CANADA
DEPARTMENT OF MINES AND RESOURCES
MINES AND GEOLOGY BRANCH
BUREAU OF GEOLOGY AND TOPOGRAPHY

GEOLOGICAL SURVEY

LEGEND

ARCHÆAN OR PROTEROZOIC

15 Gneissoid biotite granite and allied rocks, some garnetiferous; **15a**, massive granite and allied rocks, in part coarsely porphyritic; **15b**, foliated biotite granite; **15c**, pegmatite

14 Basic intrusions varying from gabbro to quartz diorite; **14a**, peridotite; **14b**, hornblendite; **14c**, gabbroic anorthosite, some gabbro; **14d**, hornblende gabbro and diorite, in part garnetiferous, in part quartz-bearing; **14e**, biotite diorite

13 Rhyolite and quartz-feldspar porphyry; may be partly sedimentary; may be older than 4 and related to 12

12 "Quartz-eye" granite and related porphyry; may be older than 4

10 | 11 **10.** Granitized gneisses derived mainly from sedimentary rocks (4,5,8,9) by gneissic granite (15b) **11.** Biotite granitoid gneiss derived mainly from sedimentary rocks (4,5,8,9) by gneissic granite (15b)

SNOW GROUP

9 Arkose, minor greywacke, and derived, sparsely garnetiferous gneisses

8 Basic flows, minor tuff; undifferentiated diorite; gradations to hornblende gneiss; **8a**, hornblende gneiss and schist derived from 8

7 Coarse, hornblende-rich agglomerate, tuff, breccia, and undifferentiated basic intrusions; **7a**, hornblendite, gabbro, diorite

6 Acidic volcanic rocks and feldspathic sedimentary rocks; minor acidic intrusions; **6a**, rhyolite

5 Staurolite and staurolite-sillimanite schist and gneiss; interbeds of 4; **5a**, mainly coarse garnet schist and gneiss; **5b**, sillimanite-garnet schist, relation to 5 unknown

4 Garnet gneiss and schist, derived from greywacke; minor argillaceous members

3 Interbedded argillite and greywacke, minor slate, arkose, quartzite, pebble beds, garnet gneiss, staurolite schist. Relation to Snow and Amisk groups unknown

ARCHÆAN

AMISK GROUP

2 Basic volcanic breccia, agglomerate, and tuff; minor flows; undifferentiated diorite; minor argillite

1 Massive and pillowed basic lavas, flow breccia; minor pyroclastic rocks; undifferentiated basic intrusions; **1a**, basic flows with many interbeds of argillite; **1b**, hornblende-quartz-plagioclase gneiss, in part banded; derived from 1

A | B **A.** Grey gneissic and banded rocks, derived mainly from basic volcanic rocks (1,2) by "quartz-eye" granite (12); in part similar to B
B. Rocks of granitic texture derived mainly from basic volcanic rocks (1,2) by granite (15,15a); probably includes some A

Drift-covered areas with few or no outcrops
Bedding (inclined, overturned)
Bedding, upper side of bed known, direction of dip unknown
Bedding, upper side of bed unknown (inclined, vertical)
Foliation (inclined, vertical, dip unknown)
Schistosity, gneissosity (inclined, vertical, dip unknown)
Faults and shear zones (inclined, dip unknown)
Direction and amount of plunge determined from linear elements 40°
Location of prospect 30
Anticlinal axis
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Glacial striæ

