CANADA
DEPARTMENT OF MINES AND RESOURCES
MINES, FORESTS AND SCIENTIFIC SERVICES BRANCH
GEOLOGICAL SURVEY OF CANADA

LEGEND

PALÆOZOIC

ORDOVICIAN

5 — *Dolomitic limestone, dolomite*

ARCHÆAN AND (?) PROTEROZOIC

4 — *Granite, granite-gneiss, and allied rocks; granitoid gneiss; abundant inclusions of 1 and 3*

KISSEYNEW COMPLEX (1, 2, 3)

3 — *Granitized gneisses*

2 — *Sedimentary gneisses; minor conglomerate, greywacke, and arkose; some hornblende gneiss;* **2a**, *hornblende-plagioclase-carbonate gneiss, limestone*

1 — *Hornblende-plagioclase gneiss; some basic intrusions;* **1a**, *basic volcanic rocks and related intrusions*

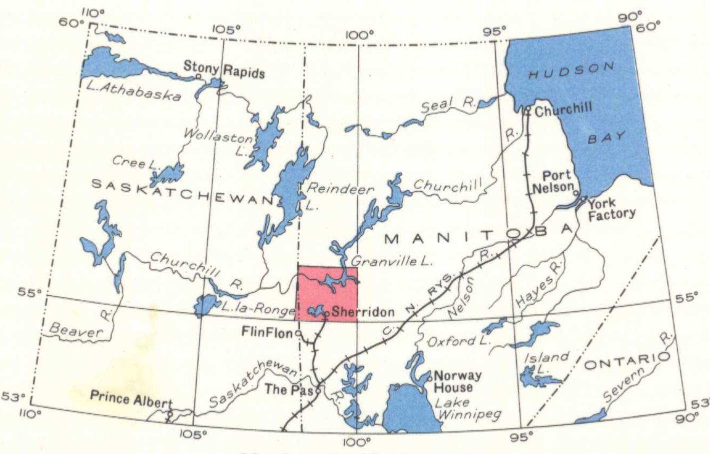
Drift-covered area with few or no outcrops
Geological contact inferred from air photographs
Structural trend (inclined, vertical, dip unknown)
Gneissosity (inclined, vertical, dip unknown)
Glacial striæ
Fault, shear zone
Prospect
Mine shaft

Geology by J.M.Harrison, 1947.
Cartography by the Geological Mapping Division, 1948.

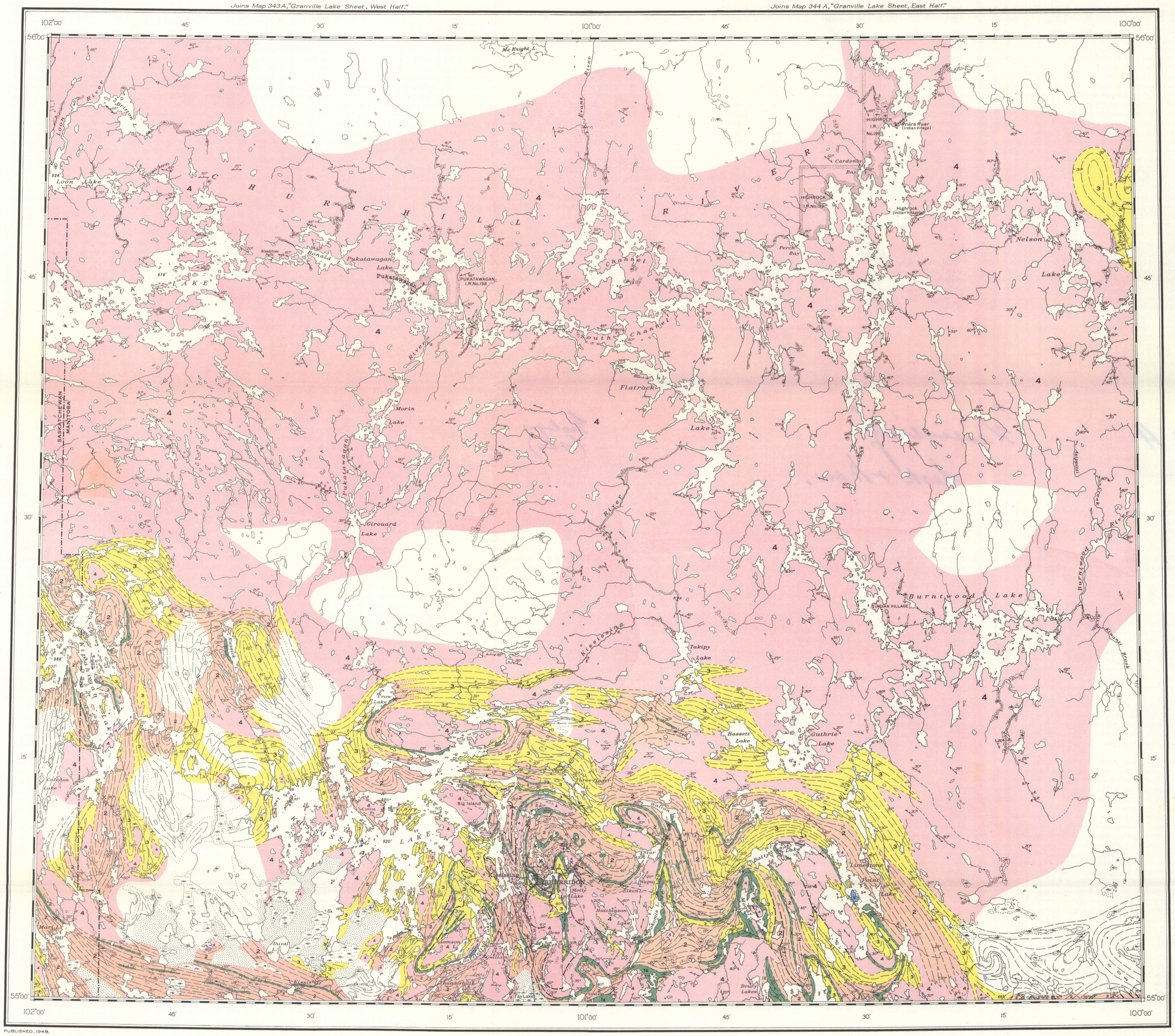
Road and buildings
Winter road
Trail or portage
Railway
Power transmission line (surveyed and approx. position)
Church
Sawmill
Interprovincal boundary
Indian Reserve boundary
Height in feet ... 920′
Stream (position approximate)
Marsh
Fall or rapid
Reef

