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FURTHER ZOOLOGICAL RESULTS  
OF THE SWEDISH ANTARCTIC EXPEDITION  
1901—1903

UNDER THE DIRECTION OF DR. OTTO NORDENSKJÖLD

EDITED BY T. ODHNER

VOL. II, No. 3.

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ACTINIARIA AND ZOANTHARIA

BY

OSKAR CARLGREN

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WITH 61 FIGURES

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STOCKHOLM  
P. A. NORSTEDT & SÖNER  
1927

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scapus, common in the capitulum and very numerous in the tentacles (size compare the diagnosis). Only the large specimen was examined concerning the stinging capsules. The large species was a female.

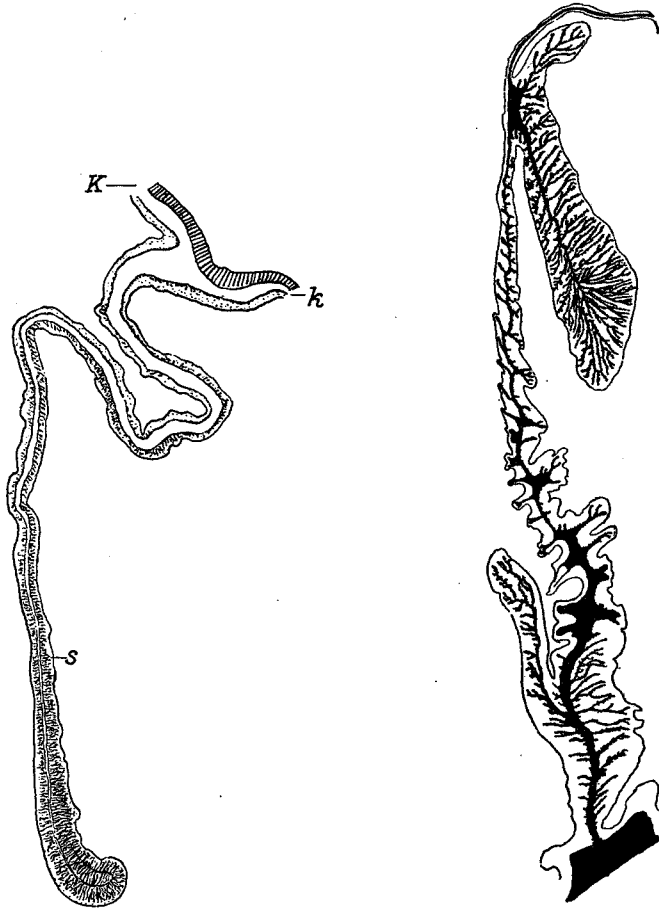


Fig. 58.

Fig. 59.

Figs. 58, 59. *Aureliana georgiana*. Fig. 58. Transverse section of sphincter *K*; *k* column, *s* sphincter. Fig. 59. Transverse section of one directive mesentery below the actinopharynx.

## Zoantharia.

### *Parazoanthus antarcticus* n. sp.

Diagnosis: Free colonies (always?) of rather long polyps connected with inconsiderable tube-shaped coenenchyme. Body incrustated with sand-grains situated in the ectoderm and only in the outer part of the mesogloea. Polyps cylindrical, in half contracted state swollen in the distal part. Capitular-ridges very distinct, broad, in

number 16—18. Tentacles rather thick. Sphincter rather weak with coarse folds. Ectoderm of the column very thick. A well developed encircling sinus in the mesogloea. Lacunae rare, probably only excavations from the sinus. Cell-islets absent, but few and scattered, irregular cells in the mesogloea. Actinopharynx with one distinct siphonoglyph, the mesogloea of which is thickened. Mesenteries about 36. Micromesenteries weak. Filaments with very well developed ciliated streaks. In the capitular-region nematocysts with very coiled thread  $34-38 \times 14-(16) \mu$ , rather common, nematocysts of the filaments with visible basal part to the spiral thread  $17-19 \times 5.5-6 \mu$ .



Fig. 60.

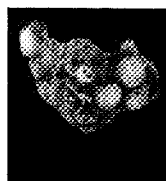


Fig. 62.

Figs. 60, 62. Fig. 60. *Parazoanthus antarcticus*.  
Fig. 62. *Epizoanthus patagonichus*.  
Almost natural size.

