CANADA

DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY

GEOLOGICAL SURVEY

LEGEND

ARCHÆAN OR PROTEROZOIC

- **14** — **14a**, *quartz-feldspar porphyry*; **14b**, *feldspar porphyry*; **14c**, *hornblende diorite*; **14d**, *diorite porphyry*
- **13** — **13a**, *albite granite and aplitic granodiorite, pegmatite*; **13b**, *massive granodiorite*; **13c**, *quartz diorite*
- **12** — **12a**, *granodiorite-gneiss*; **12b**, *porphyritic granodiorite-gneiss, some 'quartz-eye' granodiorite*; **12c**, *granodiorite-gneiss, probably in large part derived from lavas. May be older than* **8**
- **11** — **11a**, *norite, diorite*; **11b**, *pyroxenite, hornblendite*; **11c**, *hornblende metagabbro, metadiorite*; **11d**, *basic complex of pyroxenite, hornblendite, peridotite, hornblende metagabbro, saussurite amphibolite, epidote-rich 'quartz-eye' metagabbro, and quartz metadiorite*; **11e**, *intrusive complex of metagabbro, pegmatitic metagabbro, epidote-rich rock, dioritic rock, albite-zoisite rock*; **11f**, *albite granite and aplite related to* **11e**. *May be in part older than* **8**
- **9 10** — *Kisseynew gneiss:* **9**, *stratified paragneiss containing biotite, oligoclase, and quartz; in part garnetiferous; many pegmatite sills and dykes and small bodies of* **13**; **10**, *granitoid gneiss, minor pegmatite and undifferentiated* **13**
- **8** — *Conglomerate*

ARCHÆAN

- **7** — *Rhyolite, porphyritic dacite, and minor intrusive equivalents; rhyolitic tuff; dacitic tuff and breccia*
- **6** — **6a**, *argillite and small amounts of schistose, bedded tuff; minor squeezed pillow lava*; **6b**, *interbedded argillite and cherty tuff*; **6c**, *garnetiferous grey sedimentary gneisses and minor tuff*
- **5** — *Andesitic tuff and breccia; minor pillow lava; derived schists*
- **4** — *Greenstone: chiefly altered pillow lava with small amounts of interbedded pyroclastic rocks; minor intrusive amphibolite*
- **2 3** — *Gneisses and schists:* **2**, *hornblende gneiss and schist, derived from* **4**; **3**, *biotite metadiorite gneiss derived from* **2**
- **1** — *Quartz-oligoclase gneiss*

Bedding (inclined, vertical, dip unknown)

Schistosity (inclined, vertical, dip unknown)

Schistosity (indicating tops as determined from pillows)

Foliation (arrow indicates direction of plunge)

Fault

Glacial striæ

Prospect (Au-gold, Cu-copper, S-sulphide)

Winter road or trail

Portage — P

Building

Power transmission line

Township boundary (surveyed)

Township boundary (unsurveyed)

Stream (position approximate)

