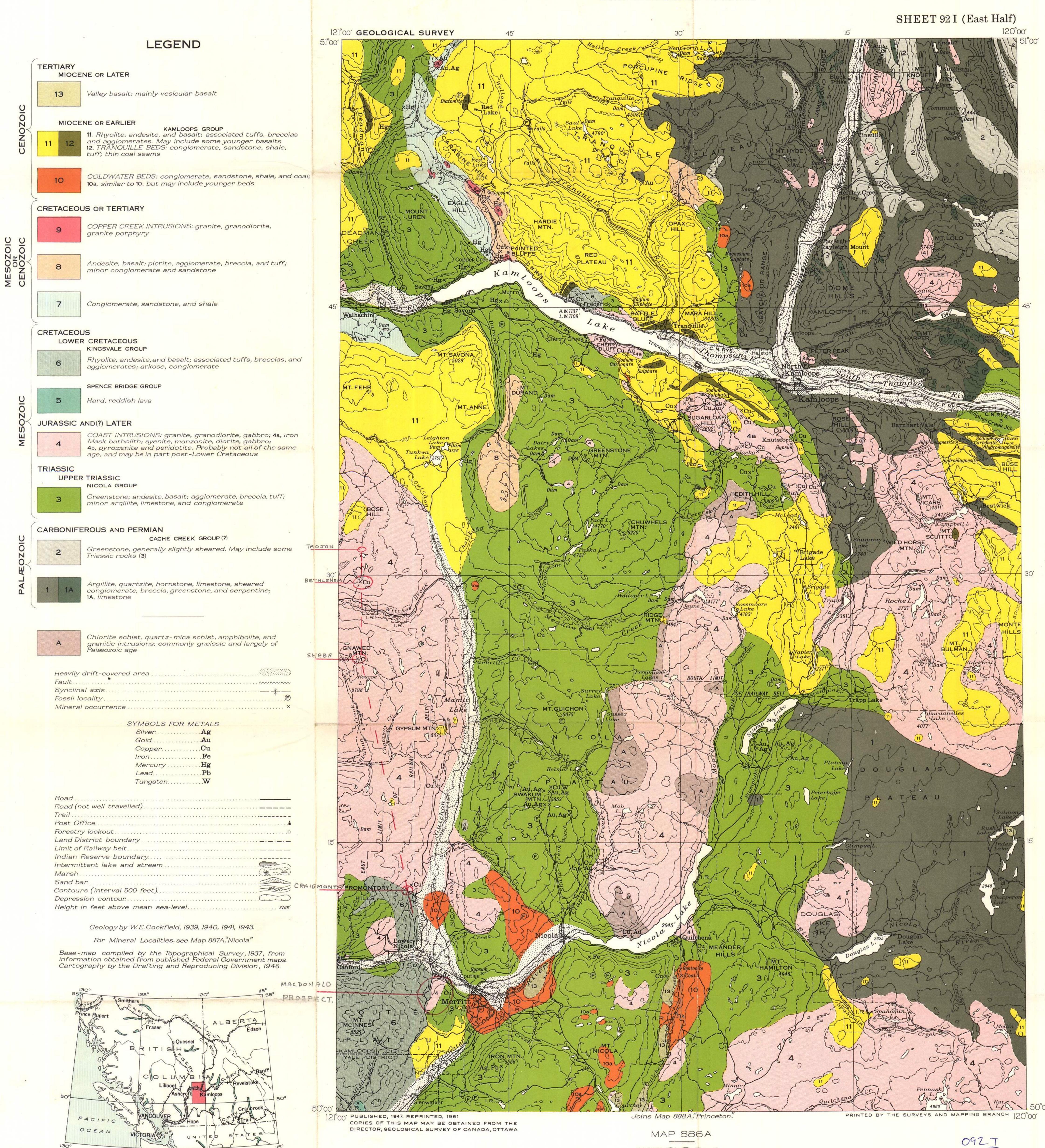
## MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY



DESCRIPTIVE NOTES

The map-area lies east of Cascade Mountains within the belt of Interior Plateaux

A group of foliated rocks (A) is shown separately on the map. They are believed to be largely of Palæozoic age, but Triassic members may be present,

and the assemblage also includes much granitic material. The Palæozoic rocks of the Cache Creek group (1,2) comprise formations of both Carboniferous and Permian age, but are so greatly deformed that their succession could not be determined. The more prominent bands of limestone (1A) were mapped separately in the hope that they would serve as horizon markers, but were found in many instances to occur as single, discontinuous masses or pods. In the northeastern part of the area greenstones are prominent and have been mapped separately (2). They are fine- to medium-grained, altered, generally sheared rocks, and are believed to be interbedded with Palæozoic sedimentary strata, but the possibility of some of them being intrusive is not precluded.

The Triassic period is represented by the Nicola group (3), which here consists largely of volcanic rocks (greenstone). These vary from fine-grained or nearly aphanitic to coarsely porphyritic types. They are predominantly green, but also occur in various shades of purple, red, brown, or grey, and include some with a dark or nearly black groundmass. The rocks are chiefly andesites, but include basaltic types as well as feldspar porphyries with phenocrysts ranging from minute size to half an inch in length. Much breccia and tuff is associated with the lavas. The latter are partly altered to chlorite, epidote, and calcite, and boundaries of individual flows are generally difficult to detect. Minor amounts of sedimentary rocks are associated with the volcanic members and have provided marine fossils of Upper Triassic age. Limestone is the most abundant type, but argillite and conglomerate occur sparingly. The limestone bands generally consist of a series of lenses rather than continuous beds.

