THE

GEOLOGICAL MAGAZINE.

No. LXXV.—SEPTEMBER, 1870.

ORIGINAL ARTICLES.

I.—On a New *Cephalaspis* discovered in America, etc.

By E. Ray Lankester, B.A., Coutts Geological Scholar, Oxford.

Principal Dawson, of Montreal, Canada, has placed in my hands for description a remarkably interesting specimen, indicating a species of the genus *Cephalaspis* in transatlantic Silurio-Devonian beds. He writes, "The specimen was found by one of my assistants, Mr. G. F. Kennedy, B.A., when collecting with me, in a bed charged with remains of *Psilophyton*, on the north side of Gaspé Bay. The geological horizon is below the middle of the Gaspé Sandstones, but several hundreds of feet above their actual base, so that the specimen may be regarded as either Lower Devonian or Lower Middle Devonian. It occurred in beds containing *Psilophyton princeps* and *P. robustus*, and also drift-trunks of *Prototaxites Logani*, the latter in the sandstones associated with the coarse shaly bed containing the *Cephalaspis*. In these sandstones there are also spines of *Machairacanthus sulcatus* of Newberry—a large fish characteristic of the Devonian of Ohio. No marine remains were found in the bed holding the *Cephalaspis*,

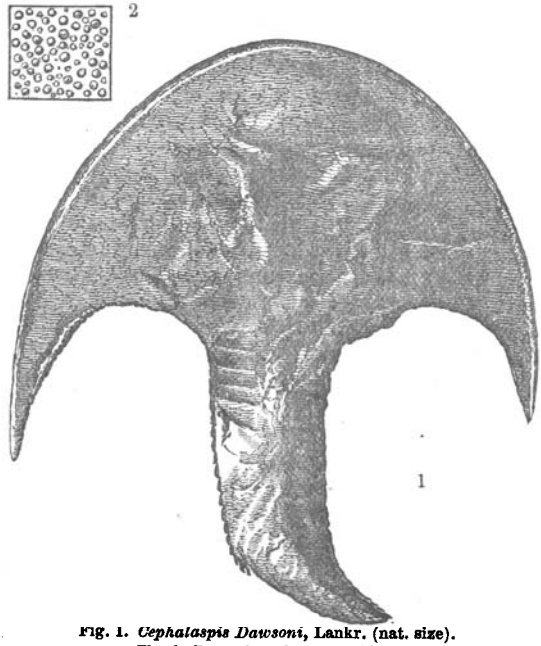
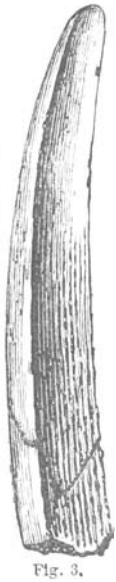


Fig. 1. *Cephalaspis Dawsoni*, Lankr. (nat. size).
Fig. 2. Part of surface magnified.

which is blackened with vegetable matter and holds many fragments of land plants; but in shales at no great vertical distance there are shells of *Lingula* and *Modiomorpha*, resembling species found in the Hamilton group of New York."

The specimen (Fig. 1) presents in slight relief a small *Cephalaspis*, with head-shield and greater part of the body, and is much flattened. The shield appears to be larger in proportion to the body than in any British species. The orbits are not shown, and the matrix has not preserved the scales of the body with much distinctness, though it is possible to make out the lateral and marginal series. No trace of pectoral, dorsal, nor caudal fins is to be made out. This species clearly belongs to the section *Eu-cephalaspis* as defined in my Monograph of *Cephalaspidæ*.[1] Its best character as a species is to be found in the very fine, almost granular, tubercles (Fig. 2) which are preserved on some parts of the surface, and represent the apparently universally present tubercular ornament of the *Osteostraci*. These fine tubercles are more minute than on any British *Cephalaspid*, and, though seemingly not very well shown in this specimen, furnish a specific mark. Amongst other fragments from this bed, which Dr. Dawson has submitted to me, is a small piece of tubercle ornament, possibly belonging to the same species of *Cephalaspis*. In this, the tubercles are very sharply moulded and nearly hemispherical. Various other fragments which cannot be identified, but are probably bits of fish bones, etc., are amongst the collection.



