

# RP 219(A)

PRELIMINARY REPORT ON THE CHASTE MAP-AREA, ABITIBI-EAST COUNTY

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PRELIMINARY REPORT  
ON  
THE CHASTE MAP-AREA  
ABITIBI-EAST COUNTY

BY  
MARCEL TIPHANE



QUEBEC  
1948

PRELIMINARY REPORT

on the

CHASTE MAP-AREA

ABITIBI-EAST COUNTY

by

Marcel Tiphane

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

Location and Access

The Chaste map-area, examined and mapped during the field season of 1948, lies between latitudes  $49^{\circ}00'$  and  $49^{\circ}15'N$ . Its eastern boundary is longitude  $77^{\circ}45'W$ , and its western is Harricana river, which is from two to six miles west of longitude  $78^{\circ}00'W$ .

The area examined is about 270 square miles and comprises the whole of Chaste township, two-thirds of Soissons township, a narrow strip of Barrin and Fonteneau townships to the east, half of Glandelet and Maizerets townships to the west, and a narrow strip of Miniac and Coigny townships to the south.

The area can easily be reached from Amos, a town on the Quebec-Cochrane line of the Canadian National Railways and on Harricana river, through the aeroplane service which has its base in Amos. Hydroplanes can land on the Harricana at 35 to 45 miles from Amos, depending on the point of landing. They can also land on Bigniba lake (Aymar), which is in the eastern part of Chaste township and 40 miles from Amos, and likewise on the lake situated in the western part of Soissons township, across range-line II-III.

There is also a new road which can be followed from Amos to the junction of Berry and Harricana rivers, a distance of 30 miles. From this point there remains a stretch of only six miles of canoe travel to reach the southwestern corner of the area.

The Harricana offers excellent means to travel by canoe along the western margin of the area, but, elsewhere in the area, Coigny river, a tributary of Harricana, is the only navigable stream. From the Coigny, the central and southern parts of the area are easily accessible. Other parts of the area must be reached by portaging along the boundary-lines, centre-lines, or range-lines of townships, lines which have been recently cut by the Surveys Branch of the Department of Lands and Forests of the Province of Quebec.

### Topography

The area examined is in the Clay Belt, which extends eastward from beyond the Ontario-Quebec boundary. The thickness of the clay varies with localities, but it is generally considerable, so that the streams have eas-

ily been able to dig deep V-shaped channels. These depressions, the eskers and moraines of sand and gravel that are common throughout the area, and three or four hills that rise to about 100 feet, offer the only little relief there is in this otherwise flat-lying region.

Lakes are few in number and are small and shallow, whereas swamps are numerous and of large extent. Streams are numerous, but many of them dry up during the summer. The level of the water varies greatly with the weather: a couple of days of steady rain may raise the water level four or five feet, with the result that some rapids along Coigny river disappear at high water. The impervious nature of the clay soil and the consequent rapid surface run-off of the rainfall have much to do with these quick changes.

The area belongs to two drainage systems: those of Harricana and Bell rivers. The height of land, spotted as exactly as possible, goes across ranges VI, VII, and VIII of Chaste township, approximately two miles east of the centre-line of the township. To the south of range VI, the divide seems to bend towards the southeast corner of the area. To the north of range VIII, it bends to the west, crosses the centre-line in range IX, follows the boundary between Chaste and Soissons townships as far as mile-post XXIX, where it bends to the north and follows very closely the boundary between Maize-rets and Soissons townships.

#### GENERAL GEOLOGY

Most of the relatively few rock exposures in the area are along Harricana and Coigny rivers, and even some of these may be seen

only at low water. Elsewhere in the area, exposures are almost entirely restricted to the three or four hills that rise to about 100 feet above the low, swampy, clay-covered plain that is the characteristic feature of the region.

#### Keewatin-type rocks

Most of the area seems to be underlain by chloritic or, in some cases, amphibolitic volcanic rocks of Keewatin-type. Some are massive, but most are schistose. They are from fine to coarse, with grains up to more than a quarter of an inch in length. On the map, they have been designated mostly as andesitic and basaltic lavas. On account of the small number of exposures, however, this conception may not be exactly true. Nevertheless, with the exception of a few narrow bands which are more acidic, all the volcanic rocks observed are intermediate to basic lavas. Interstratified with some highly schistose basic volcanics along the westward flowing part of Coigny river, there are a few very thin beds of slate.

Where the rock is not too highly schisted, one can observe pillow-lava structures in many places, but nowhere could the top and bottom relationship of the flows be determined. Some of these pillowed lavas are exposed in range V along the centre-line of Soissons township, in range II, along the eastern boundary of Soissons, and also in Chaste township, east of Bigniba lake.

Massive basic volcanics are exposed on the extensive outcrop in the eastern part of range VI of Maizerets township, on the outcrop east of the swamp near the centre-line of range

VI of Soissons, in the northeast corner of Chaste township, and also east of Bigniba lake. These massive lavas vary in grain from very fine to coarse; in the latter case, it is sometimes difficult to determine whether the rock is a basic volcanic or a gabbro.

Intermediate lavas, which are grey to greenish in colour, occur at a few places interstratified with the basic rocks. They have been observed in the exposures of range VI, Maizerets township, and along the Harricana at range-line II-III of Maizerets. These more acidic lavas are fine-grained, generally massive, or only slightly schistose, and occur as narrow bands, the average widths of which are three to four feet.

