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PRELIMINARY REPORT ON A PART OF FABRE TOWNSHIP, TEMISCAMINGUE COUNTY

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PRELIMINARY REPORT

ON A

PART OF FABRE TOWNSHIP

TEMISCAMINGUE COUNTY

BY

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I N T R O D U C T I O N

During the summer of 1950, an area of about 27 square miles, which is the subject of this report, was mapped in Fabre township, Témiscamingue county. It covers ranges I, II, III, lots 23 to 46, and ranges V north, VI north, V south and VI south.

A.E. Barlow (1) gives a brief account of the geology of the area in his report on the area of Lake Témiscamingue, published in 1906. It was mapped also by M.E. Wilson (2) in 1906-07, and R. Harvie (3) revised the geology in 1910. In the past few years, sections of it have been mapped, at the scale of 150 or 200 feet to the inch, by S.H. Ross, W.N. Ingham, P.E. Auger, and W.G. Robinson.

Mapping -

Mapping was done by using aerial photographs enlarged to 500 feet to the inch. In so fas as possible, exposures were located with the aid of the stereoscope and the geology was plotted directly on the photographs.

The eastern section of the map-area is part of the Grenville geological sub-province and it is rugged and difficult of access; it was mapped by east-west traverses, 1,000 feet apart, except the zone near the contact. The last mile of the eastern part of the map territory was summarily examined by traverses half a mile apart.

A generalized geological map, No. 905, was drawn at a scale of one mile equals 1,000 feet to accompany this report.

Topography -

The area is naturally divided into two distinct topographic units. The western part is underlain by the formations of the Timiskaming sub-province of the Canadian shield, and the eastern part by the formations of the Grenville sub-province. The western unit has unlithified sediments forming a more or less dissected plain, whose surface elevation increases from the level of lake Temiscamingue going eastward. Precambrian formations form hills above the plain.

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(1) References are at the end of the report.

Table of Formations

Quaternary				Pleistocene:	Gravel, sand, clay, erratic boulders.
Precambrian	Proterozoic	Huronian			Metamorphosed sedimentary rocks of Gowganda and other formations at contact with diabase Metamorphosed greywacke and argillite, locally sheared and silicified. Metamorphosed conglomerate
			Upper (Animikie)?		Diabase with granophyre (Nipissing)
			Middle	Cobalt Series	Lorrain formation: Quartzite, angular, conglomerate Gowganda formation: Conglomerate, quartzite, greywacke, siltstone and argillite.
			Lower	Fabre Series (Bruce ?)	"Siltstone"
	Archean			Algoman type	Lamprophyre Granite, granodiorite and related rocks Feldspar and quartz porphyry Granodiorite Gabbro-anorthosite and saussuritized equivalents
				Keewatin type	Intermediate and basic lavas, tuff, slate and chert Tuff and agglomerate
				Grenville type	Mainly biotite gneiss and hornblende gneiss, cut by pink granite

No correlation attempted with formations listed above.

The second unit is part of a rolling upland the west rim of which is necessarily more dissected than the main part of the upland; in general, it has a relief much lower than that of the first unit.

GENERAL GEOLOGY

All the consolidated formations of the map-area are Precambrian. In the western part of the area, Archean rocks can easily be distinguished from those of the Proterozoic. In the contact zone of the two sub-provinces, however, the formations are metamorphosed and in places hard to identify.

East of the contact between the two sub-provinces, gneisses and schists cut by pink granite are ubiquitous.

Keewatin-type -

The Archean of the Timiskaming sub-province consists of volcanics and intrusives. The volcanics are lavas and tuffs, mainly lavas of intermediate or basic composition now greenstones. They have been folded and dips are nearly vertical. They are cut by gabbro, granodiorite, feldspar and quartz porphyry, lamprophyre and diabase.

To the southern part of the map-area, there is an intrusive complex grading eastward from granite to granodiorite. South of the granite, the granodiorite is associated with a hornblende-rich quartz-bearing rock.