Base-map compiled August, 1931, from surveys by the Topographical Survey of Canada; and from aerial photographs by the Royal Canadian Air Force.

Approximate magnetic declination, 15°30′ East.



Joins Map 343A, "Granville Lake Sheet, West Half."
Joins Map 344A, "Granville Lake Sheet, East Half."



PUBLISHED, 1949.

MAP 970A

KISSISSING

SASKATCHEWAN – MANITOBA

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

Miles

DESCRIPTIVE NOTES

The stratified rocks of the Kississing map-area have been mostly transformed to gneisses of the Kisseynew complex (1, 2), and a large proportion of them have been granitized (3). In the extreme south-central part of the area some basic flows and related intrusions (1a) probably represent the northern limit of Amisk-type greenstones. The stratified rocks in the extreme south of the area are, in general, the least metamorphosed of the gneisses, and in many places such features as conglomerates, pebble-beds, and amygdular structures are readily recognizable. These rocks grade northwards into gneisses distinguished especially by garnet, but locally characterized by staurolite, sillimanite, cordierite, or hornblende. Limestone occurs in minor amounts here and there in the gneisses, mostly in bands not more than a few feet wide. North of Sherridon, however, impure limestone (2a) can be mapped separately. Also, some of the rocks north and northeast of Sherridon that are mapped as hornblende gneisses (1) may be completely transformed equivalents of impure, limy sediments.

Boundaries between sedimentary and basic gneisses, and their granitized equivalents (3) are gradational, and their positions, as mapped, are arbitrary. The granitized gneisses include rocks intruded by numerous dykes of granite, injection gneisses, and rocks that have been largely replaced by granitic material. In all these types of granitized rocks, relicts of the original gneisses remain —bedding, some metamorphic minerals, compositional differences, and folded structures. It seems probable that the typical Kisseynew gneisses (1, 2) were formed during the deformation of the earth's crust that accompanied emplacement of the granite, and that at least part of the heat required for the formation of the gneisses was supplied by the advancing magma. As the magma advanced, and rose, solutions and dykes from it produced the granitized gneisses (3).

The rocks mapped as granite (4) include the granitoid gneisses of the Sherridon map-area[1], and contain many remnants of Kisseynew gneisses (1, 2, 3). The south margin of the main mass of granitic rocks that occupy the north part of the map-area is drawn arbitrarily, as are most granite contacts in this area. The main granite mass contains numerous, large and small inclusions of sedimentary gneiss, but very few of hornblende gneiss. Some of the inclusions, as seen from the air, are 2 or 3 miles long, and are transected by numerous dykes of granite as much as 1,000 feet wide. Some of them, too, are clearly folded, but no continuity of such structures with adjacent inclusions could be seen. Although most of the extreme north part of the area was not mapped, due to lack of navigable streams, the appearance of outcrops from the air indicates that they are granite.

