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Studies on the Cirripedian Fauna of Japan

III. Supplementary Notes on the Cirripeds Found in the Vicinity of Seto

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With 2 Text-figures

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Since the publication of my previous paper (HIRO, 1937) dealing with the cirripeds found in the vicinity of the Seto Marine Biological Laboratory, several forms which were not referred to at that time have been added to my collection. Of these eight species, two are apparently new to science, while the remaining five are forms previously known from Japan. In addition, a rare and interesting form, *Balanus cuneiformis* HIRO, which had been recorded from the north of Australia, was rediscovered. Thus the cirripeds found in this district are eighty in number and belong to twenty-five genera.

All these specimens, together with those from other localities of Japan, are preserved in the museum of the Seto Marine Biological Laboratory.

Suborder **LEPADOMORPHA** PILSBRY

Family SCALPELLIDAE PILSBRY

1. Scalpellum stearnsii PILSBRY, 1890.

This species, the largest of the scalpelliform barnacles, is widely distributed along the Pacific coast of Japan, and is also known from the Malayan waters. A single specimen attached to the shell of *Xenophora exuta* (REEVE) was collected off TANABE Bay in January, 1938. Its dimensions are as follows:—length of capitulum 35 mm, breadth of capitulum 26 mm, length of peduncle 36 mm, breadth of peduncle 15 mm. No dwarf male was found.

Family HETERALEPADIDAE NILSSON-CANTELL

2. *Heteralepas* (*Paralepas*) *rosea* HIRO, 1938.

This species is found attached to the carapace of the giant crabs which are often caught in fishing nets in this district in early spring. Its description, with a discussion on its synonymy, has already been given by me (HIRO, 1938).

Family TRILASMATIDAE NILSSON-CANTELL
(=Poecilasmatidae ANNANDALE)

3. *Octolasmis scuticosta* sp. nov.
(Fig. 1)

This new species has an oblong capitulum with the occludent and carinal margins equally bent, though the former margin is slightly concave at the lower half of the orifice. The 5 valves are moderately developed. The integument is light yellow, and tinged with orange along the occludent margin of the scutum and tergum; the color fades away in alcohol.

The scutum is large and composed of two branches, one narrow, extending along the occludent margin, and the other broad near the base. The occludent branch is imperfectly calcified, slightly arched, long, widening toward the top and having a round end; externally it is striated with growth-lines, internally being smooth. The basal branch is perfectly calcified, broad, oval and nearly half as wide as long; the external surface is grooved radially and cut by faint growth-lines. A large triangular internal tooth is present at the base.

The tergum is thin, imperfectly calcified and subtriangular or pentagonal. Its apex is rather sharply pointed toward the carinal side but widely separated from the apex of the capitulum.

The carina is evenly bowed, narrow, a little shorter than the occludent branch of the scutum, and has a long spatulate disc at the base. The lower half of the valve is fully calcified, the upper half imperfectly calcified. The basal disc is inserted between the bases of the scuta on both sides and its end is attached to the internal tooth of the scuta.

The peduncle is usually shorter than the capitulum; its entire surface is not annulated but studded with numerous minute chitinous dots.

Mouth-parts:—The labrum is concave with many small teeth. The palpus is blunt with a few bristles.

The mandible has four teeth and a small tooth-like lower angle which is sometimes bi- or trifurcate.

The maxilla I has a strongly protruded lower part below the wide notch on the frontal edge.

The maxilla II is somewhat quadrangular, having a straight frontal edge, and planted with long bristles along the whole edge.