At the localities where the massive basic volcanics were found, i.e., in Maizerets, Soissons, and Chaste townships, there are also exposures of a massive, coarse dark-coloured rock that, apparently composed of plagioclase, amphibole and pyroxene, is considered to be a gabbro. The relationship between this gabbro and the adjacent basic volcanics could not be determined because overburden conceals the contacts and also prevents determining any grain gradation there may be between the two rock types.

A dark, dense rock, believed to be a peridotite, is exposed on the Harricana near range-line II-III of Maizerets township. It is cut by stringers of serpentine. The exposure is small, and the extent of the mass could not be determined.

Post-Keswatin

Granite

Along the eastern part of the northern boundary of the map-area, an exposure was found that shows the contact between the volcanics already described and a granite. For the most part, it is a hornblende granite, but it contains lenses of biotite granite. The contact between the intrusive and the volcanics is not sharp; it is a zone about 200 feet wide, where the rocks grade gradually from one type to the other. From the volcanics, the rock changes into an amphibolitic rock, then into a hornblende diorite, and finally into a hornblende granite or granodiorite. As this is the only exposure of granite in this part of the area, a magnetometer survey, which seems to have given good results, was made in order better to trace the contact between the granite and the volcanics and to join it with the contact established by Auger (1) in the area to the southeast. The contact thus located crosses the eastern boundary of Soissons townships near range-line V-VI, gradually bends southward, crosses range-line IV-V of Barrin township in lot 10 (outside the map-area), crosses range-line III-IV in lot 14, which is the farthest point to the east, comes back westward into this map-area to go the length of lot 4, range I of Barrin, and

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(1) Auger, P.-E., Lower Laflamme River Area,  
Abitibi District; Que. Dept.  
Mines, Geol. Rep. No.2, 1939.

bends to the southeast again towards the contact established by Auger.

Another granite is exposed along Harricana river in the southwestern corner of the area. This granite varies greatly in composition; in some places, it is composed mostly of quartz and feldspar; in others, it is a hornblende granite. There are also lenses of biotite granite, and narrow strips of hornblende syenite. As the contact with the volcanics to the north is approached, this granite becomes gneissic and has a banding parallel to the schistosity of the volcanics to the north. Unfortunately, within the map-area, there are no other exposures of this granite towards the east; the assumed contact, as located on the map, joins the exposures found by the author with those found by Longley (2) to the southeast.

#### Feldspar Porphyry

A few dykes of feldspar porphyry cutting across volcanic rocks were found in the area. They are from two to five feet wide, and are exposed along the Chaste-Soissons boundary east of mile-post 21, in range II of Berrin township, and also in the volcanic schists of Coigny river near the Chaste-Glandelet boundary-line.

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(2) Longley, W.W., Castagnier Map-Area, Abitibi-East County; Que. Dept. Mines, Geol.Rept. No.26, 1946.

### Diabase

Three diabase dykes, from eight inches to one foot wide, are exposed on Harricana river in range II of Maizerets township near range-line II-III. These dykes are very fine-grained and cut across the volcanic rocks of this locality. Two of them are exposed on the east side of the river and strike N.40°E. The third one, which is on the west side of the river, strikes N.45°W.

### Unconsolidated Sediments

The soil is composed mainly of clay and arenaceous clay. All the rivers and streams are muddy. There are, however, a few sandy areas, which trend approximately north-south, near the lakes in the eastern part of Maizerets township and in the western part of Soissons. At these places, the water is very clear. Another sandy area occupies lots 43 and 44 of ranges VII and VIII, Chaste township.

These sandy areas described are formed of low hills, which may be classified as drumlins and eskers. Other glacial deposits, of the nature of moraines, are distributed in the eastern half of Soissons township. They contain granite boulders up to five feet in diameter.

The direction of the final ice advance is indicated by numerous striae on the exposures of the area. The general trend of the striae is S.30°E., but, in the centre of Chaste township, at least two localities show a strike of S. 5°W.

## STRUCTURAL GEOLOGY

The volcanic rocks of the area are highly schistose, especially along the part of Coigny river that flows westward and also east of Bigniba lake, where there may be strong shear zones. The schistosity generally strikes about east-west and dips to the north. In the north-eastern part of the area, however, the schistosity is parallel to the contact of the volcanics with the granite.

Joints are well developed in many localities. They form triangular sets; one being parallel to the schistosity; the other two trending N.30°E. and N.75°W.

## ECONOMIC GEOLOGY

Pyrite is abundant, in the shear zone along Coigny river and in the one to the east of Bigniba lake; there is also some in the exposures of the western part of Soissons township. This pyrite is usually in the form of cubes, but also occurs finely disseminated in the rock. At many localities in the shear zones, it seems to have dissolved, and only rust is left in the cavity.

A few crystals of galena were found in the volcanic schists exposed at the second portage on Coigny river, in range V, Chaste township.

Small quantities of chalcopyrite and pyrrhotite are in many places associated with the pyrite in various parts of the area, especially in the shear zone along Coigny river

and in the exposures of range IV in the western part of Soissons township.

A magnetic anomaly was noted in ranges IX and X of Chaste township, approximately two miles from the western boundary of the township. As there are no exposures in this part of the area, the cause of the magnetic disturbance is unknown.

There are many quartz-carbonate veinlets in the volcanic rocks, but they all seem barren.

The area has been very little prospected, perhaps largely because rock exposures are very scarce. Some attention, however, could be given to the shear zone along Coigny river, but, even there, exploration would probably require geophysical surveys and diamond drilling.