

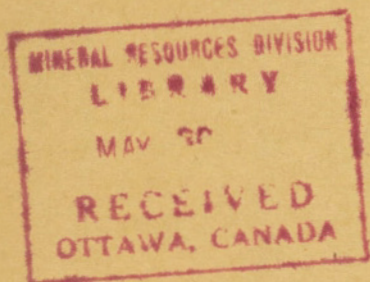
CANADA
DEPARTMENT OF MINES AND RESOURCES
MINES AND GEOLOGY BRANCH

GEOLOGICAL SURVEY
PAPER 41-7

(NORTHEAST PART) BEAUCHASTEL TOWNSHIP,
TÉMISCAMINGUE COUNTY, QUEBEC
(Summary Account)

BY
E. D. Kindle

*Nespeena Gold Mine
New Ribago Mine
Buffalo Canada
Halliwell*



OTTAWA
EDMOND CLOUTIER
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1941

Price, 10 cents

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Illustration

Preliminary map—Northeast part, Beauchastel township.

Northeast Part, Beauchastel Township, Témiscamingue County, Quebec

(Summary Account)

INTRODUCTION

The map-area covers the northeast part of Beauchastel township. It reaches from the centre line of the township to the east border, a distance of 5 miles, and extends south for $3\frac{1}{4}$ miles from the north boundary of the township. The easterly border lies 4 miles west of Noranda mine.

The east boundary of the area adjoins Geological Survey Map 453A, Rouyn area, and the north boundary adjoins part of Map 454A, Amulet area. On the south the area adjoins a map-sheet now in course of preparation by the Geological Survey. The west part of the area overlaps a part of Map 492, Halliwell Mine area, published by the Quebec Department of Mines in 1940. Maps and reports of areas to the south and west are available in geological report No. 5, Fortune Lake and Wasa Lake Map-areas, published by the Quebec Department of Mines in 1940.

The geological mapping was done on a scale of 1 inch to 1,000 feet. All outcrops in open country were located by plane-table, and outcrops in timbered areas were placed by pace and compass traverse. The plane-table work was done by R. Beauchesne and E. Gendron.

PLEISTOCENE DEPOSITS

The area is a rolling clay plain with a scattering of rocky hills that rise steeply above it to heights up to 200 feet. The clay is varved and exceeds 20 feet in depth in a road cut south of Evain. The varved clays were deposited in a widespread glacial lake as the last great ice-sheet receded. Wave action kept the hills free of clay and formed a few small gravel deposits in sheltered spots. Boulder clays are exposed in a number of places. Half a mile northwest of Evain village the boulder clay is more than 40 feet thick and contains several lenses of poorly washed gravel, which have been used for road metal. In the railway cut half a mile east of Evain station, glacial striæ striking south 15 degrees east are overridden by less prominent striæ striking south 15 degrees west.

GENERAL GEOLOGY

Archæan rocks of Keewatin type, consisting largely of rhyolite and andesite flows and flow breccias, outcrop in the northeast and southwest parts of the area and along the south border. These rocks are cut by a few small diorite and quartz diorite stocks. The granodiorite stocks that occur in ranges IX and X were intruded next. The granodiorite and older

rocks are intruded by widespread bodies of white weathering alaskite granite. Numerous alaskite dykes and several quartz porphyry and albite porphyry dykes cut the granodiorite and older rocks. The main alaskite body and rocks that it intrudes are cut by dykes of lamprophyre, diorite, and gabbro. Most of these dykes are only a few feet in width, but the gabbro and diorite dykes range up to 50 feet wide. A syenite porphyry dyke, 10 feet wide, intrudes rhyolite near the north end of lot 32, range VII. The highest point of a rock ridge in the south part of lot 42, range VIII, is capped by conglomerate, perhaps belonging to the Cobalt series. The conglomerate measures about 50 feet across, does not exceed 8 feet in thickness, and lies unconformably upon pillowed andesite. Both andesite and conglomerate are cut by a single biotite lamprophyre dyke that ranges from 1 to 3 feet in width. Two north trending dykes of quartz gabbro, one adjacent to the Halliwell mine road and the other in lot 48, range X, are believed to be the youngest rocks in the area. The former dyke is 60 feet wide and the latter 110 feet.

The main andesite belt in the northeast part of the area consists of pillowed andesite, porphyritic andesite, amygdaloidal andesite, and finely crystalline, massive andesite. These flows strike northeast and dip from 40 to 80 degrees southeast. The andesites approach 3,000 feet in thickness and are overlain on the east by a great mass of rhyolites. (See Map 453A, Geological Survey, Canada.) In the north part of range IX, several hundred feet of rhyolite lies between the alaskite granite and the andesite. This rhyolite band may be continuous with that shown along Corona Creek on Map 454A. The rhyolite narrows gradually towards the southwest; on lots 45, 46, and 47, range IX, it is underlain by massive andesite.