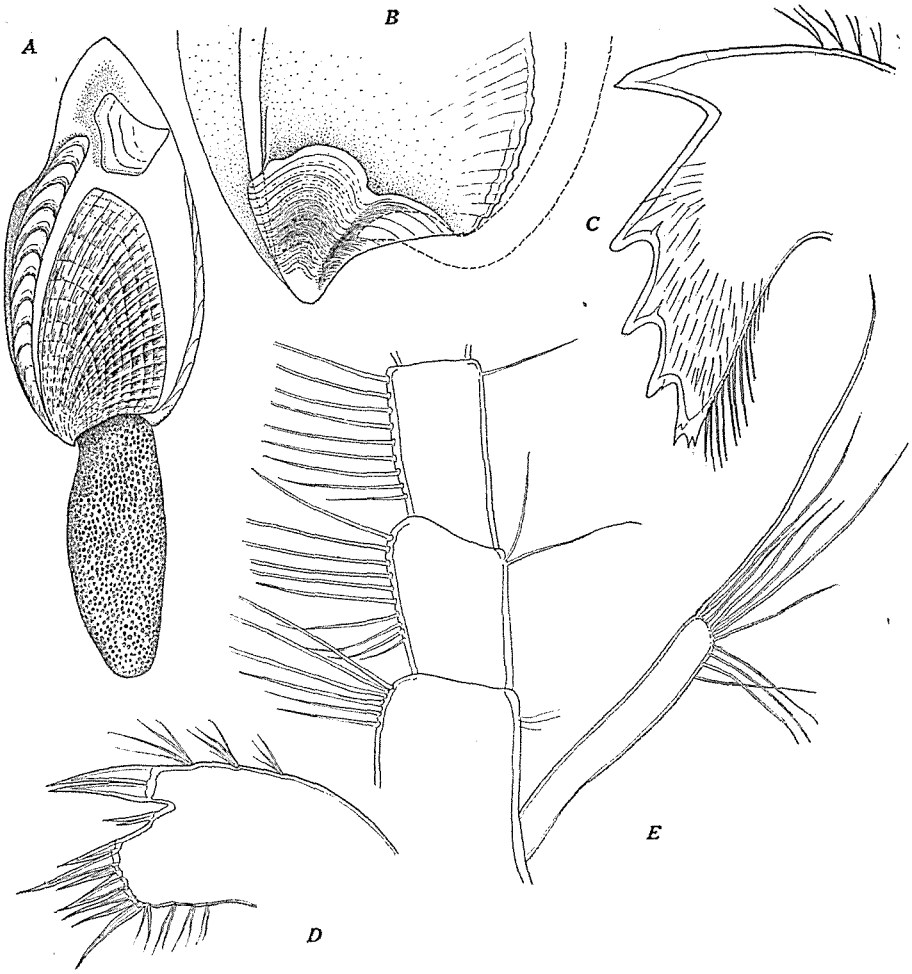

Fig. 1. *Octolasmis scuticosta* sp. nov. A, animal in lateral view ×10; B, inner side of base of scutum, showing a strong umbonal tooth (The broken line indicates the position of carina) ×20; C, mandible. ×210; D, maxilla 1 ×210; E. lower part of cirrus VI, with caudal appendage ×95.

The number of segments of the cirri is as follows:—

	I		II		III		IV		V		VI	
Holotype—	7	8	12	12	11	11	12	12	12	12	12	13

Each segment of cirri II-VI bears 7 or 8 pairs of long spines along the frontal edge and a few at the posterior distal end.

The caudal appendage is uniarticulate, about as long as the protopodite of cirrus VI and has a tuft of long spines at the rounded end.

The penis is robust, tapering uniformly.

Measurements in mm:

Capitulum		Peduncle	
Length	Breadth	Length	Breadth
5	2	3	0.5

Remarks: This curious species is found attached to the exposed mouth-feet of *Ranina ranina* (LINNÉ) from Tanabe Bay. Possibly it is widely distributed along the Pacific coast of Southern Japan as a commensal of this crab. Very recently I collected it from a specimen of the crab during my trip to Taiwan.

This species is characterized by the radially striated scutum, a feature not met with in any hitherto described species of *Octolasmis*. It, as well as *Octolasmis tridens* (AURIVILLIUS), resembles the species of *Temnaspis* in the presence of an internal umbonal tooth at the base of the scutum, but the occludent and basal branches are coherent at the umbo.

4. *Octolasmis urceolata* sp. nov.

(Fig. 2)

The capitulum of this new species is urceolate, shaped like a *Digitalis*-flower, being considerably swollen at the occludent and basal margins; the carinal margin, slightly arched, tapers into the peduncle. The very broad orifice, about as wide as the capitulum, opens upwards. The margin around the orifice, except at the basal end, greatly recurves and protrudes like the visor of a hat; a slight notch is present in the middle of both the lateral margins. The valves, of which there are only 3, are yellow and rather imperfectly calcified. The white integument is semitransparent.

The V-shaped scutum is divided into two narrow lanceolate segments. The occludent segment is short, nearly straight; the basal branch is longer, somewhat broader and moderately curved below. The umbo of the valve on both sides is closely attached to the occludent margin a little below the orifice.

The tergum is wanting.

The carina is short, narrow and terminates in a fork at both ends. The straight dorsal part is longer than the forked apical segment but shorter than the forked basal segment. Both segments run transversely parallel to each other along the lateral sides; their ends are either acute or obtuse. The apex is sometimes not forked.

