

NOTES ON THE ANIMALS FOUND ON *MACROCHEIRA*  
*KÆMPFERI* DE HAAN

III. HYDROIDS



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NOTES ON THE ANIMALS FOUND ON *MACROCHEIRA*  
*KAEMPFERI* DE HAAN

III. HYDROIDS

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EIGHT FIGURES

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The present paper is a continuation of my previous one dealing with the cirripeds and molluscs found on the giant crab, *Macrocheira kaempferi* de Haan (Hiro, 1938b). As far as I know, there is no record of the occurrence of any hydroid on this crab. In fact, hydroids are not such prevalent epibiotic animals as cirripeds, yet the following 7 forms have been found :

*Stylactis carcinicola* sp. nov.,  
*Leuckartiara octona* (Fleming),  
*Tubularia mesembryanthemum* Allman,  
*Clytia delicatula* (Thornely),  
*Obelia geniculata* (Linne),  
*Halecium crinis* Stechow,  
*Sertularella sinensis* Jaderholm.

Of these, *Stylactis carcinicola*, which seems to be new to science, is more commonly found than any other. Besides, one or two hydroids (probably *Eudendrium* sp. and *Halecium* sp.) have been found. The specimens are, however, too young, being without gonophores, to enable one to identify them. Further careful examination on richer material, therefore, will probably add some number of species to the above list.

All the materials were collected from many specimens of the giant crab taken off Tonda and off Sakai near this Laboratory.

ATHECATA

Family Bougainvilliidae

*Stylactis carcinicola* sp. nov.

(Figs. 1 & 2)

The outer and inner surfaces of the abdomen of the giant crab

are often coated with a luxuriant growth of the colony of this hydroid which occurs also on the thoracic sternum, but rarely on the carapace and legs. The hydroid probably represents a new form of *Stylactis*.

**The Hydroid.** The stolon is 0.03–0.05 mm in diameter and forms an open network which is somewhat anastomosing and covered by a thin and soft perisarc with adhering mud particles. From this stand many gastrozooids and blastostyles. The stem of the gastrozooids is

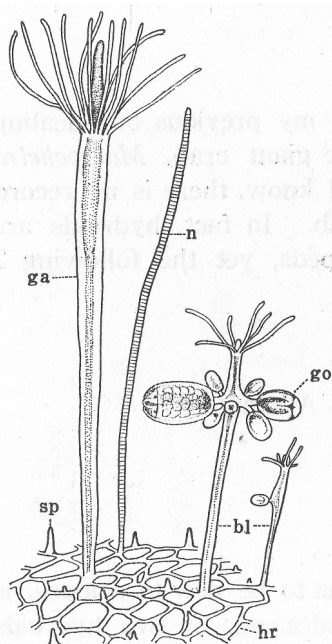


Fig. 1. *Stylactis carcinicola* n. sp.

Portion of colony, drawn in the living state: *bl*, blastostyle; *ga*, gastrozooids; *go*, gonophore; *hr*, hydrorhiza, *n*, nematozoid; *sp*, spine.

light purplish-brown, rather slender and unbranched; full-grown ones attain 10 mm when fully stretched. The hypostome is distinctly conical, elongate in the living state, and bears a single whorl of 12–30 (usually 20) filiform tentacles which are, when fully extended, almost 2 mm long. The blastostyles are shorter; more slender than gastrozooids, and have usually 6–10 tentacles which are shorter and of more variable length than those of gastrozooids. The gonophores are attached to the stem of the blastostyle at a short distance below the tentacles, and number less than 11 on each polyp (Figs. 1 & 2d).

The gonophore is a typical medusa bud, oblong, and provided with a short stalk. The younger ones bear a reddish manubrium and four brownish tentacle rudiments. When fully developed, four perradial tentacles, four reddish radial canals and a ring canal, and the brownish ova surrounding the manubrium, show clearly through the bell. The largest medusa buds examined were about 0.7 mm long and 0.5 mm in diameter.

Besides the gastrozooids and blastostyles, there occur chitinous spines and vibratile nematozooids on the stolon, though the nematozooids are very rare and easily escape notice.

**The Medusa.** The newly liberated medusa (Figs. 2a & b) is bell-shaped, as high as wide, and with a diameter of about 0.7 mm. The jelly is uniformly thin and slightly hollowed out at the apex. Both the four radial canals and the ring canal are narrow, straight, and

tinted with brownish purple pigments. The tentacles are rudimentary and eight in number; the four interradial tentacles are half as long as the four perradial ones. There are no ocelli. The velum is narrow. The manubrium is four-sided and with a short apical prolongation; the mouth and stomach are not clearly distinguishable. The manubrium is marked with brownish purple pigments, and the gonads are reddish or dusky blue in colour.

