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BUREAU OF ECONOMIC GEOLOGY

GEOLOGICAL SURVEY

PRELIMINARY REPORT

WASWANIPI MAP AREA, NORTHERN QUEBEC

BY

G. W. H. Norman

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SUMMARY REPORT ON SURVEYS IN WASWANIPI MAP-AREA, NORTHERN QUEBEC, 1935

By G.W.H. Norman

Introduction

Waswanipi map-area comprises about 5,500 square miles of territory in northwestern Quebec, north of the Canadian National transcontinental railway line. The south boundary of the area is about 43 miles north of the village of Senneterre, where the railway crosses Bell river 180 miles east of Cochrane; its northwest corner is about 100 miles southeast of James bay.

The 1935 field work by the Geological Survey was confined principally to the northern half and the south-east corner of the area. A blue-print accompanying this report shows in a general way the present state of geological mapping in the area. The geological boundaries in the Pusticamica Lake section have been taken from G.S.McKenzie's map.[1]

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1. McKenzie, G.S.: Quebec Bureau of Mines, Ann. Rept. 1934, pt. C, p. 45.

Summary Statement of Geology

The rocks of Waswanipi map-area are early Precambrian types except a few fresh olivine or quartz diabase to gabbro dykes. Similar rocks occur east as far as lake Chibougamau and west past Rouyn into northern Ontario. The relative proportion of granite, about fifty per cent or more in Waswanipi-Chibougamau district, is greater than in the district about Rouyn. The oldest rocks in Waswanipi area are Keewatin volcanics (greenstones, etc.) with a small amount of sedimentary rocks. The greenstones

and sediments are cut by an older group of basic intrusives ranging from highly altered gabbro-diorite to anorthosite, and by a younger group of granitic rocks. The youngest intrusive rocks are dykes of olivine or quartz diabase and gabbro, which occur at a few widely separated places. The surface is extensively covered by boulder clay and, more particularly in the western part of the area, by stratified clay.

The Keewatin greenstones are the usual altered lavas and related rocks, prevailingly of basic to intermediate composition but including minor amounts of light grey acid flows and banded light grey tuffs or sediments. They are in places little deformed and retain some of their original volcanic structures. In general, however, they are deformed and in many places are converted to schists.

A narrow belt of sedimentary rocks extends eastward along Mattagami lake, in the northern part of the area. The rocks are altered to biotite and hornblende schists in part, but include small amounts of conglomerate and what is considered to have been coarse arkosic sandstone. About 50 miles east of Mattagami lake a well-defined belt of similar sedimentary rocks extends east across lac la Treve and Chibougamau river north of its junction with Obatogamau river. It seems probable that the two belts were at one time connected, and it is possible that remnants of the sediments may lie in the unexplored country immediately east of Gull lake. In the southern part of the map-area a narrow band of sediments has been mapped by G.S. McKenzie immediately northeast of Pusticamica lake, and between Rose lake and Wedding river.

The basic intrusives, with the exception of anorthosite, are comparatively small sill-like bodies and are so highly altered that it is difficult to classify them and in many cases to distinguish them from greenstones. The anorthosite mass has a maximum width of 8 miles and extends from Bell river to the south side of Gull lake. Dark-coloured gabbroic phases are closely associated with the anorthosite in many places. The anorthosite and its dark phases are in general considerably altered.

The granite and related rocks in the map-area occur in bodies ranging from small dykes to huge batholithic masses. The boundaries of granite areas are more irregular than shown in the print, as the invaded rocks are penetrated by granite dykes and other small bodies near the contacts. Many large areas, apparently of granite, such as that between Rose lake and Maicasgi river, probably include bodies of greenstones.

Mineral Discoveries

A comparatively small number of mineral discoveries have been made in Waswanipi map-area and prior to 1934 only one was reported, that at mount Laurier on the south side of Mattagami lake. Since the Rose Lake gold discovery in 1934 other finds of gold-bearing quartz or shear zones have been made in the district between Rose lake and Wedding river.

The Rose Lake deposit occurs on a prominent greenstone hill close to the south side of Rose lake. It was staked by Prospectors Airways in September 1934. Articles by G.S. McKenzie in the Canadian Mining Journal, August 1935, pages 324-326, and the Quebec Bureau of Mines

Report, 1934, Part A, pages 125-132, should be consulted for information concerning the deposit. The country rocks are chiefly lavas (greenstone) with pillow structures in places. The strike of the cleavage and drag-folding in the greenstone is east southeast, and in general the cleavage dips steeply north. The greenstone is cut by a small, irregular body of quartz diorite and by a series of nearly parallel winding dykes of dark-coloured feldspar porphyry that trend southeast.

