III.—ON SOME NEW TRILOBITES FROM THE UPPER CAMBRIAN ROCKS OF NORTH WALES.

By THOMAS BELT, F.G.S.

(PLATE XII., Figs. 3-5.)

IN the autumn of 1864, Mr. Ezekiel Williamson discovered fragments of trilobites in some slaty beds belonging to the "Lower Lingula Flags" of the Geological Survey, on the right bank of the river Mawddach, a little above its junction with the Eden, and four and a half miles directly north from Dolgelly. Portions of an *Olenus* and of an *Agnostus* were found, but in too fragmentary a condition to be determined. Last summer Mr. J. Chamberlain Barlow, of Birmingham, found the same fossils in great abundance and good preservation on both sides of the Mawddach, opposite to Dolmelynlyn. During the present year I have, from these beds, added another species of *Agnostus* to the scanty fauna; and, after considerable trouble, in consequence of the rocks being greatly faulted, have been able to determine the true position of this new fossiliferous zone.

The fossils that have been found are *Olenus gibbosus*, Wahl., now for the first time recorded as British; *Agnostus nodosus*, sp. nov., and a strongly marked variety of *Agnostus pisiformis*, Lin. The beds containing these fossils lie about midway between the "Menevian group" of Mr. Salter, which forms the base of the Upper Cambrian formation, and a thick series of blue slaty beds characterized by a great abundance of *Olenus cataractes*, Sal., and *Agnostus pisiformis*, Lin., and separated from each, above and below, by yellow and yellowish grey flaky and flaggy beds that have received from Mr. Salter the local name of "Cwmhesian flags."

The following diagram will exhibit more clearly the position of these beds. The whole of the strata there shown form less than one-third of the great mass of rocks that have been called "Lingula Flags" by the Geological Survey, and the topmost of them lies several hundred feet below the beds containing the well-known *Lingula Davisii*. M'Coy.

Lower Lingula Flags of Geological Survey.	Dark blue and blue grey slaty jointed beds about 1200 feet thick. <i>Olenus cataractes</i> , Salter, common. <i>Agnostus pisiformis</i> , Lin., common. <i>Lingula</i> sp., rare.
	Grey and yellow grey flaky and flaggy beds—about 600 feet. <i>Agnostus pisiformis</i> , Lin., in upper beds.
	Blue and blue grey jointed beds, about 300 feet. <i>O. gibbosus</i> , Wahl. <i>A. nodosus</i> , sp. nov. <i>A. pisiformis</i> , var. <i>obesus</i> .
	Yellow grey flaky and flaggy beds, with bands of hard grey grit—about 400 feet.
	Dark blue beds—about 500 feet. <i>Paradoxides</i> , <i>Conocoryphe</i> , <i>Agnostus</i> , <i>Microdiscus</i> , etc., etc. Menevian group, Salter.

G. R. De Wilde, fecit.

Hailes & Co., Imp.

PHOLAS-BORINGS,
NEAR TORQUAY, DEVONSHIRE.

DESCRIPTION OF THE FOSSILS.—I. *Agnostus nodosus*, sp. nov. (Plate XII., Fig. 3, *a* long form, *b* broad ditto, natural size.)

Head, rounded in front, straight at sides, sharply rounded at posterior angles. Glabella oblong, obtuse, slightly constricted in the middle, entire, supported by a small angular lobe on each side at base; cheeks, covered with deep reticulating furrows, radiate next the outer edge; margin narrow.

Thorax consisting of two nodose joints. Axis strongly trilobate; central lobe of anterior joint with a strong obtuse tubercle.

Tail shaped like head; axis trilobate, nodose; central lobe two-thirds the length of tail, narrow in front, widening in the middle, then constricted strongly, and widening again towards the end; furnished with an oblong blunt tubercle one-third its length of its base. Lateral lobes each composed of two rounded triangular joints; limb covered with reticulating radiations, divided by a groove reaching from end of axis to margin. Margin narrow, probably furnished with short spines, but not sufficiently preserved to show them excepting obscurely in one specimen.

Locality: River Mawddach, above junction with Eden and opposite Dolmelynllyn, in "Lower Lingula Flags."

II. *Agnostus pisiformis*, Lin., var. *obesus*. (Plate XII., Fig. 4, *c* broad form, *d* long ditto, *a b* nat. size, *c d* magd. two diam.)

The typical form of this species is so well known, that I only append the characters in which the variety differs. In *A. pisiformis*, the axis of the tail is separated at its posterior end by one-fourth its length from the margin. In the variety, the axis reaches nearly to the margin, and in most of the specimens seems to touch it. In the typical form it is only a little more than one-third the width of the tail, including the margin; in the variety it is more than one-half the width, and is turgid and prominent. Lastly, the grooves in the middle of the axis are but faintly impressed in the typical form; in the variety they are deeply marked. The margin of the tail is badly preserved, but was probably furnished with short spines.

Locality with the above, in "Lower Lingula Flags."

III. *Olenus gibbosus*, Walh. (Plate XII., Fig. 5, *a* broad form, *b* long ditto.)

I have obtained very fine specimens of this well-known Scandinavian species from the Dolgelly district, and I give figures of the two forms, as Angelin,¹ Barrande,² and Salter³ have all figured the species with the ocular ridge commencing from between the two glabella furrows instead of above them, and none of them have shown the strongly marked articular spaces between the joints of the axis, although Swedish specimens in the Museum of the Geological Society show both these points clearly. Burmeister has figured the ocular ridges correctly, but shows the thorax with fourteen joints instead of fifteen, and the tail with six joints instead of five.

It occurs in older rocks than any other of the English species of *Olenus*, and, taking the body and tail together, has a greater number of axial rings. It shows some resemblance to *Conocoryphe* in its strongly marked ocular ridges and articular spaces, as well as in its large pygidium and in the facial sutures turning slightly outwards above the eye; but its true affinities, as shewn by the pointed, unfacetted pleura, are decidedly with *Olenus*.

The occurrence of this species in England will most likely be of great assistance in correlating our rocks with those of Sweden.

Locality with the above, in "Lower Lingula Flags."

IV.—PHOLAS-BORINGS, DENUDATION, AND DEPOSITION IN S.E. DEVON.

By D. MACKINTOSH, F.G.S.

(PLATE XIII.)

THE structure and marine denudation of the district between Torbay and Babbicombe Bay has been so ably unravelled by

¹ Angelin, Pal. Suec.

² Barrande, Systeme Silurian, Vol I., Pl. 3, Fig. 7.

³ Salter and Woodward's Chart of Fossil Crustacea, Trilobita, Fig. 13.

⁴ Burmeister, Organization of Trilobites, Tab. 3, Fig. 9.