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7. *Yellow shale beds*, containing a peculiar and easily recognized assemblage of fossils described in the present paper and in the *American Geologist* for Sept., 1891.

The *Newberria johannis* H., which in a former paper was thought to occupy a distinct series of beds, was found at the summit of the horizon characterized by a *A. profunda*. The relations of the beds containing the undetermined species of *Newberria* near Fairbank, are yet undetermined. The Niagara uplift near Fairbank is a fact new to Iowa geology, and its full effects in deflecting the regular trend of Devonian outcrop and modifying the regular succession of Devonian strata have yet to be ascertained.

NOTES ON A COLLECTION OF FOSSILS FROM THE LOWER MAGNESIAN LIMESTONE FROM NORTHEASTERN, IOWA.

By S. CALVIN.

Until recently we have been accustomed to regard the Lower Magnesian Limestone of the Upper Mississippi Valley as destitute of organic remains. Dr. White in his report on the Geology of Iowa, Vol. I, pp. 173–174, says that "the only fossils that have been found in this formation in Iowa are, so far as known, a few traces of the stems of Crinoids found near McGregor." Whitney in Hall's Geology of Iowa, p. 337, speaking of indications of organic life in the Lower Magnesian Limestone, says that "in Iowa, indeed, we have observed nothing of the kind." Owen seems to have been more fortunate than the other observers mentioned, for in his report on the Geol. Survey of Wis., Iowa and Minn., p. 60, he enumerates a few genera that are represented in this for-

mation, but does not cite localities. The *Euomphalus* and *Ophileta* which he mentions, may be from the horizon of the Lower Magnesian Limestone of Iowa; the trilobites referred to are probably from the Upper Potsdam or St. Croix group as will be noted farther on. In the Geology of Wisconsin, Vol. IV, Whitfield describes a number of species from the Lower Magnesian Limestone, but it is probable that the only species referable to the horizon of the formation in Iowa is his *Euomphalus strongi* which he says occurs in cherty beds in Richland county, Wisconsin. In the Geology of Minnesota, Final Report, Vol. I, pp. 222–223, Prof. Winchell mentions the discovery of organic remains in limestone of the same age as our Lower Magnesian. The fossils occur only in cherty beds and embrace the genera *Orthoceras*, *Ophileta* and *Pleurotomaria*.

In all discussions relating to the fauna of the Lower Magnesian Limestone of Wisconsin, Iowa and Minnesota, it should be borne in mind that for many years geologists have confounded the St. Lawrence Limestone, a member of the Potsdam or St. Croix series, with the Lower Magnesian. In the Geology of Minnesota, Final Report, Vol. II, pp. xiv to xxii, Prof. Winchell gives the results of the latest investigations on this subject and points out the true relations of the long misunderstood St. Lawrence Limestone. It is possible that all the species of *Dicellocephalus*, *Conocephalites*, *Illænurus*, and other forms associated with them, which have been credited to the Lower Magnesian Limestone, have come from the St. Lawrence Limestone and belong to a horizon below that of the Lower Magnesian.

Within the past few years Mr. F. H. Luthe, an enthusiastic and intelligent amateur geologist, of McGregor, Iowa, has investigated the fauna of the Lower Magnesian Limestone of Clayton and Allamakee counties, and has brought to light an assemblage of forms of very great interest. Mr. Luthe has kindly placed his collection in my hands for examination. All the recognizable species belong either to the Gasteropoda or

Cephalopoda. Indeed all the species belong to one or the other of the above groups except some amorphous, laminated, porous structures that recall certain forms of the *Stromatoporoidea.*

The following species, all apparently confined to cherty layers of the formation, may be noted:

METOPTOMA ALTA *Whitfield.* The collection contains specimens apparently identical with the species described and figured by Mr. R. P. Whitfield under the above name in his paper on *Fossils from the Calciferous Sand-rock of Lake Champlain*, Bulletin of Am. Museum of Natural History, Vol. II, No. 2. The Iowa specimens referred to this species are larger than those from Lake Champlain. With the above occur two or three other species of *Metoptoma.*

TRIBLIDIUM, sp. There are a few forms presenting the appearance of *Capulus* or *Platyceras* that probably belong to this genus.

