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CANADA

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

PAPER 53-12

UHLMAN LAKE MAP-AREA, MANITOBA

(Preliminary Account)

By

G. M. Wright

OTTAWA
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Price, 50 cents

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INTRODUCTION

The following is a preliminary account of the geology of Uhlman Lake map-area (latitude 56° to 57°; longitude 98° to 100°), which occupies about 5,300 square miles in northwest Manitoba.

The writer was ably assisted during the 1948 field season by K. E. Eade, P. T. Black, H. D. Fullerton, R. M. Forrest, T. Podolsky, E. R. Rode, J. Campbell, and T. Sewell. Mr. Eade very capably performed the duties of senior assistant.

The centre of the map-area lies 125 miles northeast of Sherridon, Manitoba, and all parts of the area are readily accessible by air from that town. Churchill River traverses the northwest part of the map-area, and provides access by canoe from Sherridon and other points. From the south the area can be reached from Nelson House via Rat River, a canoe route much used by the natives of the region.

The information incorporated in this report and the accompanying geological map is based, primarily, on field work carried out in the summer of 1948. The areas actually covered by canoe and ground traverses are largely restricted to reasonable canoe routes (See Map), but low-altitude aerial traverses were also helpful in estimating rock types in the less accessible parts of the map-area. A systematic attempt has been made, however, to interpolate between, and extrapolate from areas of known geology by the study of some nine hundred vertical air photographs. These were also used to outline major drift-covered areas. The reliability of such geological interpretation varies considerably over the map-area, depending to a large extent on the rock types and the amount of drift and bush cover, and the results are intended to indicate probabilities only.

South Indian Lake is the only settlement within the map-area. The population there is about 200 to 300, including Indians, trappers, and personnel at the two trading posts. Trapping and fishing are the main means of livelihood for most of the population. Many kinds of fur-bearing animals are indigenous to the country, and whitefish, pike, and pikerel are relatively abundant. South Bay, Southern Indian Lake, is the scene of commercial whitefish fishing.

Much of the map-area is forest covered, but little of the timber is of good quality. Forest fires have caused great destruction in years past, and much of the timber is small spruce, with pine, poplar, and birch locally predominant.

PHYSICAL FEATURES

Although the map-area contains many lakes, good stream connections are uncommon except along Churchill River and its tributaries, Rat River and its connected lakes, and the Baldock-Uhlman-Gauer Lakes system (See Map). Churchill River and its tributaries, Barrington and MacBride Rivers, provide good canoe routes with few portages. Fast water is encountered in several places along Churchill River where the stream is restricted in

width. The Rat River system, including the Mynarski Lakes, gives ready access to much of the southwest part of the map-area, but above Karsakuwigamak Lake passage is obstructed by several series of rapids, and by the height of land between Issett Lake and South Bay. The northeast part of the map-area contains a reasonably good canoe route from Baldock Lake through to Uhlman Lake and thence down Gauer River to Gauer Lake, but Chapman Lake is less readily accessible. The stream entering Uhlman Lake at its southwest end is navigable for a few miles to the south. A canoe route with many portages extends from Barnes and Roe Lakes to Harding Lake. The last is very shallow, especially at its east end, and is murky from suspended silt, but Harding River is navigable for several miles south of the lake. In the general region of Livingston and Kinwaw Lakes there are no through streams; these and many similar isolated lakes are most readily reached by small, pontoon-equipped aircraft.

Over much of the map-area surface conditions are typical of the Canadian Shield. Local relief is seldom more than a few hundred feet, with rocky hills and ridges separated by low areas occupied by drift or swamp. Rock outcrops are generally abundant, but many large areas are mantled by drift and expose little if any bedrock (See Map). Granitic rocks generally underlie the more rugged terrains, whereas sedimentary rocks underlie either long, narrow troughs, as for example those holding Pemichigamau and Kinwaw Lakes, or larger, low-lying areas. The shapes of many lakes reflect bedrock control, but in the southern part of the map-area, smooth, rounded outlines of lakes are due to disorganized drainage in an area of heavy drift.

Glacial and post-glacial deposits of drift, sand, and clay are found in many parts of the map-area. Eskers are not so abundant or continuous as in Brochet map-area to the northwest (Map 1001A); the complex esker southeast of Cousins Lake is characterized by several small ponds along its axis. A widespread blanket of clay covers much of the southeast part of the map-area, especially around the east end of Harding Lake. Elsewhere the clay deposits are not continuous, but thick clay banks have been noted on Churchill River and at South Bay; about 60 feet of varved clay was observed on upper South Indian Lake.

GENERAL GEOLOGY

All the consolidated rocks of the map-area are of Precambrian and probably Archaean age. Few of them are unaltered. The sedimentary and volcanic rocks are more or less metamorphosed; paragneisses and amphibolites are completely recrystalized. Many of the granitic rocks, with the notable exception of the coarse-grained, porphyritic granite, are gneissic. Garnets, in widely varying amounts, were observed in almost all rock types.

Although their age relationships are not definitely known, the paragneisses and associated sedimentary and volcanic schists(1)[1]

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[1]Numbers in parentheses are those of the map-units used on the accompanying map.

are believed to be the oldest in the map-area. The most common rock type in this group is a fine-grained, buff to grey, massive rock in beds a few inches thick, and consisting, microscopically, of equigranular aggregates of feldspar, quartz, and mica. Such rocks are found in several places along Rat River. At Karsakuwigamak Lake rocks of similar nature, but more highly metamorphosed and granitized, were noted, and in some places, as at Kinwaw and Harding Lakes, they are associated with impure quartzites, greywacke, and quartz-mica schists. Hornblende-rich gneisses and amphibolites are included in this map-unit where they are associated with rocks of obvious sedimentary origin and where they are evenly and continuously banded.

