

GOLDBEARING SERIES OF LAHAVE BASIN, LUNENBURG COUNTY, NOVA SCOTIA

Abstract of report by E. Rodolphe Faribault, from
Summary Report of Geological Survey for 1910.

The greater part of the district is underlain by the quartzites and slates of the Goldbearing series; but towards the north and northwest these rocks are cut by granites of Devonian age, which extend northward across South Mountain to the Annapolis Valley, and form part of the very large granite area which constitutes the backbone of the western counties of the Province. A small isolated mass of greenish grey granite was located far away from the main area, at a place situated 2 miles east of Italy Cross station, and one-fourth of a mile north of the outlet of Wallace Lake. At this locality, a recent conglomerate has been prospected for gold.

In the absence of fossils and other conclusive evidence, it has been customary to refer provisionally the Goldbearing series to the lower Cambrian, though on account of their similarity to the quartzites and slates of the Avalon peninsula of Newfoundland, which have been assigned to the Pre-Cambrian, as well as for other reasons, it is possible that they may be Pre-Cambrian.

The series as exposed in different parts of the Province has been estimated to have a total thickness of over 5 miles. This great series of rocks falls naturally into two lithologically distinct conformable divisions; a lower one, called the Goldenville quartzite; and an upper one, called the Halifax slate.

The Goldenville division is mostly made up of thick beds of grey, altered quartzose-sandstone or quartzite, locally called "whin"; interstratified with beds of dark clay slates, which are quite numerous at certain horizons, but almost wanting at others, especially at the top of the division. At many places, and more especially near granite intrusions, these rocks are much altered, and have become schistose, with a development of very minute scales of mica along the planes of schistosity, which gives them a characteristic glistening appearance when split. The Goldenville division has a thickness of over 3 miles of strata in the eastern part of the Province.

The Halifax division is composed entirely of argillaceous slates, in some cases arenaceous, and with occasional flinty layers holding iron pyrites. Dark grey layers occur sparingly, and are sometimes found to be slightly calcareous, especially when occurring at the base of the division. The lower beds are olive green in colour, and are followed by others of dark grey colour which gradually give way to a great thickness of glistening bluish-black, foliated, graphitic, soft clay slates, often pyritous, overlain by banded, black and grey arenaceous slates. The thickness of the Halifax division has been estimated at over 2 miles of strata.

After their deposition these sedimentaries were uplifted and folded into a succession of anticlines and synclines following northeast and southwest courses. They were then subjected to extensive erosion, which removed the upper part of the folds and gradually planed the surface down to its present attitude, exposing the edges of the uptilted, once deeply buried strata. The rocks, generally, dip at high angles, ranging from 45 deg. to 90 deg. from the horizontal.

In view of the intimate relation existing between the structure of the anticlinal folds and the occurrence of the gold-bearing quartz veins, special attention was paid to the location and structure of the anticlines and synclines. A section across the folds along Lahave River from Bridgewater to the old Dalhousie Road gave a succession of five major anticlines and synclines in a distance of 25 miles. Minor folds were also observed along the crest of some anticlines, especially for the first 4 miles above Bridgewater, where the strata have been plicated into a succession of small folds or undulations. Going up Lahave River the five anticlines are met with in the following order from south to north:

(1) Leipsigate Anticline crosses the river at Bridgewater, where it is composed of several minor folds in slate well exposed along the west side of the river. These folds converge westward as they approach the Leipsigate gold district, where they join and form a broad dome along which the Goldenville quartzites are brought to the surface and extend to the west. The most southerly of the minor anticlines extends eastward through the Blockhouse gold mines where the Goldenville quartzites are again brought to the surface on a smaller elliptical dome one mile long by a quarter of a mile wide. From these two domes situated, respectively, west and east of the river, the anticline pitches towards the river, forming a cross syncline which is strongly marked and extends north and south along the river, affecting the other folds similarly but to a less degree.

(2) Spondo Anticline crosses the river $4\frac{1}{2}$ miles north of the first anticline and half a mile south of Mossman station. It extends eastward to the granite, passing the south end of Big Mushamush Lake and through the Spondo gold prospect, where a large saddle-shaped vein has been uncovered. Westward, it crosses Wile and Fire Lakes south of Baker Settlement. It shows nothing but slate along its whole course. A minor anticline between the above two anticlines was located in grey slate at Waterloo, where it crosses Frederick and Matt Lakes, but it could not be traced eastward to Lahave River on account of the drift.

(3) Northfield Anticline crosses the river at Northfield station 3 miles north of the second anticline. Traced eastward it crosses the north end of big Mushamush Lake and continues through Caribou Lake where the slates are superseded by the quartzites which are brought up to the surface along a broad dome extending to the granite. West of the river the anticline passes near Clifford post-office, where it converges with the adjoining north syncline in dark grey slate.

(4) Pleasant River Barrens Anticline is situated $4\frac{1}{2}$ miles north of the third anticline, and crosses the river at an island $2\frac{1}{4}$ miles north of Riversdale station, where the lower quartzites appear at the surface on a westerly plunge of the fold and spread out towards the east beyond Newburn and New Cornwall to the granite. It crosses the outlet of Indian Lake and the north end of