

DESCRIPTIVE NOTES

The map-area is in the barren lands 210 miles northeast of Yellowknife and 95 miles north of the nearest part of Great Slave Lake. Elevations range from about 1,100 to 1,600 feet above sea-level, but local relief does not exceed 150 feet. Low-lying areas, characterized by gentle gradients, are commonly underlain by sedimentary rocks, whereas higher, more rugged terrain generally marks granitic areas. Glacial erosion has rounded, polished, and grooved the bedrock. The ice moved southwesterly, and later westerly and northwesterly about parallel with the numerous esker ridges. Glacial drift covers perhaps 75 per cent of the area south of a line extending through the north shores of Carpenter Bay (of Aylmer Lake) and Thonokied Lake, but north of this line more than 90 per cent of the bedrock is concealed by glacial debris, mainly as rounded hills as much as 150 feet high and 3/4 to 1 mile or more in length. Bedrock is commonly well displayed on the northwest, west, and southwest shores of the larger lakes, particularly Aylmer Lake. Numerous well-sorted outcrops also occur along Pleistocene drainage routes marked by eskers or by scattered sand and gravel deposits interspersed with numerous, small, rounded lakes. Good examples of drainage routes of the latter type extend northwesterly from the east boundary of the map-area at latitude 64° 15' through the head of Carpenter Bay, and westerly from near the mouth of Thonokied River to the north shore of Mackay Lake at longitude 110° 0'. Elsewhere many of the detailed features of outcrops are obscured by weathered or lichen-covered surfaces. Most of the map-area supports only a tundra growth of mosses, lichens, and various low shrubs and grasses. Here and there, in sheltered places, are patches of ground birch, willow, or alder rarely exceeding a height of 2 or 3 feet. Although these might provide emergency fuel, prospectors should provide gasoline or some other liquid for all heating and cooking. In 1948 caribou were sufficiently abundant after July 25 to provide a dependable and readily obtainable source of food. Messrs. J. Hagren, S. Otto, and M. P. Murphy have trapped parts of the map-area for some years from cabins respectively north of the west end of Aylmer Lake, on Back River between Musko and Sussex Lakes, and at Musko rapids, but only M. P. Murphy has remained in the area throughout the summer.

Basalts or andesitic lavas and tuffs, presumably the oldest members of the Yellowknife group, have been recrystallized to dark green or black schists (1) composed of needles of hornblende in a matrix of plagioclase and quartz.

Well-bedded greywacke and slate (2) are exposed in a few places in the southwest corner of the map-area, but, because of the widespread drift, the boundary between these rocks and their metamorphosed equivalents (3) was assumed near the south boundary of the map-area.

Elsewhere, the sedimentary members of the Yellowknife group have been converted to fine- to coarse-grained quartz-biotite schist (3) displaying aggregates of biotite, oval nodules of cordierite, prisms of andalusite and staurolite, garnets, and fibrous sheaths of sillimanite. Along the shores of Aylmer Lake and in a few other places beds ranging from less than an inch to several feet in width are still well defined, although so thoroughly recrystallized that it was rarely practicable to determine the tops of beds by gradation of grain size. Elsewhere schistosity has nearly or completely obliterated the bedding. The strata have been folded along northwesterly trending axes and are steeply inclined. Although bedding and cleavage commonly trend northwesterly they tend to parallel granitic contacts and thus, especially near the borders of strata, may diverge widely from the regional trend. In nearly all instances beds dip away from adjacent granitic intrusions.

The quartz diorite (4) is a medium- to coarse-grained, foliated rock with a brown, pitted, decomposed surface. It contains about 15 per cent clear quartz, 50 per cent grey to greenish andesine, 25 per cent biotite and hornblende, and a little epidote. In a few places it is cut by dykes of pink biotite-muscovite granite or granodiorite (6) or forms inclusions in that rock. East of Carpenter Bay and north of Sussex Lake pink muscovite-tourmaline pegmatite (6) comprises 25 to 75 per cent of the intrusions (5).

