

ward to describe *Turrilepas*, or J. M. Clarke, *Strobilepis*, or C. L. Faber, *Lepidocoleus*, or J. Barrande, *Plumulites*, but when similar objects are found in the Cambrian system no doubt these genera will throw light upon them.

The remains found in the Cambrian rocks of eastern North America are only scattered plates of the exoskeleton, and they are described largely with the object of inviting attention to the plates of this kind, not at all rare in some layers of the fine shales of the Lower Cambrian, which appear to be referable to *Cirripedes*. Of the genera mentioned above *Plumulites* appear to be recognizable in certain plates found in the *Paradoxides* beds of Newfoundland.

PLUMULITES Barrande.

In 1846 Barrande observed in the Ordovician rocks of Bohemia some peculiar plates of sub-triangular form and strongly ribbed transversely, which he called *Plumulites*. Eleven years later he found plates of this kind grouped together in such a way as to show the kind of animal to which they had belonged. In 1864 Prof. Reuss, in connection with a memoir on the *Lepadidæ* of the Oligocene of Germany and chalk of Galicia, took occasion to point out that the *Plumulites* of Barrande were remains of *Cirripedes*.* In 1865 Dr. Woodward referred the valves from the Silurian beds of Dudley, Eng., which de Koninck had called *Chiton Wrightianus* to the *Cirripedes*, under the name of *Turrilepas*. Thus by degrees the proper zoological position of these peculiar valves or plates, usually found loose and scattered in the shales of the Paleozoic rocks, came to be recognized.

Barrande's description of *Plumulites* is somewhat diffuse, and has been summarized by Zittel as follows:† Body elongated, resembling a pine cone, clothed with 4-6 (or more) longitudinal series of scaly plates. The plates are covered by strong transverse striæ, somewhat in relief, and have a triangular form; the median series are ordinarily distinguished from the lateral by their more convex form, and by the presence of a median keel. Barrande also found a peculiar, more oval valve in which the striæ encircled the upper end, which valve he called *valve fenêtrée*.

Plumulites has been found in the Ordovician (where it was first recognized) of Bohemia and Ohio, and similar plates in the Silurian of England and the Devonian of New York; it has not hitherto been reported from the Cambrian.

The presence of so highly differentiated a class of Crustaceans

*Syst. Silur. Bohême vol. I., Supp. p. 569.

† Traité de Paléontologie, Zittel and Barrois, vol. II., p. 531.