

DESCRIPTIVE NOTES

The map-area is accessible by water routes from Flin Flon and Sherridon, but is reached most conveniently by air. The canoe route from Flin Flon begins at Beaver Lake and follows Sturgeon-wier River and Pelican Lake to Frog Portage, then Churchill River to Southend at the outlet of Reindeer Lake. From Sherridon the route is along Kiasissing and Churchill Rivers to Granville Lake, thence north to Hughes River via Edson Lake. An alternate route follows Churchill River and Barrington River to Barrington Lake. These routes are arduous and require many time-consuming portages, particularly at low water. Airline distances from Sherridon to Brochet, on Reindeer Lake, and to the north end of Barrington Lake are 150 and 130 miles respectively; from Flin Flon the distances are 220 and 170 miles.

The map is a compilation of information obtained from shoreline and ground traversing (See key map for actual area covered), aerial reconnaissance, and the study of air photographs.

The area is one of low relief. In most parts, hills are no more than 200 feet above the level of adjacent lakes, but some bedrock hills in the northeast corner rise to about 400 feet. The elevation of Reindeer Lake is 1,150 feet above sea-level, lakes in the northeast about 1,350 feet.

The height of land between Churchill River and South Seal River drainage basins extends from the north end of Melvin (Gull) Lake to Eyrle Lake and north. Drainage is effected by shallow, meandering streams that flow in young valleys cut in glacial drift; some few flow in part over bedrock.

Stippled areas on the map are areas of heavy drift cover and very few rock outcrops. Much swamp and muskeg is included. The glacial drift is chiefly fine to coarse sand and gravel, and some areas are strewn with angular to subangular boulders, some of which have been identified with rock outcrops not more than 1/2 mile distant from their bedrock source. Most prominent among glacial features are the several eskers. One esker extends the full length of the map-area, about 70 miles, and reaches a maximum height of about 150 feet above the level of Goldsand Lake. Abandoned beaches of glacial lakes are found on Long Point (House Point) in Reindeer Lake and at many places along the shore of Brochet Bay and Paskwachi (Stump) Bay and several miles inland from the lake. Glacial striae have a southerly trend, varying from south 5 degrees east of Barrington Lake to south 15 degrees west at Reindeer Lake. A field of drumlinoid drift ridges east and southeast of Brochet Bay has the same trend.

Meta-sedimentary rocks of Kiasseynew type are the oldest in the area. Small, lenticular masses, and a few larger belts, of hornblende gneiss and schist and amphibole of doubtful origin are interbedded with the sedimentary rocks. These bedded rocks were intruded by a few small stocks of gabbroic rocks and dikes of diorite. The whole was lightly folded and sheared, and was injected, metamorphosed, and partly assimilated by granitic intrusions, which have shown their influence in all parts of the map-area and probably represent more than one period of intrusion.

Rocks of sedimentary origin (1) have been recrystallized as equigranular, fine-to medium-grained gneisses. Original bedding structures are represented by bands of slightly different colour and mineral composition. Variations in colour and composition depend on the distribution of the original sediments and upon the amount of material added by granitic injections. Most of the sedimentary rocks are light to dark grey and are composed of quartz, feldspar not more calcic than oligoclase and dark brown, green, or near black biotite in widely varying proportions. Quartz-sericite schist was observed in a bay off the west side of Vandekerckhove (Brightsand) Lake, but quartz normally constitutes no more than 50 per cent of the rocks. The rocks that appear to be the metamorphic equivalents of greywacke, arkose, and minor, impure quartzite. Common accessory minerals are blood-red garnet, magnetite, sphene, and apatite. A few gneisses carry a fibrous amphibole, probably anthophyllite.

Hornblende gneiss, hornblende schist, and amphibole (2) are not abundant; only a few bodies are sufficiently large to be mapped separately on the present scale; others are included in the group of sedimentary rocks. The general habit is narrow lenses several feet or yards long in banded sediments; xenoliths of amphibole a few inches to a few feet in diameter are common in the granites near Paskwachi (Stump) Bay and Bear Bay on Reindeer Lake, and along Sawbill River. Lenses of hornblende gneiss and schist in the banded rocks have the same general appearance as the sedimentary gneisses, but the ferromagnesian mineral is dark green hornblende. Larger masses of amphibole and hornblende gneiss are diorite in appearance. Crystals of hornblende up to one-quarter inch long form about 60 per cent of the rock; as much as 10 per cent of the mafic minerals may be hypersthene or other pyroxene. Fresh-pink to white oligoclase-andesine, a few grains of quartz, and dark brown or green mica are the other essential minerals. Accessory minerals are magnetite, sphene, some apatite, and grains of calcite. These rocks may be metamorphosed calcareous sediments; some may be derived from andesitic lava, such as is associated with sedimentary rocks in adjoining areas to the south.

