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may consider its lithological characters, which are very simple. The quartzite which forms the principal rock of the lower division, interstratified however with thin layers of bluish argilite or elay slate, is essentially a granular quartz rock, with an apparently argillaceous cement, sometimes considerable in amount. It is hard and gray in color, passing into blackish or greenish in the interior, but becoming nearly white on weathered surfaces. Its lines of bedding are distinct, and besides two sets of joints which often cause it to break into regular rhombic masses, it occasionally shows a slaty cleavage, independent of the bedding, and from a development of mica in the cleavage planes, passes into a very quartzose mica slate. The quartzite of this region is, by the miners generally designated as whin, the vulgar name in Scotland for a greenstone or diorite, which somewhat resembles it in color and texture, though a softer rock than the Nova Scotia quartzite.

The slate, which is interstratified in thin bands with the quartzites, and frequently forms the underlying rock of the gold-bearing quartz lodes, is generally a soft and fissile, bluish or blackish argillite, or clay slate, and the same may be said of the strata which forms the base of the upper or elay slate division of the gold series, so far as I have have had an opportunity of observing it. A peculiarity of this region, which strikes every mineralogist, is the great rarity of everything like caleareous rocks or minerals. This is seen in the absence of limestone, serpentine, diorite or other hornblendic rocks, and of taleose or chloritic slates, nothing of the kind being met with in most of the gold districts. Prof. Silliman, however, mentions the rare occurrence of chloritic slate, and also of epidote and staurotide in minute crystals in the Tangier district, and of a green magnesian rock resembling serpentine and holding gold, at Wine Harbor. Small portions of chlorite are found in the quartz lodes at Sherbrooke, Oldham and Montaguc. Chloritic and hornblendie rocks, according to Dr. Dawson, occur near Yarmouth, and in the peninsula which terminates in Cape Canseau, fine-grained gneiss with much mica slate, and clay slates abounding in erystals of chiastolite, are met with.

METALLIFEROUS LODES.

In the series of rocks just described gold is occasionally met with, disseminated both in the quartzite and in its accompanying bands of slate; but it is chiefly found in welldefined beds or layers of a more or less pure quartz, which are generally vory distinct from these rocks, although interstratified with them. Besides these there are other quartz lodes which cut or intersect the strata, filling cross fissures, which, according to Mr. Campbell, are generally connected with the north and south lines of elevation. These cross veins are irregular, seldom continuous, and, though sometimes carrying gold, are of little economic importance and seldom wrought. The fact that the productive quartz lodes of Nova Scotia are conformable with the stratification has been insisted upon both by Messrs. Silliman and Campbell. The latter, who conceives them to be newer than the strata, and to have been formed in openings or separations between the beds of slato and quartzite, mentions that the lodes in some instances pass from the plane of one bed to another, in descending. In one supposed instance pointed out to me, this appearance seemed due to a small fault running east and west, parallel with and near the crown of a great anticlinal. In other cases this apparent change of plane depends, I think, upon irregularities in the bedding, and the interealation of lenticular masses of argillite or quartzite in the layers of metalliferous quartz. The beds of all these materials occasionally thin out and disappear in the strike or dip, and in some cases beds of quartz separated by layers of interposed rock are found to unite farther on into a single bed. So far as my present observation goes, I think that to describe them otherwise than as interstratified beds would be to give a false notion of their geognostic relations. The laminated structure of many of the lodes, and the interculation between their layers of thin continuous films or layers of argillite, can hardly be explained in any other way than by supposing these lodes to have been formed by successive deposition at what was, at the time, the surface of the earth. There is, moreover, evidence that these laminæ were formed before the lodes were folded and contorted ; this is furnished by some remarkable specimens of the so-called barrel quartz which I took from a lode at Upper Stewiacke, and which consists of a bluish quartz in thin plates, sometimes not more than one-twentieth of an inch in thickness, and presenting in some instances glazed surfaces coated with thin argillaceous films, and in others, pellicles of argillite having the thickness of paper. The surfaces of all these layers are deeply

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