extremity. The walls are quite smooth; the adaxial wall is almost straight and ends distally in a convex margin. The abaxial wall is shorter, convex, and terminates distally in a straight or slightly concave margin. The distal end of the gonangium is covered over by a very thin sheet of perisarc, which is depressed in the centre to form a distinct hollow between the adaxial wall and the somewhat lower abaxial wall. In side view the gonangium appears extremely thin and compressed.

Totton, who has examined the immature gonangia of *O. antarctica*, states that "They spring from the middle line of the basal hydrothecate articles of the main branches, and are distal to the infrathecal nematophores." In the "Aurora" specimens the peduncle of the gonangium arises from beneath, and slightly to one side of, the process which carries the infra-thecal nematotheca.

Dimensions—

Gonangium, length	Up to 1·65 mm.
Gonangium, maximum breadth in frontal aspect	0·70–0·81 mm.
Gonangium, maximum breadth in lateral aspect	0·24–0·33 mm.

Localities.—Station 1, Commonwealth Bay, Lat. S. 66° 50′, Long. E. 142° 6′, 350–400 fathoms; 22nd December, 1913. Bottom, thick ooze. Temperature, —1·85° C.

Station 7, Lat. S. 65° 42′, Long. E. 92° 10′, 60 fathoms; 21st January, 1914. Bottom, small rocks with red algae.

Station 12, Lat. S. 64° 32′, Long. E. 97° 20′, 110 fathoms; 31st January, 1914. Bottom, rock with small amount of ooze.

Distribution.—Previously recorded from Graham Region, Seymour Island, Cape Seymour, 150 metres; Erebus and Terror Gulf, 360 metres (Jäderholm); Baie des Flanders, 1 metre (Billard); "Gauss" Station, 380 metres (Vanhöffen); Ross Sea, Discovery Inlet, 550 metres (Jäderholm); off Cape Adare, Ross Sea, 45 to 50 fathoms (Totton).

Oswaldella billardi *sp. nov.*

(Plate XV, fig. 1; text-fig. 3.)

Polyplumaria antarctica ? Billard, Deux. Expéd. Antarctique Française, Hydroides, 1914, p. 28, fig. 17.

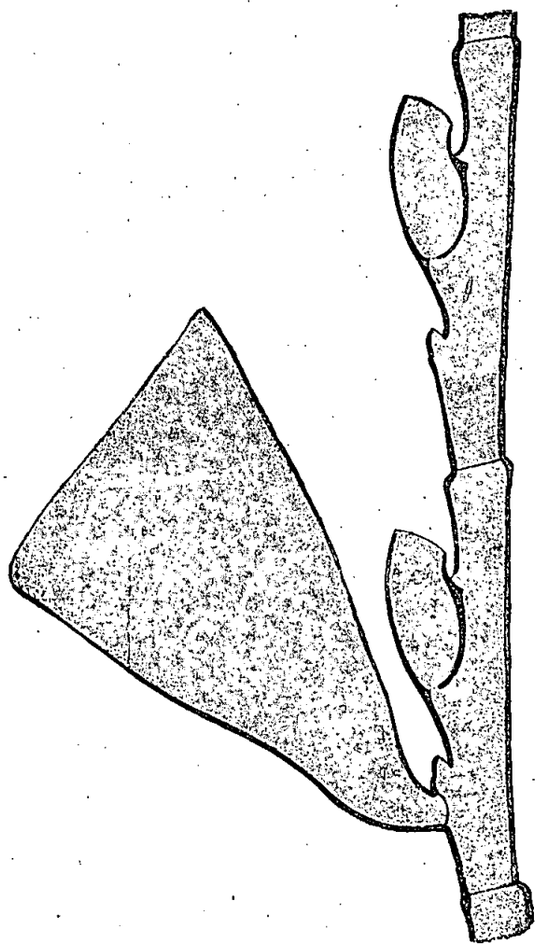
Numerous pale yellow tufts, up to 100 mm. in height, were dredged by the "Aurora" at Station VII, from a depth of 60 fathoms.

The characters of the trophosome and of the gonangia are in complete agreement with those of the single specimen taken by the "Pourquoi Pas ?" Expedition, and referred by Billard to *Polyplumaria antarctica ?* (Jäderholm).

