

THE BLOW-ME-DOWN INTRUSIVE COMPLEX, BAY OF ISLANDS, NEWFOUNDLAND*

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Reconnaissance in the western "serpentine belt" of Newfoundland in the summer of 1932 by a Princeton party under the supervision of the senior author has disclosed a series of pseudostratified intrusive rocks, the petrogenetic significance of which merits a note at this time.

REGIONAL SETTING

Blow-me-down mountain is located on the south shore of Bay of Islands, on the west coast of the island of Newfoundland. The nearest town is Corner Brook, situated at the head of the bay, twenty miles southeast.

Geologically, the Blow-me-down area forms part of the western "serpentine belt" of the island which extends for a distance of sixty-five miles parallel and adjacent to the west coast. The Bay of Islands section is at the middle of this belt and is approximately six miles wide, east to west.

The west coast of Newfoundland is for the most part a narrow, flat lowland of folded Paleozoic formations. In strong contrast to this topographically is the "serpentine belt," of late Ordovician or Devonian ultrabasic and basic intrusives, which rises out of the lowland and attains a mean altitude of 2,000 feet. These intrusives are characterized by the same peneplained upland surface which is found farther east on the pre-Cambrian rocks of the northern peninsula of Newfoundland.

In the immediate vicinity of Blow-me-down mountain the rocks surrounding the "serpentine" are steeply folded green (glaucopitic) and red sandstones, black and gray slates, and red and gray argillites, presumably of Ordovician age.¹ Overlying these with probable unconformity are andesitic lavas, commonly with well-developed pillow structure, and containing occasional pyroclastic beds. The south shore of Bay of Islands near Blow-me-down mountain is not composed of intrusives, as represented on the official geological map of Newfoundland, but is underlain by a narrow fringe of these sediments and lavas, probably down-faulted.

* Princeton University Contribution to the geology of Newfoundland, No. 10.

¹ Schuchert, C., and Dunbar, C. O., Stratigraphy and Diastrophism of Western Newfoundland: *Bull. G.S.A.*, Vol. 32, no. 1, pp. 38-39, 1921.

THE BLOW-ME-DOWN COMPLEX

The form of the intrusive complex, as at present understood, is that of a lopolith. Although actual contacts were not observed, the dip of well-marked pseudostratification near the eastern edge of the mass is concordant with the dip of the country rock, about 40° westward. (See Fig. 1.) What are believed to be the bottom horizons of the complex appear one mile southwest of York Harbor Copper mine from under a partial cover of lavas; the order of the bands, however, is the reverse of that shown from right to left on the accompanying map, thus suggesting that the intrusion is basin-shaped. The total thickness of the complex appears to be of the order of magnitude of 1.5 miles.

Several traverses across the eastern portion of the complex, inward and upward from the base, reveal the following sequence and approximate actual thicknesses: (1) Serpentinized harzburgite (pyroxene-olivine rock), 3,000 feet, including 1,000 feet of dunite

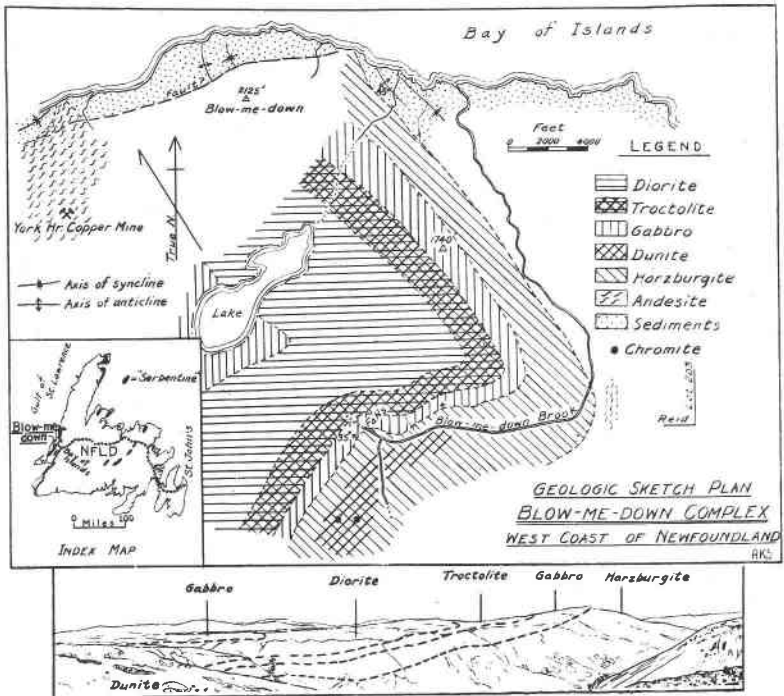


FIG. 1. The eastern portion of the Blow-me-down complex.

at 1,300 feet above the base. In the dunite appear narrow lenticular segregations of pegmatitic pyroxenite, and also schlieren of chromite; (2) Gabbro, 500 feet, evidently intrusive into the harzburgite in the vicinity of Blow-me-down Falls; (3) Troctolite (olivine-plagioclase rock), 1,000 feet; (4) Diorite, 2,300 feet; (5) Gabbro, undetermined thickness. Minor dikes of diorite are present locally in the lower gabbro band, and of granite in the troctolite zone.

The chromite occurrences in the complex were prospected some years ago by trenches and pits. No ore remains in place at the localities shown in Fig. 1, but three other deposits are known in the western "serpentines" of Newfoundland, and at least one of these (on the north shore of Bay of Islands) occupies a similar position in this northward extension of the Blow-me-down complex.

The copper deposit of the abandoned York Harbor mine occurs as replacements in chlorite schist zones in pillow lava, adjacent to diorite dikes. The ore minerals are pyrite, pyrrhotite, sphalerite, and chalcopyrite. There is a strong possibility that this mineralization is related genetically to the diorite of the Blow-me-down complex. In general, a noteworthy resemblance exists between this magmatic sequence and associated mineralization and that of the old copper districts of Notre Dame Bay, on the northeast coast of Newfoundland.²

The Blow-me-down complex in comparison with better known complexes such as the Bushveld, Sierra Leone, Duluth, and Stillwater (Montana) presents interesting analogies and dissimilarities. It is hoped that more extensive and detailed work on the Newfoundland belt of which this complex forms a part will solve some of the problems presented and throw further light on the differentiation of basic intrusives.³

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² Geology and Ore Deposits of Betts Cove-Tilt Cove Area, Notre Dame Bay, Newfoundland: *Bull.* **228**, *Can. Inst. of Min. and Met.*, p. 492, April, 1931.

³ Aided by the F. W. Roebing, III—J. L. Kemmerer, Jr. Aerial Photographic Survey, a detailed study of this region was begun in 1933 by Mr. J. R. Cooper of Princeton University. As a result of this work, the interpretation of details of sequence and structure of the rocks comprising the complex has been modified but the general conclusions remain unaltered.