REVISION OF *STYLACTIS* AND ITS ALLIED GENERA, WITH DESCRIPTION OF *STYLACTELLA* (*STYLACTIS*) *YERII* N. SP.

BY

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(With 30 Text-figures and 1 Map)

Introduction

Mr. Megumi YERI, while engaging in collecting zoological specimens to furnish the newly established museum of the Misaki Marine Biological Station, happened to find a colony of an athecate hydroid growing upon a univalve shell taken at a depth of 60 fathoms off Misaki. He was kind enough to send it to the present author, under whose examination it was discovered to form a new species of *Stylactis*. As a result of comparative study of the forms hitherto referred to *Stylactis*, the author was led to a revision of this and the allied genera, *Stylactella*, *Stylactaria*, etc., as shown in the following pages.

Before proceeding further, the writer wishes to acknowledge his indebtedness to Professor Dr. T. UCHIDA for his kind guidance throughout this work, and also to Professor Dr. T. KOMAI of the Kyoto Imperial University for his valuable suggestions on many points. Further, he must express his gratitude to Mr. M. YERI for his kindness in placing the present specimen at the writer's disposal.

Contribution No. 60 from the Zoological Institute, Faculty of Science, Hokkaido Imperial University.

Historical Review

The genus *Stylactis* was established by ALLMAN in 1864 as a member of the Podocorynidae, giving the generic diagnosis as follows: "Trophosome.—Coenosarc mainly composed of a retiform hydrorhiza, which consists of anastomosing tubes invested by a periderm; hydrocaulus rudimental (or absent ?). Polypites claviform, with a single verticil of filiform tentacles surrounding the base of a conical metastome. Gonosome.—Gonophores adelocodonic, borne on the body of the polypite at the proximal side of the tentacles".

This genus, including two species, *fucicola* and *Sarsii*, differs from *Podocoryne* only in the respect that the latter liberates medusae while the gonophores of the former remain fixed as sporosacs; and both of these two genera are distinguished from *Hydractinia* by the absence of a superficial layer of naked coenosarc.

In his beautiful monograph on the gymnoblastic hydroids (1872) the same author added a new species *inermis* to *Stylactis*, proposing the emendation of the generic diagnosis in the following two points: "Hydrocaulus not developed. Hydranth sub-claviform or cylindrical". But these differences are merely a question of degree. What he called the hydrocaulus is that part of the coenosarc which is invested by a short prolongation of the stolonial periderm towards the base of the hydranth, and there is no sharp limit between "rudimental" and "not developed". Moreover, the form of the hydranth depends upon the condition of preservation, and the *cylindrical* hydranth may be changed by contraction into the *claviform* or *sub-claviform* one. As for *Podocoryne*, he described it, in contradiction to his previous remark, as possessing a hydrorhiza just like that of *Hydractinia*.

Stylactis arge was reported by CLARK (1882) as the fourth species of this genus. Its striking difference from the species previously known lies in its gonophore, which CLARK called a "sporosac". This, however, having four radial canals, a ring canal, and rudimentary tentacles, must be called a degenerate medusa, and in reality it swims rather actively. Another point of difference is found in the

arrangement of tentacles which are in two closely set verticils, as against the diagnosis given by ALLMAN (1864), but even in *Stylactis inermis* ALLMAN the tentacles are disposed in two circlets. Of the hydrorhiza CLARK gave no description at all.

In 1888 ALLMAN again described another form (*Stylactis vermicola*) from the dredgings of the Challenger Expedition, and altered the generic diagnosis for the third time: Gonophores adelocodonic, borne on the hydranth or on the creeping stolon.

Two more species, *spongicola* and *abyssicola*, were found by HAECKEL (1889) from the Challenger collections, both of which had their gonophores directly on the hydrorhiza. Maintaining that it was not justified to alter the generic diagnosis as ALLMAN (1888) did, HAECKEL constructed a new genus *Stylactella* with the followning generic diagnosis, including *vermicola*, *spongicola*, and *abyssicola* as its representatives: "Tubulariae without hydrocaulus, with a reticular hydrorhiza, from which arise single sessile or pedunculate hydranths, and scattered between them single gonophores. Hydranths claviform, naked, with a single circlet of filiform tentacles, which surround the base of a conical hypostome. Gonophores ovate, naked, with a simple central spadix. Chitinous perisarc investing only the tubular branches of the hydrorhiza".

ALCOCK (1892) found a new form, *Stylactis minoi*, which lives associated with a scorpaenoid fish, but it was later transferred to *Podocoryne* by FRANZ and STECHOW (1908) owing to the fact that it liberates well-developed medusae instead of having sporosacs. Again in 1921 STECHOW placed it in a new genus *Podocorella*, on grounds that its medusae have no oral tentacles, and the blastostyles are very small and generally have no tentacles.

BONNEVIE, in 1898, examining the original examples of *Stylactis Sarsii* and *S. fucicola* found the coenosarcal covering over the hydrorhiza and referred them to *Hydractinia*.

Meanwhile, new forms of *Stylactis* were described one after another, among which *Stylactis Hooperi* SIGERFOOS (1899) gives rise to degenerate medusae which swim freely only a few hours, *S. arctica*

JÄDERHOLM (1902) is provided with sporosacs borne on the hydranth, but the gonophore of *S. affinis* of the same author (1904) remains unknown.

MOTZ-KOSSOWSKA in her paper of 1905 united the three genera, *Hydractinia*, *Podocoryne*, and *Stylactis*, into one genus *Hydractinia* sensu lat., because there is no such character as to reserve generic distinction, even the character of hydrorhiza in one and the same species being subject to a good deal of variation. In this paper she reported a new form, *Hydractinia Pruvoti*, bearing medusa-buds on a specialized blastostyle. BEHNER (1919) referred this to *Stylactis* by the reason that the hydrorhiza is invested by a distinct periderm, and later on, STECHOW (1921 b) placed it in the genus *Hydractomma*, newly established by him for this hydroid.

Under the name *Hydractinia clavata*, JÄDERHOLM (1905) described another species from the Antarctic Ocean, which was afterwards cited as *Stylactella clavata* by STECHOW (1925) in the list of hydroids found in the Antarctic region till that time.

In their paper on the hydroids collected by the Discovery Investigation, HICKSON and GRAVELY (1907) contributed a new form of *Stylactis* (*S. halecii*) with dactylozooids of a simple kind, and a species of *Hydractinia* (*H. dendritica*) without dactylozooids. These facts stand contrary to the usual condition that *Hydractinia* has dactylozooids and *Stylactis* has not, and therefore, they were quite convincing to show the general affinities of these two genera.

A key to the genera referred above was given by Stechow (1909) as follows:

* Hydrorhiza incrusted, with a layer of naked coenosarc, but without periderm. Mostly polymorphic.
- * Tentacles scattered. — *Clavactinia*
- * Tentacles arranged in a verticil.
  - * Medusae with 4 or 8 solitary marginal tentacles. — *Podocoryne*
  - * Sporosacs
    - * on a specialized blastostyle. — *Hydractinia*
    - * on the hydrorhiza. — *Oorhiza*
  - * Medusae with marginal tentacles in 4 pairs. — *Corynopsis*

* Sporosacs.
  * Hydranth without periderm.
    * Blastostyle bearing sporosacs provided with tentacles. *Stylactis*
    * Blastostyle bearing sporosacs devoid of tentacles. *Cionistes*
    * Sporosacs on the hydrorhiza. *Stylactella*
  * A small funnel-shaped periderm at the base of the stalk. *Hydranthea*

MAYER (1910), in his monograph "Medusae of the World", distinguished the medusae of *Podocoryne* and *Stylactis* from each other in the following points: *Podocoryne*; oral tentacles four or more, simple, unbranched. Marginal tentacles eight, or more, simple. *Stylactis*; no oral tentacles, and with eight rudimentary tentacle-bulbs.

Stylactis affinis was again found by STECHOW (1912), and this time the colony was fertile. He described its gonophore as a sporosac, but it is evident from his description and figures that it is a medusa-bud with eight rudimentary marginal tentacles and with a rather large manubrium. He wrote that one of these "sporosacs" made its appearance directly on the hydrorhiza, and said that it is preferable to enlarge the generic diagnosis of *Stylactella* and include *Stylactis* in it.

As stated above, the distinction between the genera, *Stylactis*, *Stylactella*, *Podocoryne*, and *Hydractinia*, became so greatly confused that GOETTE (1916) tried to revise them in his paper "Die Gattungen *Podocoryne*, *Stylactis* und *Hydractinia*". But the number of species under his consideration was too small to arrive at any definitive conclusion. Anyhow, he said that there is no sharp limit between these three genera so far as the characters of the gonosome, blastostyle, nematozooid, and spine are concerned, and they can only be distinguished in regard to their hydrorhiza.

BEHNER (1919) was in accordance with GOETTE in that the structure of gonophore is not an important character for systematics, because such nearly related genera as *Podocoryne* and *Hydractinia* differ from each other in the respect that the former liberates medusae while the latter has sporosacs. He referred the species *pruvoti* to *Stylactis* as stated above.

Prior to this, an epizoic hydroid, *Stylactis* (?) sp., on a crab from Christmas Island, was reported by CALMAN (1911), its systematic position being undetermined. STECHOW (1920) identified it with *Stylactis* and gave a new name *indica* to it.

STECHOW (1921 a, b) proposed new genera for some of the species under consideration; *Podocorella* for *Stylactis minoi* ALCOCK, *Hydractella* for *Hydractinia fucicola* (SARS), *Stylactaria* for *Stylactis inermis* ALLMAN, *Hydractomma* for *Hydractinia pruvoti* MOTZ-KOSSOWSKA, with the description of *Stylactella* (*Hydractinia*) *elsae-oswaldae* n. sp. obtained from the Mediterranean.

