

RP 167(A)

PRELIMINARY REPORT ON CASTAGNIER LAKE AREA, ABITIBI COUNTY

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Province of Quebec, Canada
DEPARTMENT OF MINES AND MARITIME FISHERIES
BUREAU OF MINES
Division of Geological Surveys

PRELIMINARY REPORT
ON
CASTAGNIER LAKE AREA
ABITIBI COUNTY
by
W.W. Longley

QUEBEC
1942

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LOCATION

The area examined by the writer during the summer of 1941 extends for twenty miles southward from the northern limit of Abitibi county (49th parallel) and is bounded on the east and west, respectively, by lines of longitude $77^{\circ}30'$ and $78^{\circ}00'$. Comprising approximately 400 square miles, it includes the whole of Coigny, Castagnier, Bernetz, and Vassal township and also, on the east, a strip about two miles wide of Hurault and Despinassy townships, and on the west a narrower strip of Miniac and Béarn townships.

The western part of the area may be reached readily from Amos, on the Canadian National railway, over a road that leads northeast to the village of Saint-Maurice-de-Dalquier, a distance of about 12 miles, and thence by way of the Harricana river, which flows northward to Obalski lake, in the southwestern corner of the map-area four miles due north of Saint-Maurice-de-Dalquier.

Castagnier lake, about midway along the southern boundary of the area, is twenty-three miles by road northward from the town of Barraute, on the Canadian National railway. Good roads along which are located a number of farms, extend from

the lake for about five miles both to the east and to the west. Castagnier river, which flows north-east from Castagnier lake, affords a good canoe route to the central and eastcentral parts of the area.

The northern part of the area can be reached most readily along trappers' trails, and by following the township boundary and centre lines which have been recently cut or cleared.

GENERAL GEOLOGY

Exposures of bed-rock are scarce in all parts of the area, and particularly so in the north-western and southeastern sections, where very few outcrops were seen. With the exception of several exposures of a persistent gabbro dyke, the rocks encountered are volcanics of Keewatin type with interbedded sediments, and later granitic intrusives. The intrusives underlie the major portion of the area.

Keewatin-Type

The southern part of the map-area, for a width increasing from three miles at the east boundary to about thirteen miles at the west, is underlain by rocks resembling those generally classified as Keewatin. The rocks in this belt, which continues east and west beyond the limits of the map-area, represent massive volcanic flows and ellipsoidal lavas, with interbedded, finely banded volcanic tuffs and clastic sedimentary rocks. South of Castagnier lake, which is at the southern limit of the map-area, the belt contains also thin layers of conglomerate.

This belt is bounded on the north by biotite granite gneiss, at and near the contact with which the Keewatin-type rocks have been metamorphosed to quartz-hornblende schist. In a lobe

which extends eastward from the main belt through the northeastern corner of Castagnier township and for about three miles into the northwestern part of Vassal township, the schists have been extensively intruded by biotite granite, both across and parallel to their foliation. In places, as much as 50 per cent of the exposed rock in this lobe is granite.

The northeastern corner of the map-area is underlain by massive volcanic flows and banded fine-grained quartz-hornblende schist similar to that in the southern belt. This is part of a belt which border the northern margin of the granite gneiss and extends for a considerable distance beyond the limits of the map-area.

Within the granite gneiss in the northern part of Vassal township there are numerous inclusions of the Keewatin-type volcanics that have been recrystallized to amphibolite and quartz-hornblende schist. Similar quartz-hornblende schist is abundantly exposed on a prominent ridge about a mile long, a little more than a mile east of the centre of Bernetz township. The same type of rock is also exposed in the eastern part of Coigny township in outcrops too small to show on the accompanying map; one of these outcrops is on the southeast shore of Coigny lake, and the other two are about a mile east of the lake.

Intrusive Rocks

North of the main belt of Keewatin-type rocks, the map-area is underlain by granite and granite gneiss. This is part of a large body of such rock that extends beyond the limits of the map-area except, as already noted, in the northeast corner, where its northern margin is exposed in contact with Keewatin-type volcanics and schists. Between the two belts of Keewatin-type rock, this intrusive body has a width of about 14 miles. It is a medium

grained, grey, biotite-granite gneiss. In places the foliation is pronounced while in others it is obscure, and there is also a variation in grain size from place to place. Small dykes of pegmatite and aplite are quite abundant cutting the gneiss. Usually, they parallel the foliation.

South of the granite gneiss, two intrusive bodies lie entirely within the Keewatin-type rocks. One of these enters the map-area about midway along its western boundary and extends southeastward for some 8 miles across the southwest corner of Coigny township and the northwest part of Castagnier, with an average width of about 2 miles. The rock is a medium to coarse grained, grey, hornblende-biotite granite. The other body is in the eastern part of Castagnier township, about two miles northwest of Vassal lake, and within a few hundred feet of the Keewatin-granite gneiss contact. It has the form of a sill, dipping at about 35° to the south, and it was traced for a length of about a mile, terminating on the east in a prominent knoll which it caps, the underlying rock being Keewatin-type volcanics. The rock is a medium grained, grey gneissoid syenite, or possibly a granite with low content of quartz. The foliation parallels the dip of the sill.

