DROPLETS FROM THE PLANKTON NET*

Under this common title, we are going to record miscellaneous findings which we have made during our plankton studies in various bays or inlets on the coast of Japan.

I. *Metacercaria pelagica* n. sp., a floating furcocercous Cercarian

Takasi TOKIOKA

(Figs. 1—2)

This curious organism came to my notices in June 1946 while I was examining the plankton samples collected in some inlets of Ago Bay, the famous pearl farm in Prov. Sima. The organism was spherical and of the size of *Noctiluca*. It was nearly transparent, but provided with many thin transverse parallel muscles on the anterior half, and contained a compact yellowish nucleus near the centre. A conspicuous furcated tail-like process was attached to the posterior end. Before the minute structures of this organism were examined and its identity was made clear, all the specimens were destroyed by the earthquake in the end of 1946.

Fortunately, I found in July 1949 two specimens of the same organism in a plankton sample hauled in a cove of Tanabe Bay. One of them was in excellent condition and presented in figures. This time I had no difficult in recognizing it as a floating cercarian.

The body is spherical, with a diameter of ca. 600 μ; the stalk of the furcated tail is as long as the branches, being ca. 400 μ. The transverse muscles occurring in the anterior half of the body are gradually weakened posteriorly and disappear in the posterior half. The "nucleus" is spherical, with a diameter of ca. 150 μ. Close examination has revealed that two ocelli and two sucker-like structures are formed under the chitinous capsule of the "nucleus". A canal leads from the "nucleus" to the anterior end of the body, its thickness diminishing posteriorly. The basal portion of the furcated tail is inserted deeply into

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the body near the "nucleus", though no organic connection can be detected between them.

From the structures mentioned above, it is almost certain that, the "nucleus" is nothing but an encysted cercarian larva of some distomum and the spherical transparent body enclosing the cyst is formed by the basal portion of the tail. It is conceivable that at first, the basal portion of the tail was swollen anteriorly and enclosed the cyst, and then grew further anteriorly leaving a thin canal in front of the cyst. It is, however, quite unknown whether this swelling occurred already in the stage of cercaria or began at the time of the encystment. The orientation of the animal in the cyst is the same

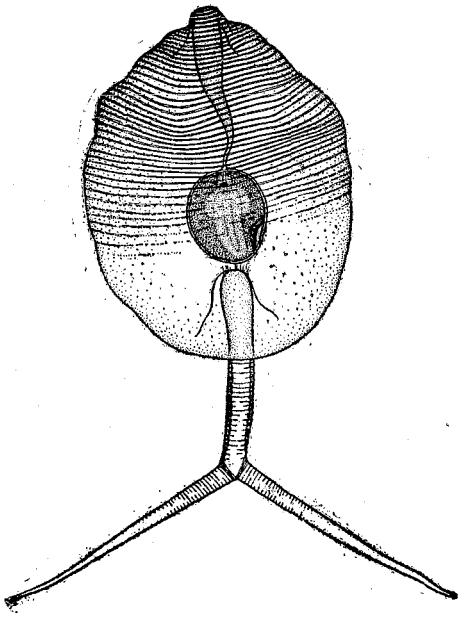

Fig. 1. *Metacercaria pelagica* n. sp., right side. ×83.

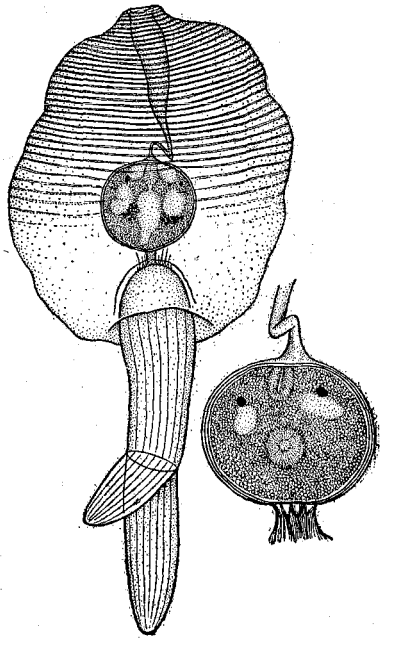

Fig. 2. *Metacercaria pelagica* n. sp., dorsal side of the animal, ×83; and ventral side of cyst, ×150.

in the two specimens, and the tail is flattened dorso-ventrally.