He added in the same year (1921 c) the fifth species to *Stylactella*, *Stylactella siphonis*, which is characterized by its broad base of hydranth. But later (1925), the same author referred it to the genus *Halerella* (*Haleremita* of BILLARD, 1904).

In 1923 STECHOW presented a key to the genera belonging to the subfamily Hydractiniinae as shown below:

Hydractiniinae STECHOW, 1913.

Creeping and incrusted. Without periderm. Mostly polymorphic.

* Tentacles scattered as in Clavidae. Incrusted. Spines developed.
Clavactinia THORNELY, 1904. Sporosac.

* Tentacles in a verticil.

* Freshwater form. Never polymorphic. Imperfectly known.
Rhizohydra COPE, 1883. Sporosac.

* Hydrorhiza reticular.

* Hydranth without stalk, standing on the hydrorhiza with its broad base.
Halerella STECHOW, 1922. Sporosac.

* Hydranth narrowing towards the base.

* Free-swimming medusae, with solitary marginal tentacles and without oral tentacles,

* upon the hydrorhiza, with spines. Never polymorphic.
Perigonella STECHOW, 1921. Medusa (Tiaridae).

* upon the blastostyle, which is mostly without tentacles. Without spines.
Podocorella STECHOW, 1921. Medusa (Tiaridae).

* Degenerate medusae with 4-8 marginal tentacles, not clustered and exceedingly rudimental. With radial canals. Spines mostly undeveloped.

Clavopsis GRAEFFE, 1883. Medusa (Tiaridae).
(*Stylactis*, sensu A. G. MAYER, 1910. Medusa (Tiaridae)).

* Sporosacs. Without spines.

* Sporosacs directly on the hydrorhiza.
Stylactella HAECKEL, 1881. Sporosac.

* Sporosacs on the blastostyle with tentacles.
Stylactaria STECHOW, 1921. Sporosac.
Stylactis ALLMAN, 1872, nec ALLMAN, 1864!

* Sporosacs on the blastostyle without tentacles.
Cionistes WRIGHT, 1861.

* Hydrorhiza incrusted. Mostly polymorphic. With spines.

* Horny skeleton.

* Hydrorhiza with coalesced coenosarc, but distinct stolonial network within, covered by a periderm.

* Medusa with 8 marginal tentacles, but without oral tentacles.
Hydractomma STECHOW, 1921. Medusa (Tiaridae).

* Mostly free medusa with 8 or more solitary marginal tentacles, and with oral tentacles.
Podocoryna M. SARS, 1864. Medusa (Margelidae).

* Medusa with 4 tentacle-pairs on the bell margin (??). Imperfectly known.
Corynopsis ALLMAN, 1864.

* Hydrorhiza with a completely naked coenosarc.

* Without spine. Attaching itself upon the other hydroid colony.
Hydronema STECHOW, 1921. Sporosac.

* Spines small, unbranched.

* Sporosacs on a specialized blastostyle, with more or less reduced tentacles.
Hydractinia VAN BENEDEN, 1841. Sporosac.
(*Stylactis* ALLMAN, 1864, nec aut.! Sporosac.)

* Sporosacs directly on the hydrorhiza.
Oorhiza MERESCHKOWSKY, 1877. Sporosac.

* Spines large, with many branches.
Hydrissa STECHOW, 1921. Sporosac.

* Calcareous skeleton.

* Skeleton without reticular structure. Habitat unlike *Kerunia*. Recent.
Hydrocorella STECHOW, 1921. Sporosac.

* Skeleton with reticular structure. Habitat peculiar. Eocene.
† *Kerunia* MAYER-EYMAR, 1899. ?

In the report of the Tiefsee-Expedition (1925) STECHOW referred *Stylactis halecii* to *Halerella*, and *Hydractinia clavata* to *Stylactella*.

KRAMP (1932), in his article on the hydroids collected by the Godthaab Expedition 1928, reported two species, *arctica* (JÄDERHOLM) and *ingolfi* n. sp., placing both species in the genus *Hydractinia*, subgenus *Stylactis*. He made a comparative study of many forms belonging to the Hydractiniinae, and came to the conclusion that there is no distinct boundary between the genera in question except the structure of hydrorhiza, by which he divided the genera above mentioned into *Hydractinia* (incl. *Podocoryne*)-group and *Stylactis*-group, and said that these can, however, hardly become more than subgenera.

Recently Professor T. KOMAI (1932) supplied us with new knowledge about two athecate hydroids associated with scorpaenoid fishes; one of them is *Podocorella minoi* (ALCOCK) and the other *Stylactis piscicola* n. sp. This latter species has, according to him, sporosacs of eumedusoid type.

Now, as was shown in the foregoing pages, the systematics of the genus *Stylactis* and its allies is in such a great confusion that it requires a thorough revision for the present writer. The species which so far have been or had been referred to *Stylactis* or *Stylactella* amount to the number of nineteen, i. e., *fucicola*, *Sarsii*, *inermis*, *arge*, *vermicola*, *spongicola*, *abyssicola*, *minoi*, *Hooperi*, *arctica*, *affinis*, *Pruvoti*, *clavata*, *halecii*, *indica*, *elsae-oswaldae*, *siphonis*, *ingolfi*, and *piscicola*; these have been referred to nine genera, *Stylactis*, *Stylactella*, *Stylactaria*, *Podocoryne*, *Podocorella*, *Hydractinia*, *Hydractella*, *Hydractomma*, and *Halerella*, some of which are used either in the broader or in the narrower sense. Before developing the writer's opinion on the classification of these genera, it will be convenient to trace the previous descriptions of each species, and to correct them as far as possible. Incidentally, the illustrations giving the general appearance of each form are reproduced here from the original papers, for it will be of some help to those who may not enjoy the good fortune of having an adequate library within easy reach.

Redescription of species so far referred to *Stylactis* and *Stylactella*

1. Species *fucicola* SARS, 1857.

(Fig. 1)

Podocoryne fucicola; *SARS, 1857, p. 145, pl. 2, figs. 6–13.
Stylactis fucicola; ALLMAN, 1864, p. 353; ALLMAN, 1872, pp. 304–305; *CARUS, 1884, p. 3.
Hydractinia fucicola; BONNEVIE, 1898, p. 486; MOTZ-KOSSOWSKA, 1905, pp, 87–89, text-fig. 11, pl. 3, fig. 20; GOETTE, 1916; *BEDOT, 1918; STECHOW. 1919, p. 13.
Hydractella fucicola; STECHOW, 1921 a, p. 30.

This species was discovered by SARS in the Messina Harbour, and referred by him to the genus *Podocoryne*. It is, however, distinct from *Podocoryne*, because its gonophores are not medusae but simple sporosacs. ALLMAN (1864) placed it in his new genus *Stylactis*, assuming that it is devoid of a superficial naked layer of coenosarc on the hydrorhiza. But his was not the case, as BONNEVIE (1898) pointed out after reexamining the original example of SARS, and thence, she removed it to *Hydractinia*.

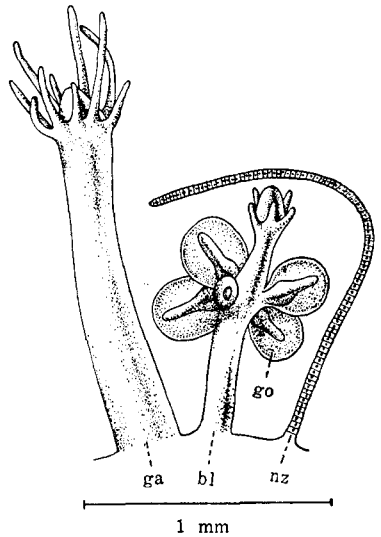


Fig. 1. "*Hydractinia*" *fucicola* MOTZ-KOSSOWSKA: bl, blastostyle; ga, gastrozooid; go, gonophore; nz, nematozooid. After MOTZ-KOSSOWSKA (1905), modified.

According to a detailed description of this form given by MOTZ-KOSSOWSKA (1905) the hydrorhiza has a distinct perisarc. In regard to the other features of this hydroid, however, her description agrees well with that of ALLMAN (1872), except for the presence of nematozooid (nz), about which ALLMAN had nothing to say. The hydrorhiza

* The asterisk indicates the papers which the author has not examined.

gives rise at intervals to small conical spines, except in those colonies growing upon *Balanus perforatus*. Gastrozooids (ga) claviform, 1.5-3.2 mm in height, with 8-12 filiform tentacles arranged in a verticil below the conical hypostome. Blastostyles (bl) slender, very contractile, sometimes exceeding the height of the gastrozooids, and never less than half their height. Tentacles 4-8 in number. Gonophores (go) large, ovate, with a short peduncle, 3 to 7 on each blastostyle, scattered or forming an imperfect verticillate group near the middle of the blastostyle. MOTZ-KOSSOWSKA's study upon the male gonophore revealed it to be a eumedusoid sporosac, with 4 radial canals, a ring canal, and inner ectoderm of two layers.

HAMANN's *Podocoryne Haeckelii* (1882) appears to fall in well with this species, though its gonophore is unknown. Gastrozooids are less than 2 mm in height, with at most 10 tentacles. Nematozooids and spines developed.

STECHOW (1921 a) proposed, by mistake, a new generic name *Hydractella* for this specie instead of *Hydractinia Pruvoti* MOTZ-KOSSOWSKA. As *Hydractella* is thus a synonym of *Hydractinia*, it is preferable to retain the older name *Hydractinia fucicola* (SARS).

