

## SUB-CLASS ENTOMOSTRACA, Müller (Gnathopoda, H. Woodward).

## ORDER COPEPODA, Milne-Edwards.

## Section I. GNATHOSTOMA, Thorell.

## Family I. CALANIDÆ, Dana.

Body elongated, consisting of from ten to twelve segments. Abdomen nearly cylindrical, much narrower than the cephalothorax, and prolonged at the posterior extremity into two more or less cylindrical caudal stylets. Head often continuous with the first segment of the thorax; fourth and fifth thoracic segments often coalescent. Head rarely divided into two segments, but not unfrequently showing an incomplete separation ("cervical suture"). Anterior antennæ very long, and composed of twenty-two to twenty-five (rarely fifteen, eighteen, or twenty) joints; that of the right side in the male often modified for grasping. Posterior antennæ large, composed of a basal joint, to which are usually attached two branches, the primary (external) consisting of two, the secondary (internal) of several joints. Mandibles strongly toothed at the apex, palp usually two-branched. Maxillæ strong, composed of a more or less quadrate biting portion, which bears numerous curved, setiform, marginal teeth, and a complex, many-lobed palp. Foot-jaws largely developed: anterior pair very broad, inner margins of the basal joints forming wart-like processes, from which spring long ciliated bristles; distal extremity divided into three short joints, which are beset with strong ciliated setæ; posterior pair longer and more slender, basal portion composed of two long and narrow joints, apical portion usually of four to six very small joints. First four pairs of feet two-branched, the outer branches (in the adult) almost always three-jointed. Fifth pair either like the foregoing, or remarkably different, and forming in the male powerful clasping organs, which are unlike on the two sides: those of the female, though often differing from the true swimming feet, always alike on the two sides. A heart is present. Eyes either median and stalked, or paired (lateral) and sessile; in the latter case often coalescent, and composed of several lenses and pigment-masses: situated usually near the front of the head, but in one genus (*Pleuromma*) near the base of the foot-jaw of one side only. Sexual organs in the female symmetrical, in the male asymmetrical; ovisac single, borne in front of the abdomen.

This family includes by far the larger portion of the pelagic Copepoda, being represented abundantly in all seas, from the equator to the poles—or at any rate, as near to those points as scientific investigation has yet been able to extend.

The overwhelming preponderance of this family in the open sea is at once apparent, when we note that out of the ninety species of free-living Copepoda found amongst