BEAVER LAKE MINING DISTRICT, SASKATCHEWAN*

By E. L. Bruce.

Beaver or Amisk lake lies in the Province of Saskatchewan just west of the provincial boundary. It is three miles west of the 102nd meridian and about 20 miles south of the 55th parallel of latitude. From Winnipeg it may be reached by two routes. The more direct is by the Canadian Northern Railway to Hudson Bay Junction, and thence by the Hudson Railway to Pas on the Saskatchewan river. From that point motor boats run regularly to Cumberland House, the Hudson Bay Company's post on Cumberland Lake, and from there north to the upper end of Namen or Sturgeon lake. From this lake a wagon road has been recently cut to Beaver lake, a distance of about 18 miles. The river from Beaver lake to Sturgeon lake is swift and difficult and is now little used by parties going north. The alternative route is by the Canadian Northern Railway to Prince Albert, thence down the Saskatchewan to Cumberland river, and up that stream to Cumberland House. It is somewhat longer than the route by the Pas, but has the advantage of being mostly down stream. The distance from Pas to Beaver lake is about one hundred and twenty-five miles and the trip requires two and a half to three days. A motor boat for the conveyance of passengers and freight is now running on Beaver lake. A canoe route leads up Sturgeon Weir river to the lakes to the north and others lead eastward to Athapapuskow and Cranberry lakes.

Topography.

Beaver lake itself is a fine body of clear water, 18 miles from north to south by about nine miles east and west. It contains hundreds of islands varying in size from mere rocks to Missi or Grand island, six miles in diameter and occupying most of the north half of the lake. The lake lies across the contact of the Palaeozoic and Pre-Cambrian rocks. The country around the south end is flat and unbroken, being largely a structural surface. The contact of the limestones with the older rocks is usually marked by a low escarpment. The country around the northern half is of low relief, but consists of narrow northerly-trending ridges separated by swamps and muskegs. Rock is abundantly exposed, but the difference in elevation is never over 50 ft. The influence of the different rock types on the topography is pronounced. The southern end of the lake is characterized by smooth curves and shingly beaches; the northern end is exceedingly irregular, and the shores consist of rocky points separated by marshy bays.

General Geology.

The geological column, as represented at Beaver lake, is as follows:

Recent—Peat.

Palaeozoic—Ordovician.

Pre-Cambrian—Granite intrusion.

Missi formation.

Amisk series.

Amisk series.—The Amisk series is by far the most extensive. The rock types are largely massive greenstones, often showing ellipsoidal weathering. The schists developed from rocks of this type. The strike of the schistosity is usually northerly; but variations are frequent. On the point north of the mouth of Sturgeon Weir river the strike is nearly east and west, and the same direction holds for some of the schists north of the lake. Along the west shore the schists have strongly contorted laminae. Some granular rocks of the type of diorites or altered diabases and some amygdaloidal lavas occur. A few exposures show a rather fresh looking light greyish felsite interlaminated with green schists.

Missi formations.—At the north end of the lake and crossing on to Missi island is a narrow band of conglomerate, striking nearly north and south. It has a well marked schistosity parallel to the strike of the band and to the Amisk series adjacent. The dip is almost vertical. The pebbles are chiefly disc-shaped fragments and well rounded pieces of quartz. Fragments of felsites and jasper are in minor amount, but typical granites do not seem to be represented. The size varies from sand particles to a diameter of a foot or more. The matrix is a rather coarse grained arkosic material. The arrangement of the pebbles is very irregular and lenses sometimes occur without pebbles. The flat schist pebbles usually lie with their long axes parallel to the schistosity, but this arrangement seems to have been original rather than induced, and therefore the present schistosity is parallel to the original bedding of the sediment. Occurring as bands and lenses is strongly schistose deep-green rock that in appearance and degree of alteration is so like the Amisk greenstone that, without the evidence of the associated fragmental formation carrying fragments of true Amisk rocks, it would undoubtedly be classed with the older formation. The rocks on Missi island immediately west of the Missi formation are greenstones with striking pillow structure.

Later granite.—A narrow belt of rather fine grained biotite granite intrudes the greenstones and schists on the west side of the lake. This tongue lies from a few chains to a mile and a half from the shore, and is variable in width, possibly discontinuous. Its maximum breadth is a half mile. Dykes from this main tongue are numerous along the lake. No tongues have been found cutting the conglomerate, but the failure of granitic pebbles in the fragmental rock, as well as the unsqueezed character of the igneous rock, seems to argue that the granite is of later age.

Palaeozoic.—Covering the Pre-Cambrian formations is the mantle of Ordovician sediments. These consist of limestones, sometimes arenaceous. They vary in color from light buff to variegated, to reddish, the latter apparently uppermost.

Glacial and recent.—This region was one of intense erosion during the glacial period, but deposits of glacial debris are not important.

Economic Geology.

Gold.—The first gold discoveries were made by Messrs. Mosher and Creighton in August, 1913. Since that time a large part of the country around the north end of the lake has been staked. Many of these claims are of the usual type located during a gold rush. Even on claims where quartz veins have been found little work has been done.

*Published by permission of the Director of the Geological Survey, Canada.