

excluded. This valve is a thick and strong appendage, and seems to vary but little. The variation that does take place appears to be in the form of the mastigobranchiæ, or the posterior extremity of the great squamose plate; and in the smaller of the two branches, which in some species, as in *Stereomastis suhmi*, is short and pointed. The large branch is generally folded longitudinally on itself. This appendage, except in possessing a strong mastigobranchia, a part common to most forms of Crustacea, varies considerably from the corresponding member in the Scyllaridæ, and also in the Astacidæ, but approximates to that in Palinuridæ.

The third pair of siagnopoda (maxillipedes) (Pl. XVIII. *g*) appears to be an important pair, if we may judge by its relative proportion. It is situated behind the mouth, on one side of the median line, and reaches back into the branchial chamber as far as to the extremity of the anterior branchial plume, and anteriorly beyond the oral apparatus, so that its extremity is visible in advance of the frontal margin of the cephalon. It consists of several branches, flat and leaf-like in character, which are so differentiated from the typical form in Crustacea, that it is only by an analytical comparison that the several parts can be homologically determined. The chief or primary branch is of great tenuity, and is folded to form a spoon-like hollow, with its convex surface turned inwards. This siagnopod is implanted immediately behind the mandibles, having the anterior pair outside rather than anterior to it. The cup-like hollow, which is formed by the leaf being longitudinally folded on itself, is turned outwards, and its inner or deeper angle, being that which is nearest the body of the animal, is subapical to the anterior extremity; thus a freely articulating plate plays in the cavity with probably a more or less constant voluntary vibration. This vibrating plate keeps the water circulating within the branchial chamber; while the mastigobranchial plate, which is very long and broad, and generally free from hairs, overlies that of the second pair, and assists it not only in its function, but, by permitting a free space between them, allows the water that may have been confined within the branchial chamber to pass out with more or less rapidity.

These are the several appendages that belong to the cephalon or head. They are much compressed together, inasmuch as there is none in a direct line between the metastoma and the third pair of siagnopoda. The first and second being situated laterally and but slightly posterior to the mandible.

The first pair of gnathopoda (Pl. XVIII. *h*) shows an approach to the pediform character. It is flat, broad, and covered with hairs, and varies very little in the several species. In *Pentacheles euthrix* the basis is serrate on the inner margin, while in most forms it is smooth on that part. In *Pentacheles euthrix* also there is attached to the outer and upper angle of the coxa a small projecting process that I take to represent the



FIG. 21.—Maxillipede of *Pentacheles euthrix*, $\times 3$.
From a drawing by Willemoes-Suhm.