It seems that this cyst keeps floating with the aid of the spherical body and the furcated tail, until it is eaten by the final host. This mode of life reminds us of *Cercaria duplicata* found in fresh water, the spherical body of which is, however, formed by the distal portion of the tail and the animal is encysted in the second intermediate host, otherwise it dies after the pelagic life of about two weeks. In any case, it is rather unusual that a distomum passes a pelagic metacercaria-stage.

II. Notes on *Echinoderes* found in Japan

Takasi Tokioka

(Fig. 3)

Among the plankton samples hauled in Ago Bay in 1946, I found an *Echinoderes* specimen which is shown in Fig. 3. It is ca. 360 μ in length excluding the caudal styli which are about one-half as long as the body. The maximal breadth of the body lies near the 5th-6th zonites. Placids of the 2nd zonite are 16. The accurate number of scalids can not be counted, although it is about 50 in all.

The posterior halves of the pachycycli of the 3rd-11th zonites are thicker than the anterior halves as shown in the optical section of the pachycyclus (C in the figure). The boundary between the thin anterior and the thick posterior halves can be traced as a dotted line on the specimen. The thickness of the pachycyclus diminishes again abruptly at the place near the posterior margin, where a thin line is discernible faintly. The 6th-10th zonites have each a dorsal spine. The 4th-12th zonites have lateral spines. The posterior margin of the 13th zonite is cut deeply at the middle, forming two teeth on each side between the middle incision and the postero-lateral spine. A long and stout spine is found at the anterior base of each caudal stylus.

Without doubt, this specimen here described is identical with *Echinoderes dujardinii* Claparède, the commonest species of the group. As I can not find any difference between the present specimen and *E. Masudai* Abe (1) which was described from the sea near Hirosima in 1925, I am of the same opinion as K. Lang (2), that *E. Masudai* is identical with *E. dujardinii*. *E. tchefouensis* Lou (3) found in the vicinity of Chefoo in North China is also very much like the present species, although it has only four dorsal spines in place of five. *Echinoderes* sp. is not uncommon near the Misaki Biological Station, and one

