CANADA

DEPARTMENT OF MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

SHEET 63 K/11 (East Half)

LEGEND

PALÆOZOIC

- 8 — Dolomite, dolomitic limestone

ARCHÆAN OR PROTEROZOIC

- 7 — Medium-grained, pink, faintly gneissic biotite granite; may be older than 6
- 6 — Coarse, porphyritic, pink to grey syenite-gneiss and gneissic syenodiorite; associated biotite syenite; 6a, medium-grained, pink to red biotite syenite
- 5 — Medium- to coarse-grained quartz diorite; biotite-hornblende diorite; minor granodiorite
- 4 — Medium-grained, porphyritic diorite, granodiorite; may be older than 3
- 3 — Medium-grained epidote-biotite granite-gneiss, in places garnetiferous; 3a, medium-grained, epidote-biotite-hornblende granite-gneiss and epidote-biotite granite-gneiss; granitized gneisses derived from greenstones; undifferentiated granitic rocks
- 2 — Coarse-grained hornblendite, hornblende gabbro

ARCHÆAN

- 1 — AMISK GROUP. Greenstone, pseudo-diorite, meta-diorite; granitized lavas; 1a, sheared, carbonatized, silicified rock, with much pyrrhotite

- A — Contact breccia, includes fragments of greenstone in diorite (5); in places cut by swarms of biotite granite (7) dykes

Bedding (upper side known, dip unknown)

Gneissosity, schistosity (inclined, vertical, dip unknown)

Lineation (plunge indicated) 28

Fault, shear zone

Shaft

Prospect ×

Geology by T. Podolsky, 1950

Building

Trail or Portage Por.

Township boundary surveyed

Township boundary unsurveyed

Survey monument

Stream (position approximate)

