

## PROTOCARIS MARSHI Walcott.

Plate xv, fig. 1.

*Protocaris Marshi* Walcott, 1884. Bull. U. S. Geol. Survey, No. 10, p. 50. (Dated 1884, but not generally distributed until 1885.)

The specimen on which the genus and species are founded is compressed between the laminae of the slate so that the entire outline of the carapace is shown and the body is widened out. As flattened the carapace is rounded quadrangular in outline, with a more or less distinctly defined marginal rim all around. The general surface appears to have been smooth. No evidence of eyes.

The body projecting beyond the carapace is about two-thirds as long as the carapace, narrowed posteriorly and made up of numerous narrow segments, each about one-third of a millimeter in breadth; the last segment or telson, which is 2.5<sup>mm</sup> long, supports two caudal spines 7 or 8<sup>mm</sup> in length; 30 segments appear between the posterior edge of the carapace and the telson; the segments appear to have been smooth and without a spinose or crenulated posterior margin; the telson and caudal spines also appear to have been smooth and without ornamentation.

*Dimensions.*—Total length, 42<sup>mm</sup>; length of carapace, 21<sup>mm</sup>; width, 26<sup>mm</sup>; length of body, 15<sup>mm</sup>, exclusive of caudal spines; width of body where it passes beneath the carapace, 10<sup>mm</sup>; at telson, 4<sup>mm</sup>.

The specific name is given in honor of Prof. O. C. Marsh.

*Formation and locality.*—Middle Cambrian, Georgia Formation. Parker's farm, town of Georgia, Vermont.

This is probably the oldest Phyllopod crustacean known at the present time. We know nothing of the animal that inhabited the shell (the shell itself is flattened by compression), but by flattening out the carapace and segmented body of *Apus glacialis*, or any allied form, we see at once the striking resemblance between the recent *Apus* and ancient *Protocaris*, the most marked difference being the absence of eyes in the Cambrian *Protocaris*.

Mr. J. L. Kingsley requested me to study *Protocaris* with a view of ascertaining its relations to *Apus*, but the material is too imperfect to arrive at a satisfactory conclusion. The animal is *Apus*-like, and it also appears to be connected with the *Nebalidæ* through *Hymenocaris*, *Peltocaris*, *Ceratiocaris*, &c. In this connection I wish to quote an observation by Prof. E. Ray Lancaster. He says: "*Apus cancriformis* is, in many respects, one of the most important of the Crustacea. \* \* \* It possesses peculiarities of organization which mark it out (together with its immediate congeners, the Phyllopoda) as an Archaic form, probably standing nearer to the extinct ancestors of the Crustacea than any other living members of the group." ("Observations and reflections on Appendages and on the Nervous System of *Apus cancriformis*," Quart. Jour. Micro. Sci., vol. xxi, n. ser., p. 343, 1881.)