

Cordilleran Section - The Geological Association of Canada

FAULTS, FRACTURES, LINEAMENTS AND RELATED MINERALIZATION IN THE
CANADIAN CORDILLERA

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PRECAMBRIAN FRACTURING AND MINERALIZATION IN THE RACING RIVER
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Copper mineralization in the Racing River area occurs in pre-Cambrian quartz carbonate veins, the emplacement of which was controlled by folding in clastic and carbonate rocks of the Helikian Gataga and Aida Formations which are part of the Gataga and Petersen thrust plates. Numerous post-mineral diabase dykes generally cut or run parallel to most veins, and are unconformably overlain by Cambrian and younger strata. Of the several known deposits only the Magnum has produced ore. The Eagle vein, 4 miles northwest of the Magnum, is an important prospect; other veins are known, such as for instance those on Bronson Mountain some 20 miles to the south.

The Magnum, Eagle and associated veins occupy fault zones that trend N35 to 40 degrees E and have vertical or very steep northwest dips. These tensional structures are oriented approximately at right angles to the axes of southeasterly plunging concentric folds that are overturned to the northeast. The folds are not uniformly distributed but occur in clusters and it is in these that the veins appear to be most common. The post-ore dykes have more diverse orientations which include northwesterly and northerly trends in addition to ones parallel to the veins. Neither veins nor diabase dykes are folded or deformed, and are thus assumed to post-date the folds.

In some contrast, copper-bearing veins on Bronson Mountain are not obviously spatially associated with fold structures but trend northeast and northwest and are also paralleled and cut by post-mineral diabase dykes. Other veins and dykes in the area trend northerly and follow a through-going fault zone.

In conclusion, it appears that the period of mineralization was relatively short and occurred at a time when most fractures that were opening trended northeast. Dyke intrusion must have closely followed vein formation but by then fractures with more diverse orientations were opening.