

RP 318(A)

PRELIMINARY REPORT ON DU GUESCLIN - ROYAL AREA, ABITIBI-EAST COUNTY

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PRELIMINARY REPORT

ON

DU GUESCLIN - ROYAL AREA

ABITIBI-EAST COUNTY

BY

A.-N. DELAND



QUEBEC
1955

PRELIMINARY REPORTONDU GUESCLIN - ROYAL AREAABITIBI-EAST COUNTYbyA.-N. DelandINTRODUCTIONLocation

The Du Guesclin-Royal area, mapped geologically during the summer of 1955, is in Abitibi-East county about 60 miles southwest of the village of Chibougamau and 110 miles northeast of Senneterre. The area is bounded by latitudes 49°09' and 49°30'N. and by longitudes 75°15' and 75°30'W. It lies west of the Gradis-Machault area (1) and north of the Buteux area (2). The area includes nearly all of Du Guesclin and Royal townships and smaller parts of Gradis, Machault, Belmont and l'Espinay. It comprises about 275 square miles.

Access

The area can easily be reached by hydroplane, the closest air bases being located along the St. Félicien-Chibougamau highway. Numerous lakes provide easy access and facilitate the mapping in the northern half of the area. The southeastern part can be covered from Hébert lake and the southwestern corner from Goulet lake. From Doda lake two canoe-routes provide access to the central and south-central parts of the area. St. Cyr river has many rapids and is a difficult canoe-route, whereas Rouge river is more practical with only three short portages between Doda and Rouge lakes. There are no portages between Rouge lake and the excellent trail that connects the upper part of Rouge river to St. Cyr river at a point close to the south boundary of Royal township.

Physiography

The Du Guesclin-Royal area has a general elevation of about 1,100 feet above sea-level. Two of the largest lakes, Father and Doda, have elevations of about 1,100 feet and Hébert lake a score of feet higher. The local relief is not marked. The highest hill lies just south of Opawica river at the eastern edge of the map-area and rises 200 feet above the level of the river. On the east shore of Father lake, at about latitude 49°17', a small rounded hill rises 170 feet above the level of the lake. There are other smaller hills west of Hébert lake and east of the mouth of St. Cyr river.

- (1) DELAND, A.-N., Preliminary Report on Gradis-Machault Area, Abitibi-East County; Que. Dept. Mines, P.R. No. 312, (1955).
- (2) FREEMAN, B.C., Buteux Area, Abitibi County and Abitibi Territory; Que. Dept. Mines, G.R. 15, (1943).

Over 20 per cent of the area is covered by bodies of water and nearly 10 per cent consists of low swampy ground which is concentrated in the southern half of the area. Thus we can say that, although a few exposures were found in swamps, 30 per cent of the area is deficient in outcrop. The remaining 70 per cent is heavily wooded and largely mantled by drift. An estimate of two per cent of exposed bedrock is liberal.

The whole area is drained northward and northwestward into Opawica river and thence, through the Waswanipi-Nottaway system, to James bay.

GENERAL GEOLOGY

All the consolidated rocks of the area are of Precambrian age. They consist mostly of granitic rocks, but Keewatin-type rocks crop out in two east-west trending bands in the northern third of the map-area. Two exposures of diabase were observed, also in the northern part of the area.

The bedrock is largely covered by drift ranging in size from coarse boulders to fine clay.

Table of Formations

CENOZOIC	Recent and Pleistocene	Till, gravel, sand, clay
Great unconformity		
PRECAMBRIAN	Keweenawan (?)	Diabase
	Intrusive contact (?)	
		Granite and associated rocks, pegmatite, aplite.
		Granite and granite gneiss, with inclusions and remnants of Keewatin-type rocks
	Intrusive contact	
	Keewatin (?)	Andesite-basalt, a little rhyolite and agglomerate; and their metamorphosed equivalents (including hornblende schist, hornblende gneiss and amphibolite)

Keewatin-type Rocks

About one-eighth of the map-area is underlain by Keewatin-type rocks. These consist largely of andesite-basalt lavas with small amounts of rhyolite and agglomerate, and more metamorphosed equivalents of these rocks. They are concentrated in the northern third of the area and form two east-west trending bands. The northern band averages about three miles wide and extends across the entire area. The southern band stretches from the northern end of Father lake to the eastern boundary; it is less regular, varying in width from about half a mile in its central part to some four miles near the eastern limit of the area. In addition to these two bands there is an east-west trending remnant, about 2,000 feet wide and three miles long, west of the northern part of Father lake. Other exposures of Keewatin-type rocks are found as numerous inclusions and remnants in granite bodies north of Father lake, near the northern part of Hébert lake, and along the southern boundary of the area.

