

from the metamorphic belts by a thin band of red sandstones and conglomerates, which attain their greatest development at the two eastern extremities. These sandstones probably underlie the coal measures, and are in turn resting upon the Cambrian slates.

To the north of the upper metamorphic belt, are beds of Silurian strata of vast extent, whose limits are at present but little known. My own observations at the head-waters of the Tobique and Nepisiquit, have convinced me that essential alterations must be made in the coloring of this portion of our geological maps. With this portion, however, we have little at present to do. If, by means of the list which has already been given, we trace out upon the geological map the precise localities of the various metallic ores, we shall find them, almost without exception, to be situated in the great metamorphic belts of slate and schist, which have been termed the Cambrian rocks.—Bathurst and the Tattagouche, with their deposits of copper, manganese, lead and iron, the head-waters of the Serpentine and Wapskahegan, the iron and copper beds of Woodstock, are in the northern metamorphic band; the antimony of Prince William, the gold and specular iron of St. Stephen, and the iron ore of Bull Moose Hill, are in the lower band of a like character. The copper of Charlotte County and Albert, with the manganese of Quaco and Shepody, are in similar rocks; but the latter are associated with beds of limestone, and are considered as Lower Silurian rather than as Cambrian strata. According to Dr. Robb's map, the mines at L'Etang and LaTete, with the deposits of the neighboring Islands, would be supposed to occur in a red sandstone district, the whole of St. George Peninsula being thus marked. These mines are, however, like the rest, in beds of slate and limestone, with hornblende rock, which are frequently injected with dykes of trap. They belong to the Lower Silurian strata.

One other fact is to be noted in this connection, namely, that extensive beds of igneous rocks, trap, syenite, felspar and porphyry, are found in close proximity to the metalliferous districts, and seem to determine in some measure the presence of the ores. This will be found to be the case in all the localities above mentioned.

## 2.—*The character of Mineral Lodes and their Country Rock.*

a. As regards deposits of copper in the Province, it will be seen that the lodes which bear this metal, are of one or the other of two kinds, either quartz rock, or a "*green metamorphic aggregate of bisilicate of magnesia and silicate of iron.*" The former rock predominates in Charlotte County and the various Islands in Passamaquoddy Bay, the latter at the deposits in the neighborhood of Point Wolf and Salmon River. The country rock for copper is metamorphic slate, especially in the vicinity of trappean dykes. Copper is sometimes found in the slates or chlorite, but these do not form the true vein-rock. The deposit at Bathurst is sedimentary.

b. *Antimony.*—The true vein-rock of this metal is quartz, the country-rock being metamorphic slates. The lode-walls (or at least one of them) are almost invariably dykes of trap. Chlorite and steatite are found in connection with these.