

mine in the Sudbury district. (*Eng. and Min. Jour.*, Dec. 2nd, 1893). Polydymite (Ni, Fe S_2) occurs at the Vermillion mine in the Sudbury district, while Millerite also occurs in certain of the Sudbury deposits, as well as at the Lancaster Gap mine in Pennsylvania. Copper pyrite, usually present in considerable amount, and titanite iron ore, complete the short list of minerals found in these deposits. Other metallic minerals are present only as the rarest exceptions and in very small amount, among these the most noteworthy being sperrylite, an arsenide of platinum (Pt As_2), discovered in the ore of the Vermillion mine above mentioned, and not known to occur anywhere else in the world.

This remarkable group of ores therefore contain nickel, cobalt, copper and iron, united with sulphur and some titanite acid, while lead, zinc, silver, arsenic, antimony, bismuth and tin are absent, or occur only in traces. Moreover, a remarkable fact in connection with this class of deposits is that—as Prof. Vogt shows—if the average of large quantities of ore such as the output of a mine be taken, there is a certain ratio between the richness of the pyrrhotite in nickel, and the percentage of copper contained in the deposit. Thus in the Norwegian deposits he states that in those workings which produce an ore containing from 75 to 80 parts of copper to 100 parts of nickel and cobalt, the pure pyrrhotite holds about 2.5 per cent. of nickel and cobalt, while as the copper sinks the per cent. of nickel and cobalt in the pyrrhotite rises until when but 20 to 25 parts of copper to 100 parts of nickel and cobalt are present in the ore, the pyrrhotite holds over 7 per cent. of the latter metals.

In this connection a recent statement by Mr. D. H. Brown (*loc. cit.*) is of interest, namely that in the case of the Copper Cliff Mine, which, as the name indicates, was opened up and worked for copper before the ore was known to contain any nickel. On sinking, a decrease in the amount of copper has been followed by an increase in the richness of the pyrrhotite in nickel, the very large body of ore struck on the 7th level and which is almost entirely free from copper pyrites, consisting of a pyrrhotite averaging about 10 per cent. of nickel.

The following table will show this relation in the case of a number of the Scandinavian deposits and it would be a matter of great interest if it could be ascertained that a similar relation exists in the case of our Canadian deposits. As Prof. Vogt points out, in order to obtain averages for large deposits, it is best to draw the results from the analysis of