The peduncle is cylindrical and usually a little longer than the capitulum; the integument thin, semitranslucent and smooth. The ovaries, visible through the integument, are sausage-shaped and, in the living condition, colored a light pinkish cinnamon.

Mouth-parts:—The labrum has 10 to 11 strong teeth in the middle along the concave margin.

The palpus is conical, having long bristles at the rounded tip and along the inner margin.

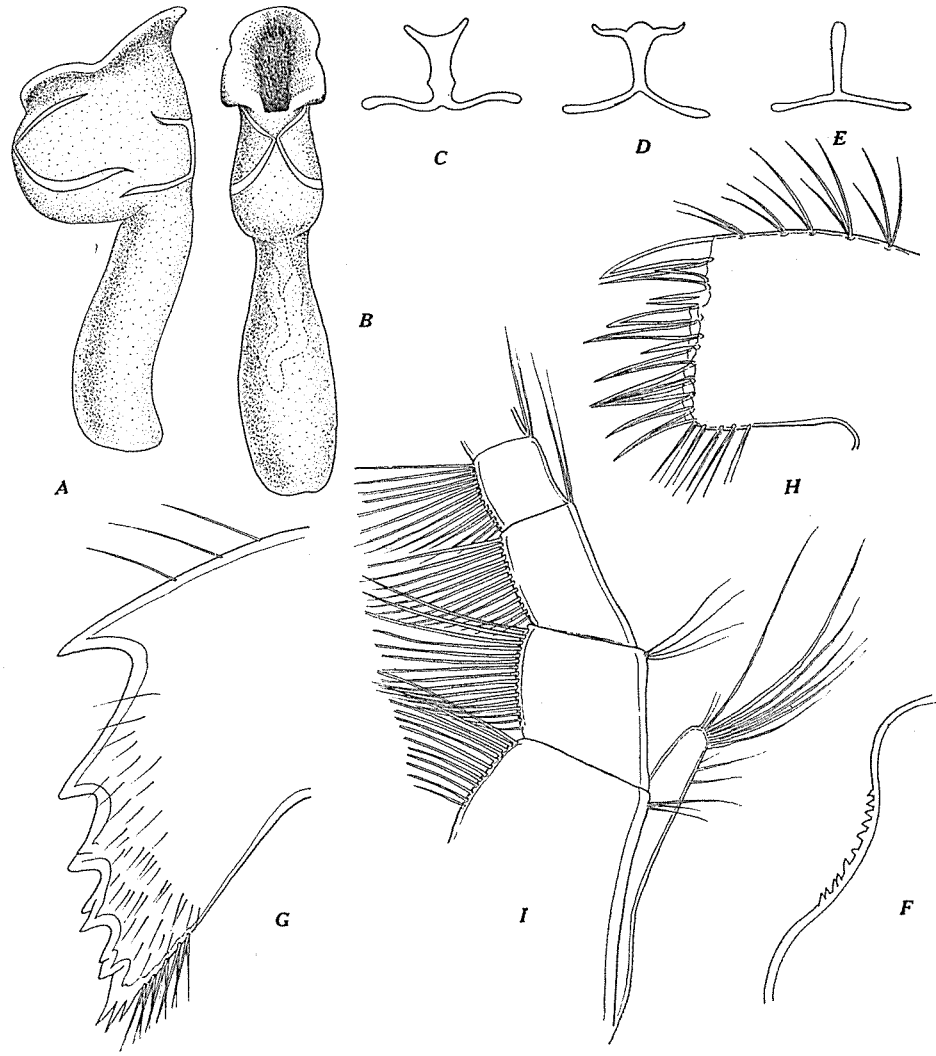

Fig. 2. *Octolasmis urceolata* sp. nov. A, Animal in lateral view ×13; B, the same in occludent view ×13; C–E, various types of carina ×15; F, labrum ×145; G, mandible ×332; H, maxilla I ×332; I, lower part of cirrus VI, with caudal appendage ×96.

The mandible has five teeth and a trifurcate lower angle; the teeth III to V each has an additional tooth along the upper edge.

The maxilla I is with a rather straight frontal edge, though with a trace of a shallow notch bearing two spinules.

The maxilla II is broad, quadrangular, with sparsely-set bristles.

The number of segments of the cirri is:—

	I		II		III		IV		V		VI	
Holotype——	7	7	13	13	13	12	13	13	13	13	13	14 .

Cirrus I is short, with subequal rami consisting of about 7 segments. The remaining longer cirri have rami with about 12 to 14 segments of which the frontal edge has about 10 to 13 pairs of close-set spines.