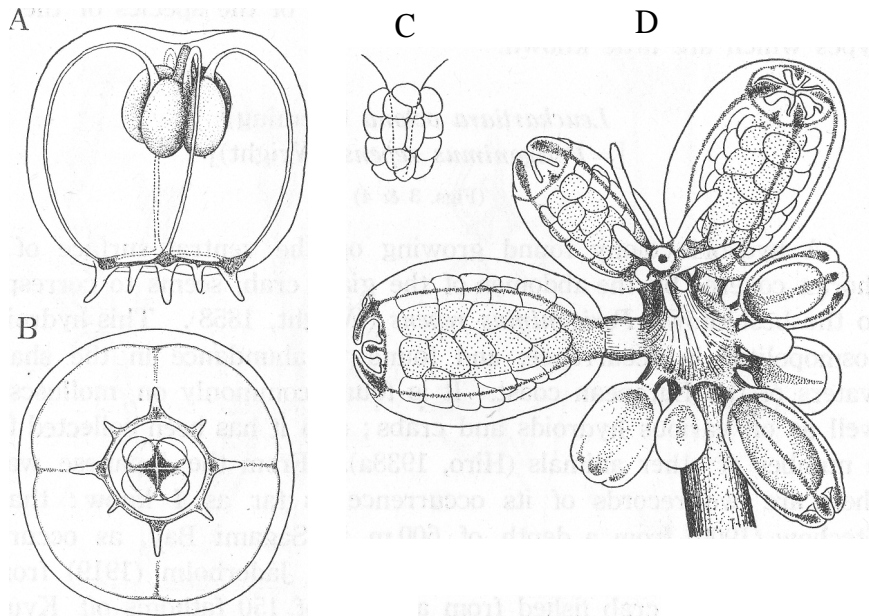


Fig. 2 *Stylactis carcinicola* n. sp.

A, newly liberated medusa seen from side. B, the same seen from below. C, manubrium of young medusa with ova. D, tip of fully-developed blastostyle showing an apical hydranth and nine eumedusoid gonophores in various stages of development.

**Remarks.** As is clear from the above description, this hydroid belongs to the primitive member of the Rougainvilliidae. Evidently, it is closely related to the North-American Atlantic species *Stylactis Hooperi* Sigerfoos (1899) living upon the littoral snail *Ilyanassa obsoleta*, and also to the Japanese species *Stylactis pisciola* Komai (1932) growing on the fish *Erosa erosa* which was taken from the vicinity of Seto. The hydranths appear to be almost indistinguishable from those of these Species, but the gonophores and medusa differ in several points. It

seems therefore to be well to regard the present form to represent a new species mainly with reference to its peculiar mode of occurrence.

Recently, Iwasa (1934), who made a revision of all the species previously assigned to *Stylactis* and *Stylactella*, emended the generic characters of *Stylactella* and divided it into two subgenera, *Stylactis* and *Stylactella*, by the state of attachment of the gonophores. So far as to be inferred from the case of *Perigonimus* in which the state is highly variable, this apparently amounts to no generic importance. Question remains, however, as to the affinity of their medusae of the species of the two types which are little known.

*Leuckartiara octona* (Fleming)  
[=*Perigonimus repens* (Wright)]

(Figs. 3 & 4)

A hydroid colony found growing on the ventral surface of the thorax covered by the abdomen of the giant crab, seems to correspond to the best-known *Perigonimus repens* (Wright, 1858). This hydroid is cosmopolitan in occurrence, and found in abundance in the shallow waters of the European coast. It is found commonly on molluscs, as well as on various hydroids and crabs; also it has been collected from a number of other animals (Hiro, 1938a). From the Japanese waters there are two records of its occurrence as far as I know: that of Stechow (1909) from a depth of 600m in Sagami Bay, as occurring on a sea-cucumber, and the other that of Jaderholm (1919) from a barnacle and a crab fished from a depth of 150 fathoms off Kyûsyû. Thus the association of the hydroid with the giant crab does not seem to be so intimate as in the case of *Stylactis carcinicola*, being undoubtedly an accidental one.