Basic volcanic rocks and their metamorphic equivalents(2), together with associated sedimentary schists, occur around the north end of Karsakuwigamak Lake, in the Rusty Lake area, and north of MacBride Lake. At Karsakuwigamak Lake, andesites, with derived greenstones and hornblende schists, are associated with minor staurolite schists of sedimentary origin, and are probably continuous with the volcanic rocks of Rusty Lake. North of MacBride Lake, the volcanic rocks are more highly metamorphosed to hornblende-plagioclase gneiss, hornblende-biotite schist, amphibolite, and chlorite schist. Most of them are garnetiferous.

No positive evidence of the relative ages of the sedimentary and volcanic groups(1, 2) was found. At Karsakuwigamak Lake and north of Rusty Lake, the scanty structural evidence available indicates that the sedimentary strata dip under the volcanic rocks and may, therefore, be older, a conclusion previously reached by Alcock[1]. On the other hand the paragneisses may correspond with

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[1]Alcock, F. J.: Rat River Route from Threepoint Lake to Southern Indian Lake, Manitoba; Geol. Surv., Canada, Sum. Rept. 1920, pt. C, p. 11.

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the Sickle series, and the volcanic rocks to the pre-Sickle volcanic rocks of the Granville Lake map-area to the west (Map 344A). If this is so, the sedimentary rocks are younger than the volcanic rocks.

Along Barrington River there is an east-trending band of hornblende-rich gneisses and amphibolites(3). Some arkosic sedimentary rocks occur within this band on the south shore of the river. Some of the hornblende gneisses and amphibolites are very well banded, and may be metamorphic derivatives of basic sediments, but it appears more probable that they are the more highly metamorphosed counterparts of the basic volcanic schists(2).

Mixed gneisses of several kinds(4) occupy large parts of the map-area. As mapped, these include lit-par-lit gneisses, with granitic stringers between thin sheets of paragneiss or amphibolite, granitized paragneiss, schist, and amphibolite, and gneissic granitic to dioritic rocks containing abundant inclusions of invaded rock. For mapping purposes, arbitrary limits of more than 25 per cent and less than 75 per cent granitic material were set for this group; boundaries are, consequently, drawn arbitrarily. In some places the mixed gneisses form well-defined border zones

between granitic and intruded rocks, but over considerable areas no such relationship could be established; for example, large-scale granitization seems to have been active in the south-central part of the map-area. In Southern Indian Lake and elsewhere, remnants of older rocks, in all stages of assimilation, and without any apparent structural control or orientation, occur scattered throughout the granitic gneisses. All rocks of these mixed types grade imperceptibly into gneissic granitic rocks.

Basic intrusive rocks(5) are neither widespread nor abundant in the map-area. A few small bodies are outlined on the map. The one in Leftrook Lake appears to be intruded by gneissic granite, but others may be younger than these granites. About a dozen diabase dykes were seen, the largest 80 feet wide, but they are not shown on the map. They are known to cut the gneissic granites, and are probably the youngest consolidated rocks in the map-area.

Granite and allied rocks(6) are widespread and of varied types, and have been grouped together for mapping purposes. They may, and probably do, represent more than one age of intrusion. A large batholithic mass of coarse-grained, porphyritic granite occupies almost the entire northeast quarter of the map-area. The rock is pink, usually massive, and contains phenocrysts of potash feldspar up to 2 inches or more in length. It becomes less coarse grained, and more gneissic and impure, near the edges of this main mass, as, for example, between the two arms of Baldock Lake. A similar granite occurs in small patches in other parts of the map-area.

Granite, quartz-monzonite, granodiorite, and quartz diorite occur in great abundance. Some bodies are massive and contain few if any inclusions, but most of the rocks are gneissic and in many places grade into mixed gneisses. Few are true granites; many of the rocks are rich in quartz and plagioclase feldspar, low in potash feldspar, and carry moderate amounts of hornblende or biotite or both. Some contain considerable magnetite. A few small bodies of hornblende syenite were seen, and gneissic to stratiform quartz diorites and diorites were noted, particularly near the contacts between volcanic and hornblende gneisses and granitic rocks.

The age relations between the porphyritic granite and the complex of gneissic granites are not definitely known, but it is felt that the porphyritic rock is the younger, a conclusion previously reached by Alcock and Bruce[1].

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[1]Alcock, F. J., and Bruce, E. L.. Precambrian Rocks of Manitoba; Bull. Geol. Soc. Am., vol. 32, 1921, p. 284.

Pegmatite dykes are abundant, and occur in all rocks except(?) basic intrusions. The gneisses between Opachuanau Lake and South Bay contain many of these dykes, but in the limited time available no detailed study of them could be made.

ECONOMIC GEOLOGY

Economic interest in the Uhlman Lake map-area has not been great, although some work has been done. Quartz veins and disseminated sulphide minerals occur in the volcanic rocks of the Karsakuwigamak Lake area, and claims have been staked there. Similar rocks in the Rusty Lake area and along MacBride River have received some attention. These volcanic rocks and derived schists appear to present the most likely prospecting ground within the map-area.

Some prospecting has been done in the schists south of South Bay, but no details are known to the writer. Pyrrhotite was observed in a specimen of hornblende gneiss on Harding River 5 miles north of the south boundary of the map-area.

Cordierite occurs in injection gneisses east of Misinagu Lake, and scattered molybdenite flakes occur in several places near Footprint Lake.

Although pegmatite dykes abound in many parts of the map-area, no minerals of economic importance were observed in them. However, the fact that relatively few of these dykes were examined in the field should be borne in mind in assessing their economic possibilities.

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