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A NEW EURYPTERID FROM THE UPPER  
DEVONIAN OF PENNSYLVANIA

BY

G. M. EHLERS



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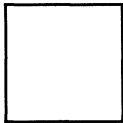
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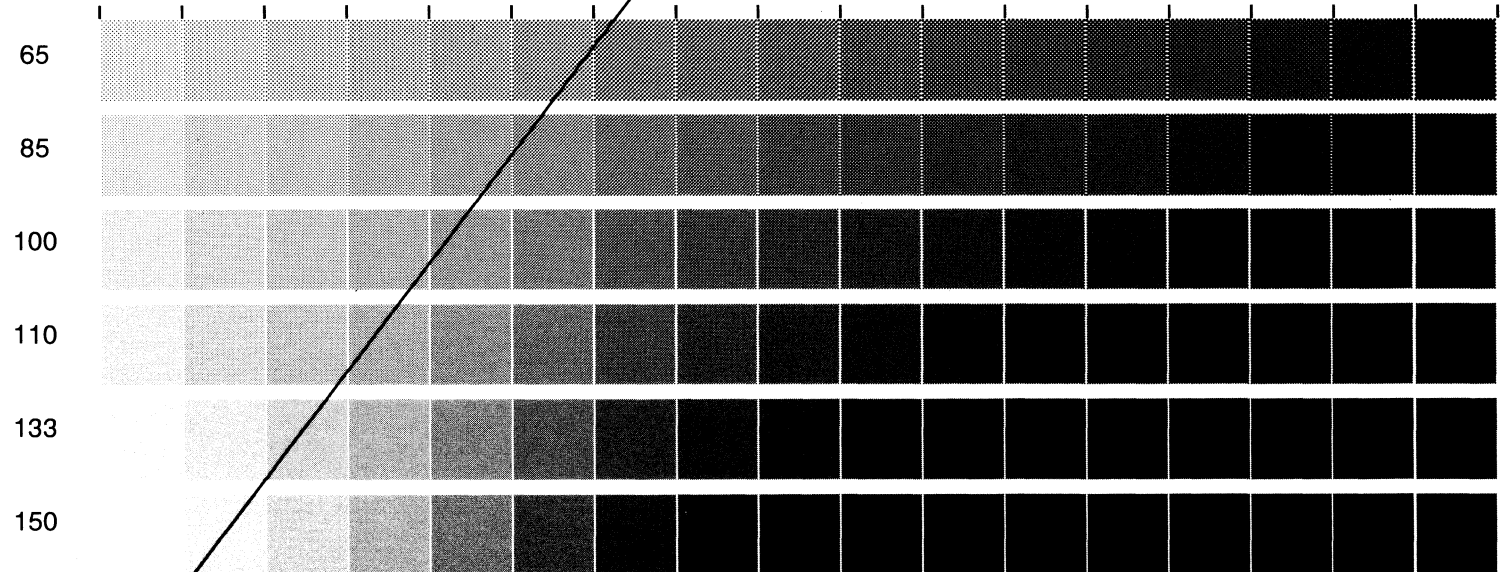
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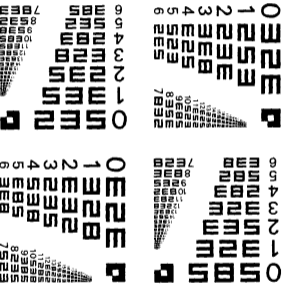


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## CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

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(Continuation of Contributions from the Museum of Geology)

### UNIVERSITY OF MICHIGAN

Editor: EUGENE S. McCARTNEY

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(Continued on inside of back cover)

## A NEW EURYPTERID FROM THE UPPER DEVONIAN OF PENNSYLVANIA

By G. M. EHLERS

**E**URYPTERID remains are almost unknown from the Upper Devonian of Pennsylvania. According to Clarke and Ruedemann,<sup>1</sup> two specimens of *Stylonurus*, belonging to different species, *S. excelsior* Hall and *S. beecheri* (Hall), were obtained from the Upper Devonian Chemung strata in the vicinity of Warren in Warren County. Recently Bradford Willard<sup>2</sup> described an ambulatory appendage of a new eurypterid, *Stylonurus shaffneri* Willard, which was collected from an outcrop of Chemung shale along the west side of Pennsylvania state highway No. 144, three and one-fourth miles south of Galeton in Potter County, about eighty-three miles west of Warren. The appendage, according to Willard,<sup>3</sup> was found in a greenish gray, soft, clayey shale immediately beneath red beds of the continental Cattaraugus ("Catskill") member of the uppermost Devonian.