Fall and rapid — F, R

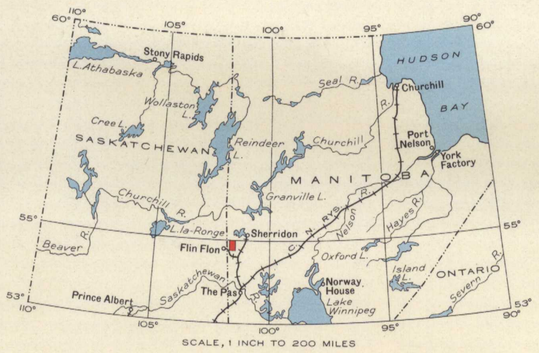
Marsh

Reef or small island

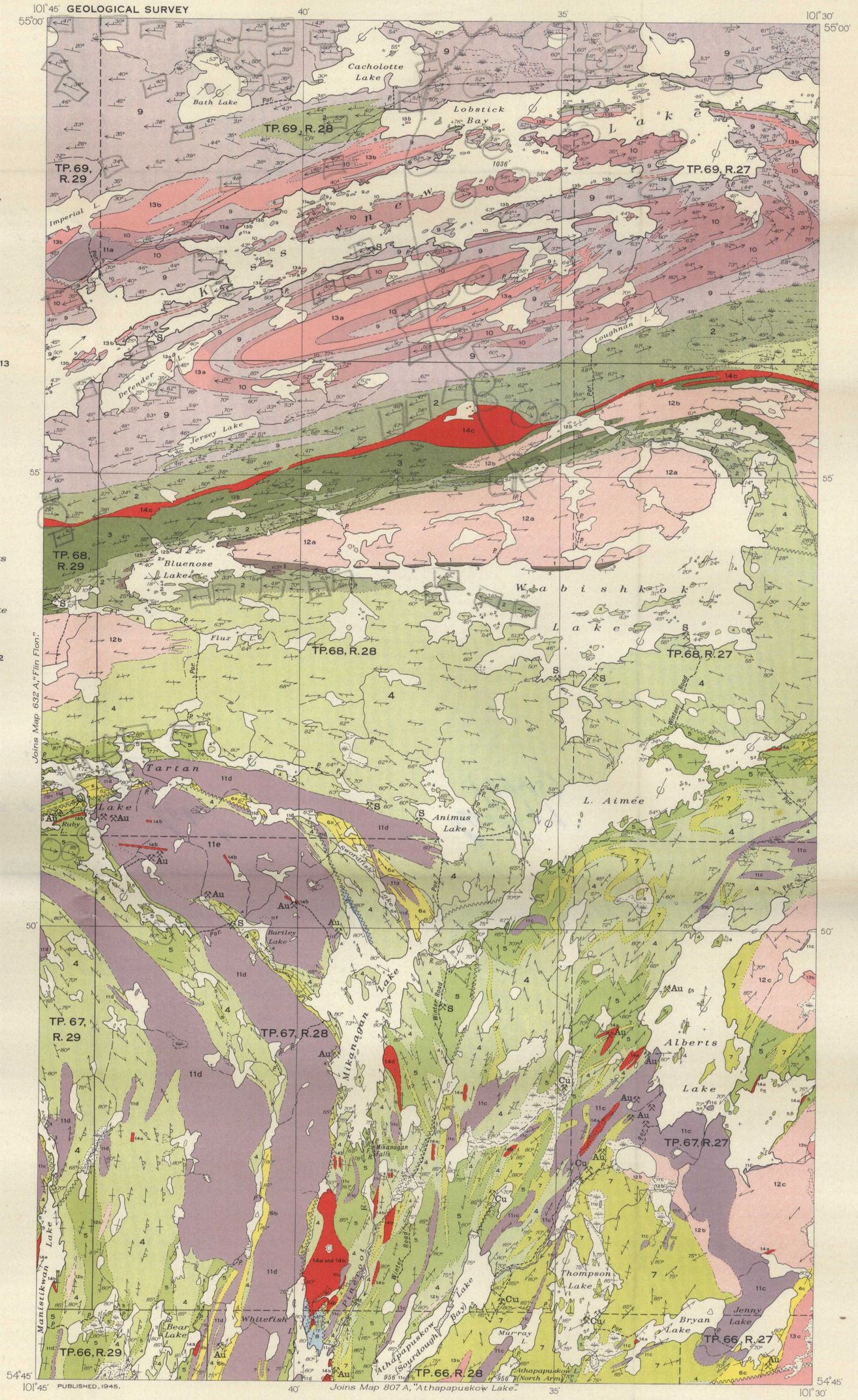
Height in feet above mean sea-level — 956'

Geology by J.D.Bateman, 1941, and J.M.Harrison, 1943.

Base-map compiled by the Topographical Survey, 1941, from aerial photographs taken by the Royal Canadian Air Force in October, 1928, and July and August, 1929, and from information supplied by the Department of Mines and Natural Resources, Manitoba. Cartography by the Drafting and Reproducing Division, 1945.



SCALE, 1 INCH TO 200 MILES



PUBLISHED, 1945.

