TWO NEW COPEPODS OF THE GENUS *ACARTIA* FROM BURMA.

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(PLATE V.)

Recently Mr. F. Kieffer of Dieselberg near Heidelberg handed over to me for identification the two Copepods described in this note. The specimens had been collected near Myitkyo about 100 miles north-east of Rangoon, Burma, on 6th February, 1933, and were found in the Sittang River and the Sittang-Pegu Canal. According to a communication of Mr. Kieffer the collection also contained the Copepods *Mesocyclops leuckarti* and *M. hyalinus*.

A few specimens of the two new forms have been deposited in the Zoological Museum, Berlin.

Acartia (Acartiella) sewelli, sp. nov.

(Pl. V, figs. 1-7.)

♀: Total length, 1·38-1·57 mm.

The 1st abdominal segment (*Ab* 1-3) is without the row of transverse spines and the scattered spines on its dorsal surface such as were described by Sewell for *A. tortaniformis* (2, p. 346). During copulation the neck-piece of the spermatophore is introduced beneath the valve (pl. v, fig. 1) which lies dorsally on the left side close to the posterior end. The right furcal ramus is somewhat longer than the left; the 2nd furcal seta is scarcely thickened.

The fusion of the proximal segments of the first antenna (pl. v, fig. 2) is more advanced than in *A. tortaniformis*, and ventrally on the posterior surface there are traces of " triangular spines " in the form of minute chitinous knobs. Spines are entirely absent on the distal segments.

On the 2nd antenna (pl. v, fig. 3), B1 protrudes globularly from the inner edge as in *A. clausi* Giesbr. (see Giesbrecht **1**, p. 514, pl. xxx, fig. 13). The two ramii of the 2nd antennae have been differently interpreted in *A. clausi* by Giesbrecht (*op. cit.*) and in *A. tortaniformis* by Sewell (**2**, p. 347, pl. xxi, fig. 4). Following Giesbrecht's terminology, the exopodite of *A. sewelli* is fused with the second basal joint (B2 Re), and the free endopodite (Ri1-2) is directed forwards. In addition to the more proximal two setae, B2 bears on its inner margin a third seta; this is wanting in *A. tortaniformis*. The outer margin of the endopodite is straight in *A. sewelli*, but is sharply bent in *A. tortaniformis*.

The exopodite of the 5th leg (pl. v, fig. 4) bears on its inner margin a row of strong teeth, while along the outer margin there is only a small bristle.

♂: Total length, 1·27-1·51 mm.

On the 1st abdominal segment (pl. v, fig. 5) the genital opening lies on the left; the right furcal ramus is conspicuously longer than the left.

The grasping antenna lies on the right; the proximal segments of the left antenna are less fused than those of the female and the chitinous knobs are even further reduced.

Concerning the succession of joints in the 5th leg (pl. v, fig. 6) I have already expressed my views (**5**, pp. 13, 101); these differ from those of Sewell (**2**) for the nearly allied species *A. tortaniformis*. In the present species the " endopodite " which arises from the ventral surface, is much smaller than in Sewell's species. On the right leg on Re1 a curved bristle is present in addition to the two straight ones on the dorsal inner margin. Re2-3 is much less bent than in *A. tortaniformis* and has a few short hairs externally near the base of the distal spine; the latter bears hairs along its inner margin. On the left leg Re2-3 bears on its outer margin a projection with a short spine and a well developed tuft of hairs.

The new species, which I have dedicated to Col. R. B. Seymour Sewell, the well known student of Indian Copepods, is very closely allied to *A. tortaniformis* Sewell. The latter species, however, may be regarded as a little more primitive, as in the female the fusion of the joints of the 1st antenna is not so far advanced. In the 2nd antenna the notch on the outer margin of the endopodite still indicates its formation by the fusion of two segments.

In one female a large nematode (1500μ×56μ) was found. This probably belongs to the genus *Philometra*, as the intestinal caeca characteristic of the genus *Contracoecum*, were not visible (see Wülker, **6**, p. 2). The anterior end bears a small boring spine; the posterior is " spitz geschwanzt " (pl. v, fig. 7).

Epistylis lacustris Imhoff kindly determined for me by Dr. A. Kahl of Hamburg, was found attached to a number of specimens.

