

- LEGEND**
- PALAEZOIC**
- CAMBRIAN(?)
- 12 Red and grey, mottled sandstone
- 11 Gabbro, diabase, basalt
- HURONIAN**
- COBALT GROUP (9, 10)
- 10 LORRAIN FORMATION: quartzite, siltstone, greywacke, pebble conglomerate
- 9 GOWGANDA FORMATION: greywacke, argillite, conglomerate; subordinate quartzite
- PROTEROZOIC**
- BRUCE GROUP (3-8)
- 8 SERPENT FORMATION: mainly fine-grained quartzite; minor conglomerate, arkose, argillite, and grit; Sa, conglomerate
- 7 BRUCE LIMESTONE: grey laminated limestone
- 6 BRUCE CONGLOMERATE: polymictic greywacke-conglomerate, greywacke
- 5 AWERES FORMATION: polymictic conglomerate, quartzite, greywacke position not precisely determined
- 4 DUNCAN GREENSTONE: basic volcanic rocks, commonly amygdaloidal; minor pillow lava and interbedded sedimentary rocks
- 3 MISSISSAGI FORMATION: arkosic quartzite; minor argillite, quartz-pebble conglomerate, polymictic conglomerate
- ARCHEAN**
- 2a, granite and granite-gneiss, dominantly granite; minor inclusions of amphibolite; 2b, mostly granite-gneiss
- 1 Amphibolite; minor conglomerate, tuff

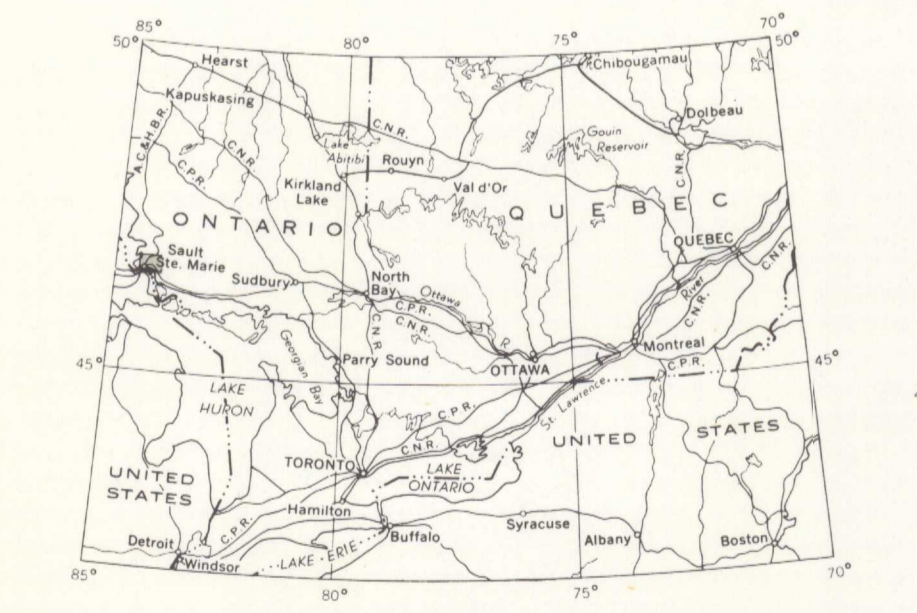
- Drift-covered area
- Geological boundary (approximate)
- Limit of geological mapping
- Bedding, tops not indicated (inclined)
- Schistosity (inclined)
- Gneissosity (inclined)
- Fault, shear zone (approximate)
- Anticline
- Syncline
- Glacial striae (direction of ice-movement known, unknown)
- Mineral prospect
- MINERAL SYMBOLS**
- Copper Cu Uranium U
- Lead Pb Zinc Zn
- Geology by R. E. Hay, 1959, 1960
- Cartography by the Geological Survey of Canada, 1961

- Roads (all weather)
- Roads (dry weather)
- Trail
- Railway
- International boundary
- Township boundary
- Indian Reserve boundary
- Electric power line
- Telephone line
- Cliff
- Lighthouse
- Intermittent stream
- Marsh
- Height in feet above mean sea-level

Base-map prepared by the Army Survey Establishment, R. C. E., Dept. of National Defence, 1954

Approximate magnetic declination, 4° 33' West

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



DESCRIPTIVE NOTES

The centre of the map-area lies about 10 miles north of Sault Ste. Marie, Ontario and 15 miles east of Lake Superior. The southeastern part is readily reached by motor road and bush road from points along Provincial Highway 17. The western part is also fairly accessible by road. Secondary roads from Highway 17 lead to the northern half. Except for a few cultivated areas near Sault Ste. Marie, the country is wooded and fairly rugged.

