

NOTICES OF MEMOIRS.

NOTICE OF A NEW LIMULOID CRUSTACEAN FROM THE DEVONIAN.¹

By HENRY SHALER WILLIAMS, of the Cornell University.

AMONG the fossils collected last summer for a comparative study of the Devonian faunas, an interesting form was discovered in Erie County, Pennsylvania, worthy of special notice.

The specimen was found in a bluish sandstone (which in places is a fine pebbly conglomerate) at Le Bœuf called the "3d oil-sand," by Mr. I. C. White, in the Report Q 4 of the Second Geological Survey of Pennsylvania (p. 239), and regarded by him as the equivalent of the third oil-sand of the Venango oil-district of that State. In the same stratum and above it are typical Chemung fossils.

It occurs just at the junction between the sandstone and a stratum of soft, fine argillaceous shale, and, in the process of weathering, the fine shale has been washed away, leaving a sharply-defined cast of the fossil in hard sandstone, though no portion of the original crust is preserved.

The associated species are *Spirifera Verneuilii*, Murch. (= *Sp. disjuncta*, Sow.), *Rhynchonella contracta*, Hall; and in the shales just above the sandstone occur *Chonetes scitula*, Hall, "*Chonetes muricata*", Hall, an *Ambocelia umbonata*, Hall, a small Productus of the type of Hall's *Productella Boydii*, the coarse ribbed *Orthis Leonensis*, Hall, and a *Rhynchonella* agreeing with some of the wider forms of *R. sappho*, Hall.

The fauna is the characteristic Upper Chemung fauna of western New York and adjacent area. In this area some of the species occur among the earliest Chemung species; no characteristic Carboniferous types have been detected. The fauna may be considered, therefore, as a pure Devonian fauna.

The general form and structure of the specimen place it among the MEROSTOMATA with anchylosed thoracico-abdominal segments, but as only the under side is exhibited, its identification with *Prestwichia* must be regarded as provisional, since we are ignorant of the structure of the under surface of authentic members of that genus.

I propose as a name for it, *Prestwichia Eriensis*, sp. nov.

The following characters exhibited by the specimen are regarded as generic and as locating it in the genus *Prestwichia* of Woodward. (1), the elliptical head-shield; (2), the genal spines which proceed backward more directly than in any described species of the genus; (3), the thoracico-abdominal segments anchylosed to form a buckler, to which is attached (4) a long telson. The general outline of the whole animal resembles that of the modern *Limulus*.

The evidence of a solid thoracico-abdominal buckler is found in the continuous surface across the body, from which proceed four (visible) short marginal spines each side the telson, and upon which are seen at least eight narrow ridges running longitudinally to near the margin.

The remaining characters may be, in part, of generic value, but

¹ Silliman's American Journ. of Sci. vol. xxx. July, 1885, p. 45.

they constitute the distinctive characters of the species, as far as these can be made out from the specimen.

The under side of the body presents three well-defined tracts, viz. the cephalic shield, which is evenly rounded in front, and is laterally prolonged backward into two genal spines, which are nearly parallel with the axis of the body, and reach nearly to a point opposite the posterior margin of the buckler. The cephalic shield along the median line is about a third the length of the body; the space between the posterior margin of the cephalic shield and the anterior margin of the buckler, containing the region of the mouth and the gnathopods, and the thoracico-abdominal buckler, marked over the surface by longitudinal ridges, and by marginal spines, and terminating in a long stout telson. Traces of the gnathopods are seen, as also traces of the foliaceous appendages of the posterior feet, but in too imperfect condition for exact delineation. Just anterior to the position of the mouth is seen a shield-like elevation upon the edge of the cephalic shield, which has the appearance of an hypostoma. The condition of the specimen is not such as to give absolute certainty to this interpretation, though the symmetry of its form is strongly in favour of it. It is possible that it is merely outlines upon the surface, produced by crushing during fossilization. There are faint indications of joints on each of the anterior set of gnathopods.