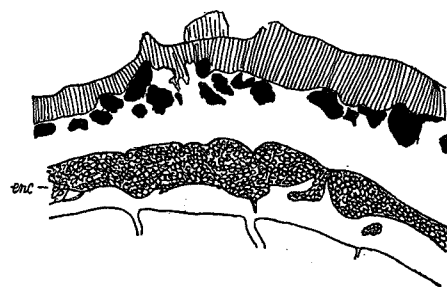


Fig. 61.

Fig. 61. *Parazoanthus antarcticus*. Transverse section of the column. Endoderm not figured. Incrustations black, *enc* encircling sinus.

Colour in alcohol dirty gray.

Dimensions: Length of the colony 2.4 cm. Breadth of the largest polyps in the distal part 0.45—0.5 cm.

Occurrence: Graham region  $63^{\circ} 50' S$   $61^{\circ} 6' W$ . Clay mixed with sand, 290 m. Bottomtemperature —  $1.05^{\circ}$ . 3. 12. 1902, 1 colony.

The single colony is composed of 4 polyps (fig. 60). They are rather long and irregularly wrinkled on the surface. The incrustation is not very strong. A transverse section of the column is figured in fig. 61

I have sectioned a single polyp. The preservation was not so good as desirable. In one half I counted 18 mesenteries, in the other there are probably 17. The mesenteries were regularly arranged after the macrotypus. The macro-mesenteries contain ovaries.

#### *Epizoanthus patagonichus* CARLGR.

*Epizoanthus patagonichus* n. sp. CARLGR 1899, p. 38, fig. 1.

» » CARLGR. MC MURRICH 1904, p. 296, Pl. 19. figs. 85, 86.

Diagnosis: Polyps connected with each other by thin, flat coenenchyme or situated close to each other, cylindrical, often somewhat swollen in the distal part

Body wall of the coenenchyme and polyps heavily incrustated with sand-grains filling up almost the whole mesogloea. Capitular-ridges rather indistinct about 18. Ectoderm of the column high with a distinct continuous cuticle. Mesogloea of the column with rather numerous cell islands. Sphincter rather strong, forming in its upper part a network with rather coarse meshes. Siphonoglyph very distinct with thickened mesogloea. Mesenteries about 32—36, micromesenteries weak. Ciliated streaks of the filaments well developed. Capitular region with nematocysts  $29-31 \times 10-12 \mu$ , filaments (and other part of the mesenteries?) with nematocysts partly  $17-19 \times 4.5-5 \mu$ , partly  $27-31 \times 10-12 \mu$ .

Colour in alcohol gray; previously described specimens brownish-yellow. Tentacles in life rust-red (MC MURRICH).

Dimensions: Length and breadth of the polyps up to 0.4 cm (0.45—0.5 cm, MC MURRICH).

Occurrence: S of W Falkland Isl.  $52^{\circ} 29' S$   $60^{\circ} 36' W$ . Sand and gravel, 197 m. Bottomtemperature  $+4.1^{\circ}$ . II. 9. 1902, 8 colonies.

Further distribution: Chile Calbuco 20 fms (leg. PLATE, teste MC MURRICH). East Patagonia  $44^{\circ} 14' S$   $61^{\circ} 23' W$  60 fms (leg. KOPHAMEL).

All eight colonies form a flat thin coenenchyme (fig. 62). Some polyps were strongly contracted and only a little higher than the coenenchyme. No traces of capitular furrows were here to be seen, in the more expanded polyps they were visible as thin spaces. The sectioned polyps were sterile.

## II. Some zoogeographical results.

The species of Actiniaria and Zoantharia, of which I here have given diagnosis and more or less complete descriptions, are 48 in number (46 Actiniaria and 2 Zoantharia). To these must be added a species, determined by PAX as *Cymbactis polaris* (CLUBB) but which is probably an *Actinostola*. Before discussing the geographical distribution of the described Actinians I here give a list of the species and also a short survey of the papers treating the antarctic and subantarctic Actinians after the publication of my paper on the Zoantharia in »Hamburger Magelhaensische Sammelreise» 1899, in which the older literature of Actinians from the Magellan and other districts of South America up to  $30^{\circ} S$ . L. is mentioned. The described Actinians are the following (\* species taken below as well as above 200 m; \*\* species taken only below 200 m; no marks: species taken above 200 m)

