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CANADA

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

PAPER 53-13

PRELIMINARY MAP

BARRIE

SIMCOE COUNTY, ONTARIO

(Descriptive Notes)

By

B. A. Liberty

OTTAWA

1953

Price, 25 cents

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DESCRIPTIVE NOTES FOR BARRIE MAP, ONTARIO

Stratigraphy

No strata outcrop within the Barrie map-area, and the present interpretation of the geology is based on the records of two old wells drilled near Barrie and on the bedrock surface contour map by Deane¹. The general bedrock topography of the map-area is that of a low terrace from Orillia southwards. The dip of the strata keeps pace, relatively, with this terrace. Accordingly, most of the area is underlain by Sherman Fall beds. However, between the city of Barrie and the town of Bradford, in the adjoining Alliston map-area to the south, there is a bedrock 'island', the strata of which may be traced from Nottawasaga Bay, to the west, and represent the highest Trenton unit -- the Cobourg formation.

Only the two wells near Barrie have been drilled for petroleum within the area. Both of them penetrated some 200 feet of Trenton and underlying Black River strata before reaching the Precambrian basement rocks.

Within the map-area, the Rockland-Hull beds may consist of as much as 70 to 80 feet of bluish grey, hard limestone. In adjacent map-areas, where information is more complete, they are described as composed of 50 feet of predominantly grey and brown, fine-grained limestone. The lower beds are fine grained to sub-lithographic in texture; the upper beds alternate between grey, fine-grained, and grey, medium-grained limestone.

The lower Sherman Fall beds consist of about 170 to 200 feet of light to dark grey, fine-grained, argillaceous limestone, with interbeds of grey, coarsely crystalline limestone, and are very fossiliferous throughout. The upper Sherman Fall beds, on the other hand, comprise only 10 to 15 feet of dark grey, fine to medium crystalline limestone.

The Cobourg formation has a thickness of about 185 feet. The lower part is a dark grey and greenish grey, fine-grained, argillaceous, fossiliferous limestone, with some clastic limestone strata. The upper part is predominantly grey and greyish brown, dense, sublithographic limestone, with calcite 'eye' inclusions.

Glacial Geology

The Ordovician strata of the map-area are overlain by a mantle of glacial drift, which varies in thickness from a thin veneer to as much as 430 feet. A full account of this superficial material is given by Deane¹, whose map of the bedrock topography

of the Lake Simcoe district portrays the remarkable preglacial drainage pattern. In the Barrie map-area, the present topography bears little relation to that of the underlying bedrock.

Structural Geology

The dip of the Ordovician strata in the Lake Simcoe district is thought to approximate the regional slope of the Precambrian surface, which is south-southwest at about 18 feet a mile.

Economic Geology

The two wells drilled for oil in the vicinity of Barrie were unsuccessful. Johnston² has discussed the petroleum possibilities of the area based on one of these. He concluded that, due to the thinness of the Ordovician strata within this area, the occurrence of accumulations of petroleum in commercial quantities is unlikely.

There are gravel pits within the area, but none is of noteworthy importance.

¹Deane, R. E.: Pleistocene Geology of the Lake Simcoe District, Ontario; Geol. Surv., Canada, Mem. 256, Figure 8 (1950).

²Johnston, W. A.: Geol. Surv., Canada, Sum. Rept. 1912, p. 300 (1914).