mastigobranchia, and the pleurobranchia, which is well developed, is implanted high upon the pleura, and is directed anteriorly, lying nearly horizontally beneath the carapace.

In the three next anterior pairs of appendages the pleurobranchia is implanted much lower, and traverses the same line as the overlying podobranchia. The first pair of pereiopoda has no pleurobranchia, nor has the second pair of gnathopoda, while the first pair (Pl. VII. fig. 1, *h*) has no branchial plume whatever, and the mastigobranchia is reduced to a rudimentary stump, fringed with a thick brush of hair.

The third pair of siagnopoda (Pl. VII. fig. 1, *g*) supports a broad and tolerably long mastigobranchia, to which is attached, on the upper margin near the base, a small styliform process, fringed with ciliated hairs on one side and simple ones on the other. This organ I take to be the rudimentary homologue of a podobranchial plume. On the second pair of siagnopoda the mastigobranchia is also present, and is large, broad, and rounded at the apex; the margin fringed with short posteriorly-directed plumes or hairs.

The entire branchial apparatus corresponds very closely with that of *Phoberus*, and resembles in general structure that of the Palinuridæ.

Observations.—Thaumastocheles zaleuca is a blind species, and most probably fossorial in its habits. That it is a degraded form I think we may safely infer from the excavations which correspond with the orbits still remaining in the anterior margin of the carapace, as well as from the depressions in the first pair of antennæ, such as exist in those specimens in which the ophthalmopoda are well-developed.

The metope is a smooth perpendicular plate, bearing two small tubercles tipped with a small brush of hair that projects from the surface immediately on each side of the median line. The general appearance of the metope is sub-membranous and translucent, and it is highly probable that the optic nerve terminates so closely behind it as to receive impressions of light, although probably of a very subdued character, as in the subterranean Amphipoda. The assumption that there is consciousness of light appears to receive support from the extent of surface which the metope occupies (Pl. VI., c″), and the depressed position of the first pair of antennæ.

The first pair of antennæ lies inside the second pair and in the same line with it; the upper surface is excavated as if it had been so formed to admit of the presence of a large pedunculated eye, which has disappeared. At the lower part of the metope and just above the attachment of the first pair of antennæ the small, fixed, rounded and polished tubercles, very close to but not associated with the articulation of the antennæ, may be the remains of the peduncle of the obsolete eye; but this is only suggested, because I do not remember to have observed similar tubercles in any form of Crustacea where the ophthalmopoda are developed.

The idea of this species being more or less fossorial in character is suggested by several anatomical conditions: the blindness of the animal; the operculum at the anterior passage of the branchial chamber; the strong pleocleis on the first somite of the pleon,