MAP 832A

MIKANAGAN LAKE

WEST OF PRINCIPAL MERIDIAN

MANITOBA

Scale, 1/63,360 or 1 Inch to 1 Mile

Miles 0 1 2 3

Approximate magnetic declination, 16°30' East.

DESCRIPTIVE NOTES

Mikanagan Lake map-area lies east of Flin Flon and may be reached conveniently by canoe from Channing on Schist Lake, or from the end of the motor road on Manistikwan (Big Island) Lake. An alternative route to Kisseynew Lake extends south and west from the village of Cold Lake, near Sherridon.

The rock formations are grouped into three structural units: one of these occupies the western part of the map-area south of Wabishkok Lake; a second unit, the Lac Aimée fault block, lies to the south of Lac Aimée and apparently represents the upper part of the first unit now thrust some miles to the north; the third unit is the complex of Kisseynew gneisses extending across the northern part of the map-area and lying with apparent erosional unconformity on the first unit.

The oldest formations surround the elliptical dome of granodiorite-gneiss (12a) that lies north of Wabishkok Lake. These are thinly layered, quartz-oligoclase gneiss (1) overlain by hornblende gneiss and schist (2) and by its metamorphosed equivalents (3). The hornblende gneiss and schist is dark green, fine-grained, and thinly layered, but north of Bluenose and Wabishkok Lakes its is partly altered to a dark grey, medium-grained, coarsely layered, biotite-bearing gneiss that resembles an altered diorite (3). Its alteration probably resulted from the intrusion of granodiorite (12a). Farther north, near Lobstick Bay in Kisseynew Lake, it is exposed along the crest of a subsidiary anticline in the Kisseynew gneisses.

The thick assemblage of greenstones (4) in the western part of the area is folded into a syncline whose axis extends through Tartan Lake to Mikanagan Lake. Similar rocks occur east and north from Manistikwan Lake. The boundary between greenstones and hornblende gneiss (2) is indefinite. Most of the greenstones are amygdaloidal pillow lavas that form flows from 60 to 90 feet thick. In many places narrow beds of tuff and breccia lie between the flows. Irregular masses of associated amphibolite are regarded as intrusions contemporaneous with the volcanic rocks, and were not mapped separately. The greenstones have been variously altered and deformed and differ in appearance from place to place. Near Wabishkok and Flux Lakes they are dark green, medium-grained rocks composed chiefly of plagioclase and hornblende. Locally, as on the south shore of Lac Aimée and east of Mikanagan Lake, the pillow lavas are pale green to white due to development of clinozoisite, and on weathered surfaces bear a striking resemblance to rhyolites, although the rock has the composition of basalt. The greenstones south of the Tartan-Mikanagan synclinal axis are generally less deformed and altered.

Beds of andesitic tuff and breccia (5) are most abundant in the basic volcanic rocks of the Lac Aimée fault block. They weather pea-green to jade-green to buff. The breccia consists of small, subangular to round fragments of porphyritic andesite in a fine-grained matrix. These rocks are commonly coarsely textured, but between Manistikwan and Whitefish Lakes there are some thinly bedded, fine-grained types.

Argillite (6a) outcrops as a narrow formation, extending from Tartan Lake to Swordfish Lake in the centre of the Tartan Lake syncline. It is indistinctly bedded, dark grey to black, and composed mainly of sericite and biotite. Thinly bedded, white to buff weathering, fine-grained, cherty rock (6b) occurs in two formations north and east of Bear Lake. It is interbedded with argillite, and may be a variety of tuff. Dark to light grey, fine- to medium-grained, well-bedded garnetiferous gneisses (6c) occur near Jenny Lake, and may be younger than the rhyolites and dacites (7).

Rhyolite, dacite, and associated tuffs and breccias (7) are common in the Lac Aimée fault block. Some of them may be intrusive. Most of these rocks weather light greyish green and contain phenocrysts of quartz, but the more northerly occurrences weather pink. In places the rocks are intensely sheared and crumpled, notably north and east of Thompson Lake.

