

DESCRIPTIVE NOTES

The map-area lies between Thessalon and Blind River, Ontario, and adjoins Wakwekobi Lake map-area on the south. It is accessible from provincial highway 17 and other roads, and from Lake Huron. Parts of the map-area were mapped previously¹⁻⁴.
Most of the map-area is underlain by pre-Huronian basement rocks, and by Huronian sedimentary and volcanic rocks and younger intrusions. The basement rocks include older mafic gneisses (1a) which grade into migmatite (1b), and younger granitic rocks (2). The latter are dominantly pink to buff, equigranular, poor in mafic minerals, and weakly to moderately gneissic. Mapping and study of the basement terrain is severely hampered by lack of outcrops.
The Bruce group is represented in this area only by the Mississagi and Thessalon formations. The Mississagi formation (3), best exposed on the French Islands, is mostly composed of medium-grained to gritty, grey quartzite, but silty and argillaceous beds are interbedded with quartzite along the north side of some of the islands. Beds at the latter horizon may represent part of the Middle Mississagi of other investigators in nearby areas⁵. Near the western edge of the map-area, basal Huronian conglomerate is well-exposed on a number of small islands; in places, underlying fractured granitic gneiss appears to grade upward, by an increase in roundness of fragments and in amount of sedimentary material, into the conglomerate. No contact of the Mississagi formation with the overlying Thessalon formation was seen in this area, but to the north the two appear to be conformable³. The flows of the Thessalon formation (4) are mainly of massive basalt, though partly amygdaloidal. Rhyolitic flows occur northwest of the map-area. The basement rocks and the Bruce strata are, in this area, separated from the Gowanda formation (5) of the Cobden group by the Murray fault. The Gowanda strata consist of a heterogeneous succession of greywacke conglomerate, argillite, siltstone, quartzite, and arkose; however, between highway 17 and Pappashah Creek, the beds are made up dominantly of pink arkose and quartzite (5a).
Both Huronian and pre-Huronian rocks are cut by numerous dykes and subconcordant gabbroic masses, mainly diabasic (6). Swarms of narrow, west- to northwest-trending dykes characterize the basement terrain southwest of Dean Lake. The basic intrusion extending eastward from Burton Islands appears to be fresher and weathers a lighter colour than those elsewhere. Granophyre (7) is a pinkish rock of irregular, medium-grained to subpegmatitic texture; in the area to the north it commonly grades into normal diabasic gabbro¹.
The Palaeozoic rocks (8) of the offshore islands are probably Middle Ordovician.
Structurally, the map-area is divided by the Murray fault. Though an anticline and syncline plunging southeast appear between Dean Lake and Mississagi River, and there are gentle warplings elsewhere, the Gowanda beds north of the fault dip generally southwest at gentle to moderate angles. South of the fault, the Bruce group rests on the basement gneisses and granite with great unconformity. On the French Islands and the adjacent mainland, the beds dip unusually steeply to the south, possibly reflecting a general increase in deformational intensity toward Lake Huron. The Murray fault, a regional feature first recognized in this vicinity more than a century ago⁴, is the dominant dislocation of the area, though smaller faults are common, particularly in the Huronian strata. The Murray fault, thought to be a steeply-south-dipping thrust with right-hand lateral displacement, divides into at least two branches in Cobden tp., and also appears to have been displaced there by minor northeasterly trending cross-faulting.
As in the area to the north³, narrow, chalcopryrite-bearing quartz veins constitute the chief deposits of economic interest. A few old showings of this type were seen in Thompson and Cobden tps. No development work is known to have been done in the area during 1960.

LEGEND

- ORDOVICIAN
MIDDLE ORDOVICIAN
8 Limestone
- HURONIAN
6 Gabbro, diabase
7 Granophyre
- COBALT GROUP
5 GOWANDA FORMATION: siltstone, arkose, quartzite, greywacke conglomerate, argillite; 5a, mainly quartzite and arkose
- BRUCE GROUP (3, 4)
3 MISSISSAGI FORMATION: feldspathic quartzite, siltstone; minor argillite, quartz-pebble conglomerate, polymictic conglomerate
4 THESSALON FORMATION: basalt, rhyolite, chert, quartzite
- ARCHAIC
2 Granite, granite-gneiss; subordinate migmatite; 2a, porphyritic granite
1a, amphibolite and biotite-rich granitic-gneiss; minor granite and migmatite; 1b, mainly migmatite; subordinate granite

- Drift-covered area
- Geological boundary (approximate, assumed)
- Bedding, inclined (tops known, unknown)
- Schistosity, gneissosity, cleavage (inclined, vertical, dip unknown)
- Fault or shear zone (defined, approximate)
- Anticline
- Syncline
- Mineral prospect (copper) x Cu

Geology by M. J. Frarey, 1960

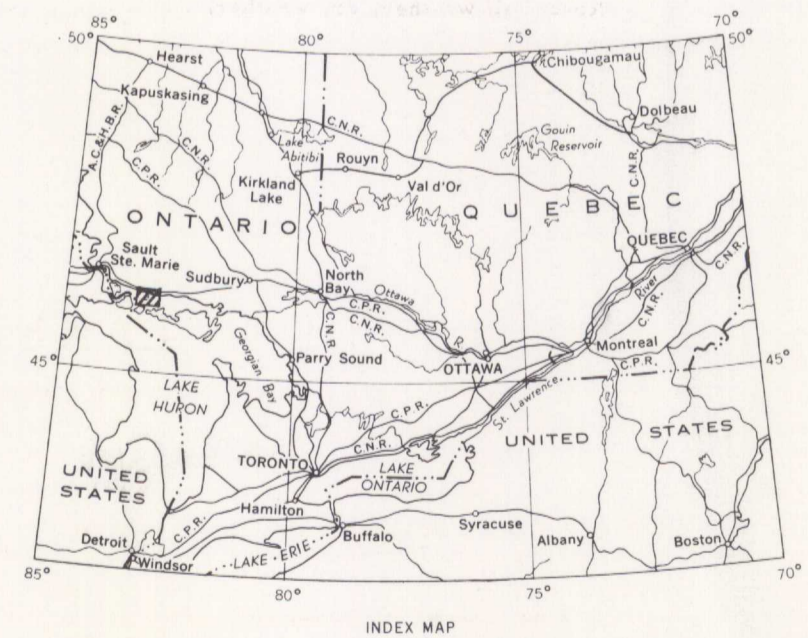
- Main highway
- Roads (all weather, dry weather)
- Trail
- Railway
- Power transmission line
- Lighthouse
- Township boundary
- Indian Reserve boundary
- Intermittent stream
- Foreshore flats
- Marsh
- Reef
- Height in feet above mean sea-level 580

Cartography by the Geological Survey of Canada, 1961

Approximate magnetic declination, 5° 00' West

In response to public demand for earlier publication, Preliminary Series maps are issued in this simplified form and will be clearer to read if all or some of the map-units are hand-coloured

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



MAP 5-1961
GEOLOGY
DEAN LAKE
ALGOMA DISTRICT
ONTARIO

