

feet long, 5 to 7 feet deep, and about 4 feet wide. These all run approximately at right angles to the general strike of the deposits. Also a small trench extends from A to C, a distance of 260 feet, crosses C, and persists possibly 50 feet farther. This trench is 1 to 2 feet wide, and 3 to 4 feet deep. Another small trench crosses trench B, and extends thence northward along the general strike of the deposit, about 60 feet. These trenches are all down to bedrock. Another trench about parallel to C, has been dug to the south of C, but did not reach bedrock, as the superficial deposits are there quite deep.

In the vicinity of these zinc-copper deposits, the land surface is dominantly flat and wet, and has been intensely glaciated. Glacial and other superficial deposits overlying the bedrock have a thickness in places of as much as 15 feet, but along the three main trenches are only a foot or so deep. The surface is also fairly heavily timbered, mainly with spruce, and numerous small streams traverse the area, but only very imperfectly drain it. Thus owing to the timber, soil, glacial, and other superficial deposits, very little bedrock is exposed in this vicinity, except in the trenches; but wherever the bedrock formation is exposed on either side of the ore deposits, it consists of massive, finely textured, dark greenish to greyish green, igneous rocks having the general appearance of andesites. Since, however, these rocks have not been examined microscopically, the general field name of greenstones is here applied to them. Possibly types related to andesites, including diorites, diabases, or basalts, may occur.

A shear zone having a general trend of apparently about north 65 degrees east (magnetic), traverses the greenstones, and it is within this zone that the ore deposits occur. Every transition may be noted from quite massive practically unaltered greenstones, to ore composed almost exclusively of zinc blende, chalcopryite, pyrite and quartz. The greenstones in places merely sheared and altered to a greenstone schist. In other places pyrite has also been introduced in varying amounts. In places also, the rocks in addition to being sheared have been more or less entirely altered to a whitish, finely laminated, talcose substance. In other places, again, the original rock material has entirely given place to quartz, a whitish dolomitic mineral, zinc blende, chalcopryite, and pyrite. Nearly everywhere, the ores are decidedly laminated, the lamination planes agreeing with the planes of shearing throughout the general shear zone. Even where solid ore now occurs, including mainly zinc blende and chalcopryite, with some quartz, the lamination planes are still very decided. The deposits are thus evidently due, largely at least, to metasomatic replacement, and have been produced by uprising and circulating solutions, within the zone of shearing, which have more or less entirely replaced the original rock and have deposited along the planes of shearing the minerals now constituting the ore deposits. Sections were measured of the exposures in the bottoms of the three main trenches.

All the ore material exposed in the bottoms of the three main crosscut trenches was sampled, ten samples being taken, which are numbered consecutively from 20 to 29 inclusive. Nos. 20 and 21 were taken from trench A; Nos. 22, 23, and 24 from trench B; and Nos. 25 to 29 inclusive from trench C. In

trench A, 10 feet of ore is exposed, and in trench B, there is over 33 feet of ore material. The actual distance between the ends of these trenches is over 100 feet, and the offset distance, measured at right angles to the supposed general direction of strike of the deposits, is about 90 feet, throughout which width it is not known whether ore occurs or not. Trench C is about 260 feet from A, measured along the general strike of the deposits, and ore material is exposed throughout this distance in the bottom of a narrow trench extending from A to C. In trench C there is 66 feet of ore material, and about 135 feet still farther to the south-east, measured at an offset at right angles to the general strike of the deposits, a shaft has been sunk 14 feet in the bottom of which good ore was found. No work has yet been done to determine the amount of ore in this intervening 135 feet. Altogether these deposits have been actually traced by trenching along the general direction of strike, for a distance of over 300 feet, and they have an aggregate exposed width in trench C of over 66 feet. The amount of ore material here would thus seem to be decidedly important.

When visited, the Stirling deposits had been very slightly exposed, nowhere to a depth exceeding 7 feet. Thus no estimate of the ore in sight could be made that would do justice to the property. From what was seen, however, all the evidence indicated that the deposits are probably quite extensive, and persistent both longitudinally and vertically. The grade of much of the ore material is also high. In one trench, for a width of 10 feet, the ore carries from 11 to 30 per cent. zinc, as well as significant amounts of lead, copper, gold and silver. Also, in the main trench, there is 20 feet of ore containing 17 per cent. to over 27 per cent. zinc, as well as important amount of lead and copper, and some gold and silver. In this trench, also, there is over 40 feet of ore material, which though of lower grade is still of consequence.

"In the past, similar complicated zinc ores have presented many difficulties in the way of treatment, but a great amount of research and investigation has recently been done along these lines, and no doubt the owners of the Stirling deposits will be able to evolve a satisfactory method. In this event the deposits will become an important source of zinc-copper-lead ores in the near future. The finding and development of these deposits should also greatly stimulate prospecting in Cape Breton, and it is hoped that, as a result, other important ore-bodies will be found."

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