All Keewatin-type rocks exposed within the area are thus found within a mile and a half of granite. In addition to regional metamorphism they have undergone contact metamorphism, the degree depending on the distance they are from a granite intrusive.

The least metamorphosed Keewatin-type rocks include andesite-basalt lavas exposed near the northern boundary of the area along the western section of Opawica river and on the shores of Du Guesclin lake, as well as elsewhere. This andesite-basalt is dark green and generally schistose; only a few outcrops of massive lava were observed. Where the schistosity is pronounced, crenulation along the planes of schistosity is common. The massive andesite-basalt has a smooth weathered surface whereas the schistose variety has a pitted weathered surface with holes elongated parallel to the structure. Pillow, vesicular, and amygdaloidal structures are rare. Pillows can be observed about a mile north of the narrows between Du Guesclin and Françoise lakes, and amygdaloidal structure was seen north of the northeast bay of Father lake. A few crystals of magnetite occur in some of the schistose andesite-basalt and, locally, this mineral makes up five per cent of the rock. Near the northern boundary of the area, about midway between the western section of Opawica river and Stina lake, several exposures of rhyolite and one of agglomerate were seen. The rhyolite is light grey with a brownish tinge. Near shear zones and where the rock is very schistose, it has been altered to sericite schist. The agglomerate forms a two-foot-wide band overlain and underlain by pillowed andesite-basalt. The fragments, which are more felsic than the groundmass, average half an inch across and make up about 60 per cent of the rock.

More metamorphosed varieties of Keewatin-type rocks are well exposed on the shores of Germain lake and north of Doda lake near the eastern boundary of the area. Narrow sills and dykes of granite are commonly associated with them. One of the most striking features of these rocks is their thinly banded structure. This banding is generally irregular and discontinuous, but locally it is more even and may be mistaken for lamination. It is due to the concentration of various minerals in thin layers. Light grey bands seem to be rich in feldspars and green bands are epidote-rich. Dark grey bands consist mostly of hornblende, and some brownish bands are probably coloured by oxidation products of dark and opaque minerals. These metamorphosed Keewatin-type rocks are also characterized by an abundance of small needles of hornblende.

Highly metamorphosed Keewatin-type rocks - including hornblende schist, hornblende gneiss and amphibolite - are found as inclusions and remnants in some of the granite masses. These rocks are largely recrystallized, rich in hornblende, and generally medium-to coarse-grained. Pillows have been preserved in some of the finer-grained inclusions. Small garnets were also seen in some varieties.

Granite (1), Granite Gneiss, and Associated Rocks

These rocks underlie more than 85 per cent of the map-area. They are highly diversified, both in texture and in composition. The accompanying preliminary map shows two separate units of these rocks: one distinguishes areas of granitic rocks that contain inclusions and remnants of highly metamorphosed Keewatin-type rocks, previously described; the other unit indicates masses of granite where such inclusions are absent or rare. In the adjacent area to the east⁽²⁾, the writer did not use this subdivision, but instead indicated separately patches where inclusions were predominant over the enclosing rock. In the present map-area, numerous exposures near Hébert river and along parts of the shores of Hébert lake indicate that the granite and the dark inclusions are intricately mixed. Because of this complexity, the separation of the inclusions from the granite is not attempted at the present scale of mapping. The distinction between the two units of granite, and their contacts, as drawn on the accompanying map, are necessarily rather arbitrary.

The granite free of inclusions and remnants is the more common type. The rock is generally massive, grey, and medium-grained and has a granitoid texture. The mafic minerals are either biotite or hornblende or both. A variety of granite rich in epidote and lacking in other ferromagnesian minerals is also quite common. A facies showing porphyritic texture, with orthoclase phenocrysts as much as one inch long, is observed west of Skokiaan lake. At some places, especially in the district southeast of Doda and Rouge lakes, the grey granite is locally gneissic. Here and there, where the rock is highly jointed and fractured, such as along the southwest arm of Father lake, the grey granite assumes a pinkish hue, and many of the joints are coated with epidote. Epidote veinlets cutting the grey granite are usually flanked by narrow zones of pinkish alteration. On the south shore of German lake, books of mica half an inch in diameter are present in medium- to coarse-grained, massive grey granite. At a few places, such as east of Rouge lake, a pink granite intrudes the grey granite. Pegmatite and aplite intrude both the pink and the grey granites at a number of places.