**The Hydroid.** At a glance even with the naked eye, this hydroid is clearly distinguishable from the colony of *Stylactis* described above by a stouter and stiffer appearance of the stem. The creeping stolon forms a network, 0.05–0.08 mm in thickness, and coated with a rather thick and hard perisarc. The hydrocaulus is fairly long, slender, and covered with a firm perisarc like that of the stolon. Its proximal end is often marked with 2–5 annulations. In such annulated forms, the perisarc may be widened below the hydranth, and also around the gonophore, to form the so-called pseudotheca. Usually each stem bears 1–3 hydranths; the height of the main stem measured to the tip of the hypostome, is 3–4 mm. The hydranth itself is spindle-shaped,

about 0.65–0.8 mm long, and has a conical hydostome and a whorl of 8–10 (usually 8) tentacles above its upper one-third; the main part except the hydostome is tinged with brownish-purple pigment spots. The medusa buds are always borne at irregular intervals on the hydrocaulus, never exceeding three in number on each hydrocaulus. They are ovoid, with a short, though longer than that of the above-mentioned *Stylactis*, stalk; the largest one attains 0.6 mm in length and 0.5 mm in diameter.

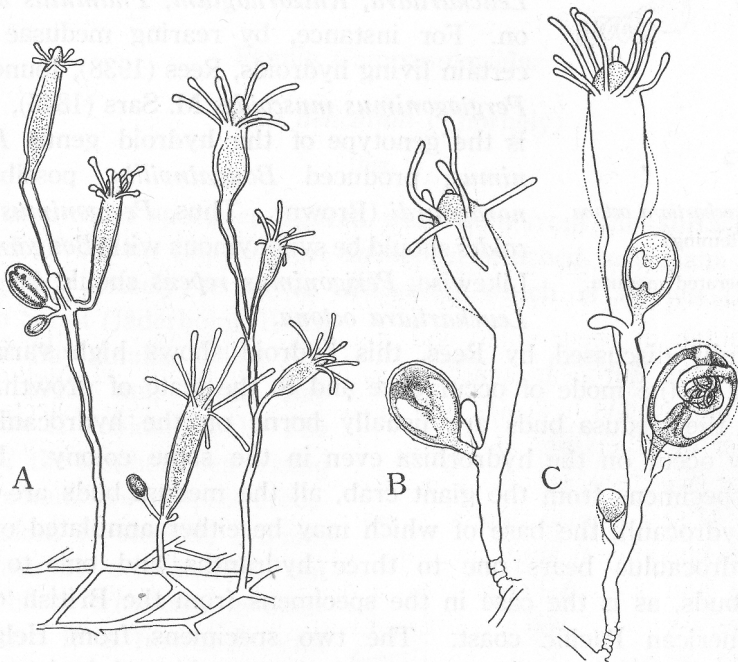


Fig. 3. *Leuckartiara octona* (Fleming).

A. part of the hydroid colony, each stem having no basal rings. B, C, polyp with developed gonophores and basal rings.

**The Medusa.** The newly liberated medusa is about 0.6 mm in height and with only two long tentacles. The apical projection of the umbrella, which is distinct in fully developed specimens, is not yet shown in such young ones. The velum is narrow. Each twisted tentacle has a large basal bulb, thick, and becomes more than three times as long as the umbrella when fully stretched. Besides, two small tentacle rudiments are present in the other radii. The four radial canals and the ring canal are comparatively broad. The manubrium is slender, cylindrical, and about half as long as the umbrella.

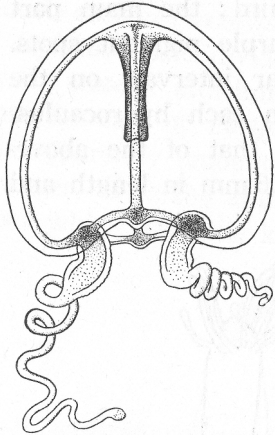


Fig. 4. *Leuckartiara octona*  
(Fleming).

Newly liberated medusa.

*Remarks.* It has been proved, by the detailed studies of Hartlaub (1895, 1914), Rees & Russell (1937) and Rees (1938), that the hydroids which had been referred to the genus *Perigonimus* could produce various kinds of medusa with two, four or more tentacles, and referable to the genera, *Amphinema* (incl. *Stomotoca*), *Bougainuillia*, *Cyaeis*, *Halitholms*, *Leuckartiara*, *Rhizorhagium*, *Thamnitis* and so on. For instance, by rearing medusae from certain living hydroids, Rees (1938), found that *Pergiogonimus muscoides* M. Sars (1846), which is the genotype of the hydroid genus *Perigonimus*, produced *Bougainuillia*, possibly *B. nordgaardii* (Brown). Thus, *Perigonimus muscoides* should be synonymous with *Bougainuillia*. Likewise, *Perigonimus repens* should be called *Leuckartiara octona*.