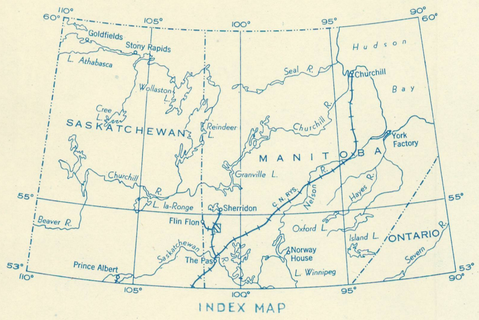
Marsh

Reef or small island +

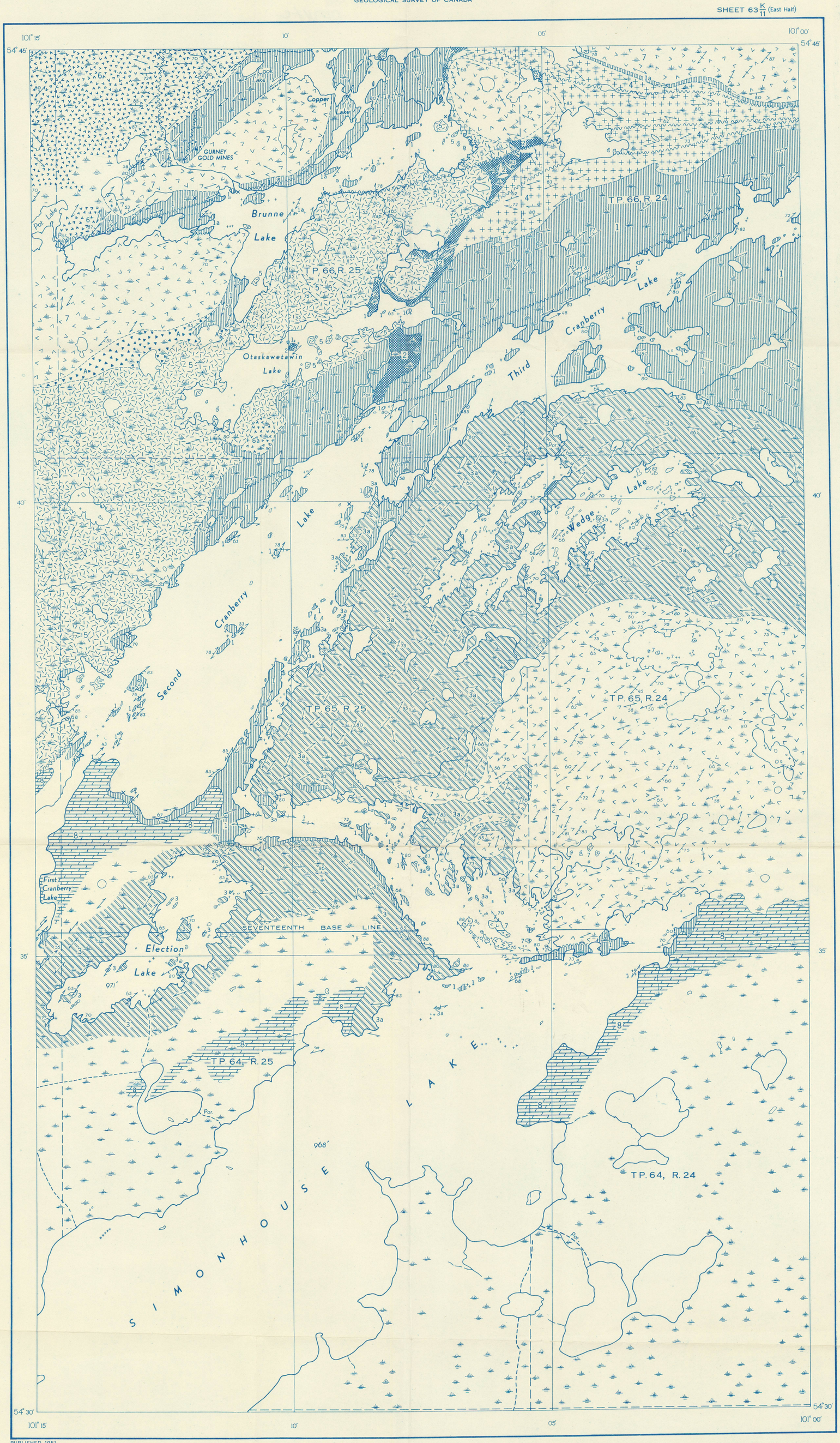
Height in feet above mean sea-level 971′

Base-map surveyed by the Topographical Survey

Approximate magnetic declination, 15° 15′ East,



INDEX MAP



PUBLISHED 1951.

PRELIMINARY MAP 51-17

CRANBERRY PORTAGE

(EAST HALF)

WEST OF PRINCIPAL MERIDIAN

MANITOBA

Scale: 1/40,000

Miles

1 ½ ½ 0 1 2

DESCRIPTIVE NOTES

The oldest rocks in the area, those of the Amisk group (1), are metamorphosed, basic to intermediate volcanic rocks and associated, undifferentiated intrusions. Primary volcanic structures were found east of Second Cranberry Lake, where pillowed lavas, with poorly defined selvedges, are exposed over a small area. The shell of greenstone surrounding the biotite granite (7) north of Brunne Lake contains thin conglomeratic bands that may be of pyroclastic origin. Lavas at the south tip of Brunne Lake are altered to dark green to black, chlorite schist, with areas of delicately banded, apparently tuffaceous material. Similar rocks near the Gurney shaft have elsewhere been called tuffs[1]. Other rocks included in this group comprise metadiorite (altered dioritic intrusions) and pseudo-diorite (oligoclase-amphibole schists).

Hornblendite and hornblende gabbro (2) consist of coarse, stubby pseudomorphs of hornblende after pyroxene, and minor feldspar. At the west end of Wedge Lake, gneissic epidote-biotite-hornblende granite (3a) grades imperceptibly into hornblendite that resembles the main mass to the north. Here the hornblendite contains an occasional grain of blue quartz. South of Wedge Lake, the granite-gneiss (3a) is cut by numerous dykes of biotite granite (7) and by biotite-hornblende diorite (5). The latter rock forms large bodies in the southeast part of the epidote granite-gneiss, but no attempt was made to outline them on the map. The mass of epidote granite-gneiss that surrounds Election Lake is bounded by schistose, contorted greenstones, which in places are well banded. On the basis of petrographic data the granite is tentatively included in the same age group as the epidote-rich granite-gneiss, to the northeast.