STRAPAROLLUS CLAYTONENSIS n. sp. This is by far the most common species in the collection. It resembles *Euomphalus calciferus*, Whitfield, Lake Champlain Fossils, p. 47, Plate VIII, Figs. 12 and 13. The volutions are four or more in number, circular in transverse section; umbilicus wide and deep; spire sometimes almost flat, usually slightly elevated. From *E. calciferous* W., this species will be distinguished by the fact that the volutions, in the cast, are not embracing, scarcely touching each other, and the volutions are not coiled in the same plane. The two forms are about equally robust and the whorls expand at about the same rate. *Straparollus claytonensis* differs from *Euomphalus strongi* Whitfield, in the greater number of less rapidly expanding volutions, the absence of carinæ or angles on the whorls and the pronounced difference between the umbilical and opposite sides.

STRAPAROLLUS PRISTINIFORMIS, n. sp. This is a smaller form than the preceding; volutions less robust, not embracing

or slightly separated in the cast, coiled in the same plane so that the spire and umbilical sides are similar in appearance; whorls nearly circular in transverse section, upper surface of each marked by an obscure carina, with traces of another carina still more obscure half way between the middle of the whorl and the suture.

RAPHISTOMA PEPINENSE *Meek.* The collection contains many specimens of this very beautiful species. The spire is depressed and consists of about six volutions in specimens having a diameter of one inch. The periphery is sharply angulated and the umbilicus wide when compared with other species of the genus. Compare *R. trochiscum* Meek, in U. S. Exploration of the Fortieth Parallel, Vol. IV. p. 19.

RAPHISTOMA MULTIVOLVATUM, n. sp. Shell moderately large, more than an inch and a quarter in diameter; spire depressed; whorls five or more in number, increasing gradually in size, each about one and a half times as large as the preceding; each whorl bears an obtuse angular carina near the suture; suture somewhat deeply impressed; upper surface of each whorl concave; outer margin marked by a sharp angle from which the convex lower surface of the last whorl slopes downward and inward to the angle that bounds the umbilicus.

RAPHISTOMA PAUCIVOLVATUM, n. sp. This is a small lenticular species having from two to two and a half very rapidly expanding whorls.

HOLOPEA TURGIDA *Hall.* There are a number of specimens indistinguishable from this species as it is described and figured by Hall, Billings and Whitfield. See Paleontology of N. Y., Vol. I, p. 12, Plate III, Figs. 9 and 10; and Lake Champlain Fossils, by Whitfield, p. 50, Plate 9, Figs. 3–7.

MURCHISONIA, sp. There are a few specimens referable to this genus. They are characterized by an elongate spire with many sharply angular volutions.

ORTHOCERAS PRIMIGENIUM *Vanuxem*. This species is well represented by two or three specimens, all showing the characteristics by which it may be readily distinguished. See works of Hall and Whitfield already cited.

CYRTOCERAS LUTHEI, n. sp. Shell rather small, elliptical in transverse section, only moderately curved; length of an average specimen from two and a half to three inches, greatest diameter of body chamber three-fourths of an inch; septa very numerous, ten chambers occupying the space of half an inch; septa oblique to the axis, rising highest on the convex side, the obliquity increasing as the septa approach the chamber of habitation; siphuncle large for the genus, situated close to the inner or concave margin, tapering more rapidly in proportion to size than the shell, and expanding to a trifling extent between the septa. Outer chamber long; margin of aperture and surface markings unknown. This species will be readily recognized by its elliptical section, its oblique, closely crowded septa, and its large, internal, rapidly tapering siphuncle.

The specific name is given in honor of Mr. F. H. Luthe, of McGregor, Iowa, to whose skill and enthusiasm science is indebted for valuable additions to our knowledge of the fauna of the Lower Magnesian Limestone in the valley of the Upper Mississippi.

The collection contains fragments of other species that will sometime, we hope, be represented by identifiable specimens.

In general aspect this fauna resembles that of the Calciferous sand-rock about Lake Champlain. The identity of the species in some cases and the close resemblance in others, leaves little doubt as to the exact equivalency of the Lower Magnesian Limestone of Iowa with the Calciferous series of northeastern New York.

GEOLOGICAL LABORATORY,
UNIVERSITY OF IOWA,
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