- |  |   |
|--|---|
| * <i>Dactylanthus antarcticus</i> (CLUBB) p. 2 | <i>Limnactinia nuda</i> n. sp. p. 7           |
| <i>Corynactis carnea</i> (STUD.) p. 2          | * <i>Halcampoides purpurea</i> (STUD.) p. 10  |
| * <i>Edwardsia intermedia</i> MC MURR. p. 4    | <i>Scytophorus antarcticus</i> (PFEFF.) p. 11 |

- Halcampa octocirrata* n. sp. p. 14  
*Parahalcampa* (n. gen.) *antarctica* n. sp. p. 15  
*Alicia uruguayensis* n. sp. p. 18  
\**Condylanthus magellanicus* CARLGR. p. 19  
*Boloceropsis platei* MC MURR. p. 22  
*Parantheopsis cruentata* (COUTH.) p. 24  
» *georgiana* (PFEFF.) p. 24  
» *ocellata* (LESS.) p. 25  
*Bunodactis patagoniensis* CARLGR. p. 27  
» *aucklandica* n. sp. p. 28  
» *sulcata* (CLUBB) p. 29  
» *octoradiata* (CARLGR.) p. 30  
*Anthopleura hermaphroditica* (CARLGR.) p. 32  
\**Glyphoperidium bursa* ROULE p. 34  
*Isoitalia antarctica* CARLGR. p. 37  
\*\**Tealanthus* (n. gen.) *incertus* n. sp. p. 38  
*Epiactis georgiana* n. sp. p. 40  
*Urticinopsis* (n. gen.) *antarctica* (VERR.) p. 42  
*Paranthus crassa* (CARLGR.) p. 44  
\**Hormosoma scotti* (STEPH.) p. 47  
*Cnidanthus* (n. gen.) *polaris* (CLUBB) p. 50  
*Isosicyonis* (n. gen.) *alba* (STUD.) p. 52  
*Antholoba achates* (DRAYT.) p. 56  
\*\**Sicyonis erythrocephala* (PAX) p. 57  
\**Actinostola intermedia* CARLGR. p. 58  
\*\* » *georgiana* n. sp. p. 61  
\*? » *crassicornis* (HERTW.) p. 63  
\*\* *clubbi* n. sp. p. 66  
*Phelliogeton* (n. gen.) *falklandicus* n. sp. p. 68  
*Symphellia exlex* (MC MURR.) p. 71  
*Thoe patagonicha* (CARLGR.) p. 74  
» *chilensis* (LESS.) p. 75  
*Choriactis impatiens* (COUTH.) p. 77  
\* » *laevis* (CARLGR.) p. 79  
\**Artemidactis victrix* STEPH. p. 84  
\**Hormathia georgiana* n. sp. p. 85  
» *erythrosoma* (PAX) p. 88  
» *rhododactyla* (PAX) p. 89  
» *castanea* (MC MURR.) p. 90  
\*\**Aureliana georgiana* n. sp. p. 91  
\*\**Parazoanthus antarcticus* n. sp. p. 93  
*Epizoanthus patagonichus* CARLGR. p. 94  
\*\**Actinostola* sp.? p. 52

Let us now turn to the literature after 1899.

In 1902 CLUBB describes two new antarctic species. *Urticina sulcata* and *carlgrëni*, from South Victoria Land. The species are, to my mind, identical and belong to the genus *Bunodactis*. In 1903 I mentioned *Condylactis cruentata* and some larvae taken during the Belgica-expedition.

MC MURRICH gives 1904 a survey of the Actinians collected by PLATE at the coast of Chile and Tierra del Fuego. Of the 27 described species only 4, *Parantheopsis cruentata*, *Antholoba achates*, *Choriactis impatiens* and *crassa*, are dredged at Tierra del Fuego, all others are from Chile proper. 10 species of the 27 are described in the present paper namely *Parantheopsis cruentata*, *ocellata*, *Boloceropsis platei*, *Actinostola chilensis* = *intermedia*, *Antholoba achates*, *Choriactis impatiens*, *C. crassa* = *laevis*, *Hormathia* = *Symphellia exlex*, *Chitonanthus* = *Hormathia castanea* and *Epizoanthus patagonichus*. Of the other specimens not examined by myself *Halianthus chilensis* is certainly a *Cactosoma* and *Paractis nivea* a *Paranthus*.

