12. Report on the Parasitic Copepoda collected during the survey of the Juan Fernandez Islands, 1916–1917.

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With Plates 2—4.

Introductory. During the survey the zoologist, Mr. K. BÄCKSTRÖM, collected five vials of parasitic copepods which, upon examination, prove to be of peculiar interest.

In the first place they come from a region where very little collecting has ever been done. The eastern portion of the southern Pacific is virtually unknown, as far as its copepod parasites are concerned. The present lot are the first to be obtained from these particular islands, and practically the first from the entire region.

Then the hosts upon which they were found are exceptional, the large scombrid, the white-spotted cabrilla, the little clingfish, the curious wreckfish, and the Chilian sculpin. It is not strange, therefore, that three and probably four of the vials should prove to be new species, and that one of them constitutes a new genus.

The specimens are all deposited in the Museum of Natural History at Stockholm, Sweden.

Juanettia, new genus. — Plate 2; 3 fig. 7.

Generic characters of female. Head fused with the first thorax segment, and the two separated from the second segment by a short neck; a pair of fleshy bifurcate processes on the ventral surface at the posterior corners of the cephalothorax. Second, third, and fourth thorax segments distinctly separated, each with a lateral cylindrical process on either side. Second segment with a pair of large conical horns on the dorsal surface at the anterior margin; egg strings cylindrical, multiseriate. First antennae enlarged and fleshy at the base; second pair modified into stout prehensile hooks. Mandibles toothed on

one margin only; two pairs of maxillae and a pair of maxillipeds. One pair of swimming legs on the cephalothorax, biramose and the rami heavily armed with setae.

Generic characters of male. Male a pigmy attached to the genital segment or the egg strings of the female. Body cyclopoid, tapered posteriorly. Head and first thorax segment fused, second, third, fourth, and fifth segments distinct; abdomen three-jointed. First antennae cylindrical, five-jointed; second pair prehensile with stout claws on the basal joint; two pairs of maxillae and a pair of maxillipeds. Four pairs of biramose swimming legs, all the rami two-jointed and heavily armed with setae; fifth pair rudimentary. Anal laminae armed with very long plumose setae.

(**Juanettia,** from the name of the island where the specimens were obtained.)

Remarks. This genus is closely related to the *Chondracanthidae,* but differs in such important particulars from any of the genera in that family that it can hardly be classed with them. The upper and lower lips do not form a sucking tube but project from the ventral surface in a manner similar to that found in the *Ergasilidae.* The first antennae are somewhat similar to those of the *Chondracanthidae,* but the second pair in the male have the prehensile claws on the basal joint instead of terminal. The mandibles are shaped like those of the *Lernaeopodidae,* and are toothed along one margin only. Both sexes have a pair of well developed maxillipeds very different from those found in the *Chondracanthidae.* The female has a single pair of biramose swimming legs on the cephalothorax, while the male has four pairs fully developed and a fifth pair rudimentary. These differences are too important to allow the genus to be placed with the Chondracanthids and for the present it must constitute a family by itself.

Juanettia cornifera, new species.

Host and record of specimens. Three mature females, each with egg strings and with one or more attached males, were taken from the gills of the whitespotted cabrilla, *Paralabrax (Serranus) humeralis,* at Juan Fernandez (Masatierra) Dec. 16, 1916. They are made the types of the new species and genus.

Specific characters of the female. In addition to the generic characters the following may be noted. First antennae attached on the dorsal surface of the head at the anterior margin; basal portion fleshy and very indistinctly segmented, terminal portion abruptly narrowed and distinctly segmented. Second antennae one-jointed prehensile claws, attached to the ventral surface near the anterior margin. The mouth and mouth parts project from the ventral surface of the head in the form of a broad cone. The upper lip at its base

where it joins the head is raised into a ridge, whose ends curve backward. The terminal margin of the lip is uneven and has a large lobe at the center, tipped with two spines.

The mandibles consist of a shaft tipped with a cutting blade, whose inner margin has a row of curved teeth, the whole appendage being very similar to those found in the Lernaeopodidae. The maxillae are like those of the male; the maxillipeds have a stout basal joint, a shorter second joint, and a strong terminal claw.

Behind the mouth on the midline of the ventral surface are two curious processes. The anterior one is shaped like the umbrella portion of a mushroom, is attached by its margin, and stands transversely at right angles to the ventral surface. The posterior one is cylindrical, is attached by one end, and the free tip curves back beneath the neck (see fig. 2).

