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PRELIMINARY REPORT ON CAPSISIT LAKE AREA, ABITIBI-EAST COUNTY

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PRELIMINARY REPORT

ON

CAPSISIT LAKE AREA

ABITIBI - EAST COUNTY

BY

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1947

P. R. No. 210

CAPSISIT LAKE AREA

Abitibi-East County

by J.E. Gilbert

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

The Capsisit Lake map-area, examined by the writer during the summer of 1947, comprises 200 square miles and extends between latitudes 49°45' and 50°00'N. and longitudes 76°00' and 76°15'W. It includes the projected townships No. 616 and No. 716. Capsisit lake, close to the centre of the area, is about 110 miles north-northeast of the town of Senneterre, which is on the Canadian National Railway line from Quebec and Montreal to Cochrane.

The area may be reached from Senneterre by canoe and by air. The canoe route from Senneterre is down Bell river to Mattagami lake, up Waswanipi river to Olga and Goëland lakes, through Maikasagi lake and then up Maikasagi river for about 13 miles to the mouth of Inconnue river. Inconnue river flows from east to west across the area and through Capsisit lake and, shortly after leaving the west boundary of the map-area, takes a sharp turn northward toward its junction with Maikasagi river. It is a good water-way along the lower part of its course, that is, for about 10 miles, but farther upstream travelling is difficult because of numerous rapids. Transportation

by aeroplane is available from Senneterre, and this is by far the simplest means of access to the area.

A good portage leads from Capsisit lake one and one-third miles northward to McDonald lake. This latter lake can also be reached directly by a water route from Maikasagi river through its outlet creek. This creek is small and shallow and does not permit the use of an outboard motor along most of its course.

The southernmost part of the map-area can be reached by canoe only during high water by following a stream flowing in a general northwestward direction toward the confluence of the stream with Inconnue river, a short distance from the western boundary of the map-area.

TOPOGRAPHY

The lowest elevation is about 850 feet above sea-level, where Maikasagi river crosses the western boundary of the map-area. Most of the larger lakes and streams are not more than 75 feet higher than this. The low, rolling hills do not rise in general more than 100 feet above the water-plane. Notable exceptions are two parallel series of ridges, consisting mostly of gabbro, north and south of Capsisit lake. One hill in the southern ridge rises 700 feet above the level of nearby Capsisit lake. There is also a sharp hill, about 300 feet high, on the north side of Maikasagi river, opposite the mouth of the creek flowing from McDonald lake.

GENERAL GEOLOGY

The southwestern part of the area, which is low and covered with muskegs, offers few rock

exposures. In the remainder of the map-area, though abundant morainic accumulations are encountered, the bed-rock is more extensively exposed than is generally the case in this part of the Canadian Shield.

Approximately half of the area is underlain by sedimentary and volcanic rocks and associated basic intrusives. The remaining part consists of intrusive granitic rocks of different types that constitute marginal zones or lobes of the more extensive masses lying outside the map-area.

Volcanic-Sedimentary Series

Volcanic and sedimentary rocks are seen interbedded in many places in the area. Sedimentary beds are found with the volcanics where the latter predominate, and, conversely, thin flows occur in preponderantly sedimentary zones. Further complication is brought in by the presence among the volcanic and, to a lesser extent, among the sedimentary rocks of many bodies of altered gabbro which, at times, can not be differentiated from altered lavas. Thus, it is not possible to enclose the volcanic, sedimentary, or gabbro areas within definite boundaries. On the accompanying map, the complex has been shown as basically volcanic, and superimposed conventional patterns have been used to indicate the general zones in which sedimentary rocks or gabbro is overwhelmingly predominant.

Volcanic rocks occur more or less everywhere in those parts of the area occupied by the series, but they are best seen in association with gabbro in extensive exposures south and north of Capsisit lake. They are mostly schistose

but in places retain original flow, flow-breccia, pillowed, and amygdaloidal structures. Fine-grained, chlorite-rich, basic and intermediate lavas are predominant, whereas acidic flows are in no place important. Porphyritic andesite is found in a few localities in thin flows with or without pillow structure. Some metamorphosed clastics, closely associated with the volcanics, may be of tuffaceous origin.

Sedimentary rocks are fairly abundant, and they are dominant in three main zones. The first zone, which may be as much as two miles wide, is present along and south of Inconnue river and extends from the western boundary of the map-area eastward to Capsisit lake. The second, a narrower zone, is one-half to one mile wide, parallels and, in part, touches the south shore of McDonald lake. The third zone, approximately three miles wide, covers the central northern part of the map-area south of the Maikasagi River intrusive and extends eastward to and beyond the eastern boundary of the map-area.

