Canada
Department of Mines
Hon. T. A. Crerar, Minister; Charles Camsell, Deputy Minister.

BUREAU OF ECONOMIC GEOLOGY
GEOLOGICAL SURVEY

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LEGEND

ARCHEAN (EARLY PRECAMBRIAN)

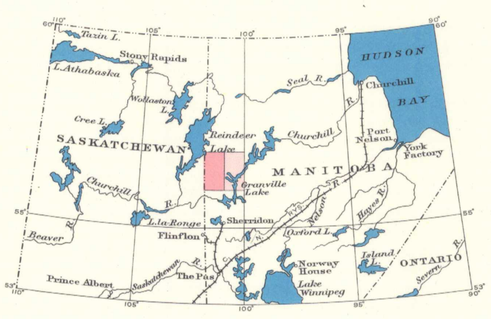
- **10** — *Granite, granite-gneiss, quartz diorite, diorite;* **10a**, *varieties exhibiting shearing or crushing*
- **9** — *Altered diorite and gabbro*
- **8** — **8a**, *biotite gneiss and schist (probably derived from Sickle sediments) injected with pegmatite or aplite; some quartzite and arkose.*
  8b, *complex of sedimentary gneiss and schist, in many places garnetiferous, and igneous gneiss (injections of granite, pegmatite or aplite) in about equal proportions.*
  8c, *sedimentary gneiss and schist predominating.*
  8d, *igneous gneiss predominating.*
- **SICKLE SERIES**
  - **5** — *Arkose, feldspathic sandstone, greywacke, quartzite; mica schist; thin lava flows may be interbedded with sediments in places*
  - **7** — *Hornblende gneiss injected by pegmatite and aplite and probably derived from Sickle sediments rich in ferro-magnesian minerals*
  - **6** — *Hornblende schist, hornblende gneiss, and amphibolite injected by granite, pegmatite or aplite and probably derived from Sickle lava*
  - **3** — *Conglomerate with thin interbeds of arkose*
- **PRE-SICKLE**
  - **1** — *Basic lavas, greenstone and greenstone schist; tuff; some rhyolite and trachyte*
  - **2** — *Hornblende schist, hornblende-biotite schist, hornblende gneiss and amphibolite, injected by granite, pegmatite, diorite or gabbro and probably derived from Pre-Sickle lavas*

Geological boundary (approximate)
Gneissic trend
Bedding (inclined)
Glacial striæ
Portage
Fall or rapid
Marsh
Height in feet ..... 1156'