Localities and habitats. SARS, 1857.—Messina Harbour. Littoral. Attached to sea-weeds; MOTZ-KOSSOWSKA, 1905.—Banyuls-sur-Mer. Littoral. Rather common upon submerged rocks, *Balanus perforatus*, algae, and thecate hydroids; HAMANN, 1882.—Naples. Growing on stones or twigs in the sea.

2. Species *Sarsii* ALLMAN, 1864.

Podocoryne carnea, i. p.; *SARS, 1846, p. 7, pl. 2, fig. 5.
Podocoryne sp.; SARS, *1857.
Stylactis Sarsii; ALLMAN, 1864, p. 353; ALLMAN, 1872, pp. 303-304.
Hydractinia sarsii; BONNEVIE, 1898, p. 486, pl. 26, fig. 42; GOETTE, 1916; *BEDOT, 1918.

Sars at first believed this form to be only a particular state of *Podocoryne carnea*, but he afterward (1857) regarded it to be specifically distinct from that form, though generically associated with it. ALLMAN referred this to *Stylactis*, for its gonophores were simple

sporosacs and not medusae as in *Podocoryne*, and proposed for it a specific name *Sarsii*. BONNEVIE examined SARS' material, and, confirming the presence of the coenosarc layer over the hydrorhiza, placed this form in *Hydractinia*.

Gastrozooids with 12–30 tentacles. Blastostyles very similar in size and with globular sporosacs arranged in a verticil at about the middle of its height.

Locality and habitat. Coast of Norway (SARS). Upon empty univalve shell.

3. Species *inermis* ALLMAN, 1872.

(Fig. 2)

Stylactis inermis; ALLMAN, 1872, pp. 305–306, fig. 79; *CARUS, 1884, p. 3; *DU PLESSIS, 1888, p. 541; PRUVOT, 1897, p. 660; GOETTE, 1916, p. 451 ff., text-fig. A, pl. 13, fig. 3, pl. 14, figs. 25–37; STECHOW, 1919, pp. 23–24.
Stylactaria inermis; STECHOW, 1921 b, p. 250.
Stylactella inermis; STECHOW, 1923 a, pp. 63–64.

Hydrorhiza (hr) destitute of spines, and formed by a layer of closely approximated, tortuous, anastomosing tubes invested by a chitinous perisarc. Gastrozooid (ga) 0.6–4.2 mm in height, with about 20 tentacles, arranged in two closely set alternating series. Younger polyps are much smaller and provided with fewer tentacles. Tentacles, when in a semi-contracted state, assume a somewhat club-shaped form (gc). They are sometimes arranged in many circlets, which remind us of the condition found in *Clavopsella*, from which STECHOW (1923 a) induced the affinity of *Stylactis* and *Hydractinia* to the Clavidae.

The blastostyle is about half the size of the gastrozooid, with about 12 tentacles, also disposed in two series. Gonophores (go) oval, short-stalked, forming an irregular verticil round the stalk of the blastostyle, at a little distance below the tentacles. They vary in number from 2 to 6 (ALLMAN, 1872; STECHOW, 1919). GOETTE (1916) called the sporosac a medusoid, but from his descriptions and figures it is certain that it is a sporosac of eumedusoid type, and his study

showed that the gonophore eventually takes the shape of a eumedusoid, passing through the styloid, heteromedusoid, and cryptomedusoid stages.

Besides the gastrozooids and blastostyles, there occur not infrequently small hollow or solid nematozooids (GOETTE, 1916; STECHOW, 1923). GOETTE found no nematocysts-batteries on them, and called them "die Tentakelpolypen".

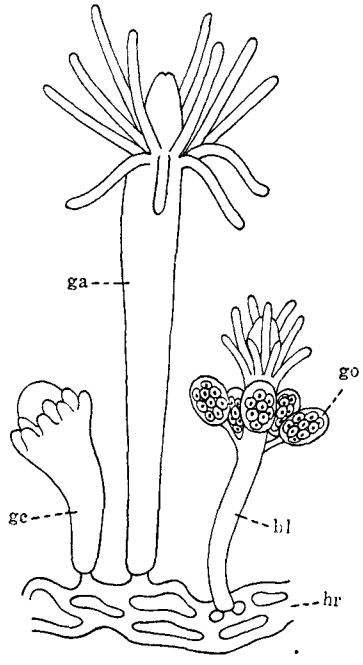


Fig. 2. "*Stylactis*" *inermis* ALLMAN: bl, blastostyle; ga, gastrozooid; gc, the same, in a contracted state; go gonophore; hr, hydrorhiza. After ALLMAN (1872).

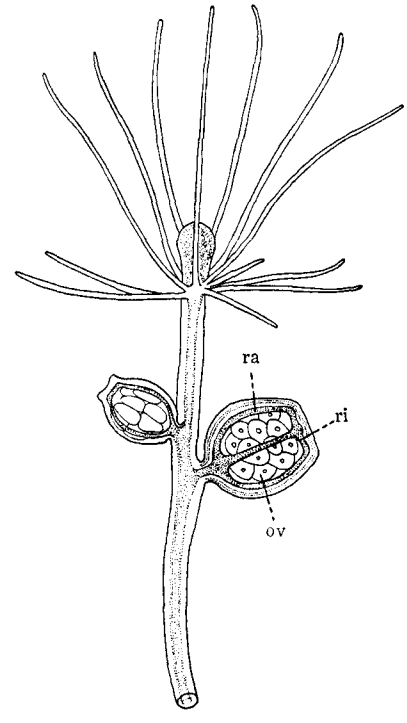


Fig. 3. "*Stylactis*" *arge* CLARK: ov, ovum; ra, radial canal; ri, ring canal. After CLARK (1882).

Localities and habitats. Hitherto found only around the Mediterranean Sea. ALLMAN, 1872.—Nice. Littoral. Spreading over the surface of sea-weeds; PRUVOT, 1897.—Gulf of Lions. Littoral. On rocks covered with algae; GOETTE, 1926.—Naples. On *Balanus* and

Fucus; STECHOW, 1919.—Villefranche near Nice. Littoral. On *Ulva* and on the colony of *Eudendrium capillare*. Ajaccio, Corsica. In 0–3 m depth. Endoume Is. near Marseilles. On *Posidonia*. Naples. In 1 m depth. On algae, colony of *Eudendrium*, and among the barnacles. Quarto near Genoa. On algae; STECHOW, 1923.—Naples. On the hydrocaulus of *Corydendrium*. Faraglioni, Isle of Capri. In 75 m depth. On algae.

4. Species *arge* CLARK, 1882.

(Fig. 3)

Stylactis arge; CLARK, 1882, pp. 138–139, pl. 8, figs. 18–20; MAYER, 1910, p. 151.

Hydranth very much elongated and slender, with from 10 to 30 tentacles closely set in two circles. Gonophores (go) developing on the distal portion of the hydranths beneath the tentacles. They are not sporosacs as CLARK described, but medusa-buds with 8 rudimentary tentacle-bulbs, 4 radial-canals, and a ring canal. A large number of planulae develop in the female gonophore, and these will be liberated while it is attached or after it becomes free. This hydroid sometimes reproduces asexually by transversal fission on account of constriction around the hydranth.

Locality and habitat. Crisfield, Maryland, Chesapeake Bay, growing on stem of *Zostera marinum*.

5. Species *vermicola* ALLMAN, 1888.

(Fig. 4)

Stylactis vermicola; ALLMAN, 1888, p. 2, pl. 1, figs. 2, 2 a.
Stylactella vermicola; HAECKEL, 1889, p. 79; STECHOW, 1929, p. 151.

Hydranth (ha) clavate, with a circlet of about 8 tentacles. Rudimentary stems standing at short intervals from a creeping, loosely branched, stolon-like hydrorhiza (hr) which is destitute of spine-like appendages. Gonophores (go) oviform, with a short peduncle, arising from the hydranth close to its proximal end, or from the hydrorhiza.

ALLMAN placed this species in *Stylactis* after changing its generic diagnosis, but HAECKEL, opposing this alternation, constructed a new genus *Stylactella* for the reception of this form.

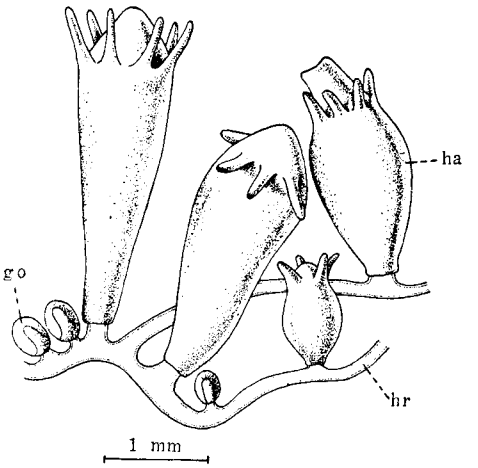


Fig. 4. "*Stylactis*" *vermicola* ALLMAN: go, gonophore; ha, hydranth; hr, hydrorhiza. After ALLMAN (1888), modified.

Locality and habitat. This hydroid attaches itself to the back of an annelid, *Laetomonice producta*, taken by the Challenger Expedition in the Northern Pacific from a depth of 2900 fathoms.

6. Species *spongicola* HAECKEL, 1889.

(Fig. 5)

Stylactella spongicola; HAECKEL, 1889, pp. 80–81, pl. 2, figs. 5-6.

Hydrorhiza (hr) reticular, with thin but distinct perisarc. Hydranth (ha) sessile, ovate or club-shaped, with a conical or rounded hypostome, around which stands a circlet of cylindrical tentacles, usually 8 in number. Gonophore (go) sporosac, filled with eggs, naked, ovate or club-shaped, two or three times larger than the hydranth, and arising from the hydrorhiza with a short peduncle.

