CANADA

DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY

GEOLOGICAL SURVEY

LEGEND

PALAEOZOIC

ORDOVICIAN

9 — *Dolomite, dolomitic limestone*

ARCHEAN (EARLY PRECAMBRIAN)

POST-MISSI

8 — *Granite, granite-gneiss, porphyritic granite and granodiorite*

7 — *Quartz-porphyry, porphyry, porphyritic quartz diorite and felsite*

6 — *Pyroxenite, peridotite, serpentine and soapstone*

5 — *Diorite, diorite-gneiss, amphibolite*

4 — *Greenstone, greenstone schist, breccias, metadiorite; abundant inclusions of* (2)

MISSI SERIES

3 — *Conglomerate, quartzite, greywacke; derived schists;* **3a**, *conglomerate*

2 — *Hornblende schist, chlorite schist, sericite schist, schistose greenstone, altered sediments and iron formation*

PRE-MISSI

1 — *Greywacke, slate, quartzite; derived schists*

Bedding (inclined, vertical)
Schistosity (inclined, vertical)
Fault
Glacial striæ
Fossil locality (F)
Mineral occurrence ×
Mineral prospect ×
Mine shaft o

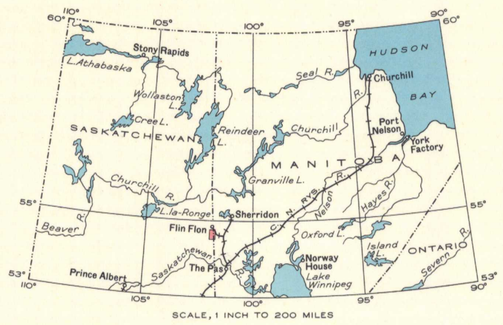
Road and buildings
Trail or portage P Por
Interprovincial boundary
Township boundary (surveyed)
Township boundary (unsurveyed)
Forest Reserve boundary
Stream (position approximate)
Marsh
Reef or small island
Height in feet above Mean sea-level 957′

Geology by T. L. Tanton, 1939.

Base-map compiled by the Topographical Survey, 1939, from aerial photographs taken by the Royal Canadian Air Force, in July and August, 1939; and from information supplied by the Manitoba Department of Mines and Natural Resources, and Department of Public Works and Labour. Cartography by the Drafting and Reproducing Division, 1940.

MINERAL OCCURRENCES

Asbestos	**Asb**
Copper	**Cu**
Gold	**Au**
Pyrite	**Py**
Zinc	**Zn**



SCALE, 1 INCH TO 200 MILES

102°00′ 55′ 50′ 101°45′ — 54°45′ — 54°30′ — 40′ — 35′

Joins Map 632A, "Flin Flon"

TP. 66, R. 30 — TP. 66, R. 29 — TP. 65, R. 30 — TP. 65, R. 29 — TP. 64, R. 30 — TP. 64, R. 29

Meridian L. — Douglas Lake — Booteg L. — Meridian Cr. — Reynard Lake — Wekach Lake — Meridian Cr. — Mystic Lake — Spectral Lake — Meridian Cr. — McNally L. — Kaminis Lake — Taylor Lake — Leaf Lake — Portage

Carlisle L. — Gravel Pit — Airport — Ross Cr. — Gravel Pit — Northwest Arm — Manistikwan Lake — Big Island — MANDY MINE Shaft — Cu Zn Cu — Stitt Island — CANADIAN NATIONAL — Gravel Pit — Hook Lake — Burley Lake — Phantom Lake — Dion L. — Shaft Cu Cu Cu — Shaft Au — Au Shaft — Au — Por. — Ledge Lake — Py — White Lake — Inlet Arm — Schist Lake — Schist Lake 987′ — Northeast Arm — Au Py — Ditch — Schist Cr. — Py — Gravel Pit — West Arm — Asb — Athapapuskow Lake 953′ — Interprovincial Boundary — SASKATCHEWAN MANITOBA

AMISK LAKE PROVINCIAL FOREST

DESCRIPTIVE NOTES

The map-area embraces parts of two physiographic provinces, the Canadian Shield and, south of it, the Manitoba Lowland. In the northern part of the area the surface is characterized by a succession of hummocky hills and ridges of rock, up to 150 feet high, separated by depressions occupied by drift-covered plains, muskegs and lakes. The Manitoba Lowland surface is, for the most part, level but is broken at intervals by valleys, by cliffs up to 30 feet high and by ridges of drift up to 50 feet high. At places this Lowland merges with the Canadian Shield; at other places the boundary follows an escarpment up to 100 feet high facing the Shield.

The pre-Missi sediments (1) are closely folded and schistose, yet retain distinctive internal structures and at places show varve-like texture gradations. Where mapped, the readily recognizable sediments may be traced by gradations into highly metamorphosed rocks in which recognizable sedimentary features are lost. The mapped bodies are believed to be remnants of a once widespread group that has been invaded, metamorphosed and largely replaced by intrusions. No contacts with the Missi series were observed but structural evidence seems to indicate that they underlie and are older than the Missi.