Strongly schistose conglomerate (8) outcrops on the east side of the north bay of Mikanagan Lake, and on the north shore of Whitefish Lake. It is bounded by faults in both places. The pebbles and boulders are of all rock types previously described, granitic and dioritic types, quartz, quartz-magnetite rock, jasper, and hematite, but none are similar to the Kisseynew complex to the north. The occurrence at Whitefish Lake is unusual in that most of the pebbles are jasper. At this lake, too, a window of rhyolite is exposed through the conglomerate which dips away from the rhyolite and apparently overlies it unconformably. The conglomerate is probably the equivalent of part of the Missi series of the adjoining Flin Flon map-area.

The Kisseynew complex (9, 10) rests with apparent conformity upon hornblende gneiss and schist (2). However, several younger formations (4-7) are missing, and as the contact is not along a fault, it probably represents an erosional unconformity. The Kisseynew gneiss (9) is a light grey to buff, coarsely layered and bedded rock consisting essentially of plagioclase and quartz with biotite, hornblende, and garnet as accessory minerals. Locally it is interlayered with pink granitoid gneiss (10) that resembles a granite except for a stratiform structure. Both are cut by great numbers of dykes and thin sills of pink pegmatite. The Kisseynew gneiss is regarded as the metamorphosed equivalent of the Missi series of the Flin Flon map-area.

Extensive masses of altered basic intrusions (11) are common. They vary widely in composition from one to the other, but due to the presence of hornblende and epidote they weather a characteristic green. Some of these bodies consist of two or more related basic types, one successively intrusive into the other, and the mass between the arms of Tartan Lake (11e) consists of several types, the final product being an aplitic pink albite granite (11f). In places intrusive breccia has been formed.

The granodiorite gneisses (12) may represent intrusions that preceded deformation of the rocks. They are fine- to coarse-grained, dark to pale grey to pink, and are partly porphyritic. North of Bryan Lake the contact between 'quartz-eye' granodiorite (12b) and the assemblage of rhyolites and dacites (7) is difficult to distinguish, as both are strongly sheared, somewhat chloritized, and contain 'eyes' of quartz. This granodiorite is closely associated with basic intrusive rock and may be related to it. The rocks mapped as granodiorite-gneiss (12c) east and south of Alberts Lake are probably granitized volcanic rocks, but in hand specimens and under the microscope they appear as granodiorite-gneiss.

The fine-grained, pink, aplitic, albite granite (13a) that cuts the Kisseynew complex is probably younger than the granodiorite-gneiss (12), for it is undeformed. For similar reasons it is considered likely that the massive, red to pink, rather coarse-grained granodiorite (13b) and the brownish quartz diorite (13c) at the east edge of the map-area were intruded after the granodiorite-gneiss.

The youngest intrusive rocks in the area (14) are massive, and the more basic types strongly resemble the "Boundary intrusives" at Flin Flon.

No economic mineral deposits have been found in the area, although three base metal occurrences have had a considerable amount of work done on them. These are the Baker-Patton deposit, just east of Sourdough Bay on Lake Athapapuskow, the Don Jon deposit on an island in the east side of Thompson Lake and on the east shore of the lake, and the Amulet prospect on the west shore of a small lake just north of the north end of Lake Athapapuskow. All these deposits occur in strongly schistose rocks derived mainly from siliceous volcanic rocks. All contain much pyrite and some chalcopyrite. No bodies of commercial size were found.

Several small, low-grade gold occurrences are known in the area. A number are located in and around the basic intrusive complex (11e) between Tartan and Mikanagan Lakes, and in the basic intrusive body (11c) west of Alberts Lake. The gold is associated with quartz veins and stringers carrying small amounts of pyrite, chalcopyrite, or arsenopyrite. The veins fill small shear zones and associated tension fractures. Gold may occur in the wall-rocks, especially where these are impregnated with arsenopyrite. The wall-rocks are partly replaced by rusty weathering carbonate.

In the Lac Aimée fault block several, irregular, gold-bearing zones and quartz veins are localized within or adjacent to brittle rocks such as small bodies of quartz-feldspar porphyry (14a). The gold is associated with pyrite and the wall-rocks are silicified.

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