The structure of the hydrothecae at once distinguishes this species from *O. antarctica* (Jäderholm). The hydrothecae are deep, jug-shaped receptacles, with a markedly convex abaxial wall. The mouth of the hydrotheca is oblique and is directed towards the hydrocladium. On the proximal nodes of the hydrocladia the hydrothecae have a depth of 0·31 mm., but the depth gradually increases until on the distal nodes the hydrothecae measure 0·39 mm. along the abaxial wall. The diameter of the mouth, 0·12 to 0·13 mm., however, remains fairly constant.

According to Billard's measurements the hydrothecae have a depth of 0·28 to 0·32 mm. on the ventral or external part.

In *O. antarctica* the hydrothecae do not narrow towards the distal extremity as they do in *O. billardi*, nor is the abaxial wall as markedly convex.



Text-fig. 3.
Oswaldella billardi sp.nov.

Gonosome.—Gonangia are present on several of the colonies. Each gonangium arises by a short peduncle from below, and slightly to one side of, the infra-thecal nematotheca. The gonangia are funnel-shaped receptacles, each abruptly truncated at the distal extremity, which is covered by a thin sheet of perisarc somewhat depressed in the centre.

These gonangia of *O. billardi* are strikingly unlike those of *O. antarctica*, in which they assume the form of flattened, narrow, cone-shaped structures.

Dimensions—

Hydrothecae, depth (abaxial wall)	0·31–0·39 mm.
Hydrothecae, diameter at mouth	0·12–0·13 mm.
Gonangia, length	Up to 1·42 mm.
Gonangia, maximum width	0·52–0·70 mm.

Locality.—Station 7, Lat. S. 65° 42′, Long. E. 92° 10′, 60 fathoms; 21st January, 1914. Bottom, small rocks with red algae.

Distribution.—Previously recorded by Billard (1914) as *Polyplumaria antarctica?* (Jäderholm) from off Port Lockroy, 70 metres.

Genus SCHIZOTRICHA *Allman.*

SCHIZOTRICA UNIFURCATA *Allman.*

var. TURQUETI *Billard.*

Schizotricha turqueti Billard, Expéd. Antarctique Française, Hydroides, 1906, p. 15, fig. 5. *Id.*, Vanhöffen, Deutsche Südpolar-Exped., xi, Zool. iii, Die Hydroiden, 1910, p. 337, fig. 49.

Polyplumaria unifurcata Allman var. *turqueti* Billard, Ann. Sci. Nat., Zool., (9), xi, 1910, p. 42.

A single specimen from Station VII agrees in all its salient features with the description and figure of a species of *Schizotricha* referred by Vanhöffen to *S. turqueti* Billard.

The colony collected by the "Aurora" Expedition reaches a height of 200 mm. The shape of the hydrothecae and their dimensions are in exact agreement with Vanhöffen's specimens, in which the hydrothecae are smaller and do not attain the depth of those originally described by Billard.

I have arranged the synonymy as above, although more material will be necessary before Vanhöffen's specimens can be definitely referred to *S. turqueti* Billard, which is now recognised as a variety of Allman's *S. unifurcata.*

Locality.—Station 7, Lat. S. 65° 42′, Long. E. 92° 10′, 60 fathoms; 21st January, 1914. Bottom, small rocks with red algae.

Distribution.—This variety has previously been recorded from Booth-Wandel Island (Billard); "Gauss" Station, 385 metres (Vanhöffen).

Genus HALICORNOPSIS *Bale.*

HALICORNOPSIS ELEGANS (*Lamarck*).

Plumularia elegans Lamarck, Hist. Nat. Anim. sans Vert., ii, 1816, p. 129.

Halicornopsis elegans Briggs, Proc. Roy. Soc., N.S.W., xlviii, 3, 1915, p. 309 (synonymy).

Several colonies of this characteristic species were dredged by the "Aurora" off Maria Island, Tasmania, at depths varying from 65 fathoms to 1,300 fathoms. *Gonosome* not present.