In 1908 CLUBB describes 8 Actiniaria from the National Antarctic (Discovery)

Expedition, of which 2 species, *Parantheopsis cruentata* and *Cribrina* = *Bunodactis octoradiata* from Falkland Islands, and 1 species, *Cribrina hermaphroditica* = *Bunodactis aucklandica* from Auckland Islands and 5 from the Antarctic (South Victoria Land) namely *Paractis* = *Cnidanthus polaris*, *Paractis papaver* = *Hormosoma scotti*, *Actinostola chilensis* = *clubbi*, *Cystiactis* = *Dactylanthus antarcticus* and *Rhodactinia crassicornis* = *Urticinopsis antarctica*. I have examined the species except those from Falkland Islands, which are certainly correctly determined.

In 1911 ROULE mentions 3 antarctic species, *Glyphostylum calyx*, *Glyphoperidium bursa* and *vas* from the French Antarctic Expedition. I have not seen the type-species and cannot say anything as to *Glyphostylum* (possibly identical with *Glyphoperidium*). Specimens which undoubtedly belong to *Glyphoperidium bursa* and *vas* I have examined from several localities. To my mind both species are identical.

The present author gives 1911 a more complete description of *Dactylanthus* (*Cystiactis*) *antarcticus* from the Graham region and points out its systematic place and in 1914 (Scottish Nat. Antarctic Exp.) and 1918 he describes *Actinernus* (*Porponia*) *antarcticus* from Coats land.

In 1913 REES describes »*Actinostola callosa* = *Dysactis crassicornis*» from Kings George's Bay, W. Falkland. This species is probably nothing but *Antholoba achates* (compare the colour).

In 1918 STEPHENSON gives a report of the Actiniaria collected during the British Antarctic (Terra nova) Expedition. Of the 15 species mentioned here 7 species are from Antarctic (South Victoria land and Ross sea) namely *Halcampoides* (probably *Cactosoma*) *aspera*, *Dactylanthus antarcticus*, *Hormosoma scotti*, *Lilliella* = *Hormathia lacunifera*, *Cymbactis* = *Stomphia selaginella*, *Artemidactis victrix* and *Leptoteichus insignis*, and one species *Bolocera longicornis* possibly = *kerguelensis* from Falkland Islands. I have not examined these specimens.

In 1922 PAX gives diagnoses of new Actiniaria collected during the French South-Polar (Pourquoi pas) expedition and the German South-Polar expedition. Of the 26 species 17 are from the latter expedition and of those 5 from Antarctic (Emperor Wilhelm's land), namely *Isotealia pachyderma*, *Cymbactis frigida*, *Antholoba epizoica*, *Sagartia antarctica* and *minima*, and 6 from Kerguelen: *Halcampoides kerguelensis* = probably *purpurea*, *Condylactis crassa* = *Parantheoides cruentata*, *Bunodactis vanhoeffeni*, *Rhytidactis antarctica*, *Dimyactis duplicata* and *Sagartia kerguelensis*. I have not examined these specimens. On the other hand, I have revised the whole collection from Pourquoi pas expedition, of which PAX 1923 gives a nearer report. Unfortunately, the interior of the collected specimens is badly preserved, inasmuch as the mesenteries are strongly compressed and the filaments mostly strongly sticking to each other. Also PAX' description of the species is a splendid example of how not to do it. It is astonishing to read such a paper by an author who wants

to pass for a specialist in Actinians. Most of the species are incorrectly determined to the genus, and there are many incorrect observations. Two species *Cymbactis* = *Sicyonis erythrocephala* and *Cymbactis polaris*, probably an *Actinostola*, are from Alexander land, the other, *Halcampoides macrodactyla* = *purpurea*, *Epiactis stephensi* = *Glyphoperidium bursa*, *Isotealia antarctica* = *Tealianthus incertus*, *Hormosoma violaceum* = *scotti*, *Actinostola rufostriata* = *Hormosoma scotti*, *Paranthus* = *Hormathia erythrosoma*, *Parantheoides* = *Hormathia rhododactyla*, *Choriactis opalescens* and *crassoides* = *laevis*, from South Shetland Islands.