Dr. C. A. Arnold of the Museum of Paleontology of the University of Michigan recently placed in the writer's hands a specimen of *Eurypterus* from the Upper Devonian of Pennsylvania which is described below.

### ***Eurypterus arnoldi*, sp. nov.**

(Plate I, Figs. 1-4)

*Description.* — The exoskeleton of the species is known only from the structure of a carapace and four tergites of a flattened and slightly distorted individual.

<sup>1</sup> Clarke, J. M., and Ruedemann, Rudolf, "The Eurypterida of New York," *Memoir 14, New York State Museum*, Vol. 1, pp. 89, 292, 310-311, 1912.

<sup>2</sup> Willard, Bradford, "A New Chemung Eurypterid from Pennsylvania," *The American Midland Naturalist*, Vol. 14, No. 1, pp. 52-57, 1933.

<sup>3</sup> *Ibid.*, p. 55.

The carapace is subtrapezoidal, the length (11.9 mm.) being a little more than two thirds of the width (17.2 mm.); broadest at the base. Its lateral margins are nearly straight, slightly converging forward; anterior margins gently convex forward; anterolateral angles well rounded; posterior margin slightly concave, bent forward near the postlateral angles. The carapace is bordered by a steeply inclined rim, broadest in front and narrowing toward the postlateral angles. The lateral eyes are very large, their length (5 mm.) being slightly less than one half that of the carapace; strongly protruded, elevated about 0.5 mm. above the general surface of carapace in present flattened condition and furnished with a C-shaped visual area; 3.5 mm. apart anteriorly and approximately 5.5 mm. posteriorly. Eyes, if they were not pushed out of their normal positions by the pressure causing the distortion of the carapace, would be bisected by a transverse line passing through the center of the antero-posterior axis of the carapace. The two ocelli are poorly indicated and are situated on separate tubercles a very short distance in front of the center of the antero-posterior axis of the carapace. A glabella-like median ridge similar to that found in *Eurypterus remipes* Dekay may be present, but on account of the flattening of the carapace due to compression its shape is not definitely indicated.

The first, second, and third tergites are almost complete, but nearly a third of the fourth is broken away on the right side. The first tergite is narrower than the others. Its width is about eight times the length, which is 2.1 mm. The fourth tergite, which in the complete state probably was the widest of the four, has a length of 2.9 mm. The middle portion of the tergites is broadly arched forward; the lateral portions are normal to the axis of the body or again curve forward. The antelateral angles are produced into broadly rounded articulating lobes. The tergites overlap along their anterior margins about one sixth of their length.

The ornamentation of the carapace and tergites is very well preserved. The carapace exhibits a single row of semicircular to V-shaped scales along its lateral and anterior margins. The steeply inclined rim above these margins shows very low, minute tubercles

or scales arranged in rows parallel to the margins. A single row of prominent rounded tubercles bounds the upper edge of the inclined rim; a similar row of tubercles is present above the upper margin of the visual area of each lateral eye. Just in front of the posterior edge of the carapace is a single row of prominent V-shaped scales. A transverse row of four large tubercles is present a short distance in front of these scales in the medial region of the carapace. To the right and left of this row of tubercles are four, possibly five, fairly large tubercles which are arranged in a transverse row close to the prominent V-shaped scales. The remaining surface of the carapace is densely crowded with tubercles, many of which are distinctly V-shaped. The anterior edge of the first tergite is bounded by a lower row of semicircular to V-shaped, anteriorly directed scales and an upper row of similar though larger scales, the edge consequently appearing as a groove between these two rows of scales. A transverse row of six prominent spinelike scales is located in the medial region of each tergite a short distance in front of its posterior margin. Each scale is the posterior termination of a longitudinal ridge. A row of transverse V-shaped scales seems to have been present along the posterior margin of each tergite. The remaining surface of each tergite except for the anterior overlapped margin is covered with minute scales of similar form.