Localities.—Off Maria Island, Tasmania, 65 fathoms; 12th December, 1912. Off Maria Island, Tasmania, 1,300 fathoms; 13th December, 1912.

Distribution.—Previously recorded from Indian Ocean; Tasmania; Bass Strait; Victoria; New South Wales; South Australia; Great Australian Bight.

Genus HALICORNARIA *Busk.*

HALICORNARIA COMES *nom. nov.*

Halicornaria intermedia Bale, Biological Results "Endeavour," ii, 1, 1914, p. 53, pl. v, fig. 2, pl. vii, figs. 3, 4. (Not *Halicornaria intermedia* Billard, Les Hydroides de l'Expéd. du Siboga, i, Plumulariidae, 1913, p. 65, pl. iv, fig. 37).

Halicornaria furcata Bale var. *intermedia* Bale, Biological Results "Endeavour," ii, 1, 1914, Addendum, p. 1. *Id.*, Briggs, Rec. Austr. Mus., x, 10, 1914, p. 298, pl. xxv, fig. 3; *Id.*, Briggs, Proc. Roy. Soc., N.S.W., xlviii, 3, 1915, p. 310. *Id.*, Bale, Biological Results "Endeavour," iii, 5, 1915, p. 325.

From a creeping hydrorhiza, which is closely applied to a branch of *Aglaophenia tasmanica* Bale, arises a number of monosiphonic stems reaching a height of 95 mm. These are simple with the exception of a single stem which divides once dichotomously. The specimens further differ from the typical form in the considerable amount of variation in the length of the free portion of the mesial sarcothecae. As the following measurements show, these structures in general present a series which gradually decreases in length from the proximal portion of the hydroclade towards its tip.

Dimensions—

Hydroclade, length	Up to 18 mm.
Hydroclade internode, length	0·39–0·42 mm.
Hydroclade internode, diameter	0·26–0·31 mm.
Hydrotheca, depth	0·29–0·31 mm.
Hydrotheca, breadth	0·18–0·20 mm.
Hydrotheca, length of free portion of mesial sarcotheca	0·09–0·21 mm.

Nomenclature.—Bale (1914) originally described, under the name of *Halicornaria intermedia*, a hydroid which he found associated with *Aglaophenia tasmanica*. Subsequently it was found necessary to cancel the specific name (name preoccupied; *H. intermedia* Billard, 1913), and in preference to proposing a new one, Bale reduced his species to a variety of *Halicornaria furcata*, pending further knowledge of the affinities of that species. In his original description Bale drew attention to the salient features which distinguished his new species from its nearest ally, *H. furcata*.

In view of the constant differences which exist between the trophosomes of the two hydroids, it appears to me advisable to maintain them as distinct species. I now raise Bale's variety to specific rank; the name *intermedia* is preoccupied in the genus, and, therefore, I substitute *Halicornaria comes* to denote the constant association of this hydroid with *Aglaophenia tasmanica* upon which it always occurs as an epizoon.

Affinities.—*Halicornaria comes* is very closely allied to *Halicornaria furcata* Bale. It differs, however, from Bale's species in (1) the greater length of the hydrocladia (up to 18 mm.); (2) the greater length of the hydroclade internodes (0·42 mm. as against 0·32–0·36 mm.); (3) the larger size of the hydrothecae (0·31 mm. as against 0·21–0·23 mm. in depth); (4) the less crowded condition of the hydrothecae; (5) the form of the margin and the marginal teeth of the hydrothecae.

Locality.—Off Maria Island, Tasmania, 65 fathoms; 12th December, 1912. Associated with *Aglaophenia tasmanica* Bale.

Distribution.—Previously recorded from Tasmania (Bale; Briggs); Bass Strait (Bale); off Green Cape, New South Wales (Bale).

AGLAOPHENIA TASMANICA *Bale.*

Aglaophenia tasmanica Bale, Biological Results "Endeavour," ii, 1, 1914, p. 37, pl. iii, fig. 2, pl. vi, fig. 2. *Id.*, Briggs, Rec. Austr. Mus., x, 10, 1914, p. 300, pl. xxvi; *Id.*, Briggs, Proc. Roy. Soc., New South Wales, xlviii, 3, 1915, p. 316. *Id.*, Bale, Biological Results "Endeavour," iii, 5, 1915, p. 317.

