

ARTICLE IV.—*Additional notes on Asaphus canalis, Conrad.* By
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PLATES II AND 12.

In the Museum Bulletin No. 8, p. 336, Vol. 1, I have described features of this species, as presented on fragments and isolated parts, found among the collections of material from Fort Cassin, on Lake Champlain. During the autumn of 1887, Prof. Seely, of Middlebury College, Middlebury, Vt., obtained from the same geological formation a much more entire individual, which he kindly placed at my disposal for further illustration. The specimen retains a portion of the glabella and most of the movable cheek of the right side, including the eye; also the greater portion of all the thoracic segments and the pygidial plate, the latter being bent downward nearly at right angles to the thorax and head. The form of the body is broadly oval, and as nearly as can be determined from the specimen somewhere about three-fifths as wide across the thorax as the entire length of the whole body. The thorax is very distinctly trilobed, the lobes being rounded and the dorsal furrows broadly concave without distinct limitations, and the axial lobe forms about one-third of the entire width. The head shield and pygidial plate are nearly semicircular in outline, and of nearly equal size, and in their normal form are nearly as wide again as long; the head shield having nearer these proportions than the pygidium. As compared with *Asaphus gigas* of the Trenton limestones, this species is much broader in proportion; both the head and tail plates being shortened in producing the semicircular form, and the axial lobe is very much narrower in proportion to the whole width of the thorax. The thoracic rings are also shorter from the anterior to the posterior margins than in *A. gigas*, making the whole thoracic section shorter in proportion to the width. This leaves the lateral lobes wider in *A. canalis* than in *A. gigas* in examples of similar size. Besides these differences in general form there are many points of difference in the minor details, as the elongated cheek spines, which are shown on one side of the specimen to have extended almost to the posterior line of the thorax; the broad channeling

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of the margin of the head and tail ; the more distinct axial lobe of the tail plate, which is always quite prominent at its posterior extremity ; the less antero-posterior extent of the thoracic rings, as well as the narrower axial lobe, and the difference of the form of the anterior border of the glabella and change in the direction of the suture line at this point. All these differences are readily distinguishable on the exterior of the specimen, irrespective of the great difference which would be apparent on the lower surface of the head and tail, and that pointed out between the hypostomæ of the two species in Bulletin No. 8, p. 338. Unfortunately the specimen here used does not show the form of the extremities of any of the plura, so as to present grounds for a comparison of these parts. As far, however, as they can be seen they would appear to be more slender or narrower at the outer ends accordingly than those of *A. gigas*. The species would appear on the whole to be a very strongly marked and distinct one, differing essentially from any other known form of *Asaphus*.

For the specimen illustrated, which has also furnished the basis for these comparisons, the Museum is indebted to the disinterested liberality of the collector, Prof. Henry M. Seely, of Middlebury College, Middlebury, Vt.