*Remarks.* — *Eurypterus arnoldi* strongly resembles the common Upper Silurian Bertie water-lime species *Eurypterus remipes* DeKay, especially in the form of the head, the ornamentation, and the longitudinal ridges on the tergites. It is, however, distinguished from this species as well as others by the large, strongly protruding eyes.

According to Dr. Rudolf Ruedemann, to whom the writer is indebted for comments regarding the structure of the type specimen, the large size of the eyes possibly though not probably indicates that the specimen represents a young stage of a much larger form.

*Type.* — The holotype, which is the only example of the species known, is named in honor of its collector Dr. C. A. Arnold, and is preserved in the Museum of Paleontology of the University of Michigan under number 16191.

*Occurrence.* — The holotype of *Eurypterus arnoldi* was collected by Dr. Arnold from a road cut along the recently constructed highway (No. 59) between Smethport and Port Allegany, McKean County, Pennsylvania, at a place locally known as Bush Hill, which is about six miles west of the last named town.

The rock from which the specimen was obtained is a greenish gray, soft, clayey shale containing remains of *Archaeopteris*, seedlike structures<sup>4</sup> associated with *Archaeopteris*, *Lingula?* sp. aff. *L. melie* Hall and *L. ligea* Hall and scales of two species of *Holoptychius*, which Professor E. C. Case of the University of Michigan has identified as *Holoptychius* sp. cf. *H. tuberculatus* Newberry and *H. giganteus?* Agassiz. Several specimens of the Lingula-like brachiopod were sent to Dr. Kenneth E. Caster of the Department of Geology of Cornell University for determination of the species and possible recognition of the age of the eurypterid-bearing shale. According to Dr. Caster, who kindly made the identification noted above, the brachiopods belong to an undescribed species and apparently are identical with specimens which he found at the eastern suburbs of Smethport in association with *Oleanella* in the upper Chadakoin approximately one hundred feet below the Cattaraugus red beds. The Lingulae, the specimen of *Eurypterus arnoldi* and other associated fossils collected by Dr. Arnold were obtained about forty-five feet below red beds locally designated as Catskill. The evidence gained from the identification of the Lingulae indicates that the shale containing the specimen of *Eurypterus arnoldi* belongs to the upper Chadakoin, the overlying red beds possibly being Cattaraugus or a red facies of the upper Chadakoin.

<sup>4</sup> Described by C. A. Arnold in article 16 of this volume of *Contributions from the Museum of Paleontology*.





PLATE I



FIG. 1



FIG. 2

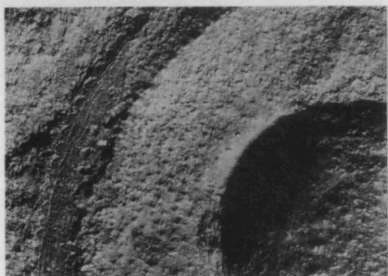


FIG. 3



FIG. 4

## EXPLANATION OF PLATE I

*Eurypterus arnoldi*, sp. nov.

- FIG. 1. View showing size and form of holotype, number 16191 U.M.  $\times 1$
- FIG. 2. View of same specimen, which has been whitened with ammonium chloride and slightly retouched to exhibit more clearly shape of carapace and tergites.  $\times 2$
- FIG. 3. View of natural mold of antero-lateral part of right side of carapace of holotype, showing prominent scales along edge of carapace. Dark area in lower right-hand corner of view represents impression of part of right lateral eye.  $\times 10$
- FIG. 4. View of carapace and first tergite of holotype, showing details of surface ornamentation.  $\times 5$



(Continued from inside of front cover)

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