The present specimens of this species differ from typical forms in the considerable amount of variation in the length of the mesial sarcothecae. On the hydrothecae of the proximal portion of a hydroclade the mesial sarcothecae are two-thirds to six-sevenths as long as the hydrothecae, but towards the tip of the hydroclade they become shorter, in some cases reaching only slightly over half the length of the hydrothecae.

Gonosome.—Corbulae (female) are present on several of the colonies, and are somewhat longer than those originally described by Bale, consisting of twenty pairs of alternate ribs which form a corbula of the closed type.

Dimensions—

Corbula (female), length	...	...	...	Up to 13 mm.
Corbula (female), diameter	...	...	...	2 mm.

The corbulae of *A. tasmanica* exhibit sexual dimorphism, a condition to which I have previously (1914) drawn attention in this species. The male corbula is long, up to 11 mm., consisting of twenty-four pairs of alternate ribs, springing from separate internodes of the rachis as narrow pinnules, but expanding above into broad leaflets. For most of its length the corbula is closed; towards the distal part, however, the main leaflets become shortened and finally separate, till at the end they are abbreviated close down to the lateral spurs. The latter project outwards and forwards from the distal edge of each rib, just above its origin, bearing two series of sarcothecae (up to four or five on each side), but no hydrothecae.

The female corbula is long, up to 13 mm., consisting of twenty pairs of alternate ribs, springing from separate internodes of the rachis as narrow pinnules, but expanding above into broad leaflets, which unite to form a closed corbula. The distal margin of each leaflet is continued a little beyond the line of union so as to form a free-edged, narrow extension or wing, bordered with sarcothecae and continued upwards into a very large crest above the corbula, having both edges free and bordered with sarcothecae. A lateral spur or secondary leaflet projects outwards and forwards from the distal edge of each rib, just above its origin, bearing two series of sarcothecae (up to six or seven on each side), but no hydrothecae.

Locality.—Off Maria Island, Tasmania, 65 fathoms; 12th December, 1912.

Distribution.—Previously recorded from Tasmania (Bale; Briggs); Bass Strait (Bale); off Green Cape, New South Wales (Bale).

EXPLANATION OF PLATES.

PLATE XV.

Fig. 1. *Oswaldella billardi* sp.nov. Photograph of a specimen 92 mm. in height.

2. *Staurotheca compressa* sp.nov. Photograph of a specimen 115 mm. in height.

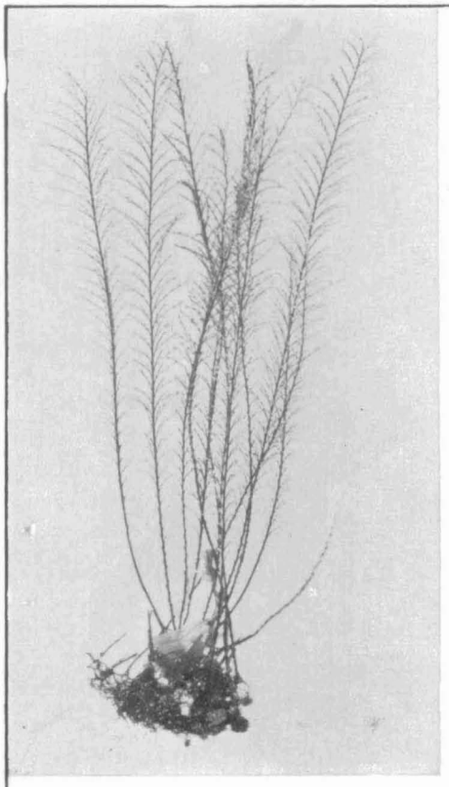
3. *Myriothela meridiana* sp.nov. Photograph of a specimen 27 mm. in height.

PLATE XVI.

Fig. 1. *Symplectoscyphus mawsoni* sp.nov. Enlarged photograph showing the arrangement of the hydrocladia.

2. *Symplectoscyphus mawsoni* sp.nov. The largest specimen shown in the photograph measures 95 mm. in height.

