22. *On a new Species of CYPHASPIS from the CARBONIFEROUS ROCKS of YORKSHIRE.* By Miss COIGNOU, Scholar of Newnham College, Cambridge. (Read March 26, 1890.)

(Communicated by Prof. T. M'KENNY HUGHES, F.R.S., F.G.S.)

DURING the visit of Prof. Hughes's geological party to the Craven district in June last, I was fortunate enough to find in the Pendle-side limestone* at the base of Butterhaw, near Cracoe, a fairly perfect head of a Trilobite which appears to belong to the genus *Cyphaspis*. Hitherto this genus has not been recorded above the Devonian, and its discovery in rocks of Carboniferous age seems worthy of notice.

Description.—Head small, semicircular, very convex, 3·5 millim. in length and 5 millim. in width. Frontal border broad, flattened, minutely granulate. Its margin produced into a number of equidistant, horizontal, cylindrical spines, ·5 millim. long. In our specimen they are visible on the right antero-lateral portion of the border, and one near the left genal angle. They are ·4 millim. apart from each other, and as the frontal border is 9·6 millim. in length, there must have been 24 spines present. Genal angles invisible, probably prolonged into short spines. Glabella very prominent, ovoid, narrow behind, and widening gradually for four fifths of its length. Slightly constricted at the two glabella-furrows on each side, much raised above the cheeks; covered with small granules and bearing four tubercles, a pair near the upper part of the anterior sloping surface, a large unpaired one near the centre, and a smaller median one behind. Of the glabella-furrows the anterior one is short and, seen from the side, is directed backwards, while looked at from above it appears as a pit in the axal furrow, marking off an imperfectly defined narrow oblong lobe. Posterior furrow deep, extending backwards to the neck-furrow and bounding the postero-lateral lobes, which are elevated and pyriform. Neck-furrow broad and shallow. Neck-lobe short, convex, badly preserved. Cheeks subtriangular, elevated, sloping abruptly along the inner and posterior sides, finely granulated, continuous in front of the glabella. Facial suture invisible. Eyes sessile, reniform, at the summit of the cheek, opposite the centre of the glabella.

Thorax and tail unknown.

Affinities.—The specimen is provisionally referred to *Cyphaspis*, but it differs from the typical species of that genus in possessing two pairs of glabella-lobes. Barrande mentions the occurrence of two transverse furrows on each side of the glabella in *C. novella* and *C. depressa*†. From both of these our species is clearly distinguished

* "Explications des Excursions," Congrès géologique International (1888), p. 80.

† Syst. Sil. de la Bohême, vol. i. p. 479.

by the frontal border being produced into spines. It closely resembles *C. Davidsoni*, Barrande, and agrees with it in having:—

- (1) The frontal border produced into spines.
- (2) Two or four tubercles on the glabella.
- (3) The granulated ornamentation of the head.

In our specimen, however, the frontal spines are longer and further apart, and the granules are finer than in *C. Davidsoni*. Further, the anterior glabella-furrows appear to be absent in the Bohemian species.

As it appears to be distinct from any species of *Cyphaspis* hitherto described, we propose to name it *Cyphaspis acanthina* on account of its thorny appearance.

Barrande records nine species of *Cyphaspis* from Bohemia, three only of which have the body-segments preserved, the other six species being represented by heads only.

All those with body-segments preserved have smooth borders to their cephalic shields, and all have the 6th axial ring prolonged into a strong median spine (see woodcut, fig. 1, *s*). It is possible that the species with spinose borders to the head-shield may belong to another genus or subgenus. The pair of lobes (*l*) at the base of the glabella are, perhaps, the best diagnostic character to rely upon in dealing with detached head-shields.

Outlines showing the Structure of some Cephalaspides.

Woodcuts are here given of a typical example of the genus *Cyphaspis*, and of those species which are most nearly allied to the specimen under consideration.

EXPLANATION OF FIGURES.

Fig. 1. *Cyphaspis megalops*, M'Coy. Wenlock Limestone; Dudley, Staffordshire.

2. — *Davidsoni*, Barr. Etage F. Mnienian, Bohemia.
3. — *Cerberus*, Barr. Etage F. Mnienian, Bohemia.
4. — *coronata*, Barr. Etage G. Moulin de Vavrovitz, Bohemia.
5. — *acanthina*, sp. nov. Carboniferous series; Yorkshire.