Lithologically, the sedimentary rocks are fine-grained types, usually containing abundant feldspar. Biotite and, less commonly, hornblende are present with a variable amount of quartz. Some varieties contain garnet, and, at two localities, on the southern shore of McDonald lake and in the eastern part of the band south of Maikasagi river, minor beds of siliceous magnetite with a fair amount of pyrite were found. Some of the sedimentary beds are up to five feet in thickness, and their original composition appears to have been that of a fine-grained greywacke. Other beds are very thin, very fine-grained, and have the appearance of recrystallized varved clays.

Gabbroic Rocks

The gabbro is intrusive into the volcanics and sedimentaries just described. The largest masses of gabbro are around Capsisit lake and in the southeast corner of the map-area. The gabbroic rocks are found more frequently associated with volcanics than with the sedimentary rocks, and it is believed that in many cases the gabbros and volcanics are merely different facies of the same igneous activity.

Most of the masses appear to be sheet-like or lenticular and to conform to the trend of the invaded rocks, though discordant stocks and dykes are not rare. In many places the gabbro shows the result of the shearing that has affected the volcanics and sediments, but in general the granularity of a gabbro is retained. It is now composed of amphibole and plagioclase. The relative amount of ferromagnesians and plagioclase varies even in the same mass. One ridge northeast of Capsisit lake exhibits a border facies very rich in hornblende, whereas toward the centre the rock becomes almost anorthositic in composition. A short distance west of the portage between Capsisit and McDonald lakes, the gabbro shows faint banding and, in places, contains white anorthosite oriented parallel to the banding.

Granitic Rocks

The granitic rocks of the area may be classified roughly into three different types. They all intrude the volcanic, sedimentary, and gabbroic rocks.

The extreme northeast corner of the map-area is underlain by a fine-grained gneissic, biotite-rich, grey quartz monzonite. The gneissic

structure is well developed and is parallel to the schistosity of the intruded volcanic and sedimentary rocks. This intrusive suggests, in appearance and composition, the Olga quartz diorite found extensively around Olga lake, about 40 miles west of the Capsisit Lake area. Many sedimentary and volcanic inclusions are present in the gneiss close to its border, and pegmatite dykes and lenses are very abundant, especially near the edge of the intrusive and in the adjacent volcanic-sedimentary rocks.

A marginal lobe of the large intrusive body that surrounds the northern part of Waswanipi lake southwest of the map-area underlies an area west and southwest of McDonald lake and possibly extends eastward to include McDonald lake itself. West and southwest of the lake, the rock is a coarse-grained, quartz-poor, hornblende-rich, grey intrusive, probably a monzonitic facies of the Waswanipi granite. Eastward, around McDonald lake, the intrusive has approximately the same composition but is much finer-grained. The sharp change in grain size may indicate an independent stock around McDonald lake.

Another marginal lobe of the Waswanipi intrusive underlies a large tract in the southern part of the area, and a smaller, isolated, but probably related, mass forms an elongate body enclosing Capsisit lake and extending southeastward from it. The rock of both masses is a true granite. It is medium- to coarse-grained, rich in quartz and poor in mafic minerals. Hornblende constitutes the predominant ferromagnesian mineral and a small amount of biotite is usually present. Its border facies is somewhat gneissic and good joints are developed, especially in the southern part of the area.

STRUCTURAL GEOLOGY

North of McDonald lake the strike of the schistosity and bedding is roughly east-southeast. The dips are generally steep to the northeast or vertical near the northwestern corner of the map-area. Closer to McDonald lake the strike remains the same, but the formations dip southwesterly. Along Inconnue river, at the point where the river crosses the western boundary of the map, the strike of the sedimentary beds is generally north-east-southwest, but eastward it becomes east-west and, farther east, it is east-southeast. All the dips in this section are northerly and average 60 degrees,

Complicated local structures are found within the bands, and drag folds are fairly abundant. Most of the drag folds, however, are very small and plunge at inconsistent angles and thus prove unreliable as indicators of the attitude of the major structures. One large drag fold that occurs three miles north-northeast of McDonald lake, however, may be considered as more reliable. The fold, 50 feet in length along its axis and 25 feet in width, occurs in thin sedimentary beds. The axis of the fold strikes S.75°E. and plunges 25 degrees to the southeast. It is therefore probable that the major folds in the northern half of the area have at least a similar trend and plunge.

