

depressed lobe; the sixth are about as long as the second, progressively increasing slightly in length, each slightly concave anteriorly and increasing very suddenly in width near their upper ends, after which the anterior and posterior edges are nearly parallel. The dactyls are very strong and well curved, and each is about two-thirds the length of the corresponding sixth segment. There are no spines on the sixth segment of the last peræopod, as shown in Sars' figure of *L. planifrons*.

The uropods are as in *L. planifrons*, but the telson is less oval and more triangular.

The peræon and first three segments of the pleon form an evenly curved arch, while the fourth, fifth, and sixth segments of the pleon are sharply deflected anteriorly and lie between the last three peræopods.

The antennæ lie posteriorly against the peræopods.

In this attitude the animal fits snugly into a hole in the disk of the comatulid in which it is about half buried. It probably attaches itself to the disk by means of the strong hook-like dactyls, and the flesh of the crinoid gradually enveloping it forms the cavity.

The length is 5 mm.

*Locality*.—China Sea; *Albatross* Stations 5310 and 5311.

*Depth*.—88 to 100 fathoms.

*Remarks*.—The only other species of this genus, *L. planifrons* Sars, was recorded by Sars from three widely separated localities on the coast of Norway. His specimens were all taken in the dredge. He remarks that the semiparasitic character of the species remains an open question.

It is very interesting to find this second closely allied species parasitic upon comatulids in so distant a locality as the China Sea.

*Type*.—Cat. No. 49599, U.S.N.M.

#### COPEPODA.

The great majority of the copepods are free living, but a considerable number of them are truly parasitic, living on the juices of fishes, crustaceans, annelids, and other aquatic animals. Another large group is commensal or semiparasitic, living in the cavities of various marine animals, especially in those of the ascidians, both simple and compound. Others occur on the external surface of sponges, sea urchins, and starfishes.

In order that the relation between the copepods parasitic on the crinoids and those occurring upon the other echinoderms may be appreciated, I have given a complete list of the latter, which follows the discussion of the two species known to be associated with the comatulids.

#### Family ASCOMYZONTIDÆ.

##### COLLOCHERES GRACILICAUDA (BRADY).

This species was described in 1880 from Robin Hood Bay, in Yorkshire, in 35 fathoms, by Brady under the name of *Cyplopicera gracilicauda*. In 1888 it was redescribed by Rosoll, who found it parasitic on *Antedon adriatica* at Trieste, under the name of *Ascomyzon comatula*.

Canu, who proposed the genus *Collocheres*, determined the identity of *Cyppocera gracilicauda* and *Ascomyzon comatule*, and recorded it also from the coast of France.

Giesbrecht has reported it, under the name of *Clausomyzon gracilicauda*, from the Bay of Naples, and G. O. Sars has recorded it from Risør on the southern coast of Norway.

In depth it ranges from the shore line down to 35 fathoms.

#### Family ASCIDICOLIDÆ.

##### ENTEROGNATHUS COMATULE GIESBRECHT.

This curious copepod was first discovered by Dr. John Beard in the course of his studies at Naples on the development of the myzostomes. It was described in great detail by Dr. W. Giesbrecht in 1901.

This parasite is much commoner in comatulids from a considerable depth than in those from shallow water. On the average there is only about one parasite to a dozen of the latter, and occasionally Giesbrecht found not a single example in about 50. On the other hand, of the *Antedons* from the Secca di Gajola at least half were parasitized.

There appears to be rarely more than one copepod in a single *Antedon*, though once Giesbrecht found four in different developmental stages in a specimen from the Secca di Gajola.

The females with egg balls are found throughout the year.

Almost the only color which the mature female shows is the brown of the contents of the intestinal canal. The animals are pale and almost transparent if the fatty tissue is not too richly developed, and the oviduct is not too full of ripe eggs. The eggs are quite opaque and white in reflected light.

The mature free-swimming male is yellowish gray and very slightly transparent. In the head and in the posterior part of the abdomen are some small rusty red globules.

Copepods infesting echinoderms other than crinoids.

*Pionodesmodes phormosomæ* Bonnier. From galls on the inside of the test of *Hygrosoma petersi* (A. Agassiz).

*Echinocheres violaceus* (Claus). On *Paracentrotus lividus* (Brandt).

*Echinocheres minutus* (Claus). On *Paracentrotus lividus* (Brandt).

*Echinocheres globosus* Hansen. In swellings on the spines of *Aræosoma gracile* (A. Agassiz) and *Sperosoma quincunciale* de Meijere.

*Cancerilla tubulata* Giard. On *Amphiura squamata* Sars.

*Philichthys amphiuuræ* Hérouard. On *Amphiura squamata* Sars.

*Chrodeumium obesum* (Jungersen). On *Asteronyx lovénii* Müller and Troschel.

*Arthrochordeumium appendiculosum* Stephensen. On *Astrocharis gracilis* Mortensen.

*Astericola clausii* Rosoll. On *Marthasterias glacialis* (O. F. Müller).

*Linckiomolgus cæruleus* Stebbing. On *Linckia lævigata* (Linnæus).