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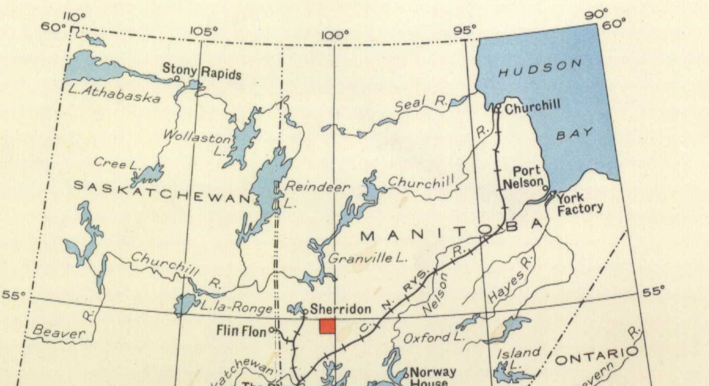
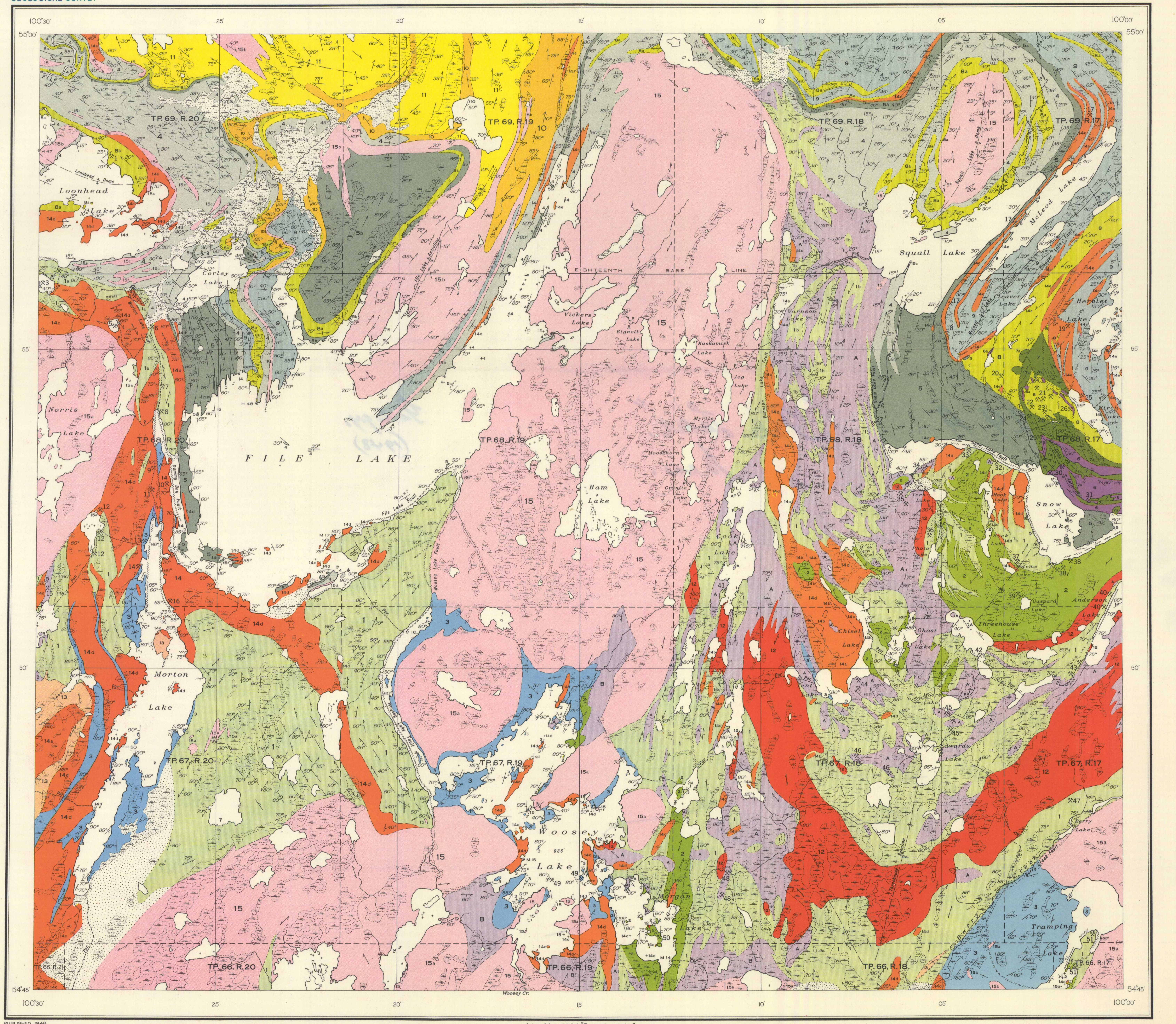
Township boundary (surveyed)
Township boundary (unsurveyed)
Portage, trail, or winter road Por. P.
Stream (position approximate)
Rapid R.
Marsh
Survey monument M14
Building
Reef or small island
Height in feet above mean sea-level 936′

Geology by J. M. Harrison, 1944, 1945, 1946.

Base-map from surveys, 1944, and compiled, 1945, by the Topographical Survey with air photographs taken in 1943. Cartography by the Drafting and Reproducing Division, 1947.





PUBLISHED, 1948.

Joins Map 906 A, "Tramping Lake"

MAP 929A

FILE LAKE

WEST OF PRINCIPAL MERIDIAN
MANITOBA

Scale, $\frac{1}{63,360}$ or 1 Inch to 1 Mile
Miles

Approximate magnetic declination, 14°15′ East.

