GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 41 ½

MAP 6-1961
GEOLOGY
WAKWEKOBI LAKE
ALGOMA DISTRICT
ONTARIO

Scale: One Inch to One Mile = 1/63,360

1 ½ 0 1 2 3 Miles

Geographical names subject to revision

Cartography by the Geological Survey of Canada, 1961

Approximate magnetic declination, 5° 18' West

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

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

INDEX MAP

PUBLISHED, 1961
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LEGEND

9. Diabase, gabbro, and basalt
10. Granophyre, syenite

HURONIAN

COBALT GROUP (7, 8)

8 LORRAIN FORMATION: varicoloured quartzite, argillite, jasper conglomerate

7 GOWGANDA FORMATION: siltstone, arkose, quartzite, greywacke conglomerate, argillite; 7a, mainly quartzite and arkose

BRUCE GROUP (3-6)

6 BRUCE LIMESTONE: thin-bedded limestone, chert, siltstone

5 BRUCE CONGLOMERATE: greywacke conglomerate; minor argillite and quartzite

3 MISSISSAGI FORMATION: feldspathic, quartzite, siltstone; minor argillite, quartz-pebble conglomerate, polymictic conglomerate

4 THESSALON FORMATION: basalt, chert, quartzite

PROTEROZOIC

ARCHAEAN

2 Granite, granitic gneiss; subordinate migmatite

1 1a, amphibolite- and biotite-rich granitic gneiss; minor granite and migmatite; 1b, mainly migmatite; subordinate granite

Drift-covered area

Proposed limit of flooding

Geological boundary (approximate, assumed)

Bedding, inclined (tops known, unknown)

Schistosity, gneissosity, cleavage (inclined)

Fault or shear zone (defined, approximate)

Glacial striae (direction of ice-movement not known)

Mineral prospect; copper Cu, chalcopyrite cp

Geology by M.J. Frarey, 1959, 1960

Main highway

Roads (all weather, dry weather)

Trail

Railway

Power transmission line

Township boundary

Indian Reserve boundary

Intermittent stream

Falls and rapids

Marsh

Height in feet above mean sea-level

DESCRIPTIVE NOTES

The centre of the map-area is about 30 miles west of Elliot Lake, Ontario, and some 12 miles north of Lake Huron. Blind River and Thessalon are, respectively, a few miles southeast and west of the area. Most of the area is accessible from provincial highways 17 (Trans-Canada Highway), 129 (Chapleau Road), 546 (White River Road), 554, and a number of minor roads. Parts of the area were mapped previously [1,2,3,4,7].

Except for the extreme northwestern corner and part of the southwestern corner between Livingstone Creek and Bright Lake, the map-area is underlain by Huronian sedimentary and volcanic rocks and younger intrusions. Strata of the Gowganda formation and basic igneous rocks predominate. The basement Archaean rocks comprise intergradational amphibolite and other mafic gneisses (1a), migmatite (1b) consisting of intimately mixed masses of granite and granitized mafic gneiss (1a), and equigranular, medium-grained, pink to grey granite and granite-gneiss (2). The boundaries between these units are necessarily generalized. Most of the southern basement area is poorly exposed.

The Bruce group (3-6) occupies a broad strip near the eastern edge of the map-area, a central area in Parkinson tp., and a sector west and southwest of Sowerby. The Mississagi formation (3) is composed of well-bedded, white to grey-weathering, medium-grained to gritty, grey feldspathic quartzite, with minor lenses or interbeds of argillite, greywacke, and chert or quartz-pebble beds. The strata in the Matinenda Lake - Chiblow Lake area have been classed as Upper Mississagi by other investigators [1,2], and the beds in the Parkinson area are probably equivalent. The Thessalon formation (4), shown previously as "Keweenawan lava" or as Huronian basalt of indeterminate stratigraphic position[3], is an assemblage of basic lavas conformable above basal Huronian beds of the Mississagi formation. A few similar beds are intercalated with the lavas. The flows are cut by diabase dykes. The volcanic rocks of the Bruce group are confined to the southwestern corner of the map-area. Stratigraphically similar flows were mapped in Echo Lake area to the northwest[5]. The Bruce conglomerate (5) consists of pebbles, cobbles, and boulders chiefly of gneissic grey granite, set in a matrix of dark grey quartzose greywacke. A few quartzite beds were observed near the base, north of Matinenda Lake. Northeast of Parkinson a thinly bedded argillite member a few feet thick occurs near the top. The Bruce limestone (6) is made up of thin, fine-grained, grey limestone beds commonly intercalated with brownish impure laminae, which, where numerous, result in a characteristic corrugated weathered surface. In places, the formation contains thin-bedded chert, chert breccia, or siltstone.