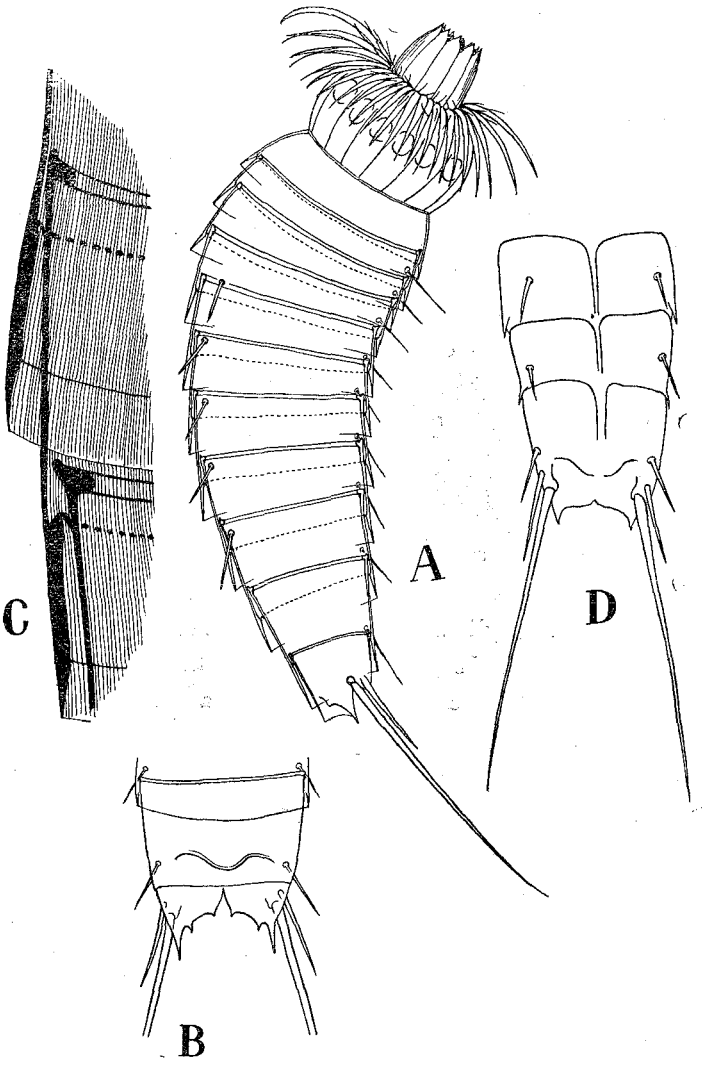

Fig. 3. *Echinoderes dujardinii* CLAPARÈDE. A……right side of the animal from Ago Bay, ×280. B……dorsal side of the posterior portion, ×280. C……optical section of pachycyclus, ×1200. D……ventral side of the posterior portion of the Seto specimen, ×250.

of the specimens is figured by Prof. KOMAI and introduced by Prof. KAWAMURA in the "Illustrated Encyclopedia of the Fauna of Japan" (1947, p. 1419). This form resembles most closely *E. tchefouensis* in having four dorsal spines. It is, however, not impossible that this difference in the number of

the dorsal spine is merely due to the difference in age and not of the specific importance. Another Japanese specimen which was found near the Seto Marine Biological Laboratory in 1939, is apparently younger than the present specimen and shows much simpler configuration along the posterior margin of the last zonite as shown in D of the figure.

1) ABE, Y.: Das Vorkommen von *Echinoderes* in den Japanischen Gewässern. Jour. Sci. Hiroshima Univ., Series B, Div. 1, Vol. 1, pp. 39–44, 1930.

2) LANG, K.: Echinoderida. Further Zoological Results of the Swedish Antarctic Expedition 1901–1903, Vol. IV, No. 2, pp. 1–22, 1949.

3) LOU, T. H.: Sur la présence d'un nouveau Kinorhynque à Tchefou: *Echinoderes tchefouensis* sp. nov. Contrib. Inst. Zool. Nation. Acad. Peiping, Vol. I, No. 4, pp. 1–9, 1934.

III. Record of a *Chaetosoma* specimen found near Seto

Takasi TOKIOKA

(Fig. 4)

A curious minute nematode-like worm, which was found among the plankton sample hauled in a cove of Tanabe Bay in August 1949, was identified after a considerable perplexity as an immature *Chaetosoma* sp.

It is ca. 900 μ in length and broadest near the middle of the body, where it is 52 μ in width. The head (*H.*) is clearly distinguishable by its swollen appearance and is armed with 7 hooks (*h.*) slightly behind the mouth (*m.*). The oesophagus (*Oe.*) is constricted in the middle of its course; the intestine (*int.*) terminates in the anus (*a.*) located on the ventral side at about the length of the head from the posterior end of the body. The crawling hooks (*h. c.*) arranged in two rows in front of the anus are 26 in all. The genital pore (*g.*) is found in the middle of the body.