In the southwest part of the area a band of rhyolitic rocks ranging from 1,000 to 2,000 feet in thickness runs roughly east and west, separating areas of andesitic rocks. The rhyolites include porphyritic and amygdaloidal flows, rhyolite flow breccias, and some rhyolite pyroclastic breccia. Some of the flow breccias are made up of a grey, finely crystalline, dacitic matrix packed with angular, white weathering, cherty, rhyolite fragments. The andesite areas are chiefly pillow lava, but with considerable areas of massive, porphyritic andesite and some andesite flow breccia.

Judging from the attitudes and forms of the pillows these rocks dip from 15 to 80 degrees towards the south. From west to east across range VIII they strike southeast, then northeast, and then southeast again, showing a sinuous folding interrupted by a fault that runs northeast, passing a little north of post 41-42 on the line between ranges VII and VIII. The structure resembles a faulted drag-fold, with rocks on the north side having moved to the northeast in relation to those on the south side of the fault. The apparent horizontal offset is about 500 feet. For convenience of identification this fault zone is named the Beauchastel fault.

It may be that the Beauchastel fault extends much farther to the northeast. If so, it may lie along the northeast trending contact of alaskite with andesite and rhyolite in the valley bottom of the stream that passes 700 feet south of the Buffalo Canadian shaft. Extended southwest of the map-area the Beauchastel fault lines up with a fault that strikes northeast from MacKay Lake, south of the Aldermac mine (See Map 462A—Service des Mines, Quebec).

The most acidic rhyolite flows in the area lie south of the Horne Creek fault. These flows are generally light pink to grey-white and range from finely crystalline to porphyritic. Most of the flows contain small, glassy quartz phenocrysts and white weathering albite phenocrysts. The rhyolite grades into rhyolite flow breccia in the vicinity of tops and bottoms of individual flows. The flows strike northeast and dip vertically.

The position of the Horne Creek fault along the contact of quartz diorite and alaskite on lots 60 and 61 is indicated by severe shearing of the quartz diorite and by the presence of drag-folds. The north sides of the drag-folds are moved east and the folds plunge northeast, indicating that the rocks on the north side of the fault moved upwards as well as east. On lot 57 a strong sheared zone believed to be the Horne Creek fault marks the contact of the alaskite and rhyolite. The sheared zone is about 30 feet wide and dips vertically. The rhyolite is sliced and silicified and is sparsely mineralized with pyrite.

The granodiorite in the northwest corner of the area is a massive, coarsely crystalline rock of pink-white colour mottled with black. A Rosiwal analysis gave 52 per cent albite, 40 per cent quartz, and 8 per cent hornblende, the latter mineral largely altered to chlorite and epidote. Elsewhere in the area the granodiorites generally contain less quartz and more hornblende. A Rosiwal analysis of granodiorite from lot 37, range IX, gave 58 per cent albite, 22 per cent quartz, and 20 per cent hornblende. The hornblende is partly altered to chlorite and biotite and some magnetite is associated with it. Granodiorite from lot 37, range X, carries about 10 per cent magnetite and 10 per cent altered hornblende.

The main body of alaskite granite is coarsely crystalline and white, but with a greenish grey cast in some localities where chlorite and epidote have developed through alteration of the plagioclase. The rock generally contains from 35 to 40 per cent quartz, 55 to 60 per cent albite, and variable amounts of chlorite and epidote. In some places the rock is traversed by small veins of chlorite and epidote. The small stocks of alaskite in the southwest part of the area range from medium grained towards their cores to finely crystalline around their borders, and alaskite dykes given off by them are so finely crystalline as to resemble rhyolite. Micrographic intergrowths of quartz and feldspar are present in both coarse- and fine-grained types, and in some places in the southwest part of the area the intergrowths occur in rounded aggregates giving the rock a spheroidal texture. All rocks in contact with the main body of alaskite are much altered and some assimilation has taken place.

The diorite stocks near the west border of the sheet are massive, coarsely crystalline rocks of grey to green colour mottled with white. They are comprised of highly altered hornblende and plagioclase with about 1 per cent quartz. In the easterly two-thirds of the area these older intrusives are quartz diorites of medium to fine grain and dull grey colour, in some cases with small, clear, quartz phenocrysts. They consist of altered albite, hornblende completely converted to chlorite and carbonate, and from 10 to 20 per cent of quartz.

MINERAL DEPOSITS

Numerous quartz veins occur in the andesite in the northeast part of the area. They range up to 8 feet in width, but their average widths are probably about 3 feet. Most of them are several hundred feet in length and one, lying 2,000 feet east of the end of the range X road, is over 1,000 feet long. They strike northeast and their dips are approximately vertical. They generally carry small amounts of chalcopyrite and pyrite, but in some places appear barren. Work has been done on a comparatively small number.