Acartia (Acanthacartia) chilkaensis Sewell var. **sittangi,** nov.

(Pl. V, figs. 8-14).

♀: Total length, 1·06-1·15 mm.

The head bears a rostrum and is separated from Th1 (pl. v, fig. 8). Th4-5 is rounded; laterally it is minutely spinose both on the ventral and dorsal surfaces and the ventral spines (about 5) are larger than the more numerous dorsal (pl. v, fig. 9).

On the 1st antenna (pl. v, fig. 10) segments 15-24 bear a delicate row of minute spines ventrally on its posterior margin.

The basal region of the terminal claw of the 5th leg (pl. v, fig. 11) is ventrally thickened and somewhat bent in the middle; often a distinct tooth is found in this situation on the outer margin. The terminal piece is feathered along both sides.

♂: Total length 1·00-1·06 mm.

The abdomen (pl. v, fig. 12) bears dorsally on its distal margin from Ab1-Ab4 a row of minute spines which is continued to the ventral side on Ab2 and Ab3.

On the grasping antenna (pl. v, fig. 13), which is on the right side, the 17th segment bears a small spine on its upper surface; this may be identical with the " spine-like tooth-plate " which Sewell (**3**, p. 10)

mentions but which he does not figure. The same spine is also to be found on the left antenna in the same location. On Aa 19-21, a chitinous knob is present proximally; this sometimes terminates in a sharp point.

On the 5th right leg (pl. v, fig. 14) Re1 bears a bristle about the middle of the ventral side. Re2 has on its inner side a somewhat quadrangular plate, but lacks the distal process figured by Sewell for *A.* (*A.*) *chilkaensis* (3, pl. ix, fig. 5). On the other hand it bears on its distal margin the little bristle which occurs there very frequently. A similar one is present on Re2 in the middle of the concave inner margin; this is mentioned by Sewell in his description, but not shown in fig. 5. The terminal spine is small and blunt.

On the left leg, B1 is indicated in Sewell's figure and B2 appears divided, as a result of which the distal piece would be the 1st joint of the exopodite. The position of the bristle of the outer margin indicates undoubtedly that it is the 2nd basal joint. In my specimens the "rounded projection" on the inner margin of this segment is only very feebly indicated, and the bristle of the outer margin arises at a distance from it. The terminal joint Re2-3 (=Exopodite 3 of Sewell) is somewhat more complicated in the specimens from the Sittang River. It terminates in a large bent cone which bears a terminal spine. From the base of the second proximal spine starts a delicate veil-like membrane, which seems to be absent in the typical form.

The new variety is distinguished from the typical form by the following characters:—

(1) In the female the 1st antenna in the typical form bears, according to Sewell, transverse rows of minute spines only on the 16th, 17th and 19th segments, while in the variety *sittangi* the rows extend from the 15th to the 24th segments. The row of the 18th is very feebly developed. In the 5th leg, Sewell figures the terminal claw as smooth; I have found minute hairs along its lateral borders.

(2) In the male, the armature of the abdomen is different. In the typical form the abdomen is naked, in the new variety Ab1-4 bear rows of minute spines. On the right 5th leg the distal outgrowth of the quadrangular plate of Re2 is absent, and on the left Re2-3 the base of the proximal spine bears a delicate membrane.

The specimens from the Sittang River are larger than those from the Chilka Lake; the averages for the two forms are:

♀: 1·10 mm. (as compared to 0·75 mm. in the *forma typica*).
♀: 1·03 mm. (as compared to 0·70 mm. in the *forma typica*).

Sewell (**3**, p. 10) noted that he had also examined some males from Cochin[1] which resembled his species, but which were somewhat larger (0·82 mm.) than the Chilka Lake specimens. These had a row of minute spines on the posterior margin of the abdominal segments 2, 3 and 4. He was inclined to regard these specimens from Cochin "as a local variation," as they agreed in all characters with the Chilka Lake

[1] This sample is not mentioned in Sewell's later work (4, p. 395).

specimen. The specimens from the Sittang River seem to be more closely related to those from Cochin, than to the *forma typica* from the Chilka Lake.

Of all species of the subgenus *Acanthacartia* so far known from India, *A. chilkaensis* is most closely allied to *A. plumosa* Th. Scott.

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