Coarse grained pink hornblende granite exposed on the southwestern shore of Lepage lake, which is near the southwest corner of Bernetz township, is similar in appearance to the rock that forms large intrusive body in Laas and Tonnancour townships, thirty miles to the east of the present map-area.

Large dykes of a fine grained granite were observed immediately southwest, and also about one mile northeast, of Coigny lake.

A medium to coarse grained gabbro dyke is exposed on the western shore of Obalski lake, in the extreme southwest corner of the map-area, and numerous outcrops of what is evidently the same dyke appear at intervals in a northeasterly direction to the northern limit of the area, a distance of more than twenty miles. In the exposures observed, the width of the dyke ranges from about one hundred feet to five hundred feet. A single exposure, about half a mile long, of a similar dyke was observed in the southeastern corner of the area, just east of the boundary between Vassal and Despinassy townships.

STRUCTURE

The general structural features of the rocks in the area follow a west-northwesterly direction, closely paralleling the contact between the main body of intrusive rock and the volcanics. The foliation and banding of the gneiss tend to parallel the banding and schistosity of the Keewatin-type volcanics. In the southern belt of volcanics, dips are predominantly steep to the south or vertical; however, local dips to the north and low dips to the south were observed. The volcanics in the north-eastern corner of the area dip to the north.

There are a few marked variations from the general structural trend. In the southwestern corner of the map-area, the strikes swing from west to southwest, and the tops of the flows or strata, as indicated by the shapes of ellipsoidal lavas, face to the northwest. These features strongly suggest the nose of a westward plunging anticline.

The banding in the ridge of hornblende schist east of the centre of Bernetz township strikes northward with an easterly dip. The same is true of the recrystallized volcanics at and east of Coigny lake.

No strong or persistent zones of shearing were seen although slight shearing was observed at many points in the southern part of the area. In view of the scarcity of rock exposures, it is not to be expected that zones of strong shearing would be much in evidence.

ECONOMIC GEOLOGY

Some prospecting has been carried out in the southern part of the area during recent years, and a few prospectors were in the field during the summer.

Small, but barren looking, quartz veins are fairly common in the Keewatin-type rocks, and some 'pockets' of pyrite and pyrrhotite mineralization were observed.

Samples from the better mineralized zones and quartz veins were collected during the investigation, and were assayed in the laboratories of the Bureau of Mines at Quebec. The results, tabulated below, are not at all encouraging.

Table of Assay Results

Sample No.	Gold, oz/ton	Sample No.	Gold, oz/ton
1	none	7	0.003
2	none	8	none
3	trace	9	0.002
4	trace	10	0.006
5	0.004	11	0.003
6	trace	12	0.002

Description of Samples Assayed

- 1.- Chlorite schist replaced by minute stringers of pyrite; Castagnier township, about a mile northwest of Vassal lake.

- 2.- Fissile schist replaced locally by pyrrhotite and traces of chalcopyrite; Castagnier township, two and a half miles west-northwest of Vassal lake.
- 3.- Contorted chlorite schist containing crystals of pyrite; middle of the line between lots 22 and 23, range II, Vassal township.
- 4.- A small, highly fractured quartz-carbonate vein mineralized with pyrite; same location as sample No. 3.
- 5.- A small stringer of fine grained pyrite; same location as sample No. 3.
- 6.- Carbonatized pillow lava containing a considerable amount of disseminated pyrite; northern part of lot 31, range I, Vassal township.
- 7.- Schistose carbonatized rock containing disseminated pyrite; Castagnier township, two and a half miles northwest of Castagnier lake.
- 8.- Highly fractured milky quartz vein containing chlorite, tourmaline, feldspar, and scattered pockets of chalcopyrite; southeastern shore of Vassal lake, Vassal township.
- 9.- Highly sheared chlorite schist containing scattered crystals of pyrite; southeastern shore of Vassal lake, Vassal township.
- 10.- Strongly silicified, well banded greenstone, containing green mica and well mineralized with pyrite; in or near lot 56, range VIII, Castagnier township.
- 11.- Quartz stringer containing pockets of chalcopyrite; eastern shore of Obalski lake, Castagnier township.

12.- Silicified fine grained greenstone containing disseminated pyrite; lot 33, range IX, Castagnier township.

Several of the quartz veins in the southern part of the area contain a buff coloured carbonate which resembles scheelite. Some specimens from these veins were examined in the laboratoires of the Bureau of Mines at Quebec with an ultra-violet ray-lamp of suitable wave-length for detecting scheelite, but the results were negative.

The season's work failed to reveal any localities within the map-area which offer particular encouragement for prospecting. The mineralization observed is meagre and proved to be of low grade, and there was no indication of the occurrence of deposits of commercial size. The scarcity of outcrop would prove a decided hindrance to prospecting.

The southern part of the area, particularly in the vicinity of the intrusive bodies and dykes, offers the more favourable localities for prospecting.