Half a mile north of the east end of the road along range line IX-X, amygdaloidal andesite is mineralized with veinlets, replacements, and disseminations of chalcopyrite, pyrrhotite, and pyrite adjacent to, and along, small sheared zones. The occurrence was investigated by Ribago Mines, Limited, between 1926 and 1930, by a shaft sunk to 147 feet with 160 feet of lateral work at that level.

A sheared or sheeted zone containing narrow veins of chalcopyrite and pyrite occurs 3,000 feet east-southeast of the Ribago shaft. The zone is exposed for 500 feet and ranges from 4 to 10 feet in width. The sulphide veins are only a few inches in width in most places and are discontinuous along their strike. They are associated with a little vein quartz and carry gold. The fissured andesite is replaced by disseminated chalcopyrite, particularly where its texture is amygdaloidal. Diamond drilling of this zone by New Ribago Mines, Limited, failed to disclose much mineralization at depth.

A somewhat similar sheared zone occurs in rhyolite near its contact with andesite on the property of Buffalo Canadian Gold Mines, Limited. Individual veins of chalcopyrite and pyrite with a little quartz occur along the sheared zone, but they are narrow and discontinuous along the surface outcrop. A 125-foot shaft was sunk 100 feet north of this sheared zone, about 10 years ago, and some drilling was done.

Quartz sulphide veins containing gold and sheared zones mineralized in places with chalcopyrite and pyrite occur on the property of Despina Gold Mines, Limited, in the northeast corner of Beauchastel township and in adjacent territory in the corners of Rouyn, Dufresnoy, and Duprat townships. Some stripping, trenching, and drilling have been done.

A small ore-body, consisting largely of chloritized andesite replaced by a little chalcopyrite and averaging somewhat over half an ounce in gold a ton, was mined in 1938 at the Halliwell mine, lot 34, range VIII. Porphyritic andesite is cut over a width of about 50 feet by roughly parallel fractures striking a little west of north, and the andesite has been altered and replaced by sulphides along these fractures near their junction with an easterly striking fault. North of the fault porphyritic rhyolite and andesite are unmineralized. Mine plans show the ore zone underlain by chilled alaskite at a depth of about 475 feet. Lenses of solid chalcopyrite, in places accompanied by pyrite and pyrrhotite, were mined, but the chloritized andesite containing about 1 per cent of chalcopyrite is reported to have formed the bulk of the gold ore.

At the north end of lot 49, range X, on the O'Leary Malartic property, gold occurs with fine pyrite in narrow, sheared zones in alaskite granite. Diamond drilling has disclosed a number of these zones, which strike northeast and dip at low angles to the southeast. Some high values were encountered over narrow widths.

Quartz veins and replacements also occur in alaskite granite on the David Duke property in the south part of lot 32, range IX. The contact of the alaskite with granodiorite plunges north, and a quartz body over 30 feet in diameter lies along this contact. The quartz carries scattered crystals of coarse pyrite and some gold. A number of narrow quartz veins, sparsely mineralized with pyrite, occur in the alaskite southeast of the large quartz body.

Sheared alaskite impregnated with a little chalcopyrite and pyrite and containing a little gold has been investigated on the Quebec Viking property, lots 59 and 60, range VIII. Quartz diorite is similarly sheared and impregnated with a little chalcopyrite and pyrite just north of the highway, lot 62.

On the south side of the Beauchastel fault the rhyolites and andesites have been altered and silicified and are impregnated with considerable pyrite and pyrrhotite, and these sulphides are accompanied by a little gold. This mineralization occurs locally for as much as 2,000 feet south of the fault, but is mostly absent north of the fault except on lot 43, range VIII, adjacent to the alaskite contact.

PROSPECTING POSSIBILITIES

Further work on the quartz and sulphide veins in the andesite in the northeast part of the area is desirable in view of the possibility of their containing gold in economic amounts.

The Beauchastel fault may be mineralized in some places, and this can be determined only by drilling as it is concealed by drift. The local replacement of the andesite, on lots 33 to 43, on the south side of the fault by pyrite and pyrrhotite is a favourable indication. This fault probably extends southwest of the map-sheet for 2 miles to MacKay Lake, where faulting has been indicated along the north shore (See Map 462A—Service des Mines, Quebec, 1938). The Francoeur mine occurs along a sheared zone on the same strike, about 2 miles southwest of MacKay Lake.

It is highly probable that the Beauchastel fault extends northeast across the map-area, and that it lies along the contact of the alaskite with andesite and rhyolite on its north side. Because of the numerous veins occurring in the andesite along small faults of similar strike in the northeast part of the area, it is reasonable to expect that veins may occur along the major fault in this vicinity.

The Horne creek fault zone may be considered as favourable ground for drill prospecting, as silicified zones such as mark its course on lot 57 sometimes carry gold.