ON

GOLD-MINING AND ITS PROSPECTS IN NOVA SCOTIA,

EMBODYING THE RESULTS OF GEOLOGICAL SURVEYS OF THE DISTRICTS OF WAVERLEY AND SHERBROOKE, FOR THE PROVINCIAL GOVERNMENT,

By HENRY YOULE HIND, M.A.

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I.—General Description of the Relations of the Gold-bearing Rocks.

The area occupied by the lower Silurian gold-bearing rocks of Nova Scotia has been variously estimated at from 6,000 to 7,000 square miles.† Since these estimates were made, there has been described a series of gneissic rocks, supposed to be the equivalents of the Cambrian and Laurentian,‡ which occupy at least one-half of the area hitherto assigned to the lower Silurian. These rocks are not yet known to be auriferous, although from the discovery of an auriferous band in the lower Laurentian, in Ontario, beneath the great iron deposits,§ there is good reason for the expectation that an auriferous zone will be found in the Nova Scotian gneisses underlying the present gold-bearing series.

I do not suppose that the lower Silurian gold-bearing rocks of Nova Scotia cover a larger area than 3,000 square miles. Gold has been found also in the upper Silurian, which may be exposed over an area of from 500 to 800 square miles, so that the total known area of the gold-bearing rocks of Silurian age probably does not exceed 4,000 square miles.

There is, however, another remarkable source of gold in the conglomerates at the base of the lower carboniferous rocks. It is not surprising that gold should have been discovered resting in the form of worn particles on the Silurian slates which support the oldest of the lower carboniferous conglomerates, or in the lower beds of the oldest conglomerate itself; but it is remarkable that gold should be found near the summit of a bed of conglomerate whose thickness is about 600 ft., and which is separated from the oldest conglomerate of the lower carboniferous series in Nova Scotia by an immense mass of bituminous shales and sandstones. In Cape Breton, gold has been discovered at the summit of a conglomerate occupying this horizon on the peninsula opposite Baddeck.

The occurrence of gold in the carboniferous conglomerates of Nova Scotia, especially at the base of the series, and in the fissures and crevices of the Silurian slates on which they rest, is highly important and suggestive, but too little is known respecting its distribution to make it a subject for description or discussion in this paper. During the ensuing summer its relations will probably be studied with some detail.

The lower Silurian rocks appear to be distributed chiefly on the south-eastern flank of a great gneissoid axis, which extends with some interruptions, hereafter noticed, from Cape Sable to the Gut of Canso, or, throughout the entire length of Nova Scotia. The most important break in the continuity of the gneissoid axis is a profound Silurian valley, averaging twelve miles in breadth, and extending from the Atlantic, at Halifax, to within ten miles of Windsor, near the Basin of Minas (Bay of Fundy). West of this Silurian valley, the gneissoid rocks occur in detached areas, of greater or less

* The paper was illustrated by specimens kindly lent by Professor Tennant, consisting of a large number of gold specimens in the matrix from Nova Scotia, Canada, British Columbia, Australia, the West Coast of South America, North Wales, Cornwall, Scotland, and other localities, also some crystals of gold figured in Mawe's "Travels in Brazil."

† The total area of the gold region may be estimated at about 7,000 square miles, and the proclaimed districts do not yet reach a twentieth part of this area.—Dawson, "Acadian Geology," second edition, p. 632.

‡ "Preliminary Report on a Gneissoid Series, underlying the Gold-bearing Rocks of Nova Scotia." By the author.

§ Summary Report of Progress in Geological Investigations. "Geological Survey of Canada, 1869."