Machairacanthus sulcatus (nat. size).

Fig. 3.

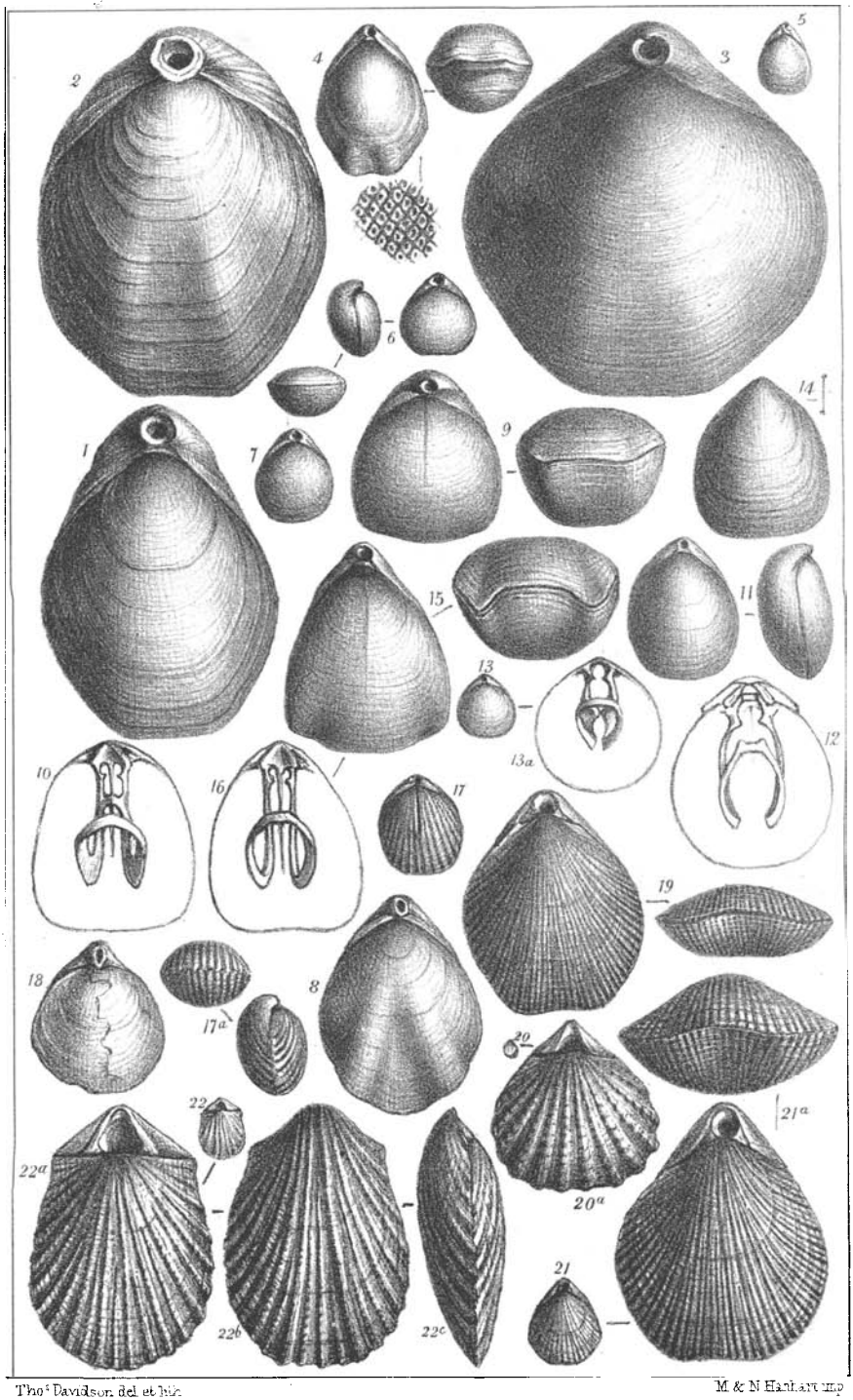
A very fine fish-spine—the *Machairacanthus sulcatus*—is drawn at Fig. 3 from a specimen which was also obtained in the sand-stones associated with the shale which furnished the *Cephalaspis*. This sandstone is not unlike the sandstone of Glamis, and other parts of Perthshire and Forfarshire which furnish *Cephalaspis*; whilst the shale strongly recalls the Forfarshire shale, which has furnished Mr. Powrie with his beautiful *Cephalaspis Pagei*.

