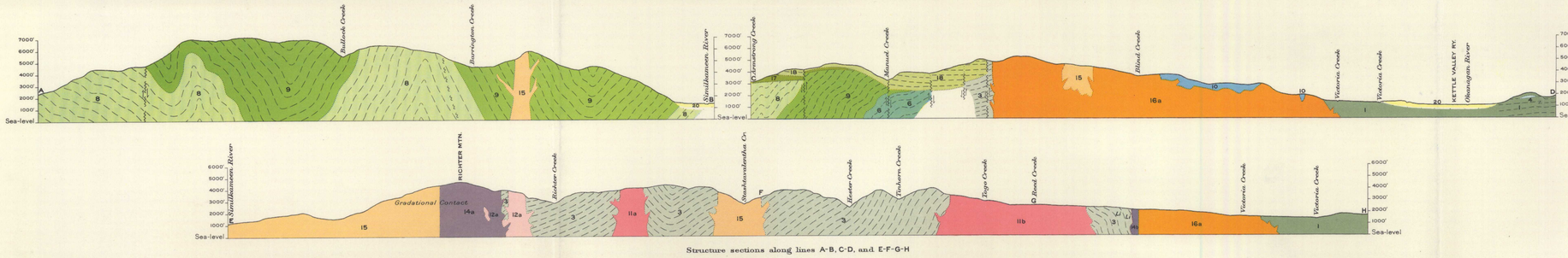
CANADA

DEPARTMENT OF MINES AND RESOURCES

