Art. XXVII.—*Notes on Devonian Faunas of the MacKenzie River Valley;* by E. M. Kindle.

The Devonian rocks east of the MacKenzie valley are bordered for nearly a thousand miles by the Pre-Cambrian rocks of the Canadian shield.* The geological map of North America, published through the coöperation of the geological surveys of the United States, Canada, and Mexico,† indicate the termination of the broad belt of the MacKenzie valley Devonian on the north by a western lobe of the Pre-Cambrian rocks which, in the region east of the delta of the MacKenzie, are bordered by the Cretaceous formations according to this map.

A coral collected by H. W. Jones and transmitted to me by Mr. Chas. Camsell furnishes evidence of the presence of Devonian Rocks, in this very northerly region east of the delta of the MacKenzie within 70 miles of the Arctic coast, where published data show only Cretaceous and Pre-Cambrian terraines. The specimen collected by Mr. Jones was obtained on the east side of Gull Lake from the limestone shown in fig. 1. The photograph shows a limestone section with a thickness of more than 100 feet in which the beds lie nearly horizontal. The Gull Lake district is one which does not appear to have been traversed by geologists. The geography of the district was described by A. H. Harrison in 1908.‡ Gull Lake is probably Long Lake of Harrison's map or one of the small lakes near Long Lake. Long Lake is the most westerly of a chain of lakes lying east of the delta and trending a little east of north through a region lying, according to Harrison's map, between 100 and 500 feet above the sea.

The corallites of the specimen on which the determination of this new occurrence of Devonian rocks is based are partially silicified and imbedded in an impure grey limestone. The coral belongs to the species *Acervularia davidsoni* E. & H. It represents the variety of this species described by Hall from the Iowa Devonian as *A. profunda*. The variable character of the size of the corallites ascribed to *A. profunda* is well illustrated by this specimen, the smaller ones having no more than half the diameter of the larger ones. Most of the cells have 40 or more radial denticulated lamellæ. In this identification I have followed Rominger in treating Hall's *A. profunda* as a synonym of *A. davidsoni*.

* McConnell, R. G., Ann. Rept. Geol. Surv. Can., n. ser., vol. 4, 1890, p. 14D.

† U. S. Geol. Surv., Prof. Paper 71, 1911.

‡ A. H. Harrison, In Search of a Polar Continent, pp. 1–292, map (E. Arnold), London, 1908. Idem, In Search of an Arctic Continent, London Geog. Jour. vol. xxxi, pp. 277–287, map, 1909.

Although no other fossil was secured by the collector, the occurrence here of this species affords conclusive evidence of the presence at Gull Lake of a Devonian fauna. *A. davidsoni* is a characteristic species of the Middle and Upper Devonian of Iowa, Michigan and Wisconsin.

This coral has not been previously reported in western Canada. It will therefore be of interest to note here the pres-

FIG. 1.

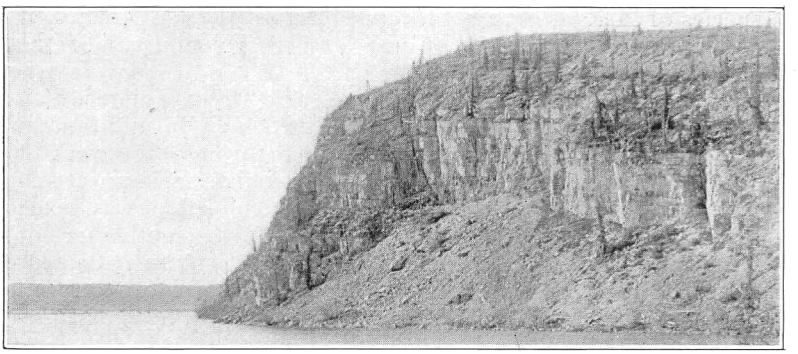

FIG. 1. Devonian limestone at Gull Lake, east of MacKenzie River delta. Photograph by H. W. Jones.

ence of *A. davidsoni* in another collection from the MacKenzie valley obtained at a locality 30 miles Northwest of Hope, which is just inside the Arctic Circle. This collection, which was made by Mr. T. O. Bosworth and presented to the Canadian Geological Survey together with other collections from the MacKenzie valley, includes the following species:

Acervularia davidsoni
Camarotaechia sp.
Atrypa reticularis
Newberrya laevis Meek
Cyrtina panda Meek
Martinia meristoides.

This faunule from Northwest of Hope shows an assemblage including several species listed by both Meek* and Whiteaves† from the MacKenzie valley collections of Kennicott and McConnell. Each of these authors considered the MacKenzie

* Trans. Chicago Academy of Sciences, vol. i, pt. 1, pp. 61–114, pls. 11–15.
† Can. Geol. Surv., Contr. to Can. Pal., vol. i, pt. III, pp. 197-253, pls. 27–32.

valley fauna to represent a Middle Devonian horizon. It represents in the writer's opinion both Middle and Upper Devonian horizons. In the faunule now under discussion from Northwest of Hope such distinctly Upper Devonian species as *Spirifer disjunctus*, which is conspicuous in the faunules listed by Whiteaves,* are wanting and the species present appear to represent the Middle Devonian fauna of the MacKenzie valley.

The single species of coral which represents the Gull Lake Devonian fauna affords rather meagre evidence for its close correlation with other faunas, but the presence of the same species of *Acervularia* in the fauna just listed from Northwest of Hope suggests that they are both representatives of the same Middle Devonian horizon.

Another collection from the MacKenzie River Valley which has recently been studied by the writer shows in addition to the faunas with which we are familiar through the work of Meek, McConnell, and Whiteaves, a Devonian facies not previously recognized in that region. This collection was made by Mr. Charles Camsell at Pine Point, on the south shore of Great Slave Lake. The fossils from this station are from beds described in Mr. Camsell's notes as "very bituminous and full of fossils. They lie flat and are associated with beds of limestone in low cliffs 3 or 4 feet high at the water's edge."

The fauna occurs as flattened or crushed shells in a black calcareous and highly bituminous shale. Some specimens might be properly called limestone,—coal black in color. When freshly broken this rock gives a strong petroleum odor.

The species recognized in this black shale fauna are the following:

Lingula sp.
Leiorhynchus cf. *laura*
Pterochaenia fragilis
Styliolina fissurella
Tentaculites gracilistriatus.

The fauna of this black shale has not been previously recognized in the MacKenzie River Valley. This fauna contains nothing which will enable one to decide positively with which one of three or four Middle and early Upper Devonian black shale horizons it is most closely allied. The last three species might occur as early as the Marcellus shale or as late as the Ithaca shale of the New York Portage. The absence of species characteristic of the black shale horizons of the Portage, however, together with the closer resemblance of the *Leiorhynchus* to a form not common above the Marcellus, lead me to place the fauna, provisionally, in the Middle Devonian.

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* L. c., pp. 248–253.