Locality and habitat. Symbiotic with a deep-sea Keratosa, dredged by the Challenger Expedition from Northern and Central Pacific, 2300–2900 fathoms deep.

7. Species *abyssicola* HAECKEL, 1889.

(Fig. 6)

Stylactella abyssicola; HAECKEL, 1889, p. 81, pl. 2, fig. 7.

Distinguished from the fomer species by the larger size of all parts, and the irregular formation of the tubes of the hydrorhiza. Hydranths (ha) arise from the hydrorhiza (hr) each with a short

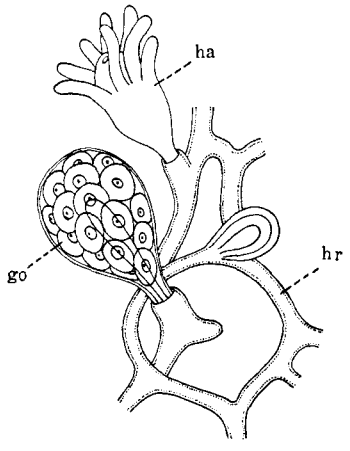


Fig. 5. "*Stylactella*" *spongicola* HAECKEL: ha, hydranth; hr, hydrorhiza; go, gonophore. After HAECKEL (1889), modified.

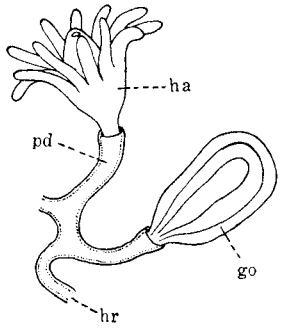


Fig. 6. "*Stylactella*" *abyssicola* HAECKEL: go, gonophore; ha, hydranth; hr, hydrorhiza; pd, peduncle of hydranth. After HAECKEL (1889), modified.

peduncle (pd), usually of the same length; they are club-shaped or ovate, with 10–16 tentacles. Gonophores (go) scarcely larger than the hydranth.

Locality and habitat are the same as those of the preceding species.

8. Species *minoi* ALCOCK, 1892.

(Fig. 7)

Stylactis minoi; ALCOCK, 1892, pp. 212–213, 1 fig.; *ALCOCK, 1899; *ALCOCK, 1901; *ALCOCK, 1902; FRANZ & STECHOW, 1908, pp. 752–753; HEATH, 1910, pp. 74–76; GUDGER, 1928, pp. 20–24, text-fig. 2.

Podocoryne minoi; STECHOW, 1909, pp. 17–18, pl. 4, fig. 8; STECHOW, 1913, pp. 56–57, text-fig. 11.

Podocoryne (or *Perigonimus*) *minoi*; STECHOW, 1912, p. 350.

Podocorella minoi; STECHOW, 1921 a, p. 30; STECHOW, 1921 b, p. 250; STECHOW, 1923 a, p. 62; STECHOW, 1923 b, p. 3; KOMAI, 1932, pp. 446–447, text-fig. 1, pl. 26, figs. A, B.

This interesting hydroid lives in association with a scorpaenoid fish, *Minous monodactylus*. KOMAI made a careful study of this form and there is no doubt that it should be called *Podocorella minoi* (ALCOCK). Its gonophores (go) develop into free swimming medusae with 4 long tentacles, but without oral tentacles, by which they are distinguished from *Podocoryne*.

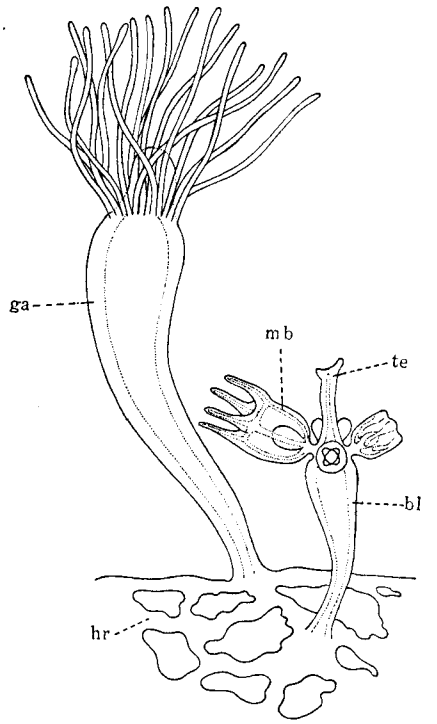


Fig. 7. "*Podocoryne*" *minoi* (ALCOCK): bl, blastostyle; ga, gastrozooid; hr, hydrorhiza; mb, medusa-bud; te, tentacle of blastostyle. After STECHOW (1913), modified.

Localities and habitat. ALCOCK—Off the Coromandel and Malabar Coasts of India. 45–70 fathoms; STECHOW—In Sagami Bay, Japan. 150 m; KOMAI—Off Misaki, Japan. 20 fathoms; Growing always on the body of *Minous monodactylus*.

9. Species *Hooperi* SIGERFOOS, 1899.

(Figs. 8–9)

Stylactis Hooperi; SIGERFOOS, 1899, p. 801 ff., text-figs. 1–5; *NUTTING, 1901, pp. 335, 374, text-figs. 13, 85; HARGITT, 1904, p. 41; MAYER, 1910, pp. 150–151, text-fig 82.

Hydrorhiza (hr), a network of tubes lying in one plane, from which arise simple spines (sp) and two kinds of hydranths, gastrozooids (ga) and blastostyles (bl). These hydranths are similar to each other and both extremely elongate. Gastrozooids may attain a length of 20–25 mm and bear usually about 20 tentacles, arranged in a single circle. Blastostyles, slightly smaller than gastrozooids, have usually 6–10 tentacles and 4 or 5 gonophores (go). Medusa (Fig. 9) degenerate, with 4 radial canals (ra), eight, similar, and rudimentary tentacles (te), and a well-developed velum (vl), but without oral tentacles and mouth-aperture.

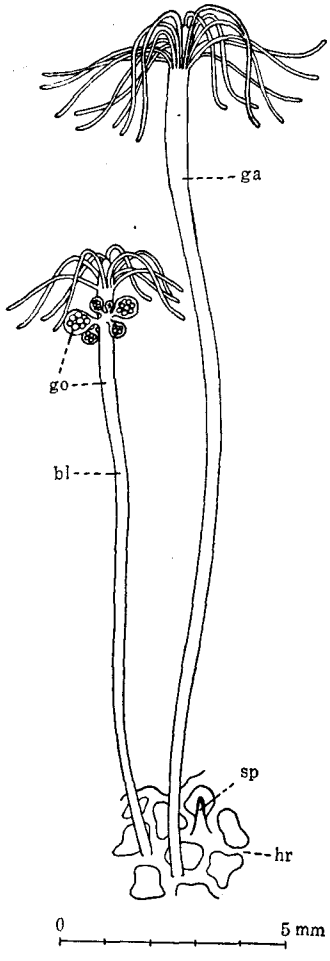


Fig. 8. "*Stylactis*" *Hooperi* SIGERFOOS: bl, blastostyle; ga, gastrozooid; go, gonophore; hr, hydrorhiza; sp, spine. From MAYER (1910), modified.

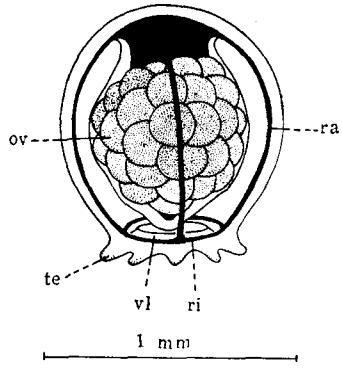


Fig. 9. "*Stylactis*" *Hooperi* SIGERFOOS. Newly liberated female medusa before spawning: ov, ovum; ra, radial canal; ri, ring canal; te, tentacle. From MAYER (1910).

Localities and habitat. Found in Huntington Bay, Long Island Sound (SIGERFOOS) and at Woods Hole, Mass. (HARGITT), having its habitat upon the shell of a living snail, *Ilyanassa obsoleta*.

10. Species *arctica* JÄDERHOLM, 1902.

(Fig. 10)

Stylactis arctica; JÄDERHOLM, 1902, pp. 5-7, pl. 1, fig. 1-2.
Hydractinia (*Stylactis*) *arctica*; KRAMP, 1932, pp. 12-13. text-figs. 1, 3, 4 and 7.

Hydrorhiza (hr), a network of stolons, covered with delicate hyaline perisarc, sparsely branched, and sometimes anastomosing. Spines not developed. A short tube of perisarc (pt) surrounds the

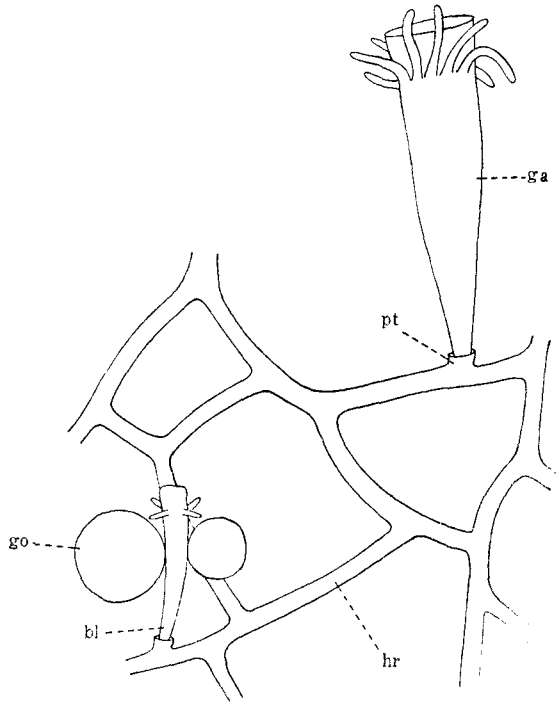


Fig. 10. "*Stylactis*" *arctica* JÄDERHOLM: bl, blastostyle; ga, gastrozooid; go, gonophore; hr, hydrorhiza; pt, perisarc tube surrounding the base of hydranth. After JÄDERHOLM (1902).

base of hydranth. Gastrozooid (ga) club-shaped, 2-3 mm long and 0.4-0.58 mm wide in JÄDERHOLM's material, and 0.8-1.0 mm high and 0.45-0.5 mm wide in that of KRAMP, which is very much contracted. Short tentacles, 12-15 in number, encircle the low, trumpet-shaped

hypostome. Blastostyle (bl) very much like the gastrozooid, except for its smaller size and fewer number of tentacles. 1 or 2 spherical gonophores (go) attach themselves to the blastostyle a short distance below the tentacular circlet.