On lot 4, range VII north, thinly interbedded and folded slate and chert crop out. These formations are here grouped with the Keewatin-type. They are cut by a basic dyke and the whole series is in turn intruded by thin lamprophyre dykes.

Huronian -

The Huronian consists mainly of Gowganda and Lorrain formations which are cut by Nipissing diabase of Upper Huronian (Animikie) age. The Gowganda has a conglomerate at the base, overlain by sandstones, greywackes, and shales. The shales commonly weather buff. Near the mouth of Lavallée river, Gowganda conglomerates appear to lie unconformably on siltstone belonging probably to the Bruce series, and considered by Harvie as parts of this so-called "Fabre Series".

The Gowganda formation is overlain by the Lorrain formation. No angular unconformity has been observed between the two formations. The Lorrain formation is made up mainly at the base of feldspathic quartzite, which have a peculiar and characteristic green-weathered surface. They grade gradually to quartzites weathering pinkish. Many gently-dipping joints are filled with quartz which has molds of elongated crystals which, at some localities, are several inches long. The original mineral is believed to be specularite.

The Nipissing diabase and related rocks are exposed in many places. It is highly probable that many of the exposures belong to the sill which was injected into the Huronian sediments, and locally cutting the Keewatin formations. On lot 9 of ranges V south and V north, diabase forms a dyke 500 to 700 feet thick which is apparently related to the above-mentioned sill.

The diabase has a variable texture. A very coarse grained form is common, and in places, it grades by an increase in feldspar and quartz into granophyre; the rock commonly has small vugs lined with quartz crystals.

The sedimentary rocks and other formations are often metamorphosed at the contact with the diabase and sometimes hard to classify.

Formations of the Grenville Sub-Province:

The eastern part of the area here described is made up mainly of grey biotite gneisses, but in places layered hornblende gneisses predominate. They are cut by dykes and lenses of pink granite. The boundary between the Timiskaming sub-province and the Grenville sub-province is quite abrupt. The two sub-provinces are separated by narrow, cultivated fields along almost the entire width of the map-area. East of the fields, the formations are plainly different from those to the west. A series of faults separate the two areas. These will be described in the chapter on structural geology.

Pleistocene -

As indicated above, the plains are dominant in the western part of the area. These are made up mainly of varved clays deposited in post-glacial lakes. Sand and gravel are rather rare. In the eastern part of the map-area, the topography is rugged, and rock is largely covered with sand and gravel.

STRUCTURAL GEOLOGY

The formations of Keewatin type strike in a general N.70°E. Their dip is steep and generally northward. Schisted zones, in tuff bands interstratified with lavas are foci of shearing. There are numerous "breaks" and shear zones in diverse directions in the Archean intrusives. Many strike N.15°E. and others are a few degrees north or south of east and west.

The Huronian sedimentary rocks, except those close to the contact with the Grenville sub-province, dip slightly north or south. Their dip in few places only is more than 25 degrees.

Along the contact zone of the Timiskaming and Grenville sub-province, as it has been mentioned above, a continuous relatively narrow depression, occupied by fields, separates the two areas.

Schistosity is apparent in Huronian rocks as much as 3,000 feet from their contact with the rocks of the Grenville sub-province. The intensity of alteration increases toward the contacts and the schistosity is parallel to it. Dips are from 35° to 80° east. In the more intensely altered zones stringers of quartz are common on the schistosity surfaces.

Two distinct faults, striking northeast and dipping southeast, cut Huronian rocks on lot 13 in range VI north. Several faults have been inferred from the study of aerial photographs, as for instance those indicated on the map accompanying the report, on lot 25, range II, and lots 8, 9 and 10, range VII-S.

The strikes of the gneisses in the eastern part of the area is generally constant over short distances, but they vary from one section to the other.

East of the contact, lineation trends from S.60°E. to S.40°E. and plunges from 22° to 45° southeast.