Along the centre of the thoracic region, there is a flattened depression, traversing longitudinally from the anterior edge of the plate, backward to the middle of the telson.

The terminal portion of the telson is evenly rounded. Each side of the median line of the buckler there are visible four clearly-defined marginal spines; there were probably more of them—six, I have supposed, but concealed in the specimen by the filling between the buckler and genal spines.

There are also four rounded, longitudinal ridges on the buckler each side of the flattened depression; these begin abruptly near the anterior margin of the buckler, and run almost directly backwards, tapering to a slender point near the margin of the buckler.

At the anterior margin of the buckler is a narrow plate, divided into a median and two lateral parts, which appears to be separated from the buckler itself by a distinct furrow. Laterally this plate appears to curve inwards and lies below (within) the surface of the buckler, and the median portion extends forward to a blunt point. I have interpreted this as probably representing the consolidated lamellar appendages of the "first and second" thoracic segments of *Eurypterus* as defined by Hall in *Palæontology of New York* (vol. iii. p. 398).¹

The telson is nearly two-thirds the length of the body, is flattened at the base, but nearly cylindrical and tapering to a blunt point at the extremity.

¹ If these indications are the remains of lamellar appendages, they are like those of *Limulus*, and may be compared with the generative plate and branchigerous thoracic appendages of the XIPHOSSURA.—H. W.

Above are given all the characters of which the specimen presents any reasonable suggestion. I have ventured to put an interpretation upon some of the characters for which the evidence is slight, in the hope that those possessing specimens of any kindred forms may throw light upon this one by confirming the interpretation here given or suggesting a better one.

Dimensions :—

Total length	10 centimètres.
Greatest width	5·7
Length of telson (about).....	4·0
Length of buckler (about).....	2·0
Greatest thickness of telson.....	0·7

Horizon.—Chemung Group, Upper Devonian; the “third oil sand” of I. C. White, 2nd Pa. Survey.

Locality.—Le Bœuf, Erie County, Pennsylvania.

The original specimen is among the collections of the U.S. Geological Survey, and will be deposited ultimately in the National Museum.

Comments.—This specimen throws back the known range of *Prestwichia*, or at least the type to which this genus belongs, to an earlier stage than heretofore reported. The earliest previously known *Prestwichia* occurs in the Carboniferous.

If my interpretation of its characters be correct, *Prestwichia* bears closer relations to *Limulus* than is suggested by other known specimens, and also it possesses features linking it with Trilobites and Eurypterids.

[The author illustrates his paper by a photo-engraving from a drawing, of *P. Eriensis*, of the natural size, and two diagrammatic figures of the supposed upper and under surface. The specimen, although of great interest, is too obscure to permit us to draw any positive conclusions from it, save the fact of the important discovery of a Limuloid Crustacean in rocks of Devonian age in Pennsylvania. A still earlier Limuloid form has, however, been met with in the Upper Silurian of Lesmahagow, Lanarkshire, and described by the writer under the name of *Neolimulus falcatus*, H. W., see *GEOL. MAG.* 1868, Vol. V. pp. 1–3, Plate I. Fig. 1.—H. W.]

REVIEWS.

THE PALÆONTOGRAPHICAL SOCIETY. A MONOGRAPH OF BRITISH FOSSIL BRACHIOPODA.¹ By THOS. DAVIDSON, LL.D., F.R.S.

WITH the present appendix (vol. v. part iii.) a monumental work has been brought to a close.² The labours of Thomas Davidson, LL.D., F.R.S., need no introduction to Paleontologists of any part of the world. The quiet distribution of the concluding fasciculi of the “British fossil Brachiopoda” should not be allowed to pass without notice.

¹ *Science*, vol. v. p. 409, 1885.

² There is, we understand, a Bibliography of the Brachiopoda ready for issue in the volume for 1885, by Dr. Davidson, which equals the work in its proportions and exhaustiveness.