GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 43 D

LEGEND

PALAEOZOIC

SILURIAN

7 — SEVERN RIVER FORMATION: dolomite, dolomitic limestone, sandstone

PRECAMBRIAN

6 — Syenite

5 — Massive granitic rocks: mostly quartz monzonite and granodiorite; some granite; up to 50% foliated inclusions

4 — Porphyritic foliated and unfoliated granitic rocks; quartz monzonite, granodiorite, granite

3 — Foliated granitic rocks: mostly granodiorite; some quartz monzonite and granite; minor granitic gneiss; up to 50% massive granitic dykes (mainly 5 but some 4)

2 — Dioritic rocks, foliated and unfoliated: 2a, melanocratic granodiorite and quartz diorite; 2b, quartz diorite; 2c, hornblende gabbro; 2d, basic dykes

1 — Metasedimentary and metavolcanic rocks: 1a, quartzite, greywacke, paragneiss, schist; 1b, tuff, agglomerate; 1c, pillow lavas, greenstones; minor metasediments; 1d, undivided

Note: 7 7 / 1 and 2 indicates extension of Precambrian rocks under Palaeozoic rocks based on aeromagnetic information

Heavily drift-covered area

Outcrop (inspected, observed from the air)

Geological boundary, approximate (assumed where under heavy drift)

Bedding, tops unknown (inclined, vertical)

Pillow lava, tops known

Gneissosity, schistosity, foliation (inclined, vertical, dip unknown)

Glacial striae (direction of ice-movement known)

Drumlinoid ridges

Esker and associated sand gravel and boulder deposits

Fossil locality

Mineral occurrence (asp, Arnsenopyrite; cp, Chalcopyrite)

Geology by H. H. Bostock, 1961

Building

Trading post

Wireless station

Rapids

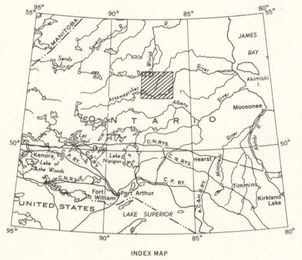
Marsh

Height in feet above mean sea-level

Cartography by the Geological Survey of Canada, 1962

Mean magnetic declination, 4° 55' West, decreasing 3.4' annually. Readings vary from 3° 38' W in the SW corner to 6° 37' W in the NE corner of the map-area

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa



INDEX MAP

Adjoins Map 6-1962 "Fort Hope"

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MAP 4-1962
GEOLOGY
LANSDOWNE HOUSE
ONTARIO

Scale: One Inch to Four Miles = 1/253,440

Miles 4 2 0 4 8 12

DESCRIPTIVE NOTES

The map-area is best reached by chartered plane from Armstrong or Nakina on the Canadian National Railways main line.

In the west half the surface topography is characterized by drumlinoid ridges, as much as 100 feet high, which form a broad arcuate pattern concave to the northwest. These ridges are composed of bouldery sand till. Lower ground may be covered locally by a thin veneer of clay. Eskers and associated glacial deposits are, in this part of the area, composed of sand with local concentrations of gravel and boulders.

East of the drumlinoid-ridge area the topography is more even and is characterized by broad areas of muskeg fringed with spruce thickets. Muskeg areas generally indicate an organic cover in excess of 2 feet but in no case did lake- or river-cuts reveal more than 12 feet of organic material. Wave-washed boulders may be found within 2 feet of the surface in spruce thickets. The eastern half of the area is characterized by a cover of hard-packed grey-brown pebbly clay till which, along parts of Attawapiskat Valley, forms bluffs 20 to 30 feet high. A linear complex of partly wave modified sand and silt ridges stretches from the northeast corner of the map-area in a south-and-southwesterly direction. Greatest relief in the area is where Attawapiskat River cuts a sand ridge that rises 80 feet above the general surface on the eastern edge of this complex.

Glacial striae along Attawapiskat River, below a point 10 miles up the north channel from its lower junction, suggest two directions of ice-movement—one to the southwest, the other to the northwest. Striae on the most easterly outcrop of Precambrian rocks along the river suggest that the northwesterly-moving ice moved more directly west at this point. Age relations between the two sets of striae are not clear but the presence of northwest striae on surfaces protected from the southwesterly-moving ice suggest that the former was the earlier direction of movement. The arcuate pattern of drumlinoid ridges in the western half of the area is truncated by a more subdued fluting which trends slightly east of south and probably indicates the direction of latest ice-movement in this area.

At the extreme east border of the area, in Attawapiskat Valley, up to 25 feet of fine white sand, gravel, and laminated clay is exposed locally beneath the till.