Localities and habitats. JÄDERHOLM—Between Greenland and Jan Mayen Island, from a depth of 2000 m. On a shell, *Mohnia mohni*; KRAMP—In Baffin Bay, 1200 m depth. Upon a colony of *Eudendrium planum*. (Godthaab Expedition)

11. Species *affinis* JÄDERHOLM, 1904.

(Figs. 11-12)

Stylactis affinis; JÄDERHOLM, 1904, pp. 264-265, pl. 12, fig. 1; STECHOW, 1912, pp. 348-351, pl. 13, fig. 9; GOETTE, 1916.

Hydrorhiza with very thin chitinous perisarc, without spines. Gastrozooid (Fig. 11) with a small ring of perisarc (pr) at the base, sparsely scattered, 1.0-2.5 mm long and 0.3-0.4 mm wide, suddenly

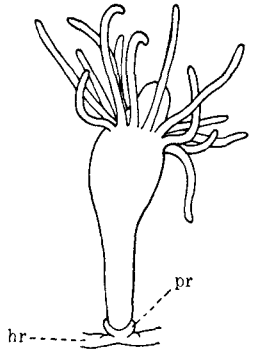


Fig. 11. "*Stylactis*" *affinis* JÄDERHOLM. Gastrozooid: hr, hydrorhiza; pr, ring of periderm at the base of hydranth. After JÄDERHOLM (1904).

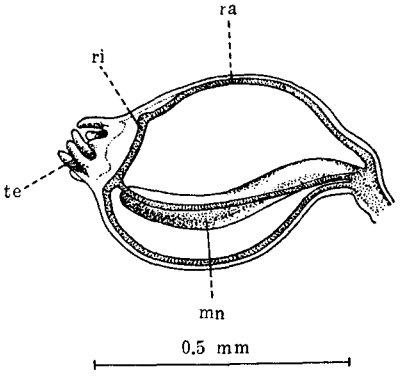


Fig. 12. "*Stylactis*" *affinis* JÄDERHOLM. Medusa-bud: mn, manubrium: ra, radial canal; ri, ring canal; te, tentacle. After STECHOW (1912), modified.

narrowing towards the proximal end giving the appearance of a short stalk. Tentacles, from 10 to 14, disposed in a circlet. Hypostome high-domed to conical. The colony was a sterile one.

STECHOW's material was rather different from that of JÄDERHOLM's above mentioned in the following points, and STECHOW stated that it may represent a new form, but gave no specific name to it. Hydrocaulus absent. Hydranth growing rather thick. Its size variable, about 0.2–1.2 mm long and 0.6 mm wide. Small hydranth with 5 or 6 tentacles, the largest with about 18, and these tentacles being generally shorter than those of JÄDERHOLM's material. Meshes of hydrorhiza rather large, but not so large as in *Stylactis arctica*. Hypostome lower. Male gonophore (Fig. 12) ovoid, 0.56 mm long and 0.34 mm wide, with 8 rudimentary tentacles (te), 4 long and 4 short, and perhaps with a ring canal (ri) and 4 radial canals (ra). Manubrium (mn) ("Spadix") very large. STECHOW called this gonophore a sporosac, but its development into a free swimming medusa may not be utterly impossible. STECHOW found a gonophore broken off from the colony, and having found no blastostyles with its sporosacs torn off, he assumed that it had been growing directly upon the hydrorhiza. This let him consider it appropriate to enlarge the genus *Stylactella* and join *Stylactis* with it.

Localities and habitats. JÄDERHOLM.—Romanche Bay, South Patagonia. 11 fathoms. Upon sea-weeds. (Schwedisch Feuerland-Expedition); STECHOW—South of the mouth of La Plata, Argentine. 90 m deep. On a crab, *Libinia smithii*.

12. Species *Pruvoti* MOTZ-KOSSOWSKA, 1905.

(Figs. 13–14)

Hydractinia Pruvoti; MOTZ-KOSSOWSKA, 1905, pp. 89–91, text-figs. 12–13; *DE BUEN, 1905; GOETTE, 1916; NEPPI, 1917, pp. 40–41, text-figs. 5–6.
Stylactis Pruvoti; BEHNER, 1914, pp. 407–419, text-figs. 13–18, pl. 7, figs. 7–8.
Hydractomma pruvoti; STECHOW, 1921 b, pp. 250–251; STECHOW, 1923 a, p. 66.

Hydrorhiza incrusted, formed by several layers of anastomosing stolons, invested by a perisarc. The tubes in the uppermost layer have a tendency to fuse together, and in MOTZ-KOSSOWSKA's material the periderm overlying them is extremely thin. According to BEHNER, on the contrary, the stolons (hr) are disposed in a single layer, and

the superficial periderm is not so thin as MOTZ-KOSSOWSKA has stated. Chitinous spines (sp) always present, but nematozooids are reported only by NEPPI. Gastrozooid (ga) very robust, attaining 15 mm in height (NEPPI's material has the maximum length of 6 mm), with a conical hypostome, and surrounded by a verticil of 10–14 tentacles. Blastostyle (bl) very small, less than half the size of the gastrozooid, 4–5 mm in length, with 1 or sometimes 2 or 3 very contractile tentacles (te) inserted to the side of a small conical hypostome. Medusa-buds (mb) at most 8 or 9 on one blastostyle, forming a pseudo-verticil at the middle or the upper third of the blastostyle. Medusa (Fig. 14) 1 mm high, 0.6–0.7 mm wide, with 4 radial canals (ra), a ring canal (ri), and 4 rudimentary tentacles (te). MOTZ-KOSSOWSKA's material is devoid of velum, but the medusa described by NEPPI is just the

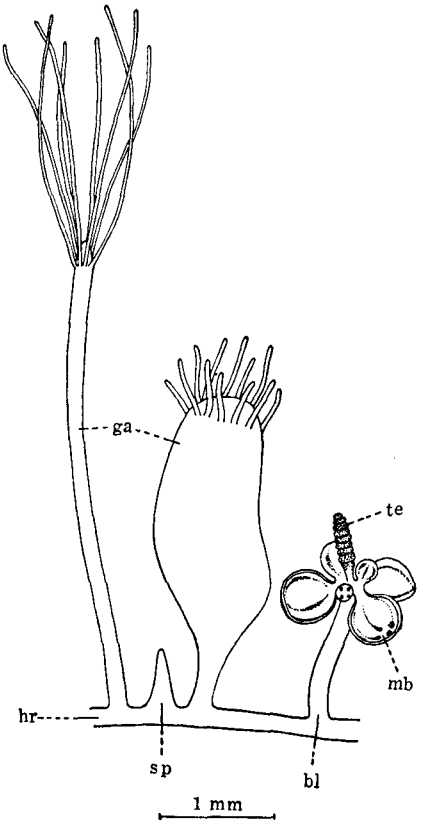


Fig. 13. "*Stylactis*" *Pruvoti* (MOTZ-KOSSOWSKA): bl, blastostyle; ga, gastrozooid; hr, hydrorhiza; mb, medusa-bud; sp, spine. After BEHNER (1914), modified.

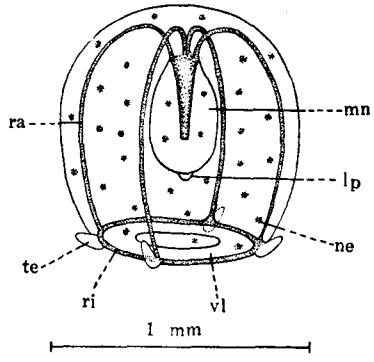


Fig. 14. "*Stylactis*" *Pruvoti* (MOTZ-KOSSOWSKA). Medusa: lp, "rudiment of lip"; mn, manubrium; ne, nematocyst cluster; ra, radial canal; ri, ring canal; te, tentacle; vl, velum. After BEHNER (1914).

same as that of BEHNER's specimen except that the latter has a small protuberance (lp) at the tip of the manubrium which BEHNER thinks may develop into lips.

STECHOW (1921 b) is of the opinion that this hydroid belongs to the Tiaridae, by which this species differs either from sporosac-bearing *Hydractinia*, or from *Podocoryne* which liberates medusae belonging to the Margelidae. He, therefore, constructed a new genus *Hydractomma* for this form. This medusa, however, seems to be a young stage of medusae belonging to the Cytaeidae, representing simpler structures of the medusae *Cytaeis* and *Podocoryne*. It is difficult to say that the medusa belongs to the Tiaridae.

Localities and habitats. MOTZ-KOSSOWSKA—Balearic Island. On a shell, *Cassidaria tyrrhena* inhabited by *Pagurus striatus;* BEHNER—Naples. On a shell, *Cerithium;* NEPPI—Naples.