ECONOMIC GEOLOGY

Several shafts were sunk, and a great deal of prospecting and exploration for silver and cobalt in the area were done after the discovery of the silver and cobalt mines of the Cobalt Camp. Prospecting was done also in the past for copper, mainly on lot 17, range VI north. All these works have as yet failed to disclose an economic deposit.

Touton Mining & Exploration Co.

Touton Mining & Exploration Co. is now the only active company in the area. Prospedting and exploration have been carried out by the company since 1940, and have indicated the presence of gold, zinc and copper, but no ore-bodies have been found to date. The reader is referred to the Quebec Department of Mines (4) publications for the description of the various mineralized zones and the work done before 1948.

The two main mineralized zones are respectively on lots 4 and 5, range V south, and lot 32, range III. The first one consists of thin veins of quartz in shear zones in granodiorite. The veins are mineralized mainly with pyrite and hold some gold and copper. The zone is described by Ingham, (4).

The second zone is in tuffs and volcanic breccias along shear zones with disseminated sulphides principally of zinc, but also of lead, copper, and cobalt. Gold and silver are present. The mineralized sections are lenticular. Besides the surface works, diamond drill holes explore the zone. Some cores have zinc, but no ore body has been defined to date. Ingham (4) describes that zone and the work done up to 1947.

In 1948, 5,200 feet of diamond drilling was bored on the company's claims, 1,538 feet of which is in three holes in the zone herein described. Low but persistent tenors for zinc, lead and copper were found in two of the holes (5).

In 1949, 5,100 feet was drilled, of which 2,666 feet in four holes is in the zone mentioned above. Two of these, Nos. 61 and 69, indicate zinc over the following sections. Hole No. 61 is located about 612 feet east of range-line II-III and 35 feet north of lot-line 31032; footage 85.3-88 contains good mineralization with sphalerite; footage 145-150, some sphalerite. Hole No. 69 is located 25 feet N.30°E. of hole 61; footage 71-73 has very little sphalerite, galena and chalcopyrite; footage 111-117, 40% to 50% massive pyrite; footage 206-207, pyrrhotite, some sphalerite and quartz. The tenor in zinc of these sections is not known to the author, the core having not been analysed at the time of the survey.

All the holes drilled in 1949 bottom in diabase from 300 to 565 feet below the surface. The holes drilled the previous year end also bottom in diabase, at an average depth of 500 feet. The diabase is similar to the one that outcrops in the vicinity and which is apparently part of the sill, already mentioned on page 5 of this report.

The sharp change in strike of the tuffs, the abrupt ending of the porphyry against the tuffs and the abrupt termination of the Gowganda conglomerate suggests the possibility of the presence of a northeast-striking fault, as indicated on the map accompanying this report, to which mineralization could well be related.

Remarks -

Despite the failure of prospecting and development to disclose workable ore deposits, the area is worthy of attention. The numerous shear zones, and the discontinuities between diverse formations would allow penetration by mineralizing solutions. Small amounts of gold have been found in the quartz veins with pyrite in the Huronian formations short distances west of their contact with the rocks of the Grenville sub-province.

References

(1) Barlow, A.E., On the Quebec Side of Lake Temiscaming, Geol. Surv. Can., Summ. Rept. 1906, pp. 113-118.

(2) Wilson, M.E., Geology of an Area Adjoining the East Side of Lake Temiscaming, Quebec, Geol. Surv. Can., Report 1064, Map 1066 (18A) (1911).

(3) Harvie, R., Geology of a Portion of Fabre Township, Que., Pontiac Township. Mines Branch, Dept. Colonization, Mines and Fisheries of Prov. of Quebec (1911).

(4) Ingham, W.N., Ross, S.H., Geol. Repts. Mining Properties in Fabre Township, Que. Dept. Mines, Publ. M-1600, 1947.

(5) Auger, P.E., Ingham, W.N., Mining Properties under Development in Abitibi and Témiscamingue Counties in 1946 and 1947, Que. Dept. Mines, P.R. No. 227, 1949, pp. 69-71.