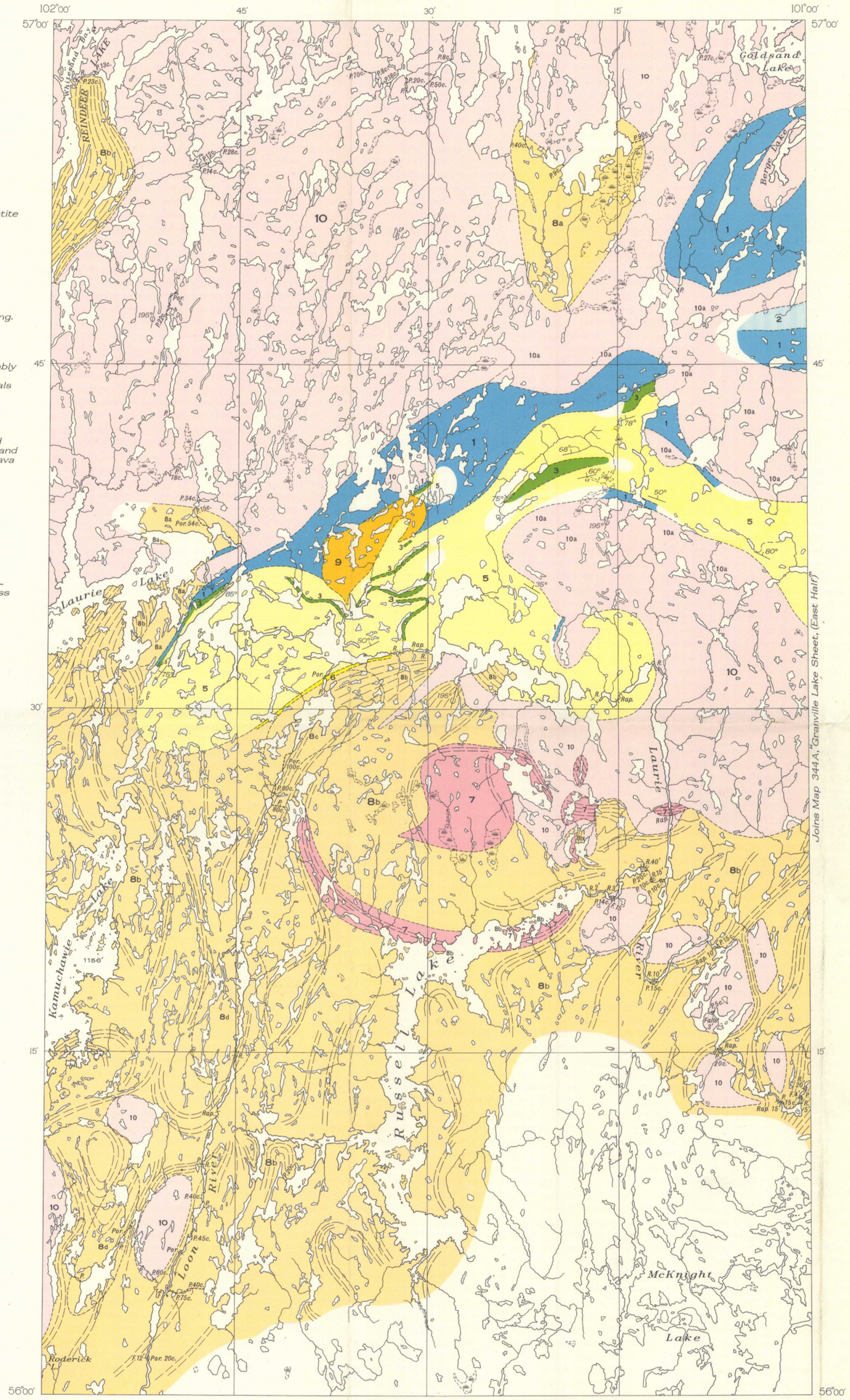
Geology by D. L. Downie, 1935.

Base-map prepared from information supplied by the Topographical and Air Survey Bureau, Department of the Interior.

Approximate magnetic declination, 18° East.



Scale, 1 Inch to 200 Miles



MAP 343A

GRANVILLE LAKE SHEET

(WEST HALF)

MANITOBA

Scale, ~~253440~~ or 1 Inch to 4 Miles

Miles 4 0 4 8 12

Kilometres 5 0 5 10 15 20

ACCESS

Granville lake is reached by canoe route from Sherridon by way of Kississing lake and Kississing and Churchill rivers. An alternative route starts from Flinflon and follows the summer freight road to Island Falls. From Island Falls the route follows the Churchill as far as Sisipuk lake. There it turns north, crosses Loon lake, ascends Loon river to Laurie river and descends the river to Granville lake. Most parts of the area can be reached without much difficulty from Granville lake by way of the Keewatin and Laurie rivers, or from Sisipuk lake by way of the Loon and Laurie rivers.

PHYSICAL FEATURES

Granville lake, 850 feet above sea level, occupies the lowest depression in the area. From it the ground rises gradually to an elevation of about 1,150 feet in the vicinity of Kamuchawie lake at the western margin of the map-area, and to almost the same elevation at Goldsand lake in the north. The main drainage channels are broken by many rapids and falls making travel rather slow and arduous. The country in detail is rugged and characterized by rounded hummocks and abrupt ridges with intervening depressions occupied by muskeg or lakes. In the northern part the vertical relief in few places is more than 150 feet, in the southern part, it reaches as high as 350 feet. The most extensive drift area forms a belt about 9 miles wide extending from the neighbourhood of Goldsand and Berge lakes, southwest to within 8 miles of Laurie lake.