The spines which occur in the Cornstones of Herefordshire, which have not yet been worked out, are of various forms and are usually "lumped" as *Onchus*. None, however, appear to resemble *Machairacanthus*, with its remarkable keeling like the petiole of a sweet-pea. I propose to call the new American *Cephalaspis* after the illustrious geologist who has allowed it to be figured here: *Cephalaspis Dawsoni*.

Note on *Scaphaspis Knerii*.

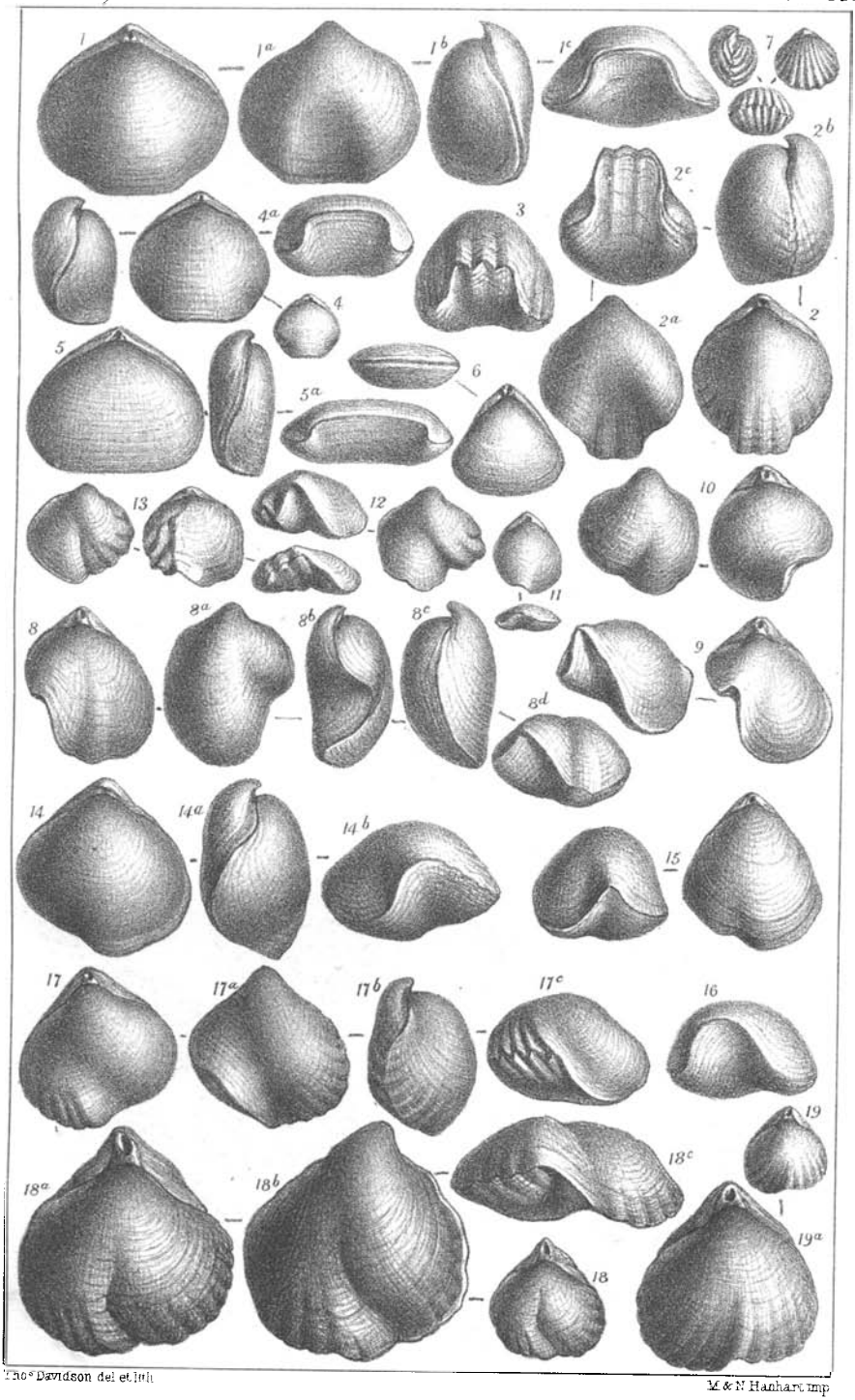
When at Vienna in the spring I was very anxious to see Dr. Kner's original type of the genus *Pteraspis*, and was enabled to do so through the kindness of Professor Reuss, who after some hunting