13. Species *clavata* JÄDERHOLM, 1905.

Hydractinia clavata; *JÄDERHOLM, 1905, 5 pls, 3 figs.
Stylactella clavata; STECHOW, 1925, p. 401.

JÄDERHOLM's article of 1925 was not accessible to the writer. STECHOW mentioned this species under the name of *Stylactella clavata* (JÄDERHOLM) in the list of hydroids previously known from the Antarctic region.

14. Species *halecii* HICKSON & GRAVELY, 1907.

(Figs. 15-16)

Stylactis halecii; HICKSON & GRAVELY, 1907, pp. 8-9, pl. 1, figs. 5-6, pl. 4, fig. 33.
Halerella halecii; STECHOW, 1925, p. 401.

Hydrorhiza incrusted, consisting of a dense mass of branching and anastomosing tubes, each covered with thin perisarc. In the central part of the hydrorhiza the tubes are disposed in several layers and closely packed together; at the periphery, however, they are arranged in a single layer and are more dispersed. Gastrozooid (ga)

1–2 mm in height, with a conical hypostome surrounded by a circlet of 6–10 tentacles. Dactylozooid (dt) short, finger-like, 0.25 mm long by 0.06 mm in diameter, terminating distally in a pad which bears a battery of nematocysts. What they described as a blastostyle (go) is a single gonophore attaching itself directly upon the hydrorhiza (hr). It is styloid sporosac in structure (Fig. 16), sometimes with 4 short processes ("tentacles") (pr) at its apex armed with nematocysts (ne).

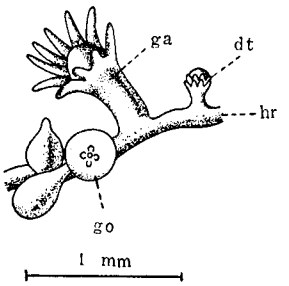


Fig. 15. "*Stylactis*" *halecii* HICKSON & GRAVELY: dt, dactylozooid; ga, gastrozooid; go, gonophore; hr, hydrorhiza. After HICKSON & GRAVELY (1907).

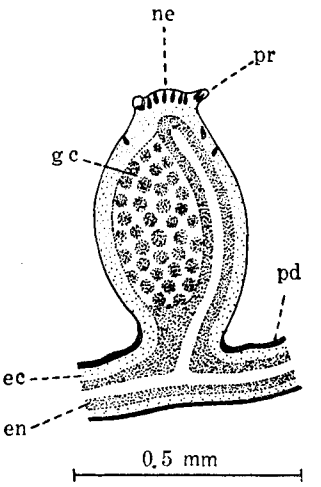


Fig. 16. "*Stylactis*" *halecii* HICKSON & GRAVELY. Sagittal section of a gonophore: ec, ectoderm; en, endoderm; gc, male germ cells; ne, nematocyst; pd, periderm; pr, tentacle-like process. After HICKSON & GRAVELY (1907).

In the list of hydroids known from the Antarctic region STECHOW (1925) described this species as *Halerella halecii*.

Locality and habitat. McMurdo Bay, Antarctica. Found by the Discovery Investigation at a depth of less than 20 fathoms.

15. Species *indica* STECHOW, 1920.

(Fig. 17)

Stylactis (?) sp.; CALMAN, 1911, pp. 546–550, text-figs. 1–2.
Stylactis indica; STECHOW, 1920, p. 11.
Stylactella (*Stylactaria*) *indica*; STECHOW, 1923, p. 63.

Branches of hydrorhiza largely isolated, anastomosing here and there, and invested by a delicate membranous perisarc, which can with difficulty be seen to extend upwards for a very short distance at the base of each polyp. The largest polyp about 0.5 mm in height, subconical in shape, expanding from a narrow base towards the distal end to about 0.2 mm in diameter. Tentacles 10–12 in number, set in a single whirl, surrounding a low convex hypostome.

Fig. 17. "*Stylactis*" *indica* STECHOW. After CALMAN (1911).

CALMAN was not quite convinced of the systematic position of this hydroid, which was afterward identified by STECHOW (1920) with *Stylactis* and designated as *Stylactis indica*. But later, in 1923, he used for this form the generic name *Stylactella*, which includes those forms previously referred to *Stylactis* (now a synonym of *Hydractinia*, according to him), and *Stylactaria* was used as a subgeneric name, though he stated that *Stylactaria* can be used as a generic name for those with gonophores on the hydranth in contrast to *Stylactella* which has its gonophores on the hydranth.

Locality and habitat. On a crab, *Xanthias haswelli*, dredged at a depth of 45 fathoms off Flying Fish Cove, Christmas Island (Indian Ocean).

16. Species *elsae-oswaldae* STECHOW, 1921.

(Fig. 18)

Stylactella (*Hydractinia*) *elsae-oswaldae*; STECHOW, 1921, p. 251.
Stylactella elsae-oswaldae; STECHOW, 1923 a, p. 640, text-fig. E.

Hydrorhiza without spines. Hydranth (ha) sparsely distributed, small and spindle-shaped, with 12–14 filiform tentacles disposed in a row. Gonophore (go) very large, sometimes larger than the hydranth, elliptic, always standing upon the hydrorhiza by a short stalk. Manubrium (mn) large, distended by a large number of eggs (ov).

Velum (vl) developed. With a four-sided opening and 4 rudimentary tentacle-bulbs (tb) at the apex. Jelly of the bell rather thick.

Locality. Naples.

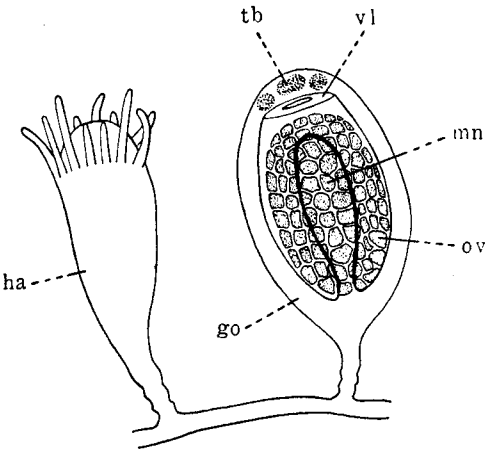


Fig. 18. "*Stylactella*" *elsae-oswaldae* STECHOW: go, gonophore; ha, hydranth; mn, manubrium; ov, ovum; tb, tentacle-bulb; vl, velum. After STECHOW (1923), modified.

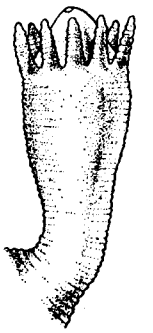


Fig. 19. "*Halerella*" *siphonis* (STECHOW). After STECHOW (1925), modified.

17. Species *siphonis* STECHOW, 1921.

(Fig. 19)

Stylactella siphonis; STECHOW, 1921 c, pp. 224-225.
Halerella siphonis; STECHOW, 1925, pp. 407-408, text-fig. 2.

Hydranth sparsely disposed, small, measuring 0.5–0.8 mm high and 0.2 mm wide in the contracted specimen. Without stalk, fixed to the hydrorhiza with its large base. Tentacles short, tapering towards their apices, number from 8 to 10. Hypostome conical. Without spine. Gonosome unknown.

In his parer of 1925 STECHOW mentions this species as *Halerella siphonis* without adding anything new to its description.

Locality and habitat. Taken by the Tiefsee-Expedition at a point south of Plettenberg Bay, South Africa, from the depth of 500 m.

18. Species *ingolfi* KRAMP, 1932.

(Figs. 20–21)

Hydractinia (*Stylactis*) *ingolfi*; KRAMP, 1932, pp. 13–16, text-figs. 1, 5–7.

Stolons (hr) with a very thin and delicate perisarc. Gastrozooid (ga) elongated, attaining 2.5 mm in length, club-shaped, its narrow base being surrounded by a very short perisarc tube. Hypostome large and trumpet-shaped, with 15–17 tentacles encircling its base. Female gonophore (Fig. 20, go; Fig. 21) cryptomedusoid, large, oval,

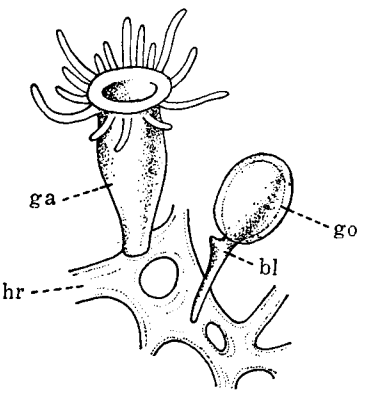


Fig. 20. "*Hydractinia* (*Stylactis*)" *ingolfi* KRAMP: bl, blastostyle; ga, gastrozooid; go, gonophore; hr, hydrorhiza. After KRAMP (1932), modified.

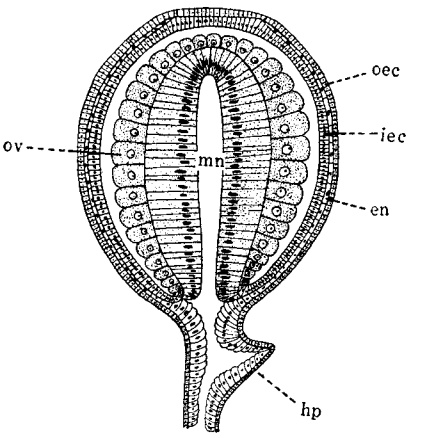


Fig. 21. "*Hydractinia* (*Stylactis*)" *ingolfi* KRAMP. Sagittal section through the gonophore and blastostyle: en, endoderm; hp, hypostome; iec, inner ectoderm; mn, manubrium, oec, outer ectoderm; ov, ovum. After KRAMP (1932), modified.

about 0.5 mm long, attaches itself solitarily by a short stalk to the distal part of a blastostyle (bl), which is slender, with no tentacles, and its conical hypostome (hp) is directed to one side. Male gonophore unknown.