The folding and metamorphism of the Yellowknife strata were accompanied by the intrusion of pink or grey, medium-grained, equigranular granodiorite, granite, and related rocks (6). The granodiorite and granite contain about 30 per cent pink honey-combed quartz, 20 to 40 per cent microcline, 40 to 50 per cent plagioclase (probably mostly oligoclase), and biotite or muscovite or both. The border phases of many of these intrusions are associated with much muscovite-tourmaline pegmatite, contain more muscovite than biotite, and are finely foliated parallel with the margins. They also contain tabular bodies of quartz-biotite schist (3) that parallel this foliation and that of the nearby areas of sedimentary rocks.

Numerous pegmatite dykes have invaded the adjacent schists within peripheral zones that extend as far as a mile beyond the granitic bodies. A few bodies of biotite-hornblende quartz diorite and granodiorite, not differentiated on the accompanying map, were noted south of Aylmer Lake in the extreme southeast corner of the map-area, northeast of Savannah Lake, 5 miles east of the mouth of Ice River, and north of Thonokied Lake. In general appearance they resemble the biotite-muscovite granodiorite and granite except that they contain hornblende; most specimens examined under the microscope contain, unlike those from the quartz diorite east of Aylmer Lake (4), a little microcline.

Areas of mixed intrusive rock and schist and gneiss (7) contain between 25 and 75 per cent schist and gneiss, whereas those containing less than 25 per cent schist and gneiss were not differentiated from the intrusions (6).

The pyroxenite (A) south of Savannah Lake is a medium-grained, black, magnetic rock, about 85 per cent of which is composed of dark green pyroxene, and 10 per cent of amphibole.

Dykes of medium- to fine-grained, dark green, brown weathering diabase and gabbro (8) are the youngest rocks recognized. They are nearly vertical, and outcrop more commonly in troughs than as ridges. Many are between 100 and 200 feet wide, and most of those mapped exceed 50 feet. Most of the dykes strike north 10 to 40 degrees west, but a few strike northeasterly or easterly. They are composed of about equal parts of labradorite and pyroxene, with accessory metallic iron minerals. Some contain a little quartz or black amygdale-like aggregates of chlorite.

Little prospecting has been done in the map-area, and no commercial mineral deposits have been found. In other areas, however, important gold deposits, genetically related to granitic rocks very similar to those in this map-area (6), occur in quartz veins in nodular Yellowknife strata; it is, therefore, not unreasonable to expect that gold occurs here. Quartz veins are fairly common in the sedimentary rocks (3), particularly along the shores of Aylmer Lake; most of them parallel the bedding or cleavage and contain a little cherty white feldspar and mica. The numerous pegmatite dykes should be carefully scrutinized for minerals containing such elements as beryllium, lithium, tantalum, and tin; spodumene (lithium) was found in two dykes, and beryl in one.

- PROTEROZOIC**
- 1. Biotite-hornblende-quartz diorite
 - 2. Greywacke and slate
 - 3. Biotite-hornblende-quartz schist derived from 2
 - 4. Granodiorite, granite, quartz diorite, pegmatite
 - 5. Biotite-hornblende-quartz schist and gneiss
 - 6. Pyroxenite (Probably younger than 3 and older than 8, age relative to 4 and 6 uncertain)
- ARCHAEO**
- 7. Hornblende schist
- Glacial striae
- Mineral occurrence
- Beryl Be
 - Spodumene Li

LEGEND

- Portage
 - Survey monument
 - Preserve boundary
 - Lake and stream (position approximate)
 - Fall and rapid
 - Glacier
 - Marsh
 - Reef or small island
 - Sand or gravel
 - Esker
 - Approximate height in feet above Mean sea-level
- Geology by C. S. Lord, 1948
- Base Map Surveyed by the Topographical Survey 1942
- Cartography by the Geological Mapping Division, 1949

AYLMER LAKE
DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES

Scale: 1 inch to 2 miles