A large part of the area is underlain by a complex of igneous and sedimentary gneisses (3). Though in some places the different rock types may be distinguished, the units are too small to be mapped separately. Furthermore, no part of the area and no map-unit is entirely free from injections of granitic rocks. Thus it has been necessary to subdivide the banded rocks on the basis of proportion of recognizable granitic material calculated as percentage of the field as percentage of gneisses (1), those with the estimated percentage is less than 40 are mapped as sedimentary gneisses (1), those with between 40 and 75 per cent as 'gneissic complex' (3), and those with more than 75 per cent as granitic gneisses (6). Contacts between map-units, where exposed, are indefinite; in most places they are obscured by glacial drift. The gneissic complex is characterized by narrowly banded gneisses of fine to medium grain, which vary in colour from almost white to dark grey; the injected material is commonly pink. Where assimilation of sedimentary rock by granitic material is advanced, the bands are not easily delimited, and no appreciable difference in composition between bands of different colour is observed. Where contacts between bands are fairly sharp, the composition of pink bands corresponds with that of larger masses of granite and granite-gneiss; grey bands contain more quartz (up to 50 per cent) and plagioclase, and biotite is more abundant.

Basic intrusive rocks (4) are not abundant. One small stock occupies the islands and part of the shores of Melvin (Gull) Lake. It consists of gabbro, in which hornblende and labradorite are the essential minerals, anorthosite, and diorite. Secondary minerals comprise fairly abundant brown biotite and a little chlorite and sericite. The borders of the stock are injected by pegmatite and apatite stringers.

Sheared and slightly pyritized, dark grey to greenish diorite (5) outcrops at the north end of Barrington Lake and on Brochet Bay. Bodies of diorite too small to be mapped on the present scale are grouped with the granitic rocks.

Granitic intrusive rocks (6) are the most abundant in the map-area. Large masses of porphyritic granite, granite, and granodiorite, their gneissic facies, and associated pegmatite and apatite underlie more than 50 per cent of the area mapped (See Index map). Most abundant of the granites is a coarsely porphyritic, flesh-pink or grey granitic phenocrysts of feldspar up to 5 inches long were observed, and others as much as 2 inches long are common. The rock is rich in quartz, and normally 10 to 20 per cent of it is biotite. Near Paskwachi Bay, Bear Bay, and along part of Sawbill River, the mafic mineral is hornblende. Medium-grained, equigranular, granitic rocks vary in composition from quartz-rich granite to granodiorite in which the plagioclase (oligoclase-andesine) constitutes 25 to 30 per cent of the rock.

White to flesh-pink leuco-granite (alaskite) and pegmatite are common facies of the granite; they are composed of quartz, potash feldspar, and some oligoclase, and less than 5 per cent dark brown mica. This granite is closely associated with sedimentary gneisses, notably south of Paskwachi Bay, on Vandekerckhove (Brightsand) Lake, and along Hughes River; it may be younger than most of the granitic rocks.

The granites carry accessory apatite, garnet, and sphene, and grains of epidote.

Dark green rocks occur as small, irregular bodies within the granites. They may weather grey, pink, brick-red, dark green, or rusty brown. Freshly broken surfaces vary in colour from amber, through green to dark green, the most common colour. The colours apparently are inherent in the component minerals, and, on cursory examination, the rocks might be mistaken for basic types. Actually, however, the composition varies between granodiorite and quartz-rich microcline granite; very dark green hornblende and hypersthene form roughly 10 per cent of the rocks. The green coloration is due to an unidentified, green, secondary mineral, possibly chlorite, which fills interstices and the numerous fractures and replaces some crystals of plagioclase.