Locality and habitat. Living upon a deep-sea brittle-star, *Homalophiura tesselata*, taken from the sea off South Greenland, at 2137–3229 m depth.

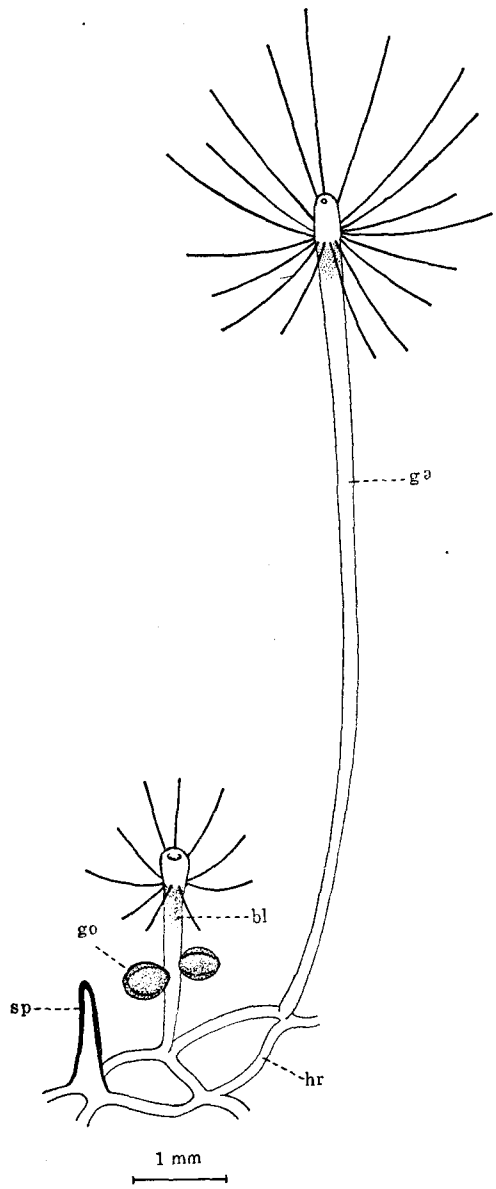


Fig. 22. "*Stylactis*" *piscicola* KOMAI: bl, blastostyle; ga, gastrozooid; go, gonophore; hr, hydrorhiza; sp, spine. After KOMAI (1932), modified.

19. Species *piscicola* KOMAI, 1932.

(Fig. 22)

Stylactis piscicola; KOMAI, 1932, pp. 448–449, text-fig. 2, pls. 27–28.

Hydrorhiza (hr) rather regularly reticulate, coated with a thin and soft membrane. Spines (sp) few in number. Gastrozooid (ga) very slender, the larger one attaining 10 mm, but about half the length in the preserved specimen. Hypostome cylindrical, encircled by 15–25 very slender tentacles. Blastostyle (bl), though similar to the former, smaller and provided with fewer tentacles and a distinct mouth-aperture. Gonophores (go) spherical or slightly oblong, attached to the basal half of the blastostyle, 1 to 3 on one polyp. Gonophore, a eumedusoid sporosac, with 4 radial canals, but no opening in the bell and the manubrium.

Locality and habitat. Living associated with a scorpaenoid fish, *Erosa erosa*, taken in the littoral of Seto, Province Kii, Japan.

Revision of *Stylactis* and its allied genera

As was shown in the preceding two chapters, the structure of hydrorhiza is the most important in determining generic character, and next come the structure of the gonophore and the point of its attachment to the colony. Bearing these points in mind, the present author is of the opinion that out of these nineteen species *fucicola* and *Sarsii* should be classified in *Hydractinia* on account of BONNEVIE's observation (1898), *minoi* in *Podocorella* as indicated by KOMAI (1932), *Pruvoti* in *Hydractomma* as by STECHOW (1921), and *halecii* and *siphonis* in *Halerella* as shown by STECHOW (1925). The writer proposes to refer all the remaining species to the genus *Stylactella* with a new generic diagnosis as follows:

> An athecate hydroid of very primitive type. Hydrorhiza, a network of anastomosing stolons invested by a periderm, and without a naked layer of coenosarc. Spines may or may not be present. Hydrocaulus rudimental or absent. Gastrozooid claviform to cylindrical, sometimes abruptly narrowing towards the base, taking the appearance of a short stalk. Tentacles filiform, arranged in one or sometimes two verticils surrounding the base of the conical or cylindrical hypostome. Blastostyle, when present, differing from the gastrozooid in its smaller size and in fewer number of tentacles. Nematozooid generally absent. Sporosacs or the medusa-buds borne on the blastostyle or on the hydrorhiza. Sometimes medusae are liberated and free swimming, but are rather degenerate in structure.

The genus *Stylactella* thus defined should conveniently be divided into two subgenera, *Stylactella* and *Stylactis*; the former having gonophores directly upon the hydrorhiza, or, on the hydrorhiza as also on the blastostyle; the latter, on the contrary, bearing them upon the blastostyle only. Accordingly, the forms mentioned above should be classified as follows:

Stylactella	(*Stylactis*)	*inermis* (ALLMAN, 1872).
,,	,,	*arge* (CLARK, 1882).
,,	,,	*Hooperi* (SIGERFOOS, 1899).
,,	,,	*arctica* (JÄDERHOLM, 1902).
,,	,,	*ingolfi* (KRAMP, 1932).
,,	,,	*piscicola* (KOMAI, 1932).
Stylactella	(*Stylactella*)	*vermicola* (ALLMAN, 1888).
,,	,,	*spongicola* HAECKEL, 1889.
,,	,,	*abyssicola* HAECKEL, 1889.
,,	,,	*affinis* (JÄDERHOLM, 1904)
,,	,,	*elsae-oswaldae* STECHOW, 1921.

As the gonophores of *clavata* and *indica* are not at all known to the writer, it is impossible to refer them to either of the two subgenera. They must, for the present, be provisionally called *Stylactella clavata* (JÄDERHOLM, 1905) and *Stylactella indica* (STECHOW, 1920) respectively.

As for *Stylactaria* STECHOW (1921) the writer puts it down as a synonym of *Stylactis* ALLMAN (1872), for, though the two genotypes of the latter genus were removed to *Hydractinia* by BONNEVIE (1898), there still remain several species in *Stylactis*, hence it is unnecessary to establish a new genus for them.

Description of *Stylactella* (*Stylactis*) *yerii* n. sp.

(Figs. 23-30)

The hydrorhiza (Fig. 23, hz; Figs. 24–25) is a. rather dense network of stolon lying in one plane. It is about 0.1 mm wide and 0.02 mm thick, and is coated with a thin but distinct membrane (Fig. 25, pd).

Gastrozooids (Fig. 23, ga; Figs. 26–28) sparsely disposed, are small, the largest one measuring about 1.5 mm in length. The body is generally cylindrical, but some are greatly distended owing to ingested food. Hypostome cylindrical or high-domed, the base being

surrounded by a circlet of 10–14 filiform tentacles. They are sometimes disposed of in two alternative horizontal rows (Fig. 26, d), or, rarely, even rather irregularly (Fig. 26, b). Hypostome and tentacles are armed with numerous nematocysts (Fig. 27, ne). The youngest polyp among the specimens observed by the writer has 4 tentacles, which were counted as 6 and then 8 in the succeeding stages (Fig. 28, a-c). These tentacles seem to increase two by two, the second pair arising at the two opposite points around the base of the hypostome at right angle to the first pair.

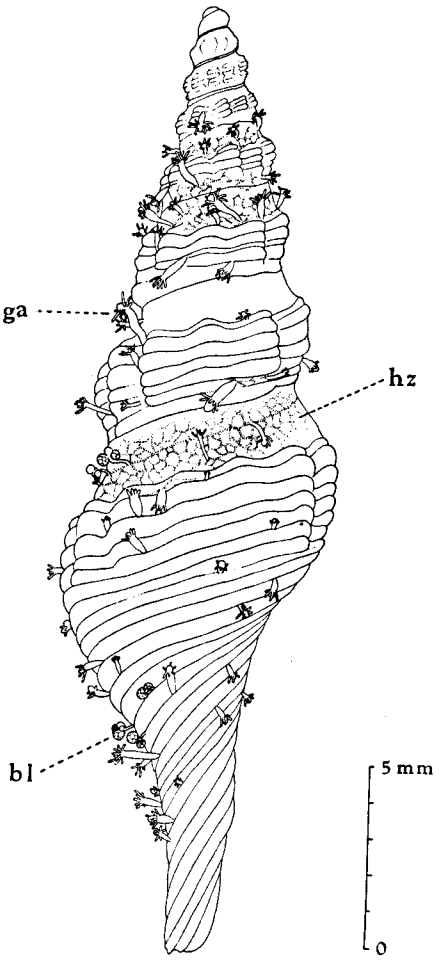


Fig. 23. *Stylactella* (*Stylactis*) *yerii* n. sp. growing upon a shell of *Turricula* (*Surcula*) *kamakurana* PILSBRY: bl, blastostyle, ga, gastrozooid, hz, hydrorhiza.

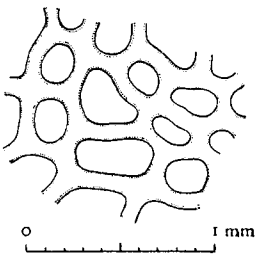


Fig. 24. *Stylactella* (*Stylactis*) *yerii* n. sp. Part of hydrorhiza magnified.