The schistose rocks (2) form a highly metamorphosed and closely folded complex. Many small masses of what are believed to be these rocks are widely distributed in areas occupied by the greenstone complex (4). The sedimentary beds are fine-grained and thinly laminated and may be altered waterlain tuffs. Schists are the abundant rocks and are of uncertain origin. It is inferred, however, that they include altered sediments and igneous rocks such as are represented by some of the pebbles in the Missi conglomerates; and that the complex is of pre-Missi age.

The Missi strata (3) are near the margins of extensive areas of these rocks that lie to the north and east beyond the map boundaries. The beds are closely folded and schistose. Conglomerate occurs in thick, poorly stratified beds and contains pebbles of granite, greenstone, schist, greywacke and iron formation. Quartzite and greywacke are minor constituents.

The greenstone assemblage (4) consists mainly of massive, fine-grained rocks composed chiefly of chlorite, hornblende, sericite and zoisite. At a few places they show ellipsoidal and amygdular structures; and breccias are associated with them. At many places the fine-grained greenstones pass gradationally into porphyritic and coarser-textured dioritic rocks. Where the greenstones were observed in contact with schists (2) or with the Missi series they exhibit the relationships of intrusive bodies, and it is believed that they are mainly of intrusive origin. An alternative view, held by other geologists who have examined these greenstones, is that they are volcanic rocks and chiefly lavas.

Basic rocks (5) occur in part along the margins of granitic batholithic bodies and show merging contacts with the granite on the one side and with metamorphosed pre-batholithic rocks on the other. Bodies of these rocks remote from the exposed edges of batholithic intrusions commonly include intimate mixtures of both igneous and metamorphic rocks with, in the igneous parts, dioritic types predominant and varying in single bodies in texture and composition.

The ultrabasic intrusives (6) are mainly massive rocks but show abrupt variations in composition, colour, texture and structure. In the peridotite and serpentine rock of Athapapuskow Lake are occurrences of picrolite and veinlets of flexible asbestos.

Porphyritic rocks (7) occur in part as dykes. More commonly, however, they form irregular-shaped bodies. These are massive in their interior parts but are bordered by porphyritic hybrid rocks, that merge into the surrounding formations. The porphyritic rocks are not all of the same age but are mainly younger than the Missi series, and are probably related to underlying batholithic intrusions.

The batholithic intrusive rocks (8) consist chiefly of medium-grained, pink and grey, hornblende and biotite granite and granite-gneiss. At several places between Phantom and Kaminis Lakes and also west of Wekach Lake is a porphyritic granite with phenocrysts of blocky, pink feldspar up to 1 inch in diameter.

The Palaeozoic strata (9) lie nearly horizontally on a smooth, gently undulating erosion surface that truncates alike the Archean schists, greenstones and granitic rocks. The strata are about 100 feet thick and consist of grey and reddish dolomite and dolomitic limestone. Fossils collected from the upper strata on Athapapuskow Lake are of Richmond, or late Ordovician, age.

A flat-lying, carbonaceous shale at least 4 feet thick occurs in an area of a few hundred square feet on the west shore of Athapapuskow Lake one mile north of the south boundary of the map-area. Veins containing iron and aluminum sulphate occur in the shale. This may be a marine sedimentary rock of Cretaceous age.

Mandy mine produced, from 1917 to 1920 inclusive, ore that yielded 9,866,328 pounds of copper valued at $2,039,943 and gold and silver values at the rate of $5 to the ton. In 1928 and 1929 exploratory underground workings were carried some 825 feet below the productive ore body to a depth of 1,025 feet. The ore body was 100 feet long, 12 feet wide and tapered downwards to a depth of 200 feet below the surface. It consisted chiefly of chalcopyrite and, occupied the central part of a lenticular sulphide replacement body 225 feet long and as much as 40 feet wide. The deposit is in a body of schist (2) partly or completely surrounded by massive greenstone (4) that is invaded by small intrusions of quartz porphyry. Surrounding the central chalcopyrite-rich part of the deposit is a zone of mixed and banded sulphides in which sphalerite predominates, and this in turn, is surrounded by a zone in which pyrite is the abundant sulphide. Arsenopyrite and galena are minor constituents of the replacement body.

Occurrences of sulphide replacement bodies containing chalcopyrite have been found on the west shore of Schist Lake south of Mandy mine and in the vicinity of Hook and Dion Lakes. They occur in greenstone schists (4) adjacent to, or as inclusions in, quartz porphyry or related acidic intrusive rocks.

Gold occurs associated with arsenopyrite and other sulphides in a quartz vein cutting greenstone rocks (4) east of Douglas Lake. At localities east of Booteg Lake and south of Phantom Lake gold-bearing quartz veins occur in rocks intrusive into these greenstones.

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MAP 633A

SCHIST LAKE

SASKATCHEWAN AND MANITOBA

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

Miles 1 0 1 2 3

Approximate magnetic declination, 17°30′ East.

633A