The map-area lies at the western extremity of the Huronian belt of rocks in Ontario and was previously mapped in part by Brunton¹ and McConnell⁴. The southeastern part of the area is underlain by Huronian sedimentary rocks and younger intrusions. Archean rocks underlie the northeast corner and most of the western half. A broad north-trending belt of Huronian rocks underlies the central part.

In the northeast the basement rocks consist of amphibolites and sediments (1), intruded by pink to grey, medium-grained, granite and granite-gneiss (2). The granitic mass in the central part of the area was previously mapped as post-Huronian but is now included with the basement rocks as no evidence for its intrusion into the Huronian strata has been found. The basement rocks in the west are almost entirely granite-gneiss.

The Bruce Group (3-8) occurs only in the southeastern and central parts of the area. The central belt was previously mapped by McConnell⁴ as the 'Soo Series' and classed as pre-Bruce. The Mississagi Formation (3), composed essentially of well-bedded, white-weathering, medium-grained to gritty, grey feldspathic quartzite, is represented south of Maud Lake by polymictic conglomerate. Quartz-pebble beds are common. The thickness exposed in the area is about 1,500 feet but nowhere was a complete section found. Near Maud Lake, amygdaloidal andesite (4), termed Duncan Greenstone by McConnell⁴, overlies the Mississagi Formation. Two thin quartz-pebble conglomerate layers occur near the base of this formation.

The Bruce Conglomerate (6) is exposed in only a few places in the southeast corner of the area, commonly in a band, not more than 100 feet thick, around masses of Bruce Limestone (7). The Aweres Formation (5), of McConnell's Soo Series, may possibly be correlative with the Bruce Conglomerate. The Bruce Limestone (7) is an assemblage of fine-grained grey beds intercalated with brownish, silty laminae. Excellent exposures can be found along the west shore of Echo Lake. The formation is less than 100 feet thick.

Quartzite (8), previously mapped as Mississagi, is now correlated with the Serpent Formation. Outcrops of massive, thick-bedded, fine-grained, poorly crossbedded Serpent quartzite are found north of Echo Lake and along the Garden River. Gritty facies and quartz-pebble beds occur north of Echo Lake, and a similar conglomerate bed underlies the quartzite near the west shore of Echo Lake. The formation is possibly as much as 3,000 feet thick in this area.

The southeast corner of the area and the section along Highway 17 east of the community of Garden River is underlain by rocks of the Cobalt Group (9-10). The Gowganda Formation (9) appears to overlie the Serpent with a slight unconformity. The formation consists of an assemblage of bedded argillite, massive argillite, greywacke, and polymictic conglomerate. Much of the argillite is varved and contains numerous pebbles. Pink granite fragments are characteristic of the conglomerate layers. Lenses of fine-grained, pink-grey quartzite are common near the top of the formation.

The Lorrain Formation (10) is found in the southeast corner of the area and in the area of the Bellevue Ridge south of Goulais River. It consists of impure feldspathic quartzite containing irregular zones of pebble beds characterized by abundant jasper.

Sheet-like intrusions and small stocks of gabbro and related rocks (11) cut the Huronian sediments in many places. Red, mottled, and grey sandstone of Cambrian(?) age underlies much of the lowland along St. Marys River.

Foliation in the granite and granite-gneiss generally strikes northwest. Fold-like structures are completely lacking. The Huronian formations are homoclinal, consistently dipping southwest at moderate angles. A synclinal structure is present in the Aweres Formation in the central belt of Huronian rocks. Dips are gentle, rarely exceeding 35°, and in some places southwest of Echo Lake they approach the horizontal.

Prominent intersecting sets of lineaments trending northwest and northeast characterize the Archean terrain. Several large faults, including those along Garden River and Mabel Lake, follow these lineaments.

The district has been known for some time for its iron and lead occurrences. Quartz-specularite veins have been reported from west of Northland Lake and in the vicinity of Bellevue Ridge. Lead and zinc have been mined intermittently since 1875 at Jardon Mines, 10 miles north of Garden River. Radioactive quartz-pebble conglomerate occurs along the east shore of Maud Lake.

¹ Brunton, S.: Deroche, Hodgins, Gaudette and Shield Townships, Algoma District, Ontario; Geol. Surv., Canada, Sum. Rept. 1921, pt. D, pp. 27-33 (1922).

² Collins, W. H.: North Shore of Lake Huron; Geol. Surv., Canada, Mem. 143 (1925).

³ Frarey, M. J.: Echo Lake, District of Algoma, Ontario; Geol. Surv., Canada, Map 23-1959 (1959).

⁴ McConnell, R. G.: Sault Ste. Marie Area, District of Algoma; Ont. Dept. Mines, vol. 33, pt. 2, pp. 1-52 (1926).

MAP 26-1961
GEOLOGY
SAULT STE. MARIE
ALGOMA DISTRICT
ONTARIO

Scale: One Inch to One Mile = $\frac{1}{63,360}$ Miles