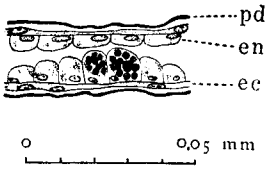


Fig. 25. *Stylactella* (*Stylactis*) *yerii* n. sp. Longitudinal section through stolon: ec, ectoderm; en, endoderm; pd, periderm.

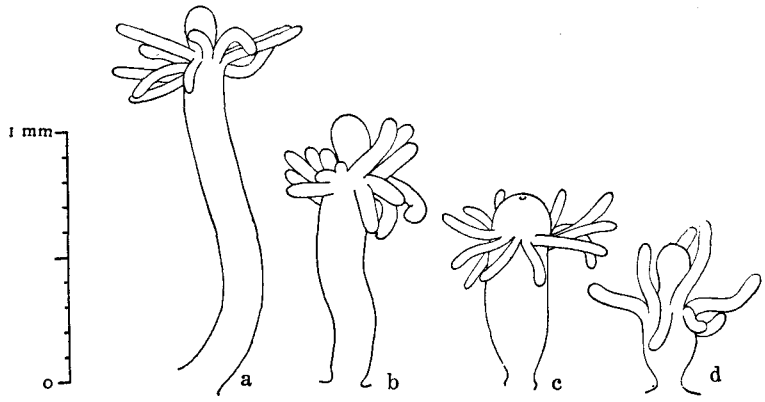


Fig. 26. *Stylactella* (*Stylactis*) *yerii* n. sp. Gastrozooids. For explanation see text.

Fig. 27. *Stylactella* (*Stylactis*) *yerii* n. sp. Sagittal section through the distal and proximal portions of a gastrozooid: mg, mesoglaea; ne, nematocyst; pd, periderm.

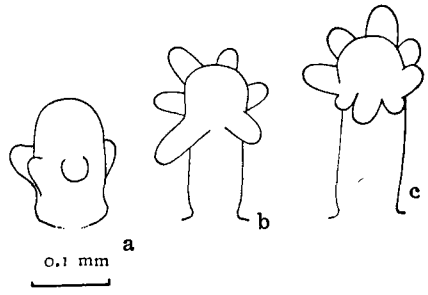


Fig. 28. *Stylactella* (*Stylactis*) *yerii* n. sp. Gastrozooids in early stages of development. For explanation see text.

Blastostyles (Fig. 23, bl; Figs. 29–30), few in number, are scattered here and there among the gastrozooids. They are more slender and smaller than the gastrozooid, usually scarcely reaching half the length of the latter. They are generally furnished with 4 tentacles and are distinguished from the gastrozooids even in their early stages of development by the possession of gonophores (Fig. 29, b-d).

Gonophores borne on the body of the blastostyle by a short stalk, are mostly 4 in number in a polyp and situated just below the

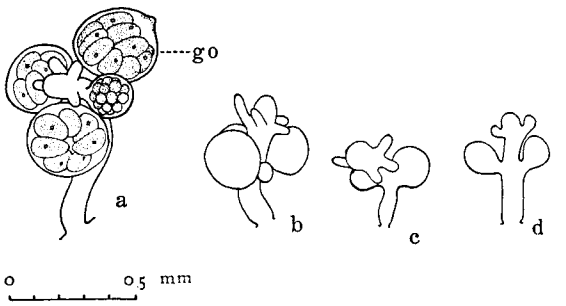


Fig. 29. *Stylactella* (*Stylactis*) *yerii* n. sp. Blastostyles: full grown (a), and in early stages of development (b, c, and d); go; gonophore.

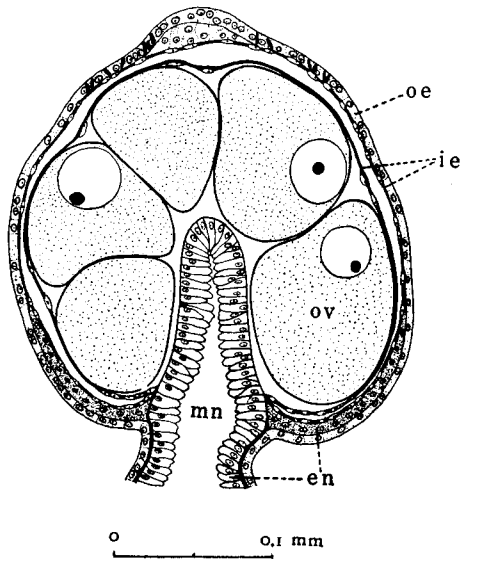


Fig. 30. *Stylactella* (*Stylactis*) *yerii* n. sp. Sagittal section of a gonophore: en, endoderm; ie, inner ectoderm; mn, manubrium; oe, outer ectoderm; ov, ovum.

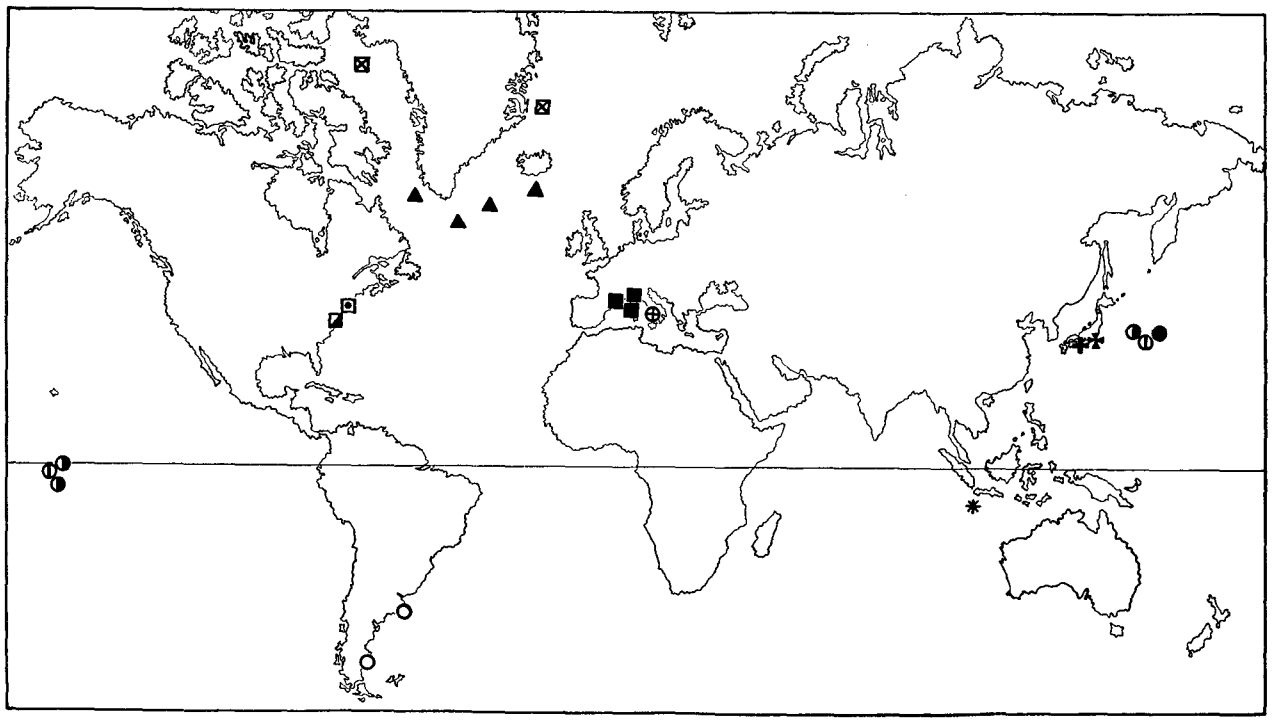
tentacular circlet. They are cryptomedusoid sporosacs in structure (Fig. 30). Spines and nematozooids could not be found.

This hydroid was growing upon a living gastropod, *Turricula* (*Surcula*) *kamakurana* PILSBRY[1], dredged up from a depth of 60 fathoms, at Yahagi-gake, off Misaki, on July 23, 1931. The specific name is due to the collector.

Distribution

The accompanying map shows the distribution of the species of *Stylactella* sensu lat. hitherto recorded, with the exception of *Stylactella clavata*, the exact locality of which is unknown to the author. As is shown in the foregoing descriptions and the map, some of the species occur as the littoral form, but others are deep-sea inhabitants. The species, *inermis*, *arge*, *Hooperi*, *elsae-oswaldae*, and *piscicola* belong to the former group, while the remaining forms to the latter, i. e., *vermicola* was found in a depth of ca. 5300 m, *spongicola* and *abyssicola* 4200–5300 m, *arctica* 1200–2000 m, *affinis* 90 m, *indica* 80 m, *ingolfi* 2137–3229 m, and *yerii* in 100 m depth.

1) Kindly identified by Mr. Shintaro HIRASE, to whom the writer's heartiest thanks are due.



Map showing the distribution of the species of *Stylactella*

■ *Stylactella* (*Stylactis*) *inermis*
◪ ,, ,, *arge*
◙ ,, ,, *Hooperi*
⊠ ,, ,, *arctica*
▲ *Stylactella* (*Stylactis*) *ingolfi*
✚ ,, ,, *piscicola*
✠ ,, ,, *yerii*
✱ ,, *indica*
● *Stylactella* (*Stylactella*) *vermicola*
◑ ,, ,, *spongicola*
◍ ,, ,, *abyssicola*
○ ,, ,, *affinis*
⊕ ,, ,, *elsae-oswaldae*

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