As fully discussed by Rees, this hydroid shows high variability according to the mode of occurrence and to the state of growth. For example, the medusa buds are usually borne on the hydrocauli, but they may occur on the hydrorhiza even in the same colony. In the present specimens from the giant crab, all the medusa buds are found on the hydrocauli, the base of which may be either annulated or not. Each hydrocaulus bears one to three hydranths and one to three medusa buds, as is the case in the specimens from the British or the North-American Pacific coast. The two specimens from Helgoland drawn by Hartlaub (1914), bear a greater number of hydranths as well as of medusa buds. In any case, the affinity of such a primitive hydroid can hardly be determined unless its medusa is examined.

#### Family Tublariidae

##### *Tubularia mesembryanthemum* Allman

This beautiful hydroid is occasionally found growing on the carapace of the giant crab, though always small in quantity. The stem arising from the branched creeping stolon is 15–25 mm high, unbranched, and coated up to the base of the hydranth, with a smooth, yellowish or orange tough perisarc; its diameter is 0.3–0.5 mm. The hydranth

is large, of a rosy hue, and with a long conical hypostome and a whorl of 14 aboral tentacles. The hypostome bears 4 four-lobed gonophore buds at the expanded base and a number of capitate oral tentacles at the distal end.

This species is also known from the shallow waters of Sagami Bay (Inaba, 1892; Stechow, 1913).

THECATA

Family Campanulariidae

*Clytia delicatula* (Thornely)

(Fig. 5)

The present specimen figured was taken from the surface of the cirriped, *Trilasmis (Poecilasma) kaempferi*, attached to a giant crab. It corresponds closely to *Clytia delicatula*, which is known from the Hirado Strait (Jaderholm, 1902), Sagami Bay (Inaba, 1890; Stechow, 1913) and Mutu Bay (Stechow & Uchida, 1931). The stem of the trophosomes arising in large numbers from the creeping stolon, is slender, 2-3 mm high, usually unbranched, but rarely bi- or trifurcate in older colonies. It is furnished with 5-8 rings directly beneath the hydrotheca as well as at the proximal end of each stem or branch. The hydrotheca is deeply campanulate with some 12 deeply-cut, acute teeth. The gonotheca is cup-shaped, about 1.5 times as long as the hydrotheca, and with a smooth margin; its stalk is very short and smooth, but very rarely ringed. The gonotheca contains usually 3 medusa buds. No free medusa has been observed.

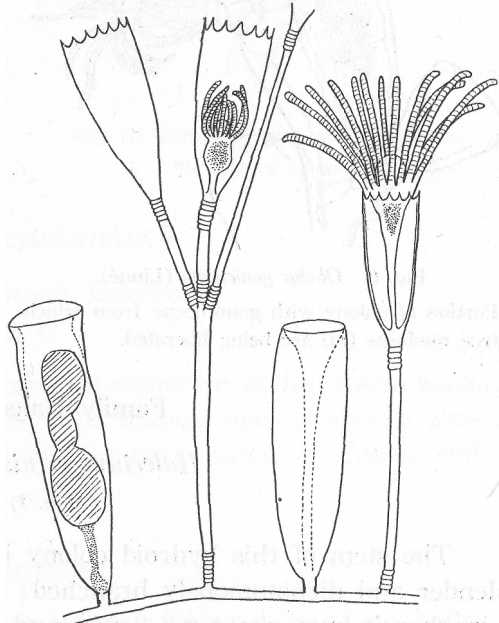


Fig. 5. *Clytia delicatula* (Thornely).  
Portion of colony with two gonosomes.



*Obelia geniculata* (Linne)

(Fig. 6)

The many fine specimens found attached to the antennae of a giant crab are clearly referable to *Obelia geniculata*. This species with a world-wide distribution, is very common in the shallow waters of Japan, but it is rarely found on this crab.

