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

GEOLOGICAL SURVEY

SHEET 53 K (East Half)

ACCESS

From Norway House, at the north end of lake Winnipeg, a well-travelled canoe route follows Nelson, Echimamish, and Hayes rivers as far as Logan lake, where it turns east across a chain of small lakes to Aswapisiwanan lake and follows it and Touchwood lake to Gods lake. From Gods lake the route continues east over a succession of small lakes and streams to Edmund lake, thence over another chain of small lakes and streams involving several long portages to Kistigan lake from where good canoe routes lead north and south. An old Indian route goes east from Kistigan lake to Echoing river via Ney lake and river. Only the larger streams are navigable all summer. A few of the smaller streams may be travelled in early spring but with the lowering of the water-level, they become impassable.

A winter road links Ilford, on the Canadian National Railways, with Gods lake, and is being extended east to Foster lake. The best method of entering the area is by airplane.

PHYSICAL FEATURES

Rounded, hummocky ridges of irregular sizes and shapes are separated by narrow, steep-walled valleys and by low depressions occupied by muskegs, lakes or streams. The average elevation of the hills is about 40 feet above the level of adjacent swamps and lakes. The drainage pattern has been controlled largely by the position, size, and outline of the drift deposits left by the Pleistocene ice sheets. The streams pursue tortuous courses, are broken by numerous rapids and falls, and have many lake expansions dotted with islands. The area as a whole is rather heavily drift covered; the outcrops are mostly confined to the margins of the larger streams, and the south shores of lakes.

GENERAL GEOLOGY

The oldest known rocks are those of the Hayes River group (1) and they form a complex of interbedded sediments and lava flows. The volcanic members distinctly predominate and range in composition from basalt to rhyolite. The sedimentary members occur at various horizons as thick beds of pryoclastics, slates and quartzites. Massive, fine-grained black basalt occurs as thin flows between other members of the group and forms only a minor constituent. Porphyritic basalt with greyish white crystals of feldspar embedded in a fine-grained, black matrix is exposed along the east shore of Monument bay, Stull lake. Massive, fine-grained, dark green, andesitic rocks are the characteristic types of the Hayes River group. Over wide areas they are altered to greenstones. Andesite porphyry is well exposed along the southwest shore of Little Stull lake. Chlorite, hornblende, and hornblende-biotite schists occur locally in all parts of the area underlain by greenstones. Massive, fine-grained, light green or greyish dacite and rhyolite are associated with andesitic lava at Little Stull lake and the north end of Stull lake. Good exposures of agglomerate occur immediately south of Margaret lake; there angular fragments of acidic lava up to 6 inches long stand out on the weathered surface. At Stull lake, tuffs and volcanic breccia are exposed at low water-level along the northeast shore of Monument bay. The tuffaceous rocks are dark green and consist of angular fragments of lava that range from a few millimetres to one-quarter inch in size, and are cemented together with fine-grained, ashy material. The volcanic breccia is a spotted rock with dark green, angular fragments of lava embedded in a more acid, volcanic matrix. Quartzite and slate occur at various horizons within the group. The quartzite in places consists of alternating beds of light and dark rock. The slates are fine-grained rocks showing alternating bands of dark green and black material, and are associated with andesitic lava. A slaty cleavage parallels the bedding planes. The slates closely resemble the associated tuffaceous rocks and may be their altered equivalents. Iron formation is well exposed along the northeast shore of Monument bay, Stull lake and consists of alternating bands of rusty weathering, reddish brown material and grey chert.

The Oxford group (2) is younger than the Hayes River group. It is composed chiefly of medium-grained, arkosic rocks, with local developments of conglomerate and fine-grained, quartzose types such as quartzite and chert. Relatively thin beds of argillite and slate are present locally. Micaceous schists are widespread. The conglomerate holds pebbles and boulders derived from the Hayes River group and in some areas marks the base of the sedimentary group, and was evidently deposited on an erosion surface of the underlying rocks. At other places the conglomerate is lacking and no definite boundary can be drawn between the two groups of rock. At Little Stull lake the conglomerate is interbedded with arkose at or near the base of the Oxford group. The arkose and the matrix of the conglomerate normally are fine-grained, light green or grey and composed of glassy, fragments of black quartz and white feldspar just visible to the naked eye, embedded in a greenish mass of chloritic and micaceous material. In this locality, the arkose and conglomerate are overlain by approximately 2,000 feet of arkose and greywacke, in turn overlain by chert, argillite, quartzite, and slate. The chert is massive, hard, black and breaks with a conchoidal fracture. The argillite is black and thinly laminated. The slate is black, compact, and brittle. At Stull lake three distinct bands of conglomerate, each approximately half a mile wide, occur in the area of Oxford group sediments and along the north part of the east shore of Monument bay, Stull lake, thin lenses of conglomerate are interbedded with arkosic sediments and dacites and rhyolites like those of the Hayes River group. Dark grey, fine-grained, bedded rocks containing a considerable amount of biotite also occur and are altered locally to hornblende gneiss and hornblende-biotite gneiss. Quartzite outcrops at a number of localities on islands and points. It is typically a massive or laminated, glassy, dark grey rock weathering greyish white.