Interpretation of bedrock beneath large drift-covered areas has been made largely on the basis of aeromagnetic maps. Areas of strongly foliated rocks generally produce a directional magnetic pattern which may be absent over predominantly massive rocks. The magnetic pattern over volcanic belts varies considerably and cannot safely be used to differentiate these rocks from the quartz diorites, the more mafic granodiorites, and some sediments. The magnetic data have been most useful in extending approximate contacts into areas of extensive drift cover. The five most northerly belts of unit 1 appear to be extensions of similar belts in the Wunnumin Lake area to the west, as shown by their magnetic trends. The southern two may be extensions of similar rocks to the south and southwest in Fort Hope map-area. The belts at Fishbasket Lake and Rowlandson Lake are composed chiefly of metavolcanic rocks, with quartz-rich gneisses prominent at the northeastern end of the former. The Mameigwess Lake belt, lying between the above belts, though poorly exposed, contains greywacke and agglomerate in addition to metavolcanic rocks. The two belts between Ekwan and Muketei Rivers comprise micaceous and chloritic schists and quartz-rich gneiss, with some intermediate, commonly porphyritic, metavolcanic rocks. Well-preserved pillow structures are present along Fishbasket River and suggest that the rocks there dip steeply to the northwest but are not overturned. In the vicinity of Rowlandson Lake and to the east, the metavolcanic rocks are extensively recrystallized, containing patches and dykes of diorite or quartz diorite.

Southwest of the junction of the two channels of Attawapiskat River, the northern edge of an extensive belt of metasediments and volcanic rocks extends into the area but is largely drift covered. Only banded quartzite and quartz biotite schist are exposed north of the 52nd parallel. South of the large lake on Muketei River, exposures of metamorphic rocks are limited to a distinctive blue-grey quartzite and a hornblende gneiss, the latter containing minor remnants of thin-bedded, dark, pyritiferous sediments. These two rock types form two belts separated by poorly exposed quartz diorite that may be recrystallized hornblende gneiss. Bedding in the quartzite belt suggests that it swings to the northeast, north of the gabbro intrusions. There, strong linear magnetic anomalies suggest that iron-formation may be interbedded.

Large areas of quartz diorite (2b), in which the quartz content may be as high as 25%, are associated with the northern volcanic belt. This rock may grade by increase in potash-feldspar content into melanocratic granodiorite. Included in this group are two bodies of hornblende gabbro (2c) which have been delineated on the basis of their well-developed aeromagnetic patterns. Anorthositic bands are prominent in outcrops in the Attawapiskat River bed immediately west of the assumed Palaeozoic contact. The plagioclase of the gabbros is distinctly more calcic than that of the quartz diorites.

The greater part of the map-area has been interpreted as underlain by foliated granodiorite (3). This rock commonly shows inclusions of darker granodiorite in lighter granodiorite and varies to quartz monzonite in composition. Foliated granitic rocks of northwestern Winisk Lake are particularly rich in potash feldspar. Most of the outcrops contain from a few to many dykes of pegmatite, pink to white massive granite, or quartz monzonite. Where the dykes are estimated to comprise 50% or more of the outcrop surface the rock has been mapped as massive granite (5).

Porphyritic granitic rocks (4) are extensive only around Kanuchuan and Winisk Lakes and north of Ekwan River. They vary from granite to granodiorite but generally show less local variation than the other granitic rocks (3 and 5).

Massive granitic rocks (5) include rocks varying in composition from granite to granodiorite. Outcrops of them show foliated inclusions up to an estimated 50%. Areas in which only pegmatite is exposed have been included in this unit. Massive granitic rocks north of the Rowlandson Lake volcanic belt and east of Attawapiskat Lake contain abundant inclusions and vary considerably in mafic content, whereas those in the eastern half of the area are generally more uniform. This is considered to be the reason for the non-directional aeromagnetic patterns over the latter.

A syenite plug (6), composed of potash feldspar and pyroxene with a high content of accessory titanite, occurs near the northwest corner of the map-area. The plug is readily delineated by its aeromagnetic pattern. Its age is unknown.

Rocks of Silurian age (7), include dolomite, dolomitic limestone, and sandstone. The western edge of these rocks has been extended beyond areas in which intersecting linear swamps and depressions are prominent, these features being considered to result from solution of underlying carbonate rocks along joint planes. In the extreme north, 3 or 4 miles beyond the margin of the map-area, Precambrian outcrops in the Muketei River bed provide further control in establishing the position of the contact. Some 25 feet of Palaeozoic rocks is partly exposed in the Attawapiskat Valley, 1 mile from the eastern border of the area. Six feet of buff crossbedded sandstone in the river bed comprises the lowest exposed rocks. For the next 10 feet the section is covered by slumped till. Above this, exposed in a projecting bluff, are 5½ feet of buff dolomite, 10 to 18 inches of greenish sandstone, and 2 feet of buff dolomite. Fossils collected from the dolomite between the sandstone beds are of Silurian (Guelph–Lockport) age.

Chalcopyrite and pyrrhotite are associated with a gabbro dyke at the southwest end of Rowlandson Lake; Prest has reported gold, arsenopyrite, and pyrite at this locality. Prest also reported gold values from similarly mineralized quartz veins north of Springer Lake.

Most pegmatites in the map-area were found to be barren of other than common minerals, except that tourmaline and a mineral in the eschynite-priorite series were identified in pegmatites near the syenite plug.

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MAP 4-1962
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