BRIDGE RIVER MAP-AREA

(92J/15)

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INTRODUCTION

The 1974 field season was spent in the Bridge River area, remapping the structurally complex rocks that host numerous epigenetic mineral deposits. The work is part of a continuing study that is aimed at understanding the metallogeny of this important metal-producing region.

The Bridge River area, which lies on the east flank of the Coast Plutonic Complex at about latitude 51 degrees north, is underlain by a rock sequence that includes cherts, pillowed basalts, argillites, and limestones of Middle and Late Triassic age (Cairnes, 1937; Monger and Cameron, 1971). Because of a lack of structural data on the existing geological map, part of the summer was spent preparing a map that could form the basis of the present study. Figure 9 illustrates the progress to date in the mapping programme.

GEOLOGY

The oldest rocks of the area, the Middle Triassic Fergusson Group, include pillowed basalts, cherts, and brown-weathering pelites, the type-section of which is exposed on the western slopes of Mount Fergusson. An east-trending fault with right lateral separation bisects the area at the latitude of Kingdom Lake, and on the downthrowr area to the north, approximately one-half mile of strike shift can be observed.

In map view, the type section of Fergusson Group rocks (section A, Fig. 9) is terminated to the west by a reverse fault, referred to by earlier workers as the 'Fergusson overthrust.' This fault brings Upper Triassic Hurley Formation argillites, conglomerate, or limestone into contact with the older Fergusson Group cherts and basalts in stratigraphic section B of Figure 9. The western boundary of section B is also a fault zone recognized by earlier workers as the 'Cadwallader Break.'

East of Gold Bridge the unconformable relationship between pillowed Pioneer basalts and overlying Hurley argillites is exposed. In section B, south of the east dextral fault, the argillaceous Hurley Formation is apparently in contact with chert that encloses the Pioneer basalts. This relationship cannot be inferred from Cairnes' (1937) map for two reasons:

(1) The continuity along strike of the Hurley Formation was not realized, and as a consequence the argillites exposed at the 'Success showings' between the dextral fault and Bralorne were incorrectly identified as Noel Formation.

(2) Basalts exposed between the 3400 level and 3700 level west of the 'Success showings' similarly were not recognized as the continuation of the Pioneer basalt.

