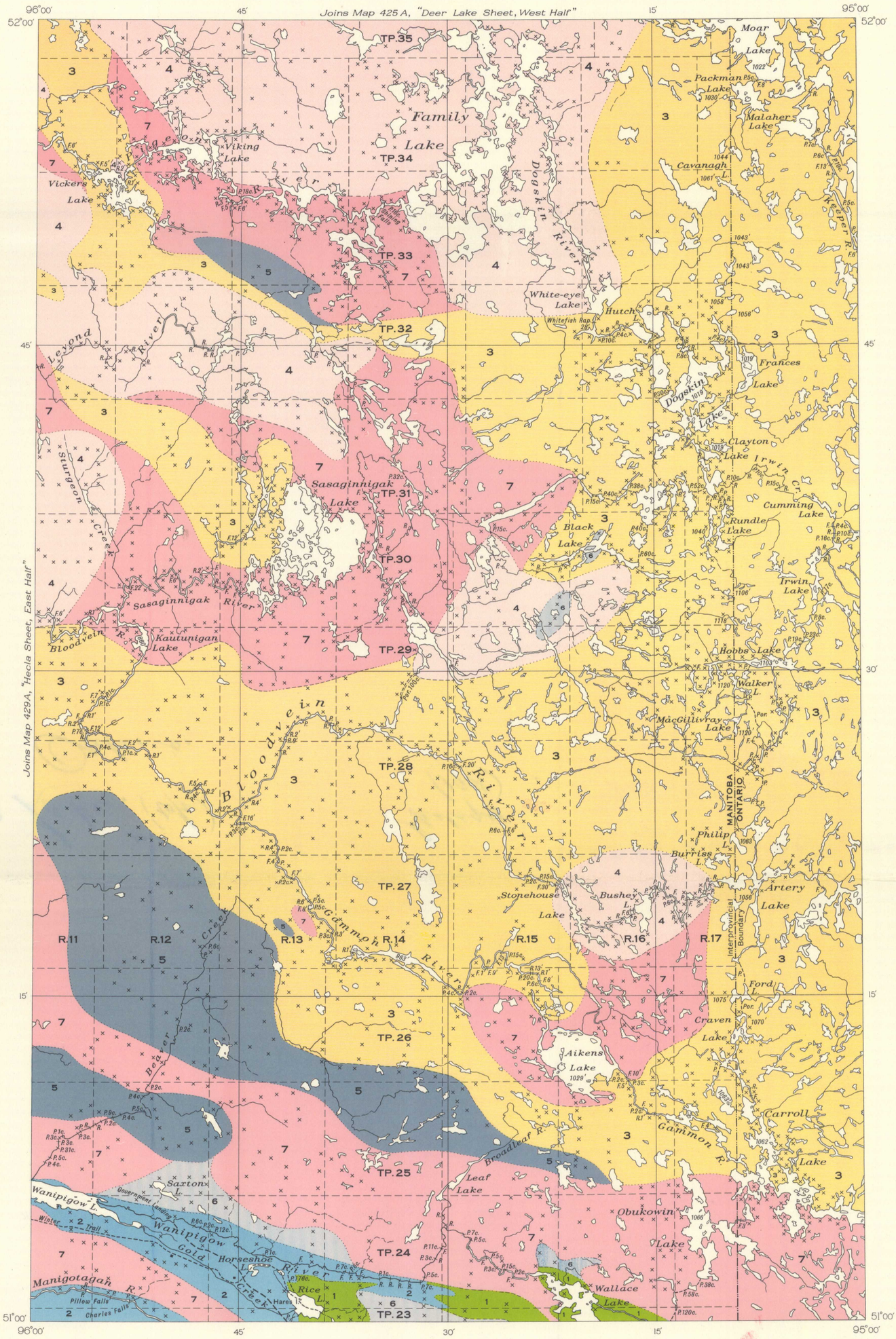
CANADA
DEPARTMENT OF MINES AND RESOURCES
HON. T. A. CRERAR, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER
MINES AND GEOLOGY BRANCH
JOHN McLEISH, DIRECTOR
BUREAU OF GEOLOGY AND TOPOGRAPHY
F. C. C. LYNCH, CHIEF
ISSUED 1938