DESCRIPTIVE NOTES

The Amisk group of basic volcanic rocks (1, 2) is similar to other assemblages of basic volcanic types that occur throughout the general region. The Snow group (4-9) is predominantly sedimentary in origin, and commonly shows a high degree of regional metamorphism. Due to faulting, age relations of volcanic and sedimentary rocks are obscure, but rocks of the Amisk group are apparently older than those of the Snow group. Map-units 6 and 7 occur only in the vicinity of Snow Lake. Certain other formations of the Snow group are similar to members of the Missi series at Flin Flon. In the northern part of the area rocks of this group are typical Kisseynew gneisses, such as those found in the Sherridon map-area. Granitoid gneiss (11) differs from granitized sedimentary gneiss (10) in that it lacks bedding, is coarser grained, and is more uniform in composition. Unclassified sedimentary rocks (3) occur chiefly at and near the margins of lakes. Their relations to rocks of the Snow and Amisk groups are not known, but some appear to be interbedded with Amisk rocks, some appear to be younger, and some are probably of the same age as those of the Snow group. Hybrid rocks A are feldspathic derivatives of Amisk basic rocks (1, 2) and minor sedimentary types (3) that have been formed by action of "quartz-eye" granite (12). They weather to a bleached appearance, and are commonly garnetiferous and foliated. Hybrid rocks B are of granitic texture, and have been derived from Amisk and sedimentary rocks (1, 2, 3) by action of potash granite (15). In some places distinctions between hybrid types A and B are arbitrary.

Faults are intricate, and many are characterized by curving trends and extensive carbonatization. Striæ on the Snow Lake fault indicate that it is a normal fault on which rocks of the Snow group moved down and to the northeast with respect to the Amisk rocks to the south. Rocks of this down-faulted block are transected by numerous branching faults. Many other shear zones extend south into the Amisk rocks. File Lake fault occupies a somewhat analogous position on the opposite side of the main granite batholith. Varnson Lake and Woosey Lake faults appear to be tear faults along the flanks of this intrusion. Berry Creek fault cuts across the southeast corner of the map-area, but extends for at least 13 miles northeast and 15 miles southwest. Granite (15) is sheared by it. Some sheared rocks in other fault zones have been recrystallized by younger granite, and some by "quartz-eye" granite. It appears that some faults are older than "quartz-eye" granite (12), some are younger than it but older than potash granite (15), and some are later than any rocks exposed.

Folds likewise are intricate. In the northern part of the area many show the overturning to the southwest that is characteristic of folds in Kisseynew gneisses. Threehouse syncline is the largest fold in the area. Little Herb basin is the westward continuation of the Herblet Lake syncline of the Wekusko area, and the Nor-Acme anticline lies on its southwest flank. McLeod Lake syncline, File Lake anticline, and Loonhead Lake and Squall Lake domes are other well-defined structures.

The Nor-Acme gold mine is the only deposit known to be of commercial size in the area. Diamond drilling has indicated a large, low- to medium-grade ore zone on the crest of the Nor-Acme anticline. Another, much smaller orebody lies on a minor anticlinal fold on its southwest flank. The two ore zones are connected across the intervening syncline by a narrow shear zone. The orebodies dip about 45 degrees northeast, and plunge about 45 degrees north-northeast parallel with the dip and plunge of the folds. Ore occurs at the contact between feldspathic sedimentary and volcanic rocks (6) of the footwall, and basic pyroclastic rocks (7) of the hanging-wall. Gold values occur in shear zones on the northwest flank of the McLeod Lake syncline. The shears appear to dip and plunge with the beds in the syncline, which suggests that they resulted from slippage between beds during folding. Deposits plunge 5 to 15 degrees to the northeast and dip about 25 degrees to the southeast. All occur in biotite diorite (14e) near its contact with arkosic gneisses (9). A very narrow, but good-grade gold deposit occurs on the largest island in Morgan Lake. It lies in sheared tuffaceous rocks (2) near the convex east contact of an arcuate intrusion of diorite (14d). Several small gold deposits lie in shear zones northwest of the Nor-Acme mine, but so far none has been proved to be ore grade. All the gold deposits in the area except that at Morgan Lake contain more or less arsenopyrite. The Nor-Acme deposit is distinguished by very fine felted "needles" of arsenopyrite, but in the Squall Lake deposits this mineral is quite coarse and blocky. Albitization, formation of biotite, and deposition of tourmaline in the wall-rock also accompany formation of gold deposits. Tennantite (grey copper ore) occurs in at least one deposit, and galena occurs in some south of Snow Lake narrows. Gold deposits in the west half of the area are much less numerous and generally contain much less arsenopyrite than those in the east half.

Sulphide deposits are common west of Morton Lake. Pyrrhotite is the main sulphide in most of them, and is reported to carry low values in nickel locally. Some deposits also contain chalcopyrite, and the Dickstone property at the west edge of the area contains a small body of good-grade copper. The mineralized zone is in a shear near contacts between basic flows (1), diorite (14d), and feldspathized rocks (A). All deposits rich in sulphides lie in shear zones that may mark small faults.

The localities most suitable for prospecting for gold are those where rock types of differing competency have been folded and faulted. The sulphide deposits appear to be replacements in shear zones, but no evidence was found to indicate that folded structures are possible controls for mineralization. Arsenopyrite seems to be a good indicator of gold, the best values being found associated either with fine "needles" or with rather coarse, blocky crystals.