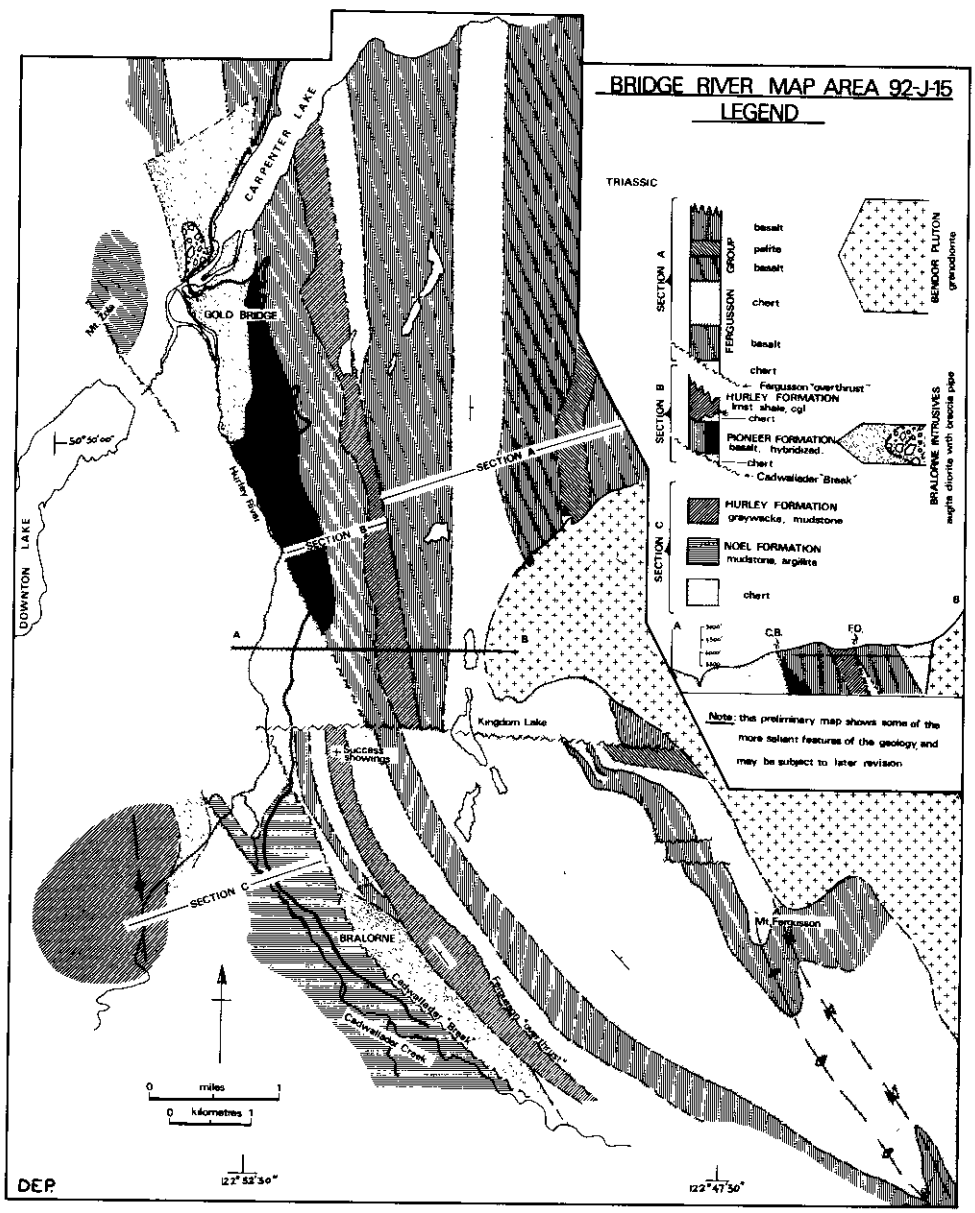

Figure 9. Bridge River map-area.

The economically important Bralorne Intrusives are wholly contained within stratigraphic section B. In the quarry west of Gold Bridge the augite diorite is intruded by a breccia pipe that presumably vented to the surface. Between the augite diorite and the pillowed Pioneer basalt, the controversial 'Pioneer greenstone-diorite' occurs. In the writer's opinion this admixture of two rock types, evident down to hand specimen scale, represents hybridization caused by diorite intruding the basalt.

West of the 'Cadwallader Break,' in section C, details of the stratigraphy have not yet been satisfactorily elucidated. For example, on the west side of Cadwallader Creek below the Mines Hotel, Noel Formation argillites that occur in a rotated fault block strike approximately northeasterly, about perpendicular to the structural grain of the valley. These are in turn flanked by cherts and then by overturned Hurley Formation along Hurley River valley.

STRUCTURE

Folding is ubiquitous in rocks of the Fergusson Group. The two largest complementary structures that have been traced for any distance are found between the summit of Mount Fergusson and Hawthorn Creek. Although refolded minor folds in the hinges of these steeply inclined neutral folds indicate that they are structures of the second generation (F_2), no major structures of an earlier age (F_1) can be demonstrated on the east side of the valley in Fergusson Group rocks. Such folds, if present, would clearly be very large flattened isoclines.

On the west side of the valley in Noel and Hurley rocks, only one deformation is discernible, and this is of distinctly different tectonic style. Large, open to close cleavage folds in argillites that still preserve evidence of tops are common. Indeed, at one locality on Mount Zola, immediately west of Gold Bridge, asymmetric minor folds around a large hinge in Noel Formation argillites are crossed by, and therefore predate, the cleavage that is genetically related to the *same* fold hinge.

In short, it would seem that the contrast in tectonic style is too great to blame entirely on the competency contrasts that exist between Middle Triassic Fergusson Group rocks and Upper Triassic Hurley and Noel Formations. An equally plausible explanation is that the Fergusson Group was subjected to Middle Triassic deformation prior to deposition of the Hurley and Noel sedimentary rocks.

MINERAL DEPOSITS

The latter part of the field season was spent examining mineral deposits north of Gold Bridge as far as Relay Creek and Tyaughton (Tyax) Creek. The type and distribution of these deposits indicate the presence of a previously unrecognized regional mineral zoning pattern in the area (Fig. 10).

Cinnabar is present as vein fillings and disseminations in Middle Triassic Fergusson Group cherts and Lower Cretaceous Taylor Creek Group chert pebble conglomerate.