Many plutonic rocks are included with the Coast intrusions (4). They are invariably intrusive into Triassic rocks (3) with which they come in contact, but were not found cutting the Lower Cretaceous rocks (6). They are considered to be largely Jurassic, but younger members may be present. The rocks are mostly medium-to coarse-grained granodiorites or quartz diorites, but locally include more acidic or more basic types. The common ferromagnesian minerals are biotite and hornblende. Of special interest is the Iron Mask batholith (4a), which contains copper deposits and veins of magnetite. The plutonic mass west of Guichon Creek also serves as host rock to a number of copper deposits.

Rocks correlated with the Spence Bridge group (5) were identified only at one locality in the extreme southwest part of the area, where they are continuous with similar rocks occurring in the Princeton map-area to the south. The rocks of the Kingsvale group (6) are co-extensive with considerable areas

of similar rocks to the south and west, some of which carry fossil plants. They show a wide range of colours, red, green, purple, buff, brown, grey, white, and black, and possess many characters similar to the Kamloops volcanic rocks, though feldspar porphyries are much more common. The agglomerates carry boulders of the granitic rocks of the region.

Small bodies of Copper Creek intrusions (9) appear along Carabine and Criss Creeks cutting both sedimentary and volcanic rocks (7,8). The latter are of either Cretaceous or Tertiary age, but no fossil evidence was obtained on which to base an age determination.

The Kamloops group includes a considerable thickness of volcanic and sedimentary rocks (10, 11, 12). The Coldwater beds (10) occur at the base of the group and in places appear to underlie the volcanic rocks unconformably. They contain, so far as is known, no intercalated flows or tuffaceous material, and probably antedate the period of vulcanism. However, fossil evidence shows no distinction in age between these and the Tranquille beds. They consist of conglomerate, sandstone, and shale, with commercial coal seams. The volcanic rocks (11) are chiefly dense, fine-grained, basaltic lavas. They exhibit a wide range of colours and are intercalated with considerable thicknesses of breccias and agglomerate. Interbedded with these volcanic rocks and grading upwards into the agglomerates are the Tranquille beds (12). These consist of conglomerate, shale, sandstone, and tuff, with thin coal seams.

Flat-lying basalts (13) are found along benches in some of the valleys and are probably the most recent consolidated rocks of the area.

Pleistocene and Recent deposits cover much of the bedrock. These are thickest in the valleys, but long, drift-covered slopes with few outcrops characterize many of the hills. The larger valleys are lined in many places with marginal terraces of sand, gravel, and clay. Terraces of white silt are prominent in the valley of South Thompson River, but also occur elsewhere in the area.

Data on the structure of the Triassic rocks are scanty, but those obtained appear to indicate that in the southern part of the map-area the folds have northerly trending axes. The emplacement of some of the plutonic rocks is also along a general northerly direction and is at variance with the general northwesterly regional trend. In the vicinity of Kamloops Lake, however, the folds appear to strike northwest, a trend that is followed by the Iron Mask batholith. The Kingsvale rocks have in general a gentle dip southwestward, but locally

are highly disturbed. The Coldwater beds are not well exposed, but appear to occur in open folds, except near the margins of the basins where dips approach the vertical. At the western margin of the Merritt coal basin the beds form a series of sharp folds with the axes striking northwest and plunging southeast. The Tertiary lavas have in general gentle dips, and some of the flows are nearly horizontal. The mineral deposits of the map-area represent a number of diverse types

and have provided several productive mines, but the total production is small in comparison with nearby districts. Placer gold deposits have been mined, generally on a small scale and with low returns, on the lower reaches of Tranquille River and Jamieson and Criss Creeks,

and along Thompson River below Deadman River. Vein deposits containing gold and silver, with lead, zinc, and copper minerals, occur in the Triassic greenstones at Stump Lake, and similar veins occur with replacement deposits in the greenstones and limestones of Swakum Mountain. Much work has been done on the Stump Lake deposits, which were among the early lode discoveries of the province, and shipments of ore and concentrates have been made. The veins are commonly less than 2 feet wide, but have been

Quartz veins are numerous in Palæozoic sedimentary rocks of the northeastern part of the area, and in small bodies of granitic rocks that cut them. They have been explored chiefly for their gold and silver content, but production to date has been small.

followed for long distances.

Copper deposits have been discovered at many places in the plutonic rocks west of Guichon Creek. The copper minerals occur as veins and in shattered zones associated in many places with molybdenite and in some with tourmaline. Copper deposits are also abundant in and around the Iron Mask batholith, where they occur as veins, impregnations in the country rock, and as stockworks. Only a few carry important gold values. A pronounced alteration of the rock to pink

albite and epidote is common near the deposits, but very little quartz is present. Veins of magnetite and apatite also occur with the Iron Mask batholith. Many veins and disseminations of copper minerals have been found in the rocks of the Nicola group.

Mercury showings are widely scattered in the northwest corner of the maparea from near Tunkwa Lake to Criss Creek. They occur in the rocks of the Nicola group and in Cretaceous or Tertiary sedimentary and volcanic rocks. The cinnabar is associated mainly with veins and stringers of dolomite, but some occur with chalcedonic quartz replacing the rock. The production from these deposits is less than 150 flasks, made chiefly prior to 1900.

The ore contains a variety of industrial mineral deposits, from among which a limited production of gypsum, sodium sulphate, and sodium carbonate has Coal has been mined for many years at Merritt from a basin of Tertiary sedi-

mentary rocks, and is known to occur with similar strata on Quilchena Creek.

original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

SCALE, 1 INCH TO 200 MILES

NICOLA KAMLOOPS AND YALE DISTRICTS

BRITISH COLUMBIA

Scale, 253,440 or I Inch to 4 Miles

Approximate magnetic declination, 24°30' to 27° East.