On either side of these two processes is a biramose swimming leg, each ramus two-jointed and heavily armed with setae. The other swimming legs have entirely disappeared. The three pairs of cylindrical processes on the sides of the thoracic segments are about the same size and are curved backward and downward.

The genital segment is strongly swollen through the center and is more than twice as wide as long. The abdomen is much narrowed, is twice as long as wide and is indistinctly segmented. The anal laminae are slender and about a third the length of the abdomen, each tipped with a single seta.

Specific characters of the male. Beside the characters already enumerated we may note especially the decided cyclopoid appearance of the whole body. The first antennae are five-jointed, the basal joint short and subspherical, the second joint nearly half the entire length and quite stout, the three terminal joints short and narrow, and all the joints well armed with setae. The second antennae at first appear biramose, the basal joint being armed with a powerful prehensile claw, which stands ventral to the terminal joints and almost reaches their tip. The upper lip is decidedly emarginate; the mandibles are like those of the female. The first maxilla resembles those of the Ergasilidae, and consists of a rounded papilla-like base tipped with a single non-plumose seta. The second maxilla has a swollen basal joint and a stout, curved terminal claw, the claws of the two maxillae overlapping on the midline. The maxillipeds extend diagonally backward and inward toward the midline; each consists of a stout basal joint, a second joint of about the same width and length, and a rather slender curved terminal claw. The first four pairs of swimming legs are biramose and the rami are two-jointed and heavily armed with setae. The fifth legs are each reduced to a small process, tipped with a single seta.

Total length of female without egg strings 4 mm. Width 2,50 mm. Length of egg strings 3 mm. Total length of male 1,10 mm. Width 0,40 mm. Color (preserved material) a uniform orange yellow, the male somewhat lighter than the female, neither sex with any pigment markings.

(*cornifera*, horned, alluding to the two horns on the dorsal surface of the second thorax segment.)

Remarks. The host of this species attains a length of three feet and is said to be common all along the coast of South America from Panama to Juan Fernandez, especially in the deep channels between the Galapagos Islands.

Future examination of these fish ought to yield numerous specimens of this peculiar species.

Caligus aesopus, new species. — Plate 3 fig. 8—10; 4 fig. 11—13.

Host and record of specimens. Eleven mature females, most of them with egg strings, were taken from the mouth of a large scombrid (material lost; probably *Seriola peruana*), April 20, 1917 at Juan Fernandez (Masatierra). They are made the types of the new species.

Specific characters of female. Carapace acorn-shaped, the same width and length, which latter is decidedly less than half the length of the entire body, rather squarely truncated posteriorly. Frontal plates well defined, about half the width of the carapace; lunules large, circular, slightly projecting. Posterior sinuses closed and inclined slightly toward the midline; median lobe a little wider than the lateral ones and about the same length. Cephalic area three-fifths the width of the carapace, its sides angular at the center and projecting strongly. Free thorax (fourth segment) spindle-shaped, the same width as the median lobe of the carapace; genital segment one-third longer than wide, with broadly rounded posterior corners, and a concave posterior margin; fifth legs visible at the posterior corners; a pair of short laminate processes projecting from the center of the posterior margin on the ventral surface. Abdomen one jointed, one-third the length of the genital segment and nearly as wide as long; anal laminae small, widely separated, divergent, each with four short setae. Egg strings half the length of the body and rather narrow.

First antennae with a long and slender terminal joint; second pair with a powerful terminal claw, which is curved like a sickle. Furca broadly Y-shaped, the base as long as the branches and nearly circular, the branches stout, blunt, and only slightly curved.

Basal joint of first legs with a rudimentary endopod in the form of a one-jointed finger process; third legs with a large claw-like spine on the basal joint of the exopod. Fourth legs short, the basal joint as long as the three terminal joints and quite stout. At the base of the spine on the third joint, and of the outer spine on the terminal joint, is a thin circular lamina whose margin is cut into long acuminate teeth.

Total length 5,45 mm. Length of carapace 2,35 mm. Length of genital segment and abdomen 2,50 mm. Width of carapace 2,35 mm. Length of egg strings 2,80 mm.

Color (preserved material) a uniform cartilage gray without pigment markings of any sort.