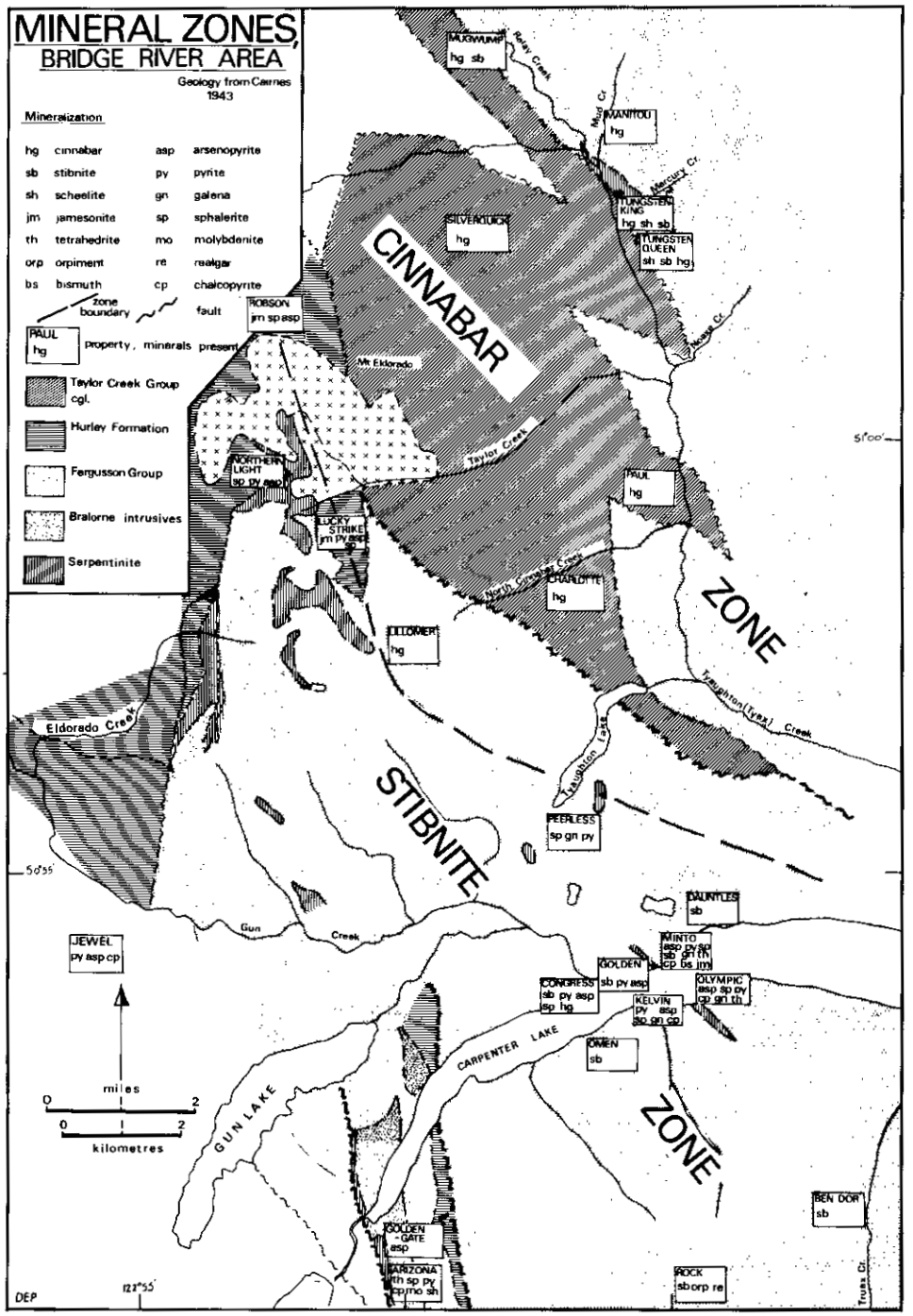

Figure 10. Mineral zones, Bridge River area.

Antimony is found in either the sulphide form, stibnite, or as the sulphantimonides tetrahedrite and jamesonite, within a broad band of variable rock type from Mount Eldorado in the north to the headwater of Truax Creek in the south. The stibnite mineralization is genetically related to the emplacement of feldspar porphyry dykes.

When these two mineral zones are superimposed on the British Columbia Department of Mines and Petroleum Resource's Preliminary Inventory Maps 92O, Taseko Lakes and 92J, Pemberton, it is apparent that a copper-molybdenum-rich zone flanks the stibnite zone to the west. The trace of this zone through the Bridge River area is imprecisely known, though the presence of molybdenite, scheelite, and chalcopyrite at Arizona, chalcopyrite at Jewel, and bornite 1 mile west of Gun Lake suggest that it may be present in the southwest sector of Figure 10.

Field work in the coming season will be aimed at establishing age relationships between the zones together with their lateral extent.

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