[1] Monograph of the Fishes of the Old Red Sandstone of Britain by J. Powrie, F.G.S., and E. Ray Lankester. Part I. The *Cephalaspidæ*, by E. Ray Lankester Mon. Pal. Soc. 1868, p. 20, fig. 9.



Tho.s Davidson del. et lith. M & N Hanhart imp.

ITALIAN TERTIARY BRACHIOPODA.



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ITALIAN TERTIARY BRACHIOPODA.

(Dr. Kner having lately died) came upon the specimens. They had been in the Museum twenty years before Kner described them; the exact locality from which they came is Zaleszczyk, on the Dneister, upon the borders of Russia and Galicia; a very inaccessible place and one of which the geology appears to be very little known, excepting that there are both true Upper Silurian and true Lower Devonian beds there, with complete transition. An odd specimen was with the three bits from Zaleszczyk, which had not come with them and seemed to me to be undoubtedly from Herefordshire. The resemblance, however, of the rock in which the Galician specimens were embedded to our cornstones was striking; the figured specimen was in matrix having a little more of a limestone character. Kner's figure, of which a woodcut copy is given in the Monograph of *Cephalaspidæ*, is bad and misleading.[1] The specimen is much more like *Scaphaspis Lloydii* than is the figure, the central ridge not being marked at all as I had thought from the drawing. In fact, the resemblance to *Sc. Lloydii* is exceedingly close, the posterior corners of the shield, however, in the Galician species being somewhat produced, instead of quite rounded off, as in *Sc. Lloydii*.

Two interesting things were noticed in the specimens. Firstly, that a form like *Pteraspis rostratus* is also present in one of the blocks; and, secondly, that in the block with Kner's figured specimen there are *marine* shells. An *Orthoceras* is lying almost against the fish-shield, which is very perfect, and there are two *Lamellibranchs* in close proximity. We must not therefore conclude from the corn-stones and Scotch beds that the *Cephalaspidæ* were exclusively lacustrine or fluviatile. The Galician specimen is tolerably perfect and has not been much knocked about by sea waves, as the Steganodictyan fish-remains of Cornwall and Devon seem to have been before deposition.—E.R.L.

II.—On Italian Tertiary Brachiopoda.

By Thomas Davidson, F.R.S., F.G.S., etc.

(Plates XIX. and XX.)

Continued from p. 370.

23. *Terebratula Voglianei* (Michelotti), Pl. XIX. Fig. 18. Essai sur le Miocène Inf. de l'Italie Sept. p. 51, Pl. 4, Fig. 15, 16, 1861; and Sequenza, Brach. Mioc. delle Provincie Piedmontesi, 1866.

No very perfect example of this species appears to have been collected; the one figured in my plate was kindly given to me by Sig. Meneghini. The shell is ovate and smooth, about ten lines in length by nine in breadth; the valves are moderately convex, and there exists a deepish sinus in the ventral valve to which corresponds an elevation or fold in the opposite one. *Ter. Voglianei* occurs in a yellowish marl in the Lower Miocene at Dego, and along with it is found a small *Terebratulina*, which may probably be a variety of *T. caput-serpentis*.

I would beg leave to suggest that Italian Palæontologists should

[1] See Note, preceding page.