Remarks. This species is closely related to *Caligus isonyx,* but differs markedly from it in the proportions of the various body regions, particularly the free thorax segment. The rudimentary endopod of the first legs is larger than in any other known species of the genus, and the furca is longer and narrower, while its branches are divergent instead of parallel.

The host is manifestly not a common one since it was unknown both to the members of the expedition and to the natives at the time it was captured. The same host, when taken again, will doubtless yield more of the species.

(*aesopus,* odd-footed, in allusion to the rudimentary endopod on the first legs.)

Lepeophtheirus interitus, new species. — Plate 4 fig. 14—17.

Host and record of specimen. A single female with egg strings was taken from the gills of the wreckfish, *Polyprion prognathus,* at Juan Fernandez (Masatierra), April 23rd., 1917. This specimen becomes the type of the new species.

Specific characters of female. Carapace definitely more than half the length of the whole body, as wide as long, evenly rounded anteriorly, somewhat squarely truncated posteriorly. Posterior lobes rather narrow and not quite reaching the level of the median lobe. Thoracic area five-sevenths of the width of the carapace, cephalic area narrower, somewhat quadrangular, its anterior corners quite pronounced. No eyes visible.

Free segment half the width and a third of the length of the genital segment, its lateral margins strongly convex. Abdomen one-third the length of the genital segment, one-jointed; anal laminae short, incurved toward each other, each armed with four setae. Genital segment elliptical, a little longer than wide, with short and blunt posterior lobes, its sides strongly convex. Egg strings more than half the length of the body and a little wider than the abdomen; eggs rather thick, about twenty in each string.

Frontal plates well defined; first antennae short, not reaching the level of the lateral margin of the carapace; second antennae rather stout, the terminal claw strongly curved.

First maxillae large and deeply cleft, the two branches about the same length, the inner one somewhat thicker. Furca narrow, about twice as long as wide, cut beyond the center, the branches conical and widely divergent, the base smoothly rounded.

First swimming legs with the rudiments of an endopod on the distal, posterior corner of the basal joint. Fourth legs large and long, reaching nearly to the posterior margin of the genital segment.

Total length 5,50 mm. Carapace 2,95 mm long, 2,90 mm wide. Genital segment 1,70 mm long, 1,45 mm wide. Egg strings 3 mm long.

Color (preserved material) a uniform yellowish brown.

(*interitus,* wrecked, alluding to the host on which it is found.)

Remarks. This species is closely related to *Lepeophtheirus longipes,* but the body proportions are quite different, the furca is much longer and narrower and its branches are divergent. The rudiments of endopods are also present upon the first legs while the fourth legs do not reach the posterior margin of the genital segment. The abdomen has but a single joint instead of two. For these reasons it has not seemed presumptuous to create a new species although there is but a single specimen, especially since it was found upon an entirely different host.

Chondracanthus clavatus Bassett-Smith.

Host and record of specimen. A single female was taken from the gills of the clingfish, *Gobiesox (Sicyases) sanguineus,* Dec. 23, 1916 at Juan Fernandez (Masatierra).

Remarks. This species has been found hitherto only in the waters about the British Isles upon such hosts as the lemon sole *(Pleuronectes microcephalus)* and a small dab or flounder. It has been fully described, first by Bassett-Smith in Annals and Magazine Natural History, series 6, vol. 18, 1896, p. 13; pl. 5, fig. 1, and afterward by T. Scott in the Eighteenth Annual Report of the Fishery Board for Scotland (1900), p. 165; pl. 7, figs. 35—37.

The present specimen corresponds so closely with these published descriptions and figures that we have to conclude it is the same species although it comes from a far distant region and from an entirely different host.

Lernanthropus sp.

Host and record of specimen. A single female with egg strings was obtained from the gills of the sculpin, *Scorpis chilensis,* Dec. 23, 1916, at Juan Fernandez (Masatierra).

Remarks. Although this is probably a new species it is impossible to obtain drawings of the various appendages without destroying the specimen. It is better to wait for more material, therefore, before establishing the species. It will be closely related to *Lernanthropus trachuri* established by Brian in 1903.

Explanation of Plates.

Plate 2. Fig. 1. Dorsal view of *Juanettia cornifera*, gen. n.; sp. n. Fig. 2. Side view of head and first and second thorax segments. Fig. 3. Mandible. Fig. 4. Maxilliped. Fig. 5. Mouth parts of male. Fig. 6. First swimming leg of female.

