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CANADA

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

PAPER 53-16

PRELIMINARY MAP

ORR LAKE

SIMCOE COUNTY
ONTARIO

(Descriptive Notes)

By
B. A. Liberty

OTTAWA
1953

Price, 25 cents

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DESCRIPTIVE NOTES FOR ORR LAKE MAP, ONTARIO

STRATIGRAPHY

PRECAMBRIAN

Precambrian rocks of the Canadian Shield occupy the northern part of the map-area. They consist chiefly of pink granite and granite-gneiss, and their uneven surface forms the floor upon which the Ordovician strata rest.

ORDOVICIAN

Black River

The 'Basal' beds rest unconformably on the Precambrian rocks. In most places the lowermost strata consist of green shale and red, sandy shales containing frosted sand grains. Due to the irregular nature of the Precambrian topography, these 'Basal' strata are not everywhere present. They appear to be thickest in depressions on the surface of the crystalline rocks, and have an observable thickness of 15 feet in this map-area, but their maximum thickness probably exceeds this figure. No fossils have been found in them, but as they are overlain with apparent conformity by limestones enclosing Black River fossils they have been mapped tentatively with other strata of Black River age.

Resting on the 'Basal' beds are 44 feet of limestone strata comprising the Pamela? beds. These are divisible into three lithological units. The lowest consists of 23 feet of buff to brownish weathered, grey, greenish grey, and brown, fine-grained limestone in beds ranging in thickness from a few to 14 inches. With these beds is included some lithographic limestone containing vugs filled with calcite. The middle unit weathers grey and brownish grey, and comprises a lower 7 feet of grey, fine-grained limestone, with inclined fingers of lithographic brown limestone, and an upper 3 1/2 feet of brown and grey, lithographic limestone with inclined fingers of brown, fine-grained limestone. The lower part can be traced east of the map-area, but there passes into a brown, lithographic limestone of about the same thickness. The upper part thins eastwards to 14 inches in the eastern part of the Orillia-Brechin map-area. Chert nodules, and a glauconitic coating on fossils and enclosed pebbles have been observed. The upper unit comprises some 4 1/2 feet of strata in the Port McNicoll quarry, situated beyond the map-area about a mile north of Port McNicoll. There, a lower 2 1/2 feet of buff to grey weathering, brown, fine-grained limestone is succeeded by 1 1/2 feet of grey, lithographic limestone. Eastward, in the Coldwater quarry, these strata have changed laterally into 7 feet of buff weathering, pale green and greenish grey, fine-grained, dolomitic limestone in beds up to 18 inches thick. This is the Rama building stone of the

Longford quarry¹.

The succeeding Lowville beds consist of some 35 feet of strata. They are completely exposed only in the Coldwater quarry. At their base is a few inches of thinly laminated, grey, lithographic limestone, which may be traced westward into 2 feet of thinly laminated, greenish grey and grey, fine-grained limestone and fragmental (clastic) lithographic limestone in the Port McNicoll quarry. The remaining strata consist of light grey weathering, brown, grey, and cream, lithographic limestone, in beds that vary from a few inches to 2 feet in thickness. Green and white calcite 'eyes' impart a 'Birdseye' appearance to some of the beds, and thin shale partings have been observed. The uppermost 12 1/2 feet are for the most part more massive, and contain the coral species Tetradium cellulorum. They correspond to the highest unit of the Lowville beds east of this map-area, namely, the Tetradium beds, and their base is defined by a parting of bentonite².

The Leray beds (Coboconk limestone) overlie the Lowville and constitute the uppermost Black River unit. They consist of 17 feet of grey and bluish grey weathering, grey and brownish grey, fine- and medium-grained limestone. Beds are commonly 12 to 16 inches thick, but may weather thin, irregular, or to a rubble. Some grey, medium-grained, fragmental (clastic) limestone beds have been observed. These strata are quite fossiliferous, the most noteworthy genera being the corals Lyopora (= Columnaria), Streptelasma, and Calapoecia; the brachiopod Rafinesquina; the stromatoporoid Stromatocerium; and several genera of nautiloids. Chert nodules have been observed in the uppermost 4 feet.

Due to the thick mantle of glacial drift in the area west of Coldwater Valley, the configuration of the bedrock surface is only very generally known, and, in consequence, the position of the 17 to 20 feet of Leray beds cannot be mapped with any degree of accuracy. Accordingly, only their approximate position is indicated in this part of the map-area.

Trenton

Rocks of Trenton age succeed the Black River strata with apparent conformity, but in general are coarser textured. In this map-area, the Rockland-Hull beds, which have a normal thickness of about 55 feet, have been seen only in lot 10, con. II, Orillia township. No contacts with the Black River were observed. For the most part the beds consist of grey and dark grey weathering, grey and brownish grey, fine- and medium-grained limestone and crystalline limestone in beds from a few inches to more than a foot thick. The brachiopod genus Dalmanella is common. In the outcrop area, about 15 feet of middle Rockland-Hull strata can be seen.

Sherman Fall beds are nowhere exposed in the map-area, nor have they been penetrated by any wells, but data from adjacent map-areas suggest that they comprise some 170 feet of light to dark grey, fine-grained, argillaceous limestone, with interbeds of crystalline limestone. The lowest few feet are usually very argillaceous and shaly.

GLACIAL GEOLOGY

The entire map-area has been glaciated, and most of the bedrock is concealed beneath a mantle of drift. In the vicinity of the outcrop belt, in the northern part of the area, the drift averages only a few feet in thickness. There, the physiography is essentially a reflection of the underlying bedrock, but on the headlands that overlook Georgian Bay, and southwards, the drift increases in thickness to 200 feet.

STRUCTURAL GEOLOGY

The Precambrian surface beneath the Palaeozoic strata probably has considerable relief, as indicated by the variation in thickness of the 'Basal' beds. Otherwise, there are no Precambrian inliers and no localities at which high dips can be observed. The Ordovician strata appear to be nearly flat-lying, with a slight dip that probably approximates that of the bedrock surface, which shows as a terrace on the contoured bedrock map of the area by Deane³. The regional dip appears to be in a general south-southwest direction, but elevations run into the Port McNicoll, Coldwater, and Uthoff quarries, the last situated in the adjacent Orillia-Brechin map-area, indicate some local variation.

ECONOMIC GEOLOGY

The Ordovician limestones of the map-area have been utilized for various purposes. The largest and most important was the Coldwater quarry, whose limestone was used for flux⁴ and crushed stone. The limestone in the Port McNicoll quarry was also used for flux⁴. A very old quarry, in lot 20, con. XIV, Medonte tp., in Pamela? beds, has long been in disuse. Due to the mantle of glacial drift, gravel pits are numerous. No economic operations are being carried on within the map-area at present.

1

Caley, J. F., and Liberty, B. A.: Prel. maps, Orillia-Beaverton, Ontario; Geol. Surv., Canada, Paper 50-11, 1950.

2

Kay, G. M.: Jour. Geol., vol. 39, 1931, p. 367.

3

Deane, R. E.: Pleistocene Geology, Lake Simcoe District, Ontario; Geol. Surv., Canada, Mem. 256, Fig. 8, 1950.

4

Goudge, M. F.: Limestones of Canada, Part 4, Ontario; Bureau of Mines, Dept. of Mines and Resources, Ottawa, Pub. No. 781, pp. 185-186 (1938).