LEGEND

ARCHEAN (EARLY PRECAMBRIAN)

- 4 — Granite
- 3 — Granodiorite, quartz diorite
- 2 — Greywacke, quartzite, arkose, slate, conglomerate; some dacite flows
- 1 — Basalt, andesite, dacite, rhyolite; interbedded greywacke, tuff, chert and iron formation
- 7 — Granite, granodiorite, quartz diorite
- 6 — Granite, granodiorite and quartz diorite; subordinate hornblende-biotite gneiss, biotite gneiss, and biotite–chlorite schist
- 5 — Biotite–hornblende gneiss and schist derived from (1) and (2); subordinate granitic intrusives

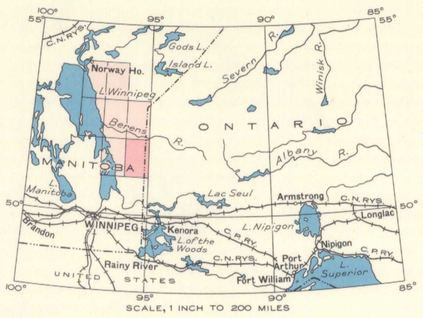
Geological boundary (approximate, assumed)
Glacial striæ
Outcrops where observed
Road not well travelled
Trail or portage
Interprovincial boundary
Township boundary (unsurveyed)
Fall or rapid
Height in feet

SOURCES OF INFORMATION

Compiled and reproduced by the Bureau of Geology and Topography from information supplied by Federal Government Departments. Geology by A.W. Johnston, 1936.

TRUE NORTH
MAG. NORTH

Approximate magnetic declination, 8° East.



SCALE, 1 INCH TO 200 MILES

ACCESS

The area may be reached from Lake Winnipeg by canoe by ascending the Pigeon, Bloodvein or Wanipigow rivers. These streams are well travelled with good portage trails cut around the numerous falls and rapids. Within the area, in addition to the rivers mentioned above, the Dogskin, Sasaginnigak, Gammon rivers and Beaver creek are navigable with canoes. Travel on the Leyond river is difficult except during high water in the spring.

PHYSICAL FEATURES

Viewed from the higher hills the surface appears flat or plain-like and presents an even skyline to the observer. In detail the surface is rough and hummocky with steep rocky hills and ridges rising 50 to 150 feet above the lakes and low areas of muskeg. The rivers flow along poorly defined valleys and are interrupted by many rapids and falls. The country is sparsely wooded with jackpine, spruce, and poplar. The trees are small and large areas have been burned by recent forest fires.

The area was glaciated in Pleistocene time by ice moving southwestward. The glacial drift left by the retreating ice is not thick but small accumulations of boulder-clay, sand, and gravel occur in places. Rock outcrops are plentiful over most of the area.

GENERAL GEOLOGY

The oldest rocks within the area are a series of volcanic and sedimentary strata that outcrop as a narrow, northwesterly trending belt near the southern border of the area. All the members of the series are steeply folded; dips as low as 45° are uncommon. In many localities the sediments and volcanics are interbedded; thin bands of bedded material are present in most areas of volcanic rocks but large areas of sediments contain few or no lava flows. No structural or stratigraphic break has been recognized within the series, but the assemblage is divisible into two groups based on relative abundance of lava flows. The group composed predominantly of volcanic rocks (1) includes light grey, fine grained, porphyritic rhyolite, greenish to dark grey, fine grained porphyritic dacite, fine grained, black andesite and medium grained, greenish to black basalt and their derived schists. Beds of sedimentary strata, including greywacke, tuff, chert, and iron formation, are locally well developed but constitute a relatively small proportion of the whole group. Dykes of granite porphyry are abundant in the lavas and sediments east of Rice lake. The group composed predominantly of sediments (2) includes thick bedded, medium grained, buff to white quartzite, greenish grey rather coarse grained arkose, light to dark grey, fine grained greywacke and thinner, dark, slaty beds and lenses of conglomerate. Grey to light green dacite and dacite porphyry lava flows showing pillow structure occur interbedded with the sediments but do not make up more than a small part of the group.