Plate 3. Fig. 7. Dorsal view of male of *Juanettia cornifera.* Fig. 8. Dorsal view of female of *Caligus aesopus,* sp. n. Fig. 9. Second antenna. Fig. 10. Third swimming leg.

Plate 4. Fig. 11. Furca of *Caligus aesopus.* Fig. 12. First swimming leg. Fig. 13. Fourth swimming leg. Fig. 14. Dorsal view of female of *Lepeophtheirus interitus.* Fig. 15. First maxilla. Fig. 16. Furca. Fig. 17. First swimming leg.

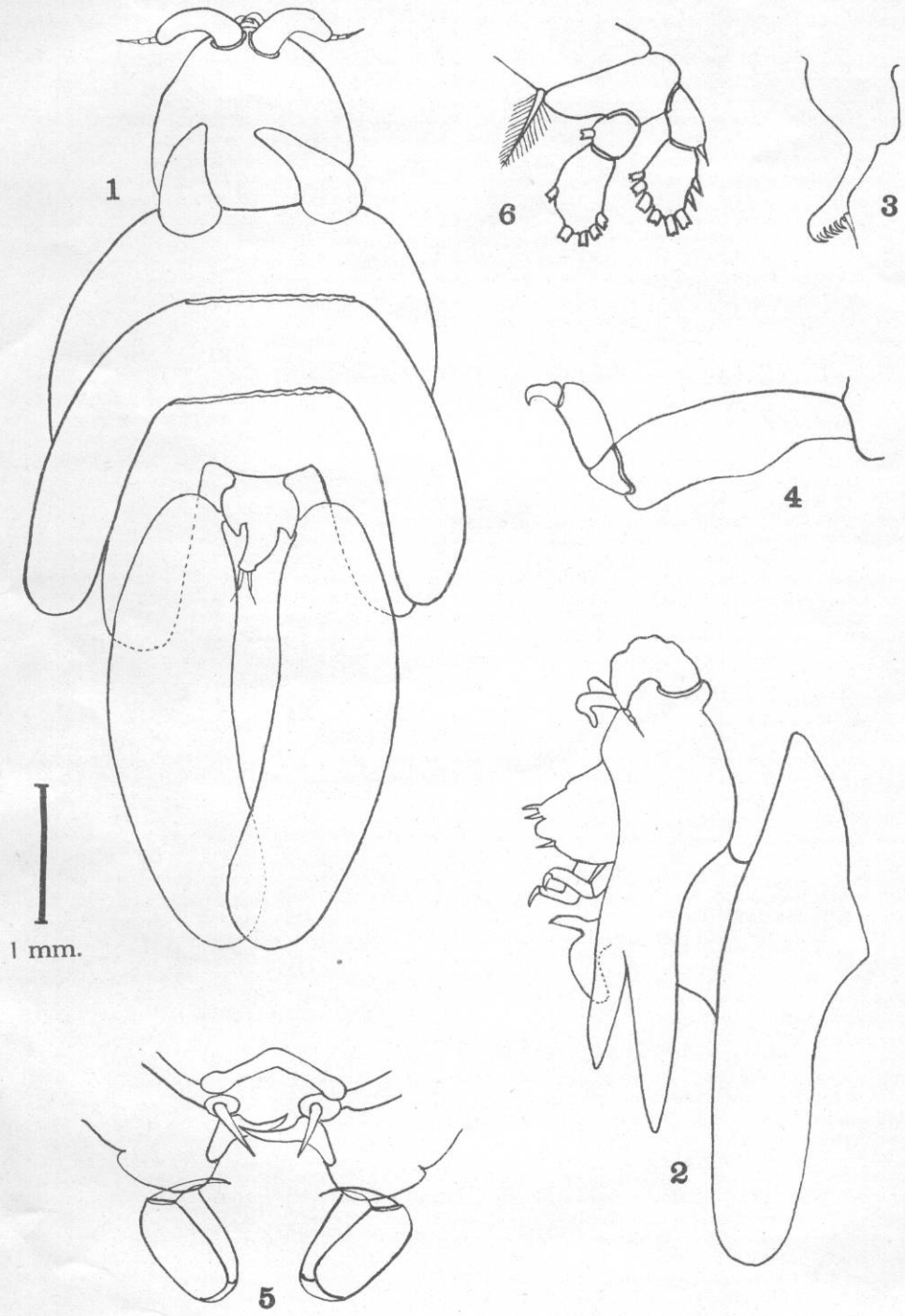

Fig. 1. Dorsal view of Juanettia cornifera, female. Fig. 2. Side view of head and first and second thorax segment. Fig. 3. Mandible. Fig. 4. Maxilliped. Fig. 5. Mouth parts of male. Fig. 6. First swimming leg of female.