GENERAL GEOLOGY

The oldest known rocks are the pre-Sickle volcanics (1). Basic lavas form by far the greater part of the group. Normally the lavas are massive and fine-grained but porphyritic phases occur in which phenocrysts of altered feldspar stand out on the weathered surface. Fine-grained, bedded, tuffs are well exposed south of Berge lake. Locally, the basic lavas have been recrystallized to form amphibolites, and hornblende-biotite gneisses and schists (2). Acid lavas occur at a number of localities, but make up only a small proportion of the pre-Sickle group. Of these pale green to greyish rhyolite and trachyte predominate, but some exceedingly fine-grained types are almost black. The volcanic rocks are cut by numerous dykes of pegmatite, aplite, quartz porphyry, granite, lamprophyre, and amphibolite.

The Sickle series (3 and 5) is younger than the volcanic group. The main mass of the Sickle sediments forms a syncline that extends westward from the east edge of the map-area to the central part of the map-area, where it swings southwest and the body of sediments spreads out along Laurie river. There, several minor anticlinal folds are developed in the major syncline and the structure is further complicated by the intrusion of a large, irregular shaped mass of diorite (9). The conglomerate (3) in this neighbourhood is not believed to be basal. The conglomerate elsewhere is at the base of the series and passes gradually, with an increasing number of arkosic interbeds, into the overlying sediments; these grade from relatively coarse-grained arkose and feldspathic sandstone into finer-grained greywacke and quartzite. In places they are altered to micaceous and garnetiferous schists and gneisses. They are normally grey on the fresh surface, but pink varieties are common; on the weathered surface, they are reddish brown and grey. Lavas are local in extent and concentrated near the base of the series as narrow flows alternating with thin sedimentary beds. The prevailing types are fine-grained, massive to schistose, grey to green, acidic rocks. The conglomerate band southeast of Laurie lake is overlain by an exceedingly complex association of sediments and lavas.

In the vicinity of Laurie river, the sediments have been converted to biotite and biotite-hornblende gneisses and schists (8a), locally injected with pegmatite and aplite. The conglomerate band two miles west of the large hook-shaped expansion of Laurie river has been so highly altered that the pebbles are not readily distinguished from the matrix. South of Laurie river, the metamorphism has been more intense and the sedimentary gneisses have been extensively invaded by igneous material to form a complex of varying proportions of sedimentary and igneous gneisses (8b, 8c, 8d). The igneous gneisses are derived largely from granite, pegmatite, and aplite and are grey and pink. Small dark coloured areas of hornblende and hornblende-biotite gneiss may have been derived from basic intrusive rocks. The sedimentary gneisses are commonly grey to dark grey, medium grained, granular rocks. The prevailing types vary from a quartz-feldspar-biotite gneiss to an impure quartzite. In the more argillaceous rocks garnets are common. In a few areas where the metamorphism has been less intense, bedding planes and evidences of the original fragmental character are well preserved. Areas of hornblende gneiss (7) showing pronounced banding and, in rare instances, bedding planes, are considered to have been derived from Sickle sediments that had a high content of ferromagnesian minerals. The rocks of other areas have the appearance and characteristics of altered volcanics and are regarded as being altered pre-Sickle volcanics (2) or Sickle volcanics (6).

Dykes, sills, and irregular stock-like masses of rocks (9), grading from diorite to gabbro, cut the Sickle and pre-Sickle rocks. The rocks are in general, medium to coarse-grained and commonly are black but coarser-grained phases show crystals of black ferromagnesian minerals imbedded in a mass of greyish white crystals of feldspar. They are cut by granite and pegmatite dykes and are considered to be older than the acid intrusives. Numerous trap dykes also cut both the Sickle and pre-Sickle rocks.

The acid intrusives (10) grade from granite to quartz diorite and locally to diorite. The two most widespread rock types are microcline granite and quartz-oligoclase diorite. The massive varieties are medium to coarse grained, and grey and pink. Porphyritic phases are common. The crushed granites (10a) may be older than the undeformed granites.

ECONOMIC GEOLOGY

Numerous pyrrhotite replacement deposits occur in the schists and gneisses south of Laurie river. Samples of two of these assayed only a trace of gold with negligible values in copper.

A mineralized zone occurs in the neighbourhood of the northeast arm of the large diorite intrusive (9). The relations of the deposit to the surrounding rocks are obscured by a rusty capping of oxidized material, but the deposit is believed to be associated with offshoots from the large mass of diorite. The sulphides are largely pyrrhotite with some pyrite and small amounts of chalcopyrite.