Criteria for determinations of tops and bottoms of beds and flows were very difficult to find. Cross-bedding is totally absent in the observed sedimentary rocks, and no grain gradation was found because of the thinness of the beds or the complete recrystallization of the constituents. Pillows are common in the volcanic flows but in almost every case they are invariably highly

flattened, and only a few can be considered as fairly reliable. About half a dozen top determinations by pillows were made south of Capsisit lake, and they indicate that the tops of the flows are toward the north. Three other determinations about two miles north of McDonald lake give the tops toward the south. In both localities the beds are upright. These determinations seem to point to the presence of a synclinal axis somewhere between two localities. But, obviously, the information is much too scanty, the intervening distance too great, and the structure of these regions habitually too highly complex for such a simple interpretation of the structure to be readily accepted.

As regards the age relationship of volcanics and sediments, the evidence thus far points to their being mutually interbedded rather than to their being of different age.

The structures of the granitic intrusives generally tend to conform to the attitude of the older rocks. There is evidence, however, in places such as the west end of Capsisit lake and at the contact between the Maikasagi River gneiss and the sediments, that the granitic intrusives are in part responsible for the deformation of the volcanic and sedimentary beds.

ECONOMIC GEOLOGY

The Capsisit Lake area forms part of a wide zone of volcanic and sedimentary rocks that, intruded by basic and acid masses of various types, extends from the Quebec-Ontario border to Chibougamau lake. Already, in other parts of this zone, important discoveries of gold, silver, and copper have been made. The Bachelor Lake discoveries, in Lesueur township, - some of gold-bearing

sulphides and others carrying a high content of silver, in addition to lead and zinc, - are only 25 miles south of Capsisit lake, in rocks somewhat similar to those of the present area.

During the course of the geological mapping of the Capsisit Lake area, a number of sulphide-bearing shear zones, almost invariably parallel to the regional schistosity, were observed in the volcanic-sedimentary-gabbro complex. Some of these occurrences may be briefly described as follows:

a shear zone trending north-northwest in sedimentary rocks about one mile south of Maikasagi river, along the creek flowing out of McDonald lake;

a dyke of sheared porphyry in volcanics, two miles northeast of the place just mentioned and half a mile south of the same river;

heavy pyrite replacements in sheared sedimentary rocks, two miles northeast of the east end of McDonald lake;

an east-west-trending shear zone in similar rocks on the southeast shore of the same lake;

two shear zones trending at right-angles to each other - one northeast, the other northwest - in volcanics and gabbro at a point about two and a half miles along a trail leading southwestward from Capsisit lake;

and a north-northeast-trending shear zone in gabbro about a mile north of the southeast corner of the map-area.

Toward the close of the field season of 1947, an interesting gold discovery, which resulted in extensive staking of claims, was made only one-quarter of a mile south of the southeast corner of the map-area. The find was reported from an 18-inch-wide shear zone of altered gabbro occupied by a six- to twelve-inch quartz vein. The shear zone and the vein trend N.20°E. and have an easterly dip of 25 degrees.

There is no doubt that the Capsisit Lake area, which as yet has been little prospected, is distinctly deserving of continued search, not only for gold and silver but also for base metals such as zinc, lead, copper, and nickel.

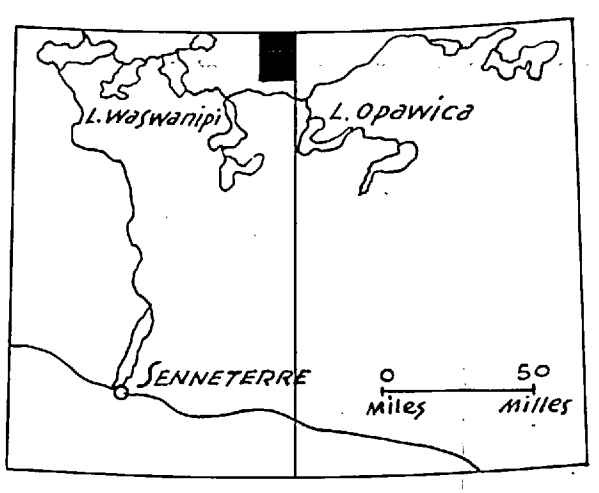
Granitic intrusives
Intrusions de roches granitiques

Volcanic rocks;...
Roches Volcaniques....
with associated sedimentary zones....
avec zones de sédiments associés....
and gabbro masses.
et amas de gabbro.