Sydney: David Harold Paisley, Government Printer—1908.



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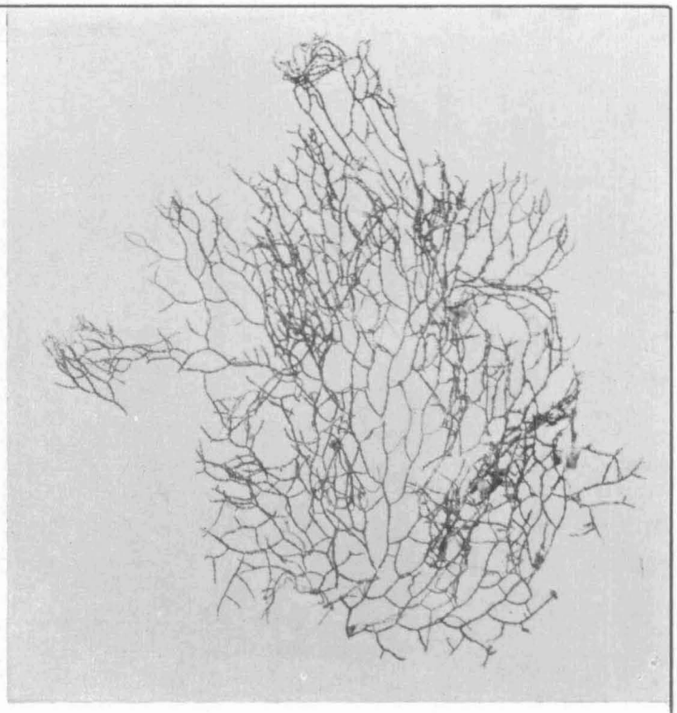

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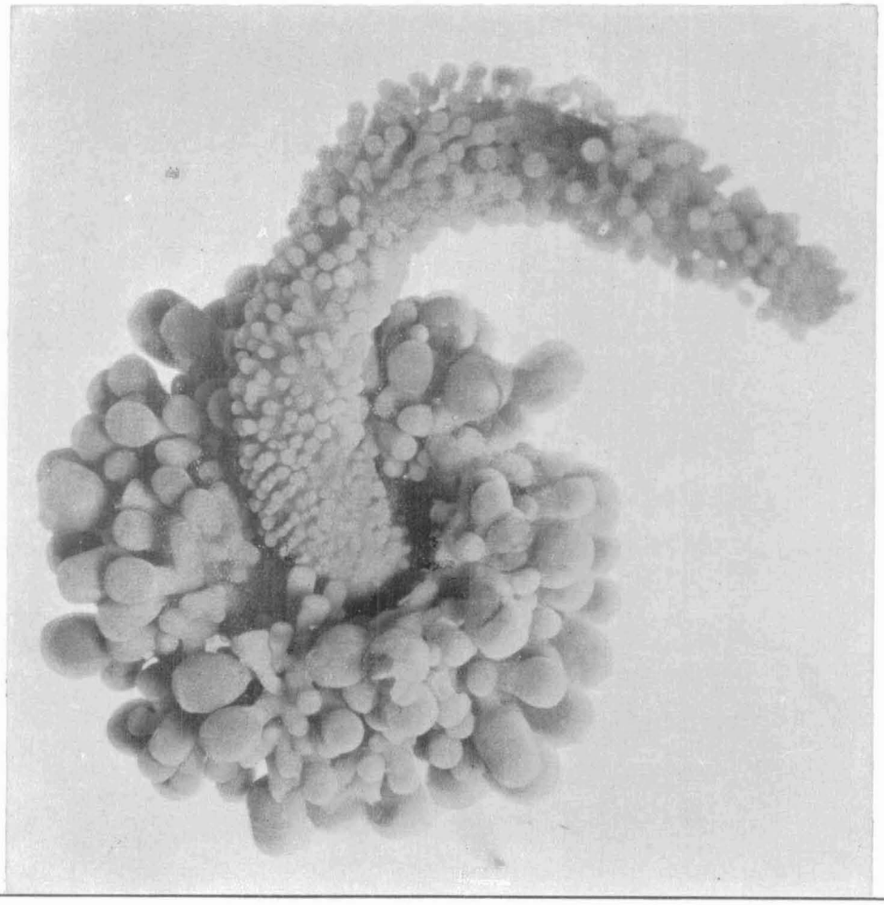