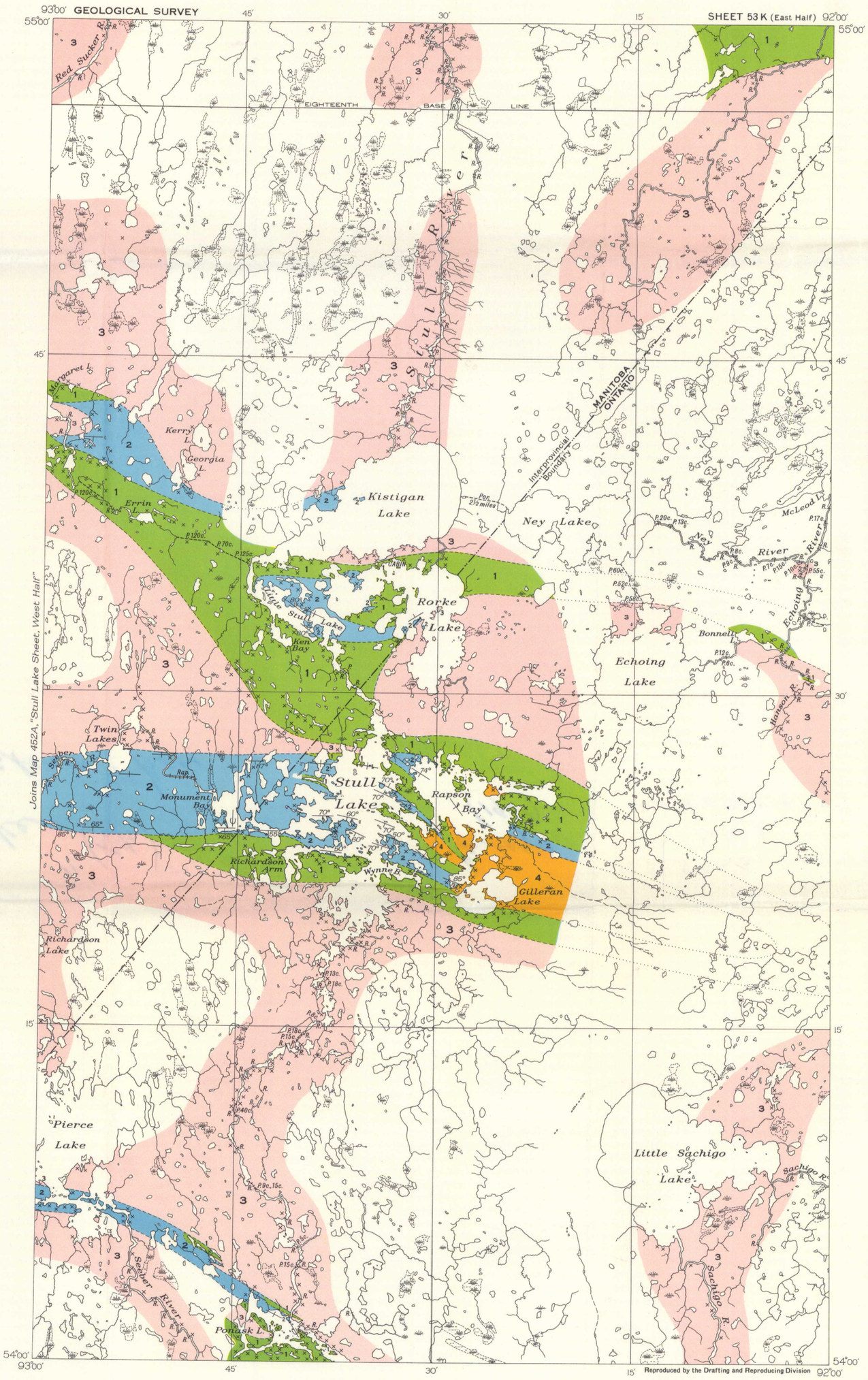
The Hayes River and Oxford groups are invaded by batholiths of granitic rocks (3) that include microcline granite, biotite granite, and gneissic phases of these varieties. Stocks and dykes of granite invade the sediments and are interpreted as offshoots from an underlying granite batholith. Pegmatite dykes are common and cut both the granitic and pre-granitic rocks. They strike in all directions and range in width from a few inches to a few hundred feet. Pink aplite dykes are closely associated with them and each cuts the other. Small dykes of dark green lamprophyre cut the granitic and pre-granitic rocks at a number of points in the area. They average about 3 feet in width and in general are massive and fine grained. Dykes of quartz porphyry are abundant in all parts of the areas underlain by pre-granitic rocks. They are dark, greenish grey, fine-grained, glassy rocks weathering greyish white. Phenocrysts of smoky quartz are conspicuous on weathered surfaces. Dykes of dark grey, feldspar porphyry, spotted with abundant white feldspar phenocrysts cut all members of the Hayes River and Oxford groups.