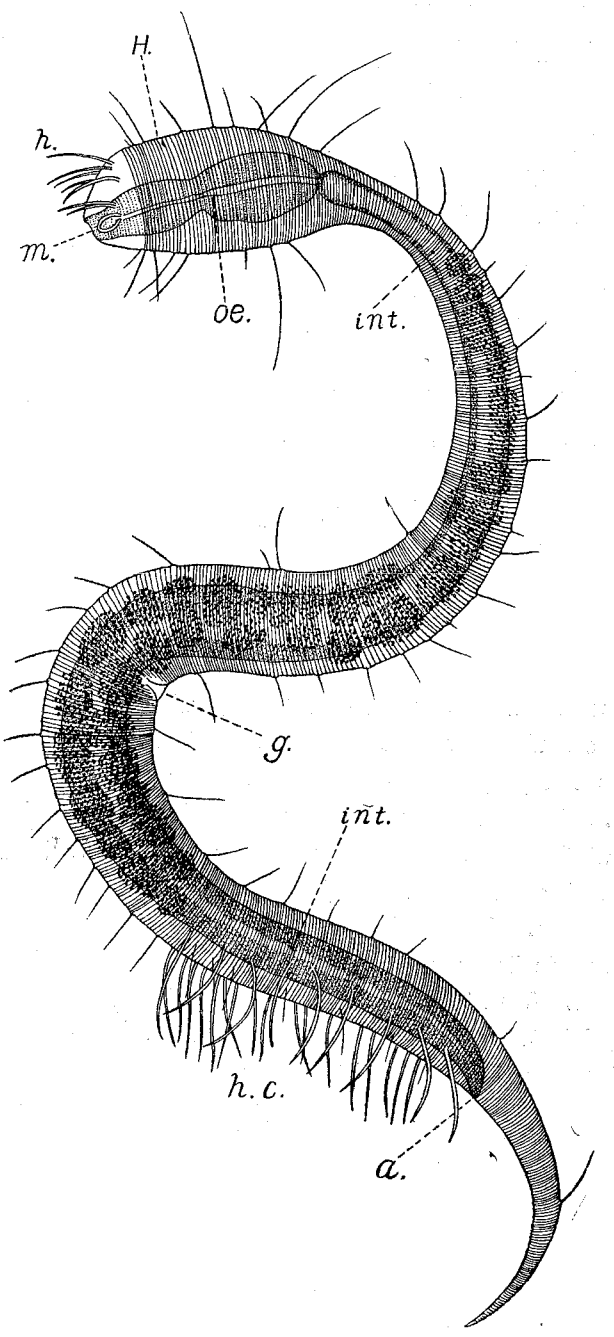

Fig. 4. *Chaetosoma* sp. from Tanabe Bay, ×280.

IV. *Haemocera morii* n. sp., a curious Copepod belonging to the family Monstrillidae

Takasi TOKIOKA

(Fig. 5)

An adult female specimen of *Haemocera*, a strange copepod infesting Polychaeta during its development from the metanauplius to the stage just before the adult, was found in plankton sample hauled near the Laboratory in August 1949.

Body 1.6 mm in length, excluding the long genital setae which are as long as body. Very slender and broadest in the middle of the cephalic segment and in the Ist thoracic segment, the two segments being fused completely. Anterior end of head truncated and provided at each antero-lateral corner with an antennule, which is 4-jointed and armed with setae as follows:

	Simple setae	Plumose setae	Branched setae	Blade setae	Claws
1st Segment	1	—	—	—	—
2nd Segment	4–5	1	—	—	—
3rd Segment	1	2	—	—	—
4th Segment	7	4	3	1	2

The anterior part of the head is slightly broadened and shows through the brain and other ganglia and muscles attached to antennules. The mouth is represented by a minute proboscis on the ventral surface near the posterior end of this broadened part.

The thoracic segments diminishes in size posteriorly, and the first four are provided each with a pair of swimming legs. Both the ectopodite and endopodite of each swimming leg are three-segmented and furnished with several plumose setae. The leg of Vth thoracic segment is vestigial, and club-shaped and surmounted with two plumose setae.

The abdomen consists of two segments. The anterior genital segment is as large as Vth thoracic segment and provided on the postero-ventral corner with a slender stylet which extends distally into a pair of long genital setae. The setae have many fine ring nodules and hold an egg cluster near the terminal end. The anal segment is very small, and the caudal furca is provided with a pair of three plumose setae.