The caudal appendage is uniarticulate, a little shorter than the protopodite of cirrus VI, and with long spines at the rounded tip.

The penis is shorter than cirrus VI, thick, tapering uniformly, and has a tuft of hair at the end.

Measurements in mm:

Capitulum		Peduncle	
Length	Breadth	Length	Breadth
2.5	2.0	2.5	0.8

Remarks: The present species cannot be identified with any of the proviously described species of the genus *Octolasmis*. A complete disappearance of the tergum is found only in *Octolasmis angulata* (AURIVILLIUS) and *Octolasmis cor* (AURIVILLIUS), but the narrow scutum and the forked apical segments in the carina separate it from both these species. The structure and position of the orifice are highly characteristic.

This species is found attached to the inner mouth-feet of *Ranina ranina* (LINNÉ), as is the case with *Octolasmis scuticosta* described above. The association of these species with the crab appears to be as close as in the case of *Octolasmis aymonini* (LESSONA et TAPPARONE-CANEFRI) and *Octolasmis clavula* HIRO.

Suborder **BALANOMORPHA** PILSBRY

Family CHTHAMALIDAE DARWIN

5. *Octomeris sulcata* NILSSON-CANTELL, 1932.

This species seems to be a form endemic to Japan. So far as I have experienced at Tomioka in Kyûsyû and Takao in Taiwan (Formosa), it lives only in the intertidal region, whereas in this district along the Kii Peninsula it has never been found on coastal rocks; only a few specimens were found attached to a large shell of *Mytilus crassitesta* from waters of some depth. I had a similar experience at Nezugaseki on the coast of the Japan Sea, where it was found on shells of *Haliotis gigantea*. These facts suggest that the difference in the sea-water temperature is apt to alter their habitat.

Morphologically, this species exhibits some very aberrant features in comparison with others of the genus *Octomeris*. This form is very characteristic in that the base is totally calcareous and also the rostrum and two rostral latera are coalesced by two linear sutures; these features thus link *Octomeris* to *Pachylasma*. The full discussion of this problem will be given in another paper dealing with the cirripeds of Taiwan.

Family BALANIDAE DARWIN

6. Balanus (Chirona) amaryllis DARWIN, 1854.

The specimens from Tanabe Bay are of a dark rose color without distinct longitudinal bands and therefore may be referred to the forma *roseus* (*Lamarck*). The largest one measures 13 mm in height and 20 mm in carino-rostral diameter. This species is widely distributed from Southern Japan to the northern coast of Australia and also to the Indian Ocean.

7. Balanus (Membranobalanus) cuneiformis HIRO, 1936.

This curious species was originally recorded by me (HIRO, 1936 a) from off Port Darwin, northwest of Australia, but it has never been obtained since. The present specimen collected by Mr. Torao YAMAMOTO on January 25, 1939 at 7 or 8 fathoms in front of the Laboratory agrees with my original description fairly well, although some slight differences are found. The habitat is also similar, being found in a hole bored by *Cliona*-like sponge on a dead coral rock.

The shell is white, conical and has a cup-shaped membranous base. The rostrum, a little longer than the carina, is cuneiform in shape, though somewhat more rounded at the basal margin than in the original specimen; its inner surface beneath the sheath is wholly smooth. The other plates have the low and narrow smooth area beneath the long sheath. The scutum has a longitudinal median depression, and the growth-lines, fringed with fine hairs, are finely crenated, being crossed by radial ridges. The tergum, having the spur wider than half the basal margin, is broader than the scutum; its external surface is flat and marked with simple growth-lines.

Measurement in mm:

Carino-rostral diameter	8.2
Height of basal part	2.3
Length of rostrum	7.0
Length of carina	6.3

8. Acasta fenestrata DARWIN, 1854.

As far as I have been able to ascertain, there has only been two records of this species since DARWIN's original description of this from the Philippine Islands, one by WELTNER (1897) and the other by NILSSON-CANTELL (1938). The former author found this species in *Discodermia* (*Racodiscula*) *japonica* collected off Enosima, Sagami Bay and also from the Red Sea, and the latter found it in *Petresia similis* collected off Gopalpore, Orissa Coast, Bay of Bengal.

The present specimens found in the vicinity of Seto are likewise embedded in the stony sponges, such as *Discodermia japonica* DÖDERLEIN and *D. calyx* DÖDERLEIN, forming a nodular elevation on the surface of the host. The structures of the compartments and opercular valves are identical with

the original description. The internal body could not be examined owing to poor preservation.

Literature Cited

The works that appeared before 1937 are to be found in my paper of 1937.

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