West of Stull lake a large mass of diorite (4) intrudes the sediments and lavas and is considered to be younger than the granite. Diabase dykes are few and cut both the pre-granitic and granitic rocks. They are characterized by a fresh appearance both in the hand specimen and thin section. They are considered to be the youngest consolidated rocks of the district.

ECONOMIC GEOLOGY

Near Little Stull lake the volcanic and sedimentary rocks are cut by numerous quartz porphyry and feldspar porphyry dykes that strike nearly parallel to the bedding and schistosity of the invaded rocks. Many of the dykes carry disseminated grains of pyrite; others are cut by pryite-bearing quartz stringers. A zone of pronounced shearing occurs near the contact between sediments and lavas along the southwest shore of the lake, and within it small, lenticular bodies of blue quartz mineralized with pyrite, were observed at a number of points and in two places carry a few specks of visible gold. Sheared and fractured zones occur in the body of sediments about Little Stull lake. Some of these are cut by mineralized quartz veins and gold was panned from the rusty capping of a few of them. Porphyry dykes holding disseminated pryite, pyrrhotite and arsenopryite cut the sediments in the vicinity of the hook-shaped bay north of the lake. Shear zones bearing pyrite and pyrrhotite were noted in the vicinity of the oval shaped boss of granite 12 miles northwest of Little Stull lake.

Along the south shore of Wynne bay, Stull lake, small quartz veins in silicified quartzite beds hold pyrite and pyrrhotite and some gold. Diamond drilling on this showing is said to have given disappointing results. In sediments fringing the south side of Richardson arm, Stull lake, a narrow, fractured zone carries sphalerite with some chalcopyrite and pyrite.



LEGEND

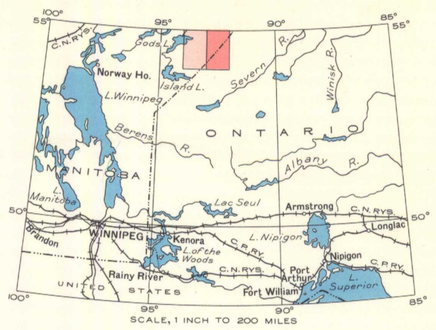
ARCHEAN (EARLY PRECAMBRIAN)

- 4 — *Diorite*
- 3 — *Granite, granite-gneiss, quartz diorite, quartz diorite-gneiss*
- 2 — *OXFORD GROUP: conglomerate, arkose, greywacke, slate, quartzite, chert; gneiss, garnetiferous schist*
- 1 — *HAYES RIVER GROUP: andesite, dacite, rhyolite, basalt, agglomerate, breccia, tuff; quartzite, slate, iron formation; mica schist, hornblende schist, chlorite schist*

Geological boundary (defined, approximate, assumed)
Outcrops where observed
Bedding (inclined, vertical)
Glacial striæ
Portage
Interprovincial boundary
Stream (position approximate)
Rapid
Marsh

Base-map compiled by the Topographical Survey from information supplied by Federal Government Departments.

Geology by D.L. Downie, 1936, and from maps by Ontario Department of Mines.



SCALE, 1 INCH TO 200 MILES

MAP 451A

STULL LAKE SHEET

(EAST HALF)

MANITOBA AND ONTARIO

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

Miles 4 0 4 8 12

Kilometres 5 0 5 10 15

Approximate magnetic declination, 2° East.

451A