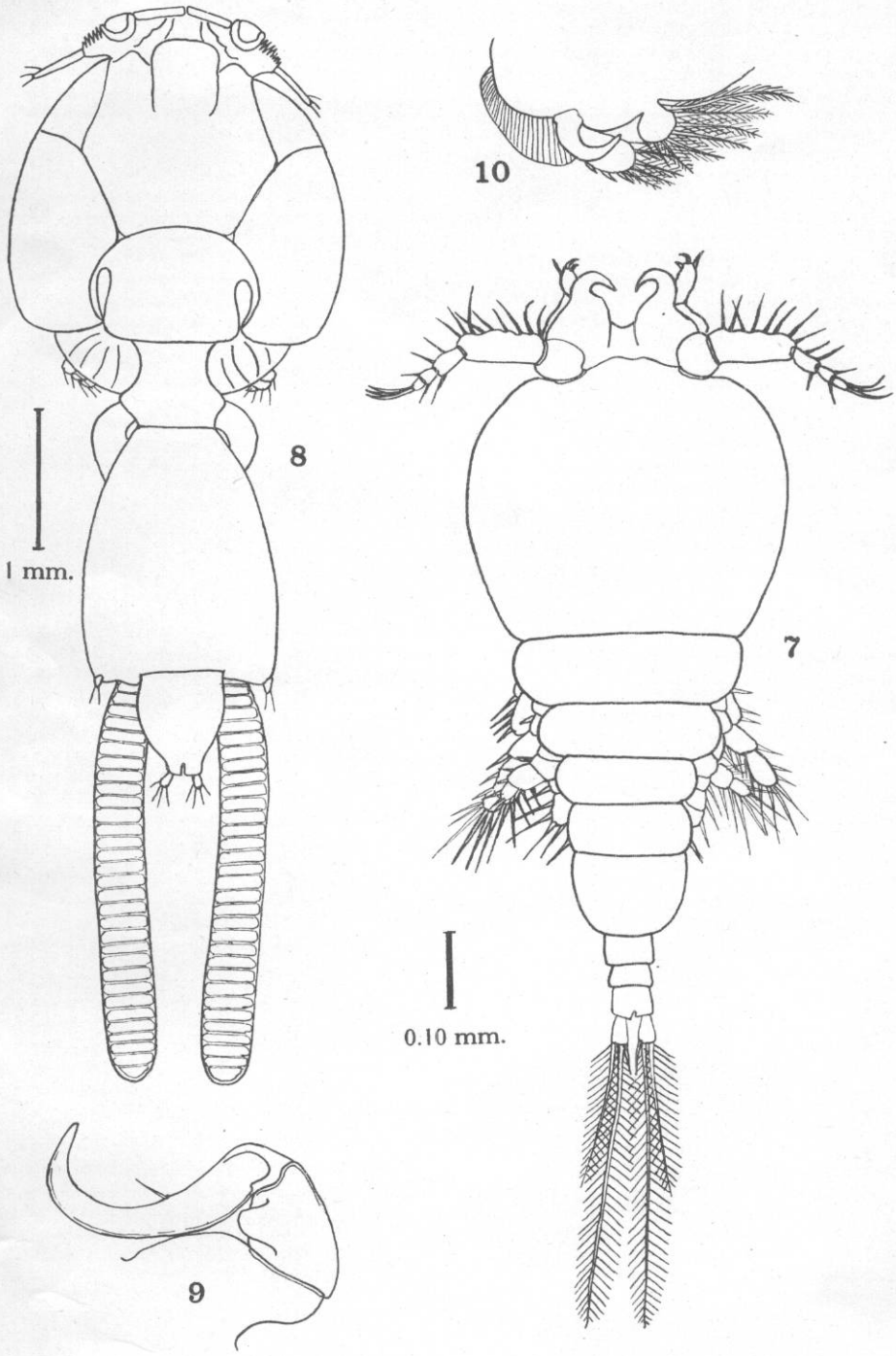

Fig. 7. Dorsal view of male of Juanettia cornifera. Fig. 8. Dorsal view of female of Caligus aesopus. Fig. 9. Second antenna. Fig. 10. Third swimming leg.