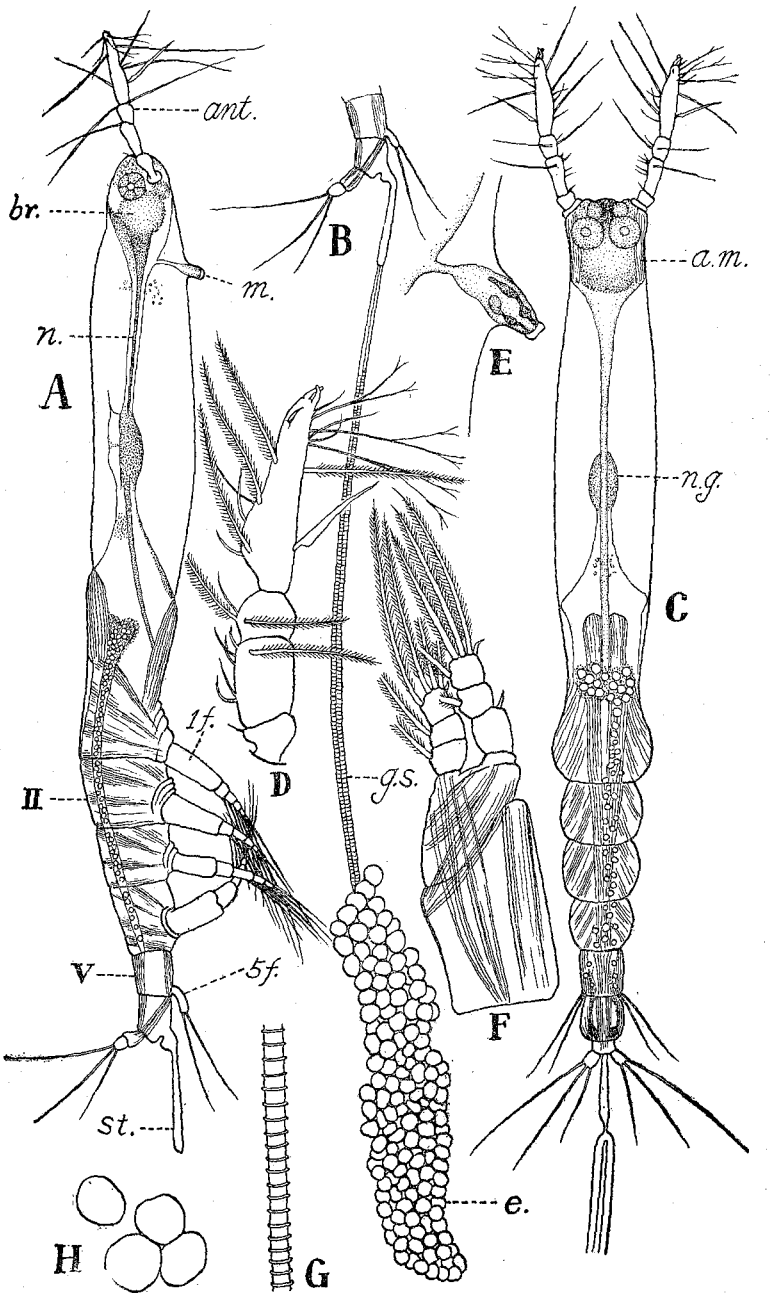
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Fig. 5. *Haemocera morii* n. sp., A……right side of the animal, ×75; B……genital setae, ×75; C……dorsal side of the animal, ×75; D…… antennule, ×200; E……mouth proboscis, ×200; F……left 1st swimming leg, ×200, G……a part of the genital seta, ×200; H……eggs, ×200. *a.m.* antennule muscle, *ant.* antennule, *br.* brain, *e.* eggs, *g.s.* genital seta, *m.* mouth, *n.* nerve cord, *n.g.* nerve ganglion, *st.* stylet, *1f.* 1st swimming leg, *5f.* 5th leg, II. second thoracic segment, V. fifth thoracic segment.

The great part of the head appears transparent, except the median longitudinal nerve and the oval nerve ganglion situated near the centre. No trace of alimentary canal is found.

I dedicate the present specimen to the late Takamoti MORI who was the most active investigator on copepods of Japan and closed his life at Hirosima on August 6, 1945.