Intrusive granitic rocks ranging in composition from granite to quartz diorite underlie by far the greater part of the area. All are younger than the volcanics and sediments. They may be divided into two groups. The older and more basic group of intrusives (3) varies in composition from granodiorite to quartz diorite. The rocks of this group are grey, medium to coarse grained, and are composed of grey to white oligoclase, 10 to 20% quartz, and a relatively large proportion of dark minerals such as biotite, hornblende and chlorite. Foliation is generally well developed but not invariably so. The younger group of intrusives (4) are largely granites. They are pink, medium to coarse grained rocks composed of pink orthoclase or microcline with a subordinate amount of plagioclase, 20 to 30% quartz, and a relatively small proportion of biotite, hornblende, or chlorite. Porphyritic phases are common. Foliation is locally developed but in general is absent. Aplite and pegmatite dykes cut both groups of intrusives. They are composed of quartz and feldspar, some mica, and in places contain tourmaline and molybdenite.

Contacts between the group of grey granodiorites and quartz diorites and the younger group of pink granites are generally irregular and poorly defined. Pink granite as dykes and irregular shaped masses intrudes the older group of granodiorites and quartz diorites. Intrusives of both groups are intermingled throughout large areas (7), the rocks of both groups making up a considerable proportion of the whole.

Biotite and biotite-hornblende gneisses (5) derived from sediments and probably in part from lava flows, form two belts near the southwest corner of the area. The gneisses are a monotonous succession of banded rocks composed of quartz, feldspar, biotite and hornblende in various proportions. The banding is mainly due to the original bedding of the sediments but in part is the result of lit-par-lit injection of quartzose granitic material. The gneisses are cut by innumerable pegmatite dykes which in places make up 20% or more of the bedrock. A wide transition zone generally occurs along the contact of the gneiss with large intrusive bodies.

Throughout the area the group of granodiorites and quartz diorites contains inclusions of the older rocks which they have invaded. The younger pink granites also contain inclusions in places but they are not as common as in the older group of intrusives. The inclusions range from small rounded or angular blocks to large masses many feet in diameter. They are commonly schistose or gneissic and include hornblende-biotite gneisses, quartz-biotite-feldspar gneisses and mica-chlorite schists; blocks of greywacke, feldspathic quartzite and greenstone are not uncommon. Areas where the inclusions are abundant occur as zones (6) either within the intrusives or along the borders of areas of sediments and volcanics. The intrusives form the greater proportion of the bed rock within these zones but the inclusions make up an appreciable amount of the whole.

ECONOMIC GEOLOGY

Gold deposits occur as quartz bodies along shear zones within the volcanic and sedimentary rocks (1 and 2) near the southern border of the area. Narrow shear zones carrying small quartz veins are widespread, especially within the volcanic members of the series (1). Structural features such as contacts between lava flows, contacts between lava flows and beds of chert, tuff or quartzose sediments, or contacts of small intrusive bodies with flows or sediments appear to control the development of the quartz bearing shear and fault zones. The gold occurs as small particles in the quartz. Much of the gold-bearing quartz does not contain sulphides although chalcopyrite and pyrite generally occur along the margins of the quartz veins and lenses, and adjacent to included fragments of the wall rock.

MAP 428A

CARROLL LAKE SHEET

(WEST HALF)

MANITOBA–ONTARIO

Scale, ~~253,440~~ or 1 Inch to 4 Miles

Miles 4 0 4 8 12

Kilometres 5 0 5 10 15