Finally the present author gives (1924) a report of MORTENSEN's collection of Actinians from New Zealand and its subantarctic islands. Although it is questionable, if the Campbell and Auckland islands are to be referred to the purely subantarctic regions, I have mentioned this paper here. The described species from these islands are: *Edwardsia tricolor*, *Condylanthus aucklandicus*, *Actinia tenebrosa*, *Parantheopsis cruentata*, *Bunodactis mortenseni*, *Synphellia aucklandica*. To these *Sagartia alboviridis* KIRK and STUCKEY, not examined by me, is to add (compare literature CARLGRÉN 1924 a).

It is not my intention to discuss the antarctic and subantarctic Actinians in general here. I hope ere long to take up this question in connection with the working out of another paper from these regions. It may, however, be suitable to make a comparison between the subantarctic and the antarctic regions south of the Atlantic Ocean. I give first a list of the Actinians found in the different regions with additions and corrections to that by PAX (1923, p. 25).

## Alexander land.

\*\**Sicyonis erythrocephala* (PAX)\*\**Actinostola* sp?

## Westantarcticis.

\**Dactylanthus antarcticus* (CLUBB)\**Edwardsia intermedia* MC MURR.\*\**Halcampoides purpurea* (STUD.)*Glyphoperidium bursa* ROULE*Glyphostylum calyx* ROULE\*\**Parazoanthus antarcticus* CARLGR.

## South Shetland Islands.

\*\**Halcampoides purpurea* (STUD.)*Glyphoperidium bursa* ROULE\*\**Tealianthus incertus* CARLGR.*Hormosoma scotti* STEPH.*Hormathia erythrosoma* (PAX)*Hormathia rhododactyla* (PAX)\**Choriactis laevis* (CARLGR.)

## Shagrock bank.

*Glyphoperidium bursa* ROULE*Hormathia georgiana* CARLGR.

## Falkland Islands.

*(Actinia? macloviana* LES.)*Parantheopsis cruentata* (COUTH.)\*\**Bolocera longicornis* CARLGR.?*Bunodactis octoradiata* (CARLGR.)*Antholoba achates* (DRAY.)*Phelliogeton falklandicus* (CARLGR.)*Epizoanthus patagonichus* CARLGR.

## Burdwood bank.

*Artemidactis victrix* STEPH.



*Actinostola crassicornis* (HERTW.)  
*Choriactis laevis* (CARLGR.)

South Orkney Islands.

*Glyphoperidium bursa* ROULE  
*Stomphia selaginella* (STEPH.)  
*Choriactis laevis* CARLGR.  
*Artemidactis victrix* STEPH.

Off Coats land.

\*\**Actinernus antarcticus* (CARLGR.)  
 \*\**Epiactis* sp.?, \*\**Sicyonis* sp.?

South Georgia.

*Edwardsia intermedia* MC MURR.  
*Limnactinia nuda* CARLGR.  
 \**Halcampoides purpurea* (STUD.)  
*Scytophorus antarcticus* (PFEFF.)  
*Halcampa octocirrata* CARLGR.  
*Parantheopsis georgiana* (PFEFF.)  
 \*\**Glyphoperidium bursa* ROULE  
*Epiactis georgiana* CARLGR.  
*Hormosoma scotti* STEPH.  
 \*\**Actinostola georgiana* CARLGR.

*Sagartia georgiana* CARLGR.

\**Artemidactis victrix* STEPH.

\*\**Hormathia georgiana* CARLGR.

\*\**Aureliana georgiana* CARLGR.

Tierra del Fuego and Magellan Strait.

*Edwardsia intermedia* MC MURR.  
*Parahalcampa antarctica* CARLGR.  
*Condylanthus magellanicus* CARLGR.  
*Bolocera occidua* MC MURR.  
*Parantheopsis cruentata* (COUTH.)  
*Bunodactis octoradiata* (CARLGR.)  
*Leiothealia! badia* MC MURR.  
*Antiparactis lineolata* (MC MURR.)  
*Antholoba achates* (DRAYT.)  
*Dysactis! rhodora* HERTW.  
 \**Actinostola intermedia* CARLGR.  
*Actinostola crassicornis* (HERTW.)  
*Choriactis impatiens* (COUTH.)  
*Choriactis laevis* (CARLGR.)  
 \*\**Hormathia pectinata* (HERTW.)  
*Stoichactis? <sup>1</sup> fuegiensis* (DANA)  
*Parazoanthus fuegiensis* CARLGR.