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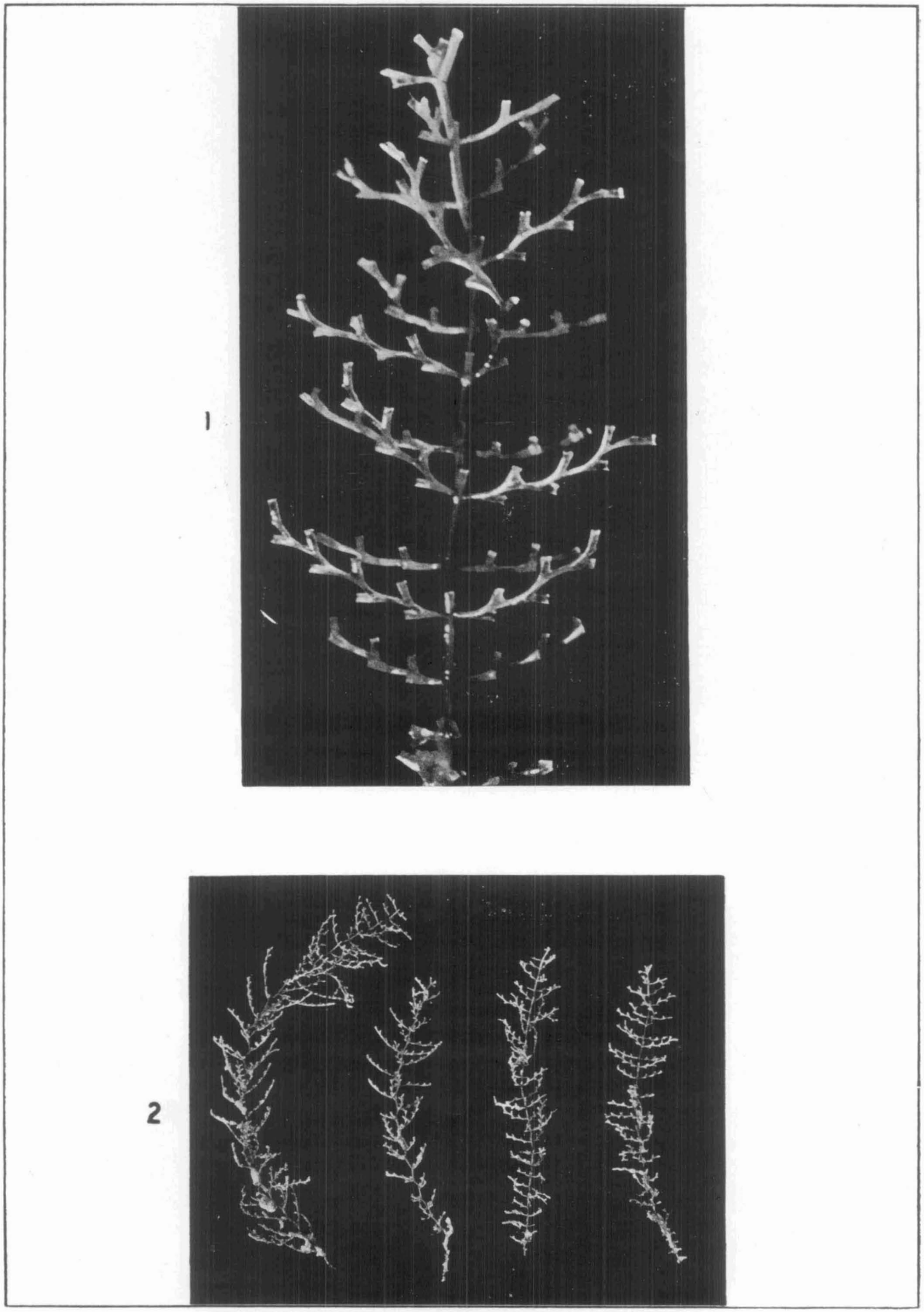
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