Three masses of the granite containing inclusions and remnants of hornblende-rich rock are shown on the accompanying map. One is north of Father lake, another cuts across the northern part of Hébert lake, and the third is found along the southern boundary of the area west of Hébert lake. The granite of these bodies does not vary much from the granite that does not contain inclusions. It is medium- to coarse-grained, and hornblende is the most common ferromagnesian mineral. However, gneissic structure is common, and banding and ptygmatic folding were observed at a few places. East of Goulet lake, angular fragments up to a foot across and rich in hornblende have been incorporated into the granite and the rock has the texture of a breccia. In

(1) The term granite is here used in its broad sense and includes rocks varying in composition from true granite to diorite.

(2) DELAND, A.-N., Op. cit.

other places, as on the west shore of Hébert lake, the inclusions do not have sharp contacts with the granite and they have been more assimilated. In these places the rock is an injection gneiss characterized by pronounced banding.

Diabase

Two exposures of diabase were observed in the area - one about 1,000 feet west of Kevin lake, the other north of the narrows between Du Guesclin and Françoise lakes, about 2,000 feet south of the northern boundary of the area. Thus, one of the diabase outcrops is found in Keewatin-type rocks, the other in granite. Although no contact was observed between the diabase and the surrounding rock, the diabase is believed to be the youngest consolidated rock of the area, and may be of Keweenawan age.

The diabase is fresh, massive, and dark-coloured and consists essentially of plagioclase and pyroxene. The diabase near the northern boundary is fine-grained and can easily be mistaken for a Keewatin-type gabbro-diorite. The rock found west of Kevin lake is more easily recognized as it has a characteristic diabasic or ophitic texture.

Pleistocene and Recent

Unconsolidated glacial debris of variable thickness mantles most of the area. It consists largely of a heterogeneous mixture of sand, gravel and boulders. Sorted materials include clay and sand. At a number of places, grey unstratified clay overlain by sand was observed. A discontinuous esker, some fourteen miles long, trends southwesterly from the south shore of Doda lake into the northwest corner of Belmont township. Many small kettle lakes up to half a mile long are found on both sides of this esker.

Glacial striae in various parts of the area have an average strike of about S. 35° W.

STRUCTURAL GEOLOGY

The most common and widespread structures in the area are schistosity and banding in the Keewatin-type rocks, and gneissosity and jointing in the granite. Shear zones and evidence for one small fault were also observed.

In the Keewatin-type rocks, the schistosity, the thin banding and the flows have an overall easterly strike paralleling the trend of the two bands of these rocks. In places, especially near the granite contacts, the schistosity and the banding diverge from this general direction. The dips are very steep to vertical.

In the granite, where gneissic structure is locally developed, the trend in general is also easterly. Southeast of Doda and Rouge lakes, however, northeasterly strikes predominate.

Jointing is common in the granite, but a compilation of all the joints recorded shows they have, in general, no predominant direction, although

locally, as near Father and Hébert lakes, certain sets do predominate.

A number of shear zones were seen in the granite, nearly all of them in the massive variety. Good examples occur at the eastern boundary of the area just north of Doda lake, along the northwest shore of Gaston lake, and on the shores of Father lake.

There is good evidence for a northeasterly trending fault along the southwest bay of Françoise lake. Southeast of the bay the schistosity strikes from N. to N.10°E., whereas on the northwest side it strikes between N. 65°E. and E. Exposures on both sides of the bay show slip surfaces, fractures, drag folding, and zones in which the rock has been recrystallized and injected by numerous veinlets of quartz and calcite.

ECONOMIC GEOLOGY

Disseminated sulphides, mostly pyrite, are widespread in the Keewatin-type rocks, but are found only in very small quantities. No concentration of sulphides was seen. One sample taken from the remnant of Keewatin-type rocks west of Father lake gave on analysis traces of silver, copper, and lead. Another sample from the north shore of the small bay of Doda lake near the eastern boundary of the area gave traces of zinc. Two other samples collected between the western section of Opawica river and Stina lake gave no values at all.

As far as the writer is aware, prospecting has been carried on only in the northern part of the area. Two groups of claims were staked a few years ago between the western section of Opawica river and Stina lake, but have since been allowed to lapse. In May, 1955, a new group of 20 claims was staked just north of the narrows between Du Guesclin and Françoise lakes, but little work seemed to have been done on them up to the time of the writer's visit.