Comparing the Actinians from South Georgia with those from the other regions we find no identical species at South Georgia and Falkland islands, one species, *Edwardsia intermedia*, is common to S. Georgia and the Fuegal region, one species, *Artemidactis victrix*, is dredged at S. Georgia as well as at Burdwood bank and South Orkney Islands, two species, *Glyphoperidium bursa* and *Edwardsia intermedia*, are common to S. Georgia and Westantarctis, three species, the mentioned *Glyphoperidium*, *Hormosoma* and *Halcampoides purpurea* are taken at S. Georgia as well as at South Shetland islands and two species, *Glyphoperidium* and *Artemidactis* are common to S. Georgia and South Orkney islands. The 2 species, *Glyphoperidium* and *Hormathia georgiana*, found at Shag Rock bank, are present also at S. Georgia. Of these species *Edwardsia intermedia* is taken also in S. Chile. *Glyphoperidium bursa* also at Bouvet Island and at Queen Mary Land, this species as also *Hormosoma* and *Artemidactis*, the latter occurring also at South Victoria Land, besides *Hormosoma*

<sup>1</sup> According to the description of MC MURRICH (1893) this species cannot be a *Discosoma* but rather a *Stoichactis*. I very much doubt, however, that this species is a Stichodactylin Actinian, if not a *Corynactis*.

at Queen Mary Land and *Artemidactis* at Adelie Land, are probably circumpolar. *Halcampoides* seems to be a cosmopolite although it is most numerous in the arctic and antarctic regions (compare CARLGREN (1921, p. 84—85). *Hormathia georgiana* is known only from S. Georgia and Shag Rock bank. More than half of all the S. Georgia-species are not found in another region, of the other species the greater part belongs to the antarctic fauna. Thus as to the Actinians there are strong reasons to regard South Georgia as a transition-region between the subantarctic (Fuegal) and the pure antarctic regions. A similar conclusion EKMAN (Holothurien in Further zool. results of the Swedish Antarctic expedition, I: 6, Stockholm 1925, p. 166—167), as before him KOEHLER (compare EKMAN), has drawn from his examination of the Holothurians, a paper I did not read until I had taken my position with regard to the zoogeographical character of the marine fauna of S. Georgia.

The Actinian fauna of the Fuegal region (incl. Magellan Strait) is nearly related to that of the Falkland Islands. The tree littoral forms, *Parantheopsis cruentata*, *Bunodactis octoradiata* and *Antholoba achates* seem to be common in both these regions. *P. cruentata* has a large subantarctic distribution, occurring also at Kerguelen, Campbell and Aucklands and Macquarie islands and, according to MC MURRICH, also at South Chile. Also *A. achates* has a wide distribution, appearing also along the west-coast of South America and at Patagonia. Another of the Magellan-species, *Condylanthus magellanicus*, is found also south of Africa and a nearly related species, *aucklandicus* at Auckland islands.

Only a single species, *Edwardsia intermedia*, is common to Tierra del Fuego and Westantarctic. Two species, *Actinostola crassicornis* and *Choriactis laevis*, from Burdwood bank occur also in the Fuegal region, the latter also at South Shetland Islands. Besides it is remarkable, that one specimen of *Artemidactis victrix*, certainly an antarctic form, so common at South Georgia, was also found on Burdwood bank. Is there perhaps an unknown submarine ridge between South Georgia and Burdwood bank (compare NORDENSKJÖLD, Wiss. Ergebn. Schwed. Südpolar Exp. I: 2, 1917, p. 6) facilitating the distribution of the fauna?

Also with the Actinian fauna of Chile and Patagonia the Fuegal fauna shows relations. I will, however, not discuss this question at present, especially as the Actinian fauna of Patagonia is imperfectly known.

Further examinations of the subantarctic and antarctic forms may probably bring forth other circumpolar species. To these is probably to be added, besides the before mentioned, also *Stomphia selaginella*, dredged at South Orkney Islands, Queen Mary Land, Adelie Land, South Victoria Land and in Ross sea and *Dactylanthus antarcticus*.

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