The silver veins in the Thunder Bay district of Ontario cut diabase and pyritiferous phyllites and schists, and those in the Great Bear Lake area, Northwest Territories are localized in areas where pyritiferous tuffs are abundant.

One particularly significant occurrence of native silver veins cutting massive sulphide deposits is that described from Broken Hill, Australia by Lawrence (1968). There, mercurian antimonial silver and allargentum, Ni-Co arsenides, and other sulphosalts and sulphides occur in a siderite vein that cuts the great lead-zinc lodes. Lawrence concluded that the silver vein was derived by leaching of its constituent elements from the pre-existing sulphides, sulphosalts, and other minerals in the Main Lode Horizon.

Conclusions

Our view of the origin of the native silver veins at Cobalt is that the ore and gangue elements were derived principally from the Keewatin sulphide-rich interflow sediments, with minor contributions from the volcanic flows. The veins appear to us to represent late extracts derived probably by diffusion from these metal-rich rocks. Mobilization of the elements probably took place as a result of the injection of the Nipissing diabase.

Support for our thesis comes from the fact that a metal source is readily available stratigraphically below the deposits at Cobalt, and that a number of other similar deposits throughout the world show a close genetic relationship to pre-existing sulphides.

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