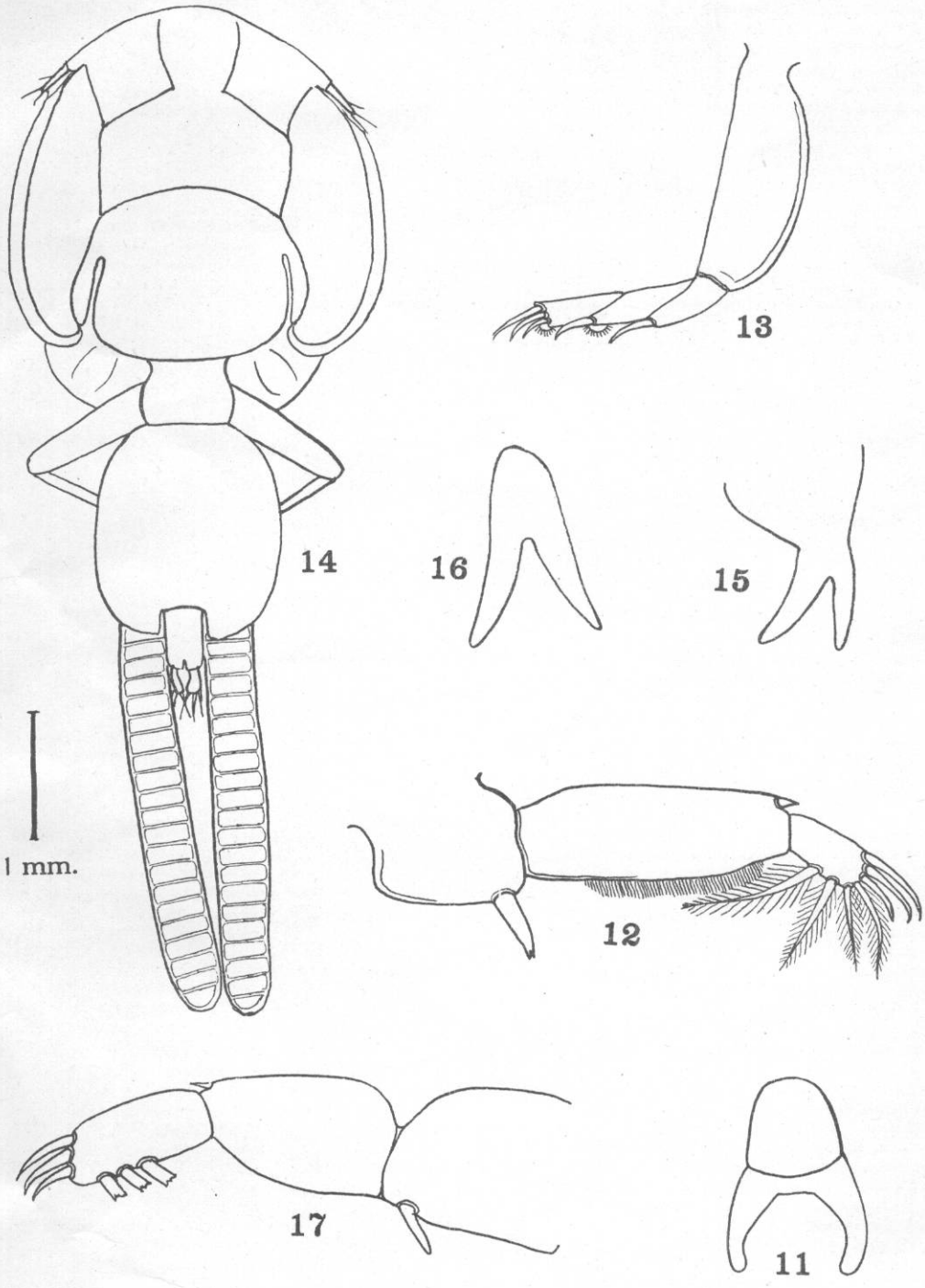

Fig. 11. Furca of Caligus aesopus. Fig. 12. First swimming leg. Fig. 13. Fourth swimming leg. Fig. 14. Dorsal view of female of Lepeophtheirus interitus. Fig. 15. First maxilla. Fig. 16. Furca. Fig. 17. First swimming leg.