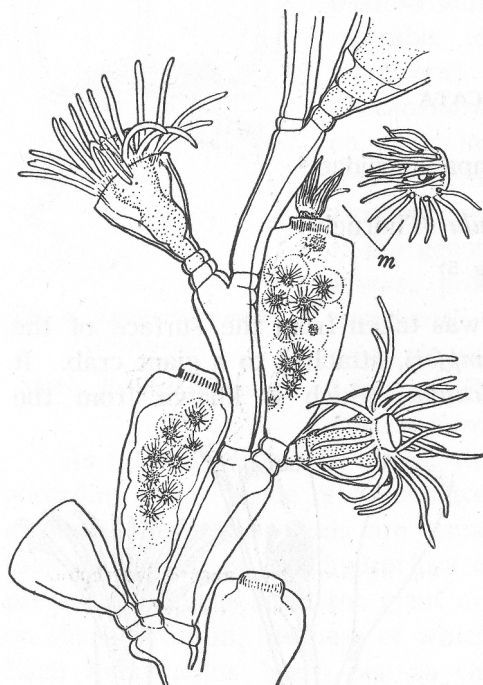


Fig. 6. *Obelia geniculata* (Linné).

Portion of colony with gonothecae from which free medusae (*m*) are being liberated.

The stem of the largest colony is 15mm high, geniculate, and bears alternate pedicels on the shoulder processes of the internodes. The pedicel of each hydrotheca is short and annulated with 2 or 3 rings. The gonesome arising from the point of articulation of the hydrotheca, is bottle-shaped, with a distinct terminal collar and a short pedicel consisting of 2 or 3 rings. The newly liberated medusa (Fig. 6 *m*) is of a size about two-thirds as broad as the hydranth of the trophosome and has about 24 marginal tentacles.

## Family Haleciidae

*Halecium crinis* Stechow

(Fig. 7)

The stem of this hydroid colony is 10–30 mm high, very delicate, slender and dichotomously branched; the interspace between adjoining branches is long, about 0.8–2 mm, and the diameter of the stem is about 0.07–0.08 mm. The second hydrotheca is usually far apart from the first one which is close to the point of branching; the more distal thecae are set in close juxtaposition. The distal most theca contains a small hydranth with 16–18 tentacles. The coenosarc and hydranth are

colored lemon yellow. No gonosome has been observed.

This hydroid is occasionally found often twining around other hydroids on the carapace of the giant crab.

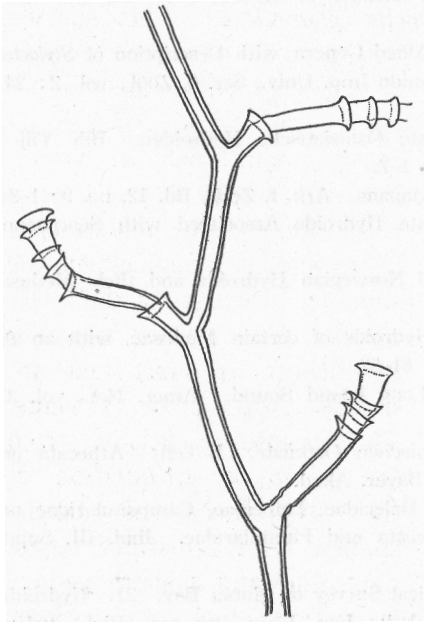


Fig. 7. *Halecium crinis* Stechow.  
Portion of colony.

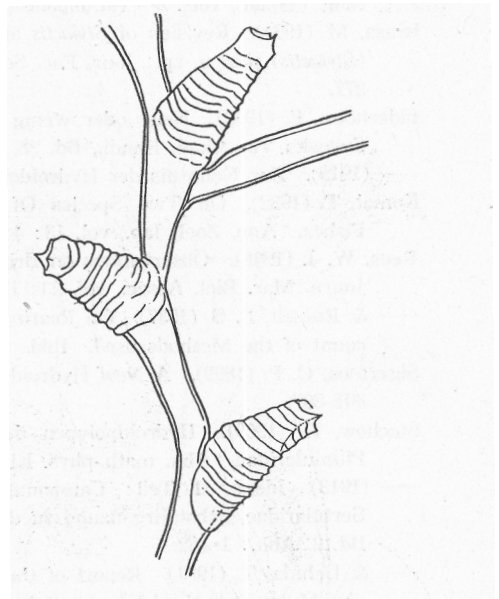


Fig. 8. *Sertularella sinensis* Jaderholm.  
Portion of colony.

### Family Sertulariidae

#### *Sertularella sinensis* Jaderholm

(Fig. 8)

Rather common on the giant crab. In structure of the hydrotheca, the specimen (Fig. 8) closely agrees with Inaba's and Stechow's descriptions. The species is known from the deep waters of Japan and South China.

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