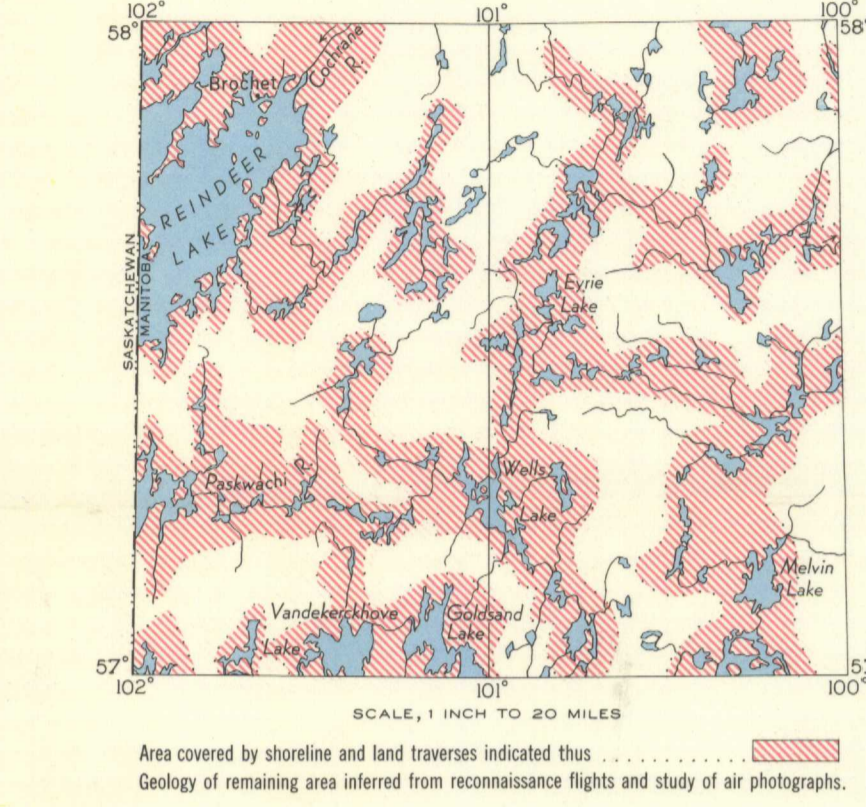
In the time available for field work it was impossible to obtain a clear picture of bedrock structures of the area. However, structural trends are shown on the map as revealed by observations on the ground, from the air, and on air photographs. It is interesting to note that these trend lines pass freely from one map-unit to another, and exist within areas in which granite is the major rock type. Many of the lineaments observed on air photographs proved to be joint fractures; the nature and origin of many others are unknown.

The small stock of basic intrusive rocks at Melvin (Gull) Lake is of interest, as copper-nickel deposits of importance have been found in similar rocks at Lynn Lake to the south of the map-area. Evidence of mineralization in this stock and in other rocks of the area is slight. Disseminated pyrite is found in some of the gneisses and in the sheared diorite.