The Cobalt group overlies the Bruce strata with no discernible angular discordance. Around Matinenda Lake, a few feet of quartzite or greywacke intervenes in some sections between the Bruce limestone and the Cobalt group, and may represent the Lorrain quartzite of other areas, which otherwise appears to be missing. The Gowganda formation (7) is a bedded assemblage of polymictic greywacke conglomerate of varying character, interbedded with arkose, fine-grained, impure quartzite, and laminated argillite. Where polymictic conglomerate forms the base of the formation, as in Parkinson and Montgomery tp. and in Township 167, it commonly contains angular fragments of the underlying Bruce limestone. The arkose, much of which is also conglomeratic, appears to be most abundant in the middle part of the formation. In the east-central part of the map-area and elsewhere, white or pink-weathering quartzite (7a) forms a prominent part of the formation. Just south of Beals Lake on highway 129 (Chapleau Road), varved argillite containing pink granite pebbles is well exposed.

The Lorrain formation (8) consists, in this area, of an assemblage a few hundred feet thick of fine-grained, varicoloured, impure quartzite with minor argillite intercalations. White quartzite and jasper conglomerate of the middle Lorrain were observed only in a small area in Township 175, near the northern edge of the map-area.

Diabase and gabbro (9) form large subconcordant sheets and numerous steeply inclined dykes some of which transect the former. Granophyre (10) is an irregularly mottled, coarse-grained to subpegmatitic assemblage of pink feldspar and commonly elongate dark minerals, intergradational with gabbro. A syenitic phase appears in the southeastern corner of the area, north of Cobden River. Near the west end of Wakwekobi Lake and again on the east side of the outlet from Tunnel Lake, are areas of breccia consisting of numerous pieces of argillite and greywacke in gabbro and granophyre.

The sedimentary formations are gently folded. The dominant structure is a westerly plunging anticline about Matinenda and Chiblow Lakes, complemented to the northwest by a broad gentle basin extending beyond the map-area. In Parkinson tp., a domal structure accounts for exposures of Bruce strata there. Northeasterly dipping Gowganda beds along the southwest shore of Bright Lake indicate a syncline under the lake and a complementary anticline, truncated by the Murray fault, southwest of it. The latter is the most important fault in the district, and in this and the adjoining area to the south[6], it generally separates sharply the pre-Huronian basement rocks from Huronian strata to the north. At Sowerby, it divides into two or more faults passing through Cullis Lake. The Huronian strata generally are cut by numerous faults. Most of these have minor displacements, but west of Denman Lake, north of Slate Falls, and elsewhere, they have resulted in repetition of strata. A number of faults or fault zones are occupied by gabbroic bodies that mask their exact position.

Quartz veins, bearing various amounts of chalcopyrite, bornite, specularite, and carbonate, are common in the area, particularly in Gowganda strata and diabase. Most strike east-west and are nearly vertical. The veins are mostly narrow, and low in copper, but some showings have warranted development work, notably in Township 168 where work was done by Andover Mining and Exploration Co. Ltd.

Radioactive quartz-pebble conglomerate is reported to occur near the west boundary of the map-area, southwest of Kirkwood Lake.

[1] Abraham, E.M., and Robertson, J.A.: Cobden Tp., District of Algoma, Ontario; Ont. Dept. Mines, Prel. Map P71 (1960).
[2] Abraham, E.M., and Robertson, J.A.: Scarfe Tp., District of Algoma, Ontario; Ont. Dept. Mines, Prel. Map P68 (1960).
[3] Collins, W.H.: North Shore of Lake Huron; Geol. Surv., Canada, Mem. 143 (1925).
[4] Emmons, R.C.: Wakomata Lake, District of Algoma, Ontario; Geol. Surv., Canada, Sum. Rept. 1926, pt. C (1927).
[5] Frarey, M.J.: Echo Lake, District of Algoma, Ontario; Geol. Surv., Canada, Map 23-1959.
[6] Frarey, M.J.: Dean Lake, District of Algoma, Ontario; Geol. Surv., Canada, Map 5-1961.
[7] Murray, A.: Geol. Surv., Canada, Rept. Prog. 1858, pp. 67-100.
[8] Thomson, J.E. and others: Copper, nickel, lead and zinc deposits in Ontario; Ont. Dept. Mines, Province of Ontario Metal Resources Circular No. 2, 1957.
[9] Wright, J.F.: Geol. Surv., Canada, Map 1063A (1958).

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Enlarge this to this

MAP 6-1961
WAKWEKOBI LAKE
ONTARIO
SHEET 41 ½

6-1961

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