The deposits lie in an area measuring about 300 feet from north to south and 600 feet from east to west. The quartz diorite lies near the centre and the feldspar porphyry dykes mostly on the west side of this area. The deposits consist of a series of roughly parallel zones of mineralized and sheared rock, along which small lenses or veins of quartz occur. Five main discontinuous zones, 30 to 45 feet apart, have been exposed at the surface. These conform in strike to the general east southeast trend of the greenstone. The quartz veins contain visible gold, and some are mineralized with pyrite, others with pyrite, pyrrhotite, chalcopyrite, sphalerite, and one or more soft grey minerals believed to be tellurides. The gold content of a 265-foot length of one vein across an average width of 25½ inches is given in G.S. McKenzie's reports as 1.25 ounces to the ton. Some of the other veins also contain gold in important amounts. During the summer a tunnel was driven from Rose lake under the eastern part of the deposit, and at least one high-grade vein was intersected at a depth of about 150 feet.

Other gold-bearing quartz veins or shear zones were discovered and explored during 1935 in the greenstone

belt between Rose lake and Wedding river. They lie in the area examined by G.S. McKenzie and were not visited by the writer.

The Mount Laurier sulphide deposit lies south of Mattagami lake on the southwestern slope of a high hill, one mile north of mount Laurier. The deposit is a series of small lenses consisting either partly or entirely of pyrrhotite with a trace of chalcopyrite, in a band of altered tuffs about 200 feet wide. The lenses range in length up to 20 feet or more, and are a few inches to a few feet wide. The rocks north and south of the tuffs are lavas cut by diorite and granite.

The lavas are for the most part irregularly replaced by or altered to fine-grained, dark-coloured rocks of dioritic composition that vary considerably in texture from place to place.

The few discoveries reported may indicate only that the area has been little prospected apart from the main water routes. The low-lying parts are heavily covered by boulder clay or stratified clay and for this reason are rather discouraging to prospectors. However, the presence of high-grade gold-bearing veins at Rose lake indicate that all rocks favourable for prospecting, including probably all but the large masses of granite, should be systematically examined. The occurrence of outcrops is briefly sketched in the following pages.

The northwestern part, extending west from Bell river, is flat and extensively covered by stratified clay. Rock outcrops are exposed where Bell and Allard rivers and a few of their tributaries have cut through the clay, which is estimated to be 75 feet thick in places.

A few low hills lie on the east side of Allard river about 7 miles from its mouth. These apparently form part of a belt of low hills that extend east from Allard river toward mount Laurier. The rocks exposed in these hills are greenstone, in part metamorphosed, and medium-to coarse-grained diorite.

The wide belt of greenstone west of Bell river forks in the north-central part of the area into two belts separated by granite and anorthosite.

The northern of these two belts is in part well exposed in a series of hills that extend from the mouth of Bell river to Olga lake. Mount Laurier, standing about 600 feet above the surface of Mattagami lake, is the highest of these hills which are progressively lower and more isolated both eastwards and westwards from mount Laurier. The hills are exceptionally rugged and rocky for about 2 or 3 miles east and west of mount Laurier.

The southern of the two greenstone belts apparently extends without interruption from Bell river across Baptiste and Iserhoff rivers to Waswanipi lake.

The central part of the district between Bell river and Waswanipi lake is difficult of access, but from the air low hills are visible throughout the district between Olga and Rose lakes. It seems probable, therefore, that the central part of this belt contains a fair proportion of rock outcrops. The anorthosite between the two greenstone belts is similar lithologically to that at Chibougamau lake, in which mineral deposits have been found. The contact of the Bell-Olga anorthosite with granite is, therefore, worthy of exploration.

The northeastern part of the area east of Gull and Waswanipi lakes is in general low. The granite-greenstone contacts east of Waswanipi lake are fairly closely defined, but there is a possibility that the narrow belt of greenstone extending east from Iserhoff river to Waswanipi lake may continue across the lake and through the area mapped as granite. The percentage of rock outcrops in the greenstone belt east of Waswanipi lake is not great. The belt is easy of access either from Waswanipi river or from Baxter creek and the lakes at its headwaters, which drain into the southeast corner of Waswanipi lake. The district for 16 miles east of Gull lake appears low and flat from the air, and has not yet been explored. Although presumably underlain largely by granite it may contain bands of greenstone, sediments, and basic intrusives similar to those exposed along the large south tributary of Maicasgi river 20 miles east of Gull lake.

The northern part of the southern half of Waswanipi area from Kanikwanika island, on Bell river, east to beyond Pusticamica lake has been mapped by G.S. McKenzie. The Quebec Bureau of Mines Report, 1934, Part C, describes the district about Pusticamica lake.

In the southern part of the area a greenstone belt is exposed at intervals, and may be continuous from Bell river eastward to Wetetnagami river.

The greenstone in the eastern part of this belt, the limits of which have been fairly well defined on Sullivan and Wetetnagami rivers, is more schistose and metamorphosed than the greenstone in many of the other belts in the area. The greenstone belt about Kamshigama lake has not been fully explored. It is a comparatively

flat region, in general; a few low hills, reported to contain greenstone and granite, occur between the east end of Kamshigama lake and the most southerly point on Wedding river.

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