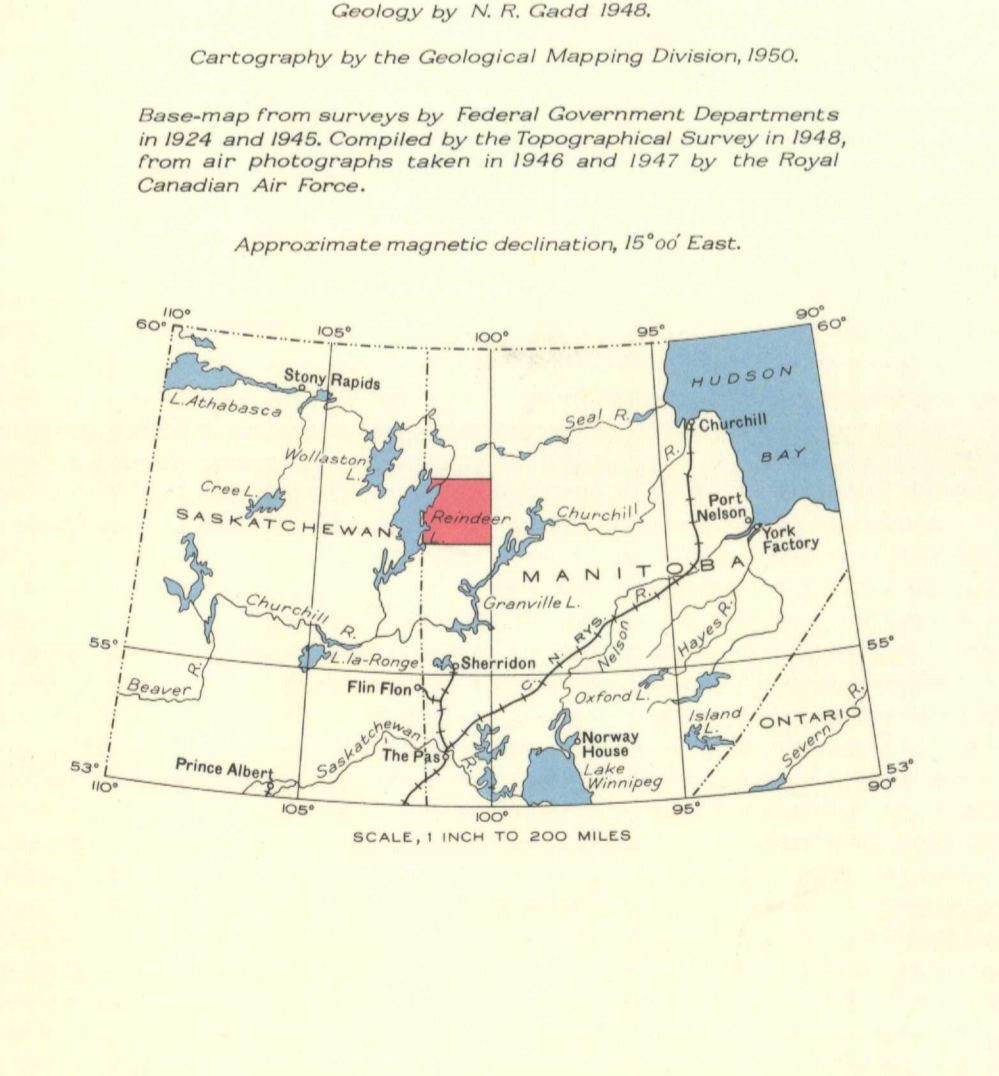
A small gossan was observed on the west arm of Vandekerckhove (Brightsand) Lake, where pyrite is disseminated in a small outcrop of quartz-sericite schist. Overlying drift and soil are brick-red and charged with tiny particles of magnetite; iron rust coats boulders and gravel for one-quarter mile along the shore in the vicinity of the outcrop. Two large boulders of massive sulphides, chiefly pyrite, lie on this shore; their origin is not known.

A lead-zinc deposit at Paskwachi (Stump) Bay, just west of the Manitoba-Saskatchewan boundary, was described by Stockwell (Brown Mineral Claims, Geol. Surv., Canada, Sum. Rept. 1928, pt. B, p. 68). Paskwachi Bay is part of a power development reservoir in which the water level has been raised about 9 feet and, as a result, the mineral showing now lies under water.

Magnetic compass deviations up to 45 degrees are noted on the ground and at an altitude of 700 feet above the area indicated on the map. The cause of deviation could not be determined because the area is heavily drift covered.



- LEGEND**
- ARCHAIC**
- 6 Porphyritic granite and gneiss, granodiorite, granite and granite-gneiss, pegmatite, apatite, alaskite, some hybrid rocks and diorite
  - 5 Diorite and quartz diorite sheared and injected by granite and pegmatite
  - 4 Gabbroic anorthosite
  - 3 Complex of igneous and sedimentary gneisses, pegmatite, apatite, some hornblende gneiss and amphibole
  - 2 Mainly hornblende gneiss and hornblende schist, amphibole
  - 1 Mainly meta-sedimentary gneiss and schist; quartzite, greywacke, arkose, some amphibole and hornblende gneiss
- Drift and swamp-covered area, with few or no outcrops
- Area of strong magnetic attraction
- Drumlinoid drift ridge
- Esker
- Geological boundary (assumed)
- Gneissosity, schistosity (inclined, vertical, dip unknown)
- Lineation (plunge known)
- Glacial-lake beaches
- Glacial striae
- Structural trends (from air photographs)
- Portage
- Building
- Church
- Survey monument
- Stream (position approximate)
- Rapids
- Marsh or swamp
- Reef or small island



MAP 1001A  
**BROCHET**  
MANITOBA

Scale: One Inch to Four Miles = 1/253,440  
Miles

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