

striated or furrowed at right angles to the axis of the larger convolutions of the bed, a result evidently due to a sliding of the layers of the quartz lode over one another during the corrugation of the strata which has here taken place near the summit of the anticlinal. It seems not improbable that the corrugated structure of the lodes, which gives rise to the barrel quartz is due to the difference in texture, and to the greater resistance to lateral pressure offered by the quartz layers than by the enclosing beds of clay and sandstone, which by their consolidation have given rise to the argillites and quartzites. There is, moreover, evidence that during the movement of the strata, openings and fissures were in some cases formed in these quartz lodes, giving rise to joints in which gold, metallic sulphurets, and carbonate of lime were afterwards deposited, apparently by solution and segregation from the adjacent parts of the lode.

It has been shown that gold-bearing lodes are met with at intervals through a great thickness of the auriferous series. As remarked by a writer in a late number of the *Mining Gazette*, these lodes in Nova Scotia generally, if not always, occur in groups, each of which may include twelve, twenty, or more lodes of various dimensions. Other portions of the series are without quartz lodes, or contain groups which are apparently destitute of gold.

It results from the interstratification of the auriferous lodes, and their exposure on the denuded crowns of the anticlinals that, unless there has been a vertical displacement along the line of the east and west anticlinal, we should expect to find each lode of the north side repeated on the south side of the anticlinal axis. This repetition of the veins is recognized by the miners themselves in some of the districts, and becomes of service in guiding explorers.

The elevations and depressions of the east and west anticlinal axes, caused by the transverse undulations, give to the outcrops of the strata which appear on the worn-down surfaces of the anticlinal domes, the form of more or less elongated ellipses, since the outcrops of the beds on the north and south sides of the axis must bend round towards each other, and unite whenever the plane of erosion intersects a north and south synclinal. Of this a fine instance occurs at Oldham.

While the slope of the beds on the two sides of the anticlinal axis will, unless the beds are vertical or present an overturn dip, be in opposite directions, it is easy to see that in the case of a synclinal the layers, being arranged in a basin, will dip towards each other from the opposite sides. The main anticlinals already spoken of are, as is always the case, accompanied by subordinate parallel undulations which affect, more or less, the distribution of the auriferous strata. Thus, according to Prof. Hind, a synclinal depression occurs in the crown of the anticlinal at Laurencetown, and in a recent article, probably from his pen, in the *Mining Gazette*, we are informed that shafts are here being sunk on lodes situated on the opposite sides of the synclinal, and dipping towards each other at angles of forty-five degrees.

Mr. Campbell describes the outcrop at Isaac's Harbour "as presenting a succession of narrow parallel folds, in which the quartz lodes are arranged in a saddle-like form in the planes of bedding of the arched strata. The course of the lodes is in some cases interrupted by faults or dislocations connected with the transverse undulations already referred to, but these faults are comparatively few and of little importance." I am informed by Mr. R. J. Leekie, that on the west side of Isaac's Harbour, at the Lone Star Mine, a drift has been carried about 150 feet along a quartz lode, lying in the bottom of one of these synclinal folds, the axis dipping gently to the westward, while workings have been carried upwards for some distance on both the north and south sides of this folded sheet of quartz.

The occurrence of the gold of Nova Scotia in interstratified lodes is by no means a singular fact in the history of gold deposits. The gold-bearing quartz lodes of Victoria appear, from the descriptions of Selwyn, to be for the most part true veins, cutting the stratification; but in the gold region of California, although such transverse veins are not unknown, by far the greater number of the auriferous quartz lodes appear as layers conformable to the stratification, often lying between the sandstones and slates which form the common rocks of the country, and sometimes, as in Nova Scotia, divided by thin interposed layers of argillite. These conformable lodes are generally exposed on the upturned edges of eroded anticlinals, but in one case in Nevada County a remarkable lode is mined, which is described as consisting of three distinct floors or bands, "having a very flat dip,