An outlier of Palæozoic dolomite outcrops on the long point that extends northward into Limestone Point Lake, and in some reefs to the east of the point. No identifiable fossils were found, but the dolomite is probably of Ordovician age, as is that at Reed Lake. It is greatly contorted and may represent a down-faulted block, as suggested by Wright[2]. A composite chip sample from the exposures at the long point was analysed by R. J. C. Fabry of the Geological Survey of Canada, and yielded the following percentage composition: CaO, 30.10; MgO, 20.30; $(Fe,Al)_2O_3$, 1.20; CO_2, 45.64; H_2O, 0.50; and insoluble, 2.34.

Large swamps and deposits of glacial drift cover much of the bedrock in some parts of the map-area. One of the largest of these tracts lies about Duval Lake near the south border, and in part probably represents a glacial lake with attendant beaches and spits. A broad expanse of boulder till and sandy clay covers most of the bedrock from Churchill River north to McKnight Lake, and for several miles on both sides of the lake. Large, wet swamps occupy most of the east part of the southeast quarter of the map-area. Drift ridges and flats are common throughout, but were noted especially in the southern third of the area.

Bedding is distinct in ungranitized sedimentary gneisses (2), and structural trends shown in areas underlain by them mark the stratification. Hornblende gneisses (1), which are mainly derived from basic volcanic rocks and related (?) intrusions, are commonly well banded or foliated. Where the gneisses are granitized (3) bedding is obscured, but foliation is preserved. Trend lines were plotted on the base-map before going to the field, and were later checked by traverses, and dip symbols added. An approximate outline of the lithologic types shown on the map, except hornblende gneiss, was also made before field investigations began, but where the air photographs were used to extend observed contacts, these extensions are shown in dotted lines. Rock structures are clearly defined in pictures of these gneisses and, where vertical views are not available, oblique pictures can be used to advantage. Structural trends plotted in the unexplored part of the southeast quarter of the map-area were taken from oblique views.

Structures in the area are very complex, due chiefly to folding, which is too intricate to interpret on the scale of the map. Some of the most complexly folded rocks lie between Walton and Batty Lakes, southwest of Moody Lake, and between Drury Lakes and File River. The structures there have been roughly indicated by trend lines and by the interpolation of bands of hornblende gneiss between observed outcrops. Structures are no doubt just as complex in the west half of the area, but, except for the Sherridon map-area, the detailed geology of which has been modified and incorporated in the present map, so much of it is covered by lakes, glacial drift, and swamp that no adequate delineation could be obtained.

Most structures trend from north, through northwest, to almost west, the chief exceptions being parts of two small folds just west of Batty Lake, which trend north-northeast, and an elongated dome at Adamson Lake that trends northeast. Nearly all structures are overturned to the west and southwest, so that the axial planes of the folds dip east or northeast. The chief exceptions, again, are the folds at Batty Lake, which dip west, and the northwest flank of the dome at Adamson Lake. In addition to these, many westward dips were recorded about the arched fold on which the Sherritt-Gordon mine is located. The folds at Batty Lake resemble somewhat the Sherritt-Gordon fold, as do the intricate folds that can be seen in the air photographs of the unmapped part in the southeast corner of the map-area.

Most of the mineral occurrences in the map-area were discovered prior to 1931, and were prospected for base metals. The Sherritt-Gordon copper-zinc orebodies are the only deposits that have been mined. The Bob Lake deposit was thoroughly diamond drilled, but it is reported that the copper content is too low to constitute ore under present conditions. These deposits were described by Bateman[3]. The other base metal deposits are low grade, and in many of them pyrrhotite was the only sulphide recognized. These deposits were examined and described by Wright[2,4].

A gold deposit was discovered in 1947 about a mile west of a small lake, locally known as Kay Lake, about 2 miles southwest of Moody Lake. The gold occurs with arsenopyrite in silicified hornblende gneiss near the contact with garnetiferous sedimentary gneiss. The deposit lies on the flank of a small, overturned fold in an area of complexly folded rocks. The size and economic importance of this deposit were not known in 1947. A few small, gold-bearing quartz veins, also discovered in 1947, lie within a mile of the south end of Kay Lake. Most of them are in hornblende gneiss and carry arsenopyrite, but two carrying galena were seen in the granite near its north contact.

[1]Sherridon; Geol. Surv., Canada, Map 862A (1946).

[2]Geology and Mineral Deposits of a Part of Northwest Manitoba; Geol. Surv., Canada, Sum. Rept. 1930, pt. C, pp. 32-38 and 60-66 (1931).

[3]Sherritt-Gordon Mine Area; Geol. Surv., Canada, Paper 44-4, 1944.

[4]Kississing Lake Area; Geol. Surv., Canada, Sum. Rept. 1928, pt. B, pp. 73-104 (1929).