70 Strike and dip of bedding
Direction et pendage des couches

Minor shear zones
Zones de cisaillement peu prononcé

× Pyrite mineralization
Minéralisation de pyrite

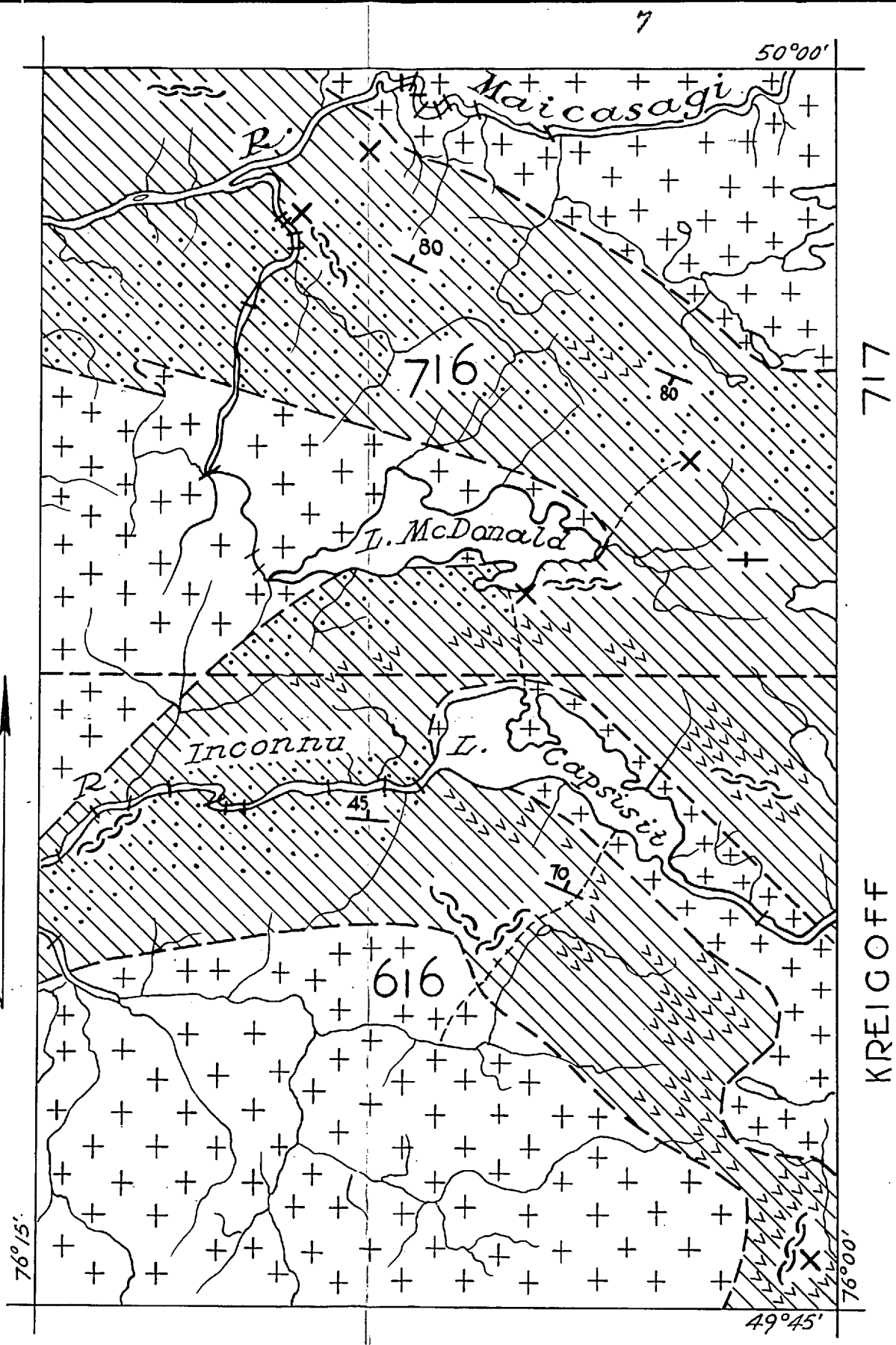


18°W.

GEOLOGY BY:
GÉOLOGIE PAR: J.E. GILBERT, 1947

RÉGION DU LAC CAPSISIT
CAPSISIT LAKE AREA

ABITIBI - EST
ABITIBI - EAST



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