Medium-grained, porphyritic diorite (4) consists of equant plagioclase phenocrysts in a groundmass of hornblende, plagioclase, and minor biotite, with quartz rarely visible in the hand specimen. To the west, but separated from the diorite by a mass of hornblendite (2), lies a diorite (5) that resembles the porphyritic diorite (4), but lacks the porphyritic habit and is much less altered. The plagioclase in this diorite occurs in lath-shaped, euhedral grains, which are alined parallel with the gneissic structure. Variations in composition are more pronounced than in the porphyritic diorite, and biotite is commonly present in excess of hornblende. The contacts of this diorite with greenstone are marked by a wide, poorly defined zone of brecciation (A), which consists of irregular mafic fragments in a dioritic matrix. The breccia grades into a dense hornfels, which in turn grades into pseudo-diorite.

Porphyritic syenite (6) shows marked textural and compositional variations. Medium-grained, non-porphyritic phases (6a) are found as dykes and stocks in greenstone and quartz diorite.

Biotite granite (7) occurs in well-defined stocks, the largest of which is found in the southeast part of the mapped area. It is characterized by a pink to red colour, and by rounded clusters of quartz grains, which resemble phenocrysts. The quartz clusters are fractured, and the fractures are filled with hematite that imparts the lavender colour commonly seen on smooth surfaces of the rock. The content of dark minerals seldom exceeds 10 per cent. Biotite is the most abundant mafic constituent, but marginal zones commonly contain an excess of hornblende. Dense, red rhyolite and rhyolite porphyry dykes are associated with the granite.

Although field relationships clearly show the existence of at least six structurally and chronologically separable plutonic rock types, petrographic characteristics prompt the suggestion that the rocks of map-units 4 to 7 inclusive may belong to one unified orogenic phase, and may well be considered younger than the hornblendite and epidote granite-gneiss. The latter is distinguished by a unique texture, by concordant included masses of basic rocks in varying stages of granitization, and by other characteristics suggestive of a replacement origin.

In the Amisk greenstones, the zones of post-crystalline deformation are marked by wide bands of chlorite schist. The best defined shear zone extends from the southwest part of Second Cranberry Lake to the chain of islands northeast from the narrows, and is believed to join with the fault shown along the north shore of the lake. Axes of crenulations and mullion structures in the shear zone plunge steeply northeast, but the direction of movement along this and similar shear zones is not known. A series of east-west fractures, younger than the shear zones described above, are believed to be transverse faults, with average right-hand displacements of about one-quarter mile. North of the Gurney mine, a system of north-south fractures with left-hand displacement passes through both the syenodiorite (6) and greenstone, but appears to terminate abruptly at the contact of the pink biotite granite (7).

Two main types of mineral deposits were recognized. Certain shear zones, particularly those around Brunne Lake, are characterized by disseminated pyrrhotite, minor chalcopyrite, and occasional sheet-like bodies of massive pyrrhotite. Associated quartz veins contain abundant chalcopyrite and are said to carry gold. A brief examination of the Gurney property indicated that the deposit may be classified with this type. East of the big island on Third Cranberry Lake, the greenstones contain some strongly brecciated quartz veins that vary in width from several inches to 5 feet. The cracks in the veins are filled with pyrite, minor chalcopyrite, coarse brown siderite, and rare celestite. These veins are commonly near albitic quartz porphyry dykes. Mineralization of a similar type has occurred at the Golden Hill property, south of the Cranberry Portage townsite, and on an island at the southwest end of First Cranberry Lake. Gold has been found in some of the brecciated quartz veins.

Veins of blue quartz were found north of the portage into Brunne Lake and at the extreme southeast end of Otaskawetawin (Bear) Lake. Two small pegmatite dykes, well mineralized with chalcopyrite and pyrite, were seen on an island in the northeast part of Second Cranberry Lake.

[1] Stockwell C. H. and Harrison J. M.: Structural Geology of Canadian Ore Deposits; C. I. M. M. Symposium; p. 289 (1949).