



ARGULUS INDICUS, new species.

Fig. 1. Dorsal view of female. Fig. 2. First and second antennae. Fig. 3. Supporting ribs of sucking disks. Fig. 4. Maxilliped. Fig. 5. Respiratory area, showing division into two portions.

THE
JOURNAL
OF THE
SIAM SOCIETY,
Natural History Supplement.

Vol. VII, No. 1.

BANGKOK.

1927.

A COPEPOD (*ARGULUS INDICUS*) PARASITIC ON THE
FIGHTING-FISH IN SIAM.

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WITH PLATE I.

Introductory.—About thirty-five years ago Dr. Max Weber described* from the coast of Java under the name of *Argulus indicus* the species of parasitic copepod herein referred to. Some years later P. N. van Kampen published a reference† to the same species, based on a specimen also from Java. A single female specimen was taken by Dr. Hugh M. Smith from the dorsal surface of a fighting-fish (*Betta*) at Bangkok, Siam, July 4, 1925. This specimen has been placed in the United States National Museum under catalog number 56537.

Weber's description was very meager, and the only figure he gave was of one of the fourth swimming legs. Van Kampen supplemented this with a few lines of description and two text figures, one of the dorsal and one of the ventral surface of an adult female, which indicate fairly well the position and relation of the various appendages but of course give no details of structure. Van Kampen in his figure shows no spots on the dorsal surface and he says nothing about them in the text.

Accordingly it has seemed best to supply the missing facts in the form of a general description of the species, with detailed

* Zoologische Ergebnisse, Bd. 2, 1891-92, p. 544.

† Zoologische Anzeiger, Bd. 34, 1909, p. 447; text figs. 5 and 6.

drawings. There is also added here a new locality for the species and its host has been named for the first time.

Description of the female.—Carapace nearly orbicular, but a trifle longer than wide, with evenly rounded margins. Cephalic area broadly triangular, projecting a little anteriorly; the two median ribs, instead of running forward to the anterior margin of the carapace as usual, curve around in front of the compound eyes and their tips point outward toward the lateral margins. Each rib is also branched in front of and a little inside the eye, and the short branch extends diagonally forward and inward. The ribs, running from near the base of the cephalic area outward and backward through the lateral area and into the posterior lobes, are peculiarly curved as may be seen in the dorsal view.

The respiratory area is divided into two portions; the posterior one is proportionally large, elliptical in shape, and nearly fills the posterior lobe; the anterior one is minute and is easily overlooked, and is removed a short distance forward and inward, thus being entirely separated from the posterior portion. The posterior sinus is about one-third the length of the carapace, with nearly parallel sides; the posterior lobes curve inward at their tips and cover the basal portion of the abdomen, reaching to its center. The compound eyes are minute and are removed some distance behind the anterior margin, and are separated by a wide interval. The abdomen is broadly heart-shaped, nearly one-half wider than long, the posterior lobes are broadly and bluntly rounded, the posterior sinus is about one-fourth the length of the abdomen, and the anal laminae are terminal.

There is no claw on the anterior margin of the basal segment of the first antennae, but there is one on the ventral surface near the posterior margin, and a very stout spine inside the segment near the midline. The two terminal segments are short and do not reach the curve in the lateral claw of the basal segment. The second antennae are four-segmented; the basal segment is longer than the other three combined, and is armed on its ventral surface with two stout spines, the proximal one much larger than the distal. There is also a huge spine inside the base of this antenna near the midline, considerably larger than the one opposite the first antenna. The

ribs supporting the margins of the sucking disks are slender, each composed of five segments, three of which are much longer than wide while the other two are of about the same length and width, these two alternating with the former three.

The maxilliped is rather slender, the plate on the basal segment is broadly triangular and the three spines on its posterior margin are short and bluntly rounded. Inside the bases of these maxillipeds is a pair of stout spines, and there is another pair of spines, placed farther apart, on the ventral surface between the maxillipeds and the first swimming legs. The first two pairs of legs are furnished with flagella, but there are none on the other two pairs. The posterior lobes on the basal segments of the fourth legs are broad laminae, whose margins are heavily fringed with hairs, and whose pointed tips reach beyond the distal margin of the second segment. The semen receptacles in the abdomen are circular and close to the midline, and are invisible in dorsal view. They are near the base of the abdomen and in ventral view are partially concealed by the posterior lobes of the fourth legs.

Color (preserved specimen): Entire body a golden yellow, the dorsal surface covered with minute spots of light cinnamon-brown; the spines on the ventral surface and on the antennae, the margins of the sucking disks, and the eyes dark reddish-brown.

Total length, 7.75 mm.; carapace 7 mm. long, 6.65 mm. wide; abdomen 1.45 mm. long, 2 mm. wide.

Remarks.—The distinguishing characters of this species are the spotted dorsal surface, the division of the respiratory area and the great inequality of its two parts, the structure of the supporting ribs of the margins of the sucking disks, and the branching of the longitudinal ribs of the cephalic area. Such a branching of these ribs occurs in the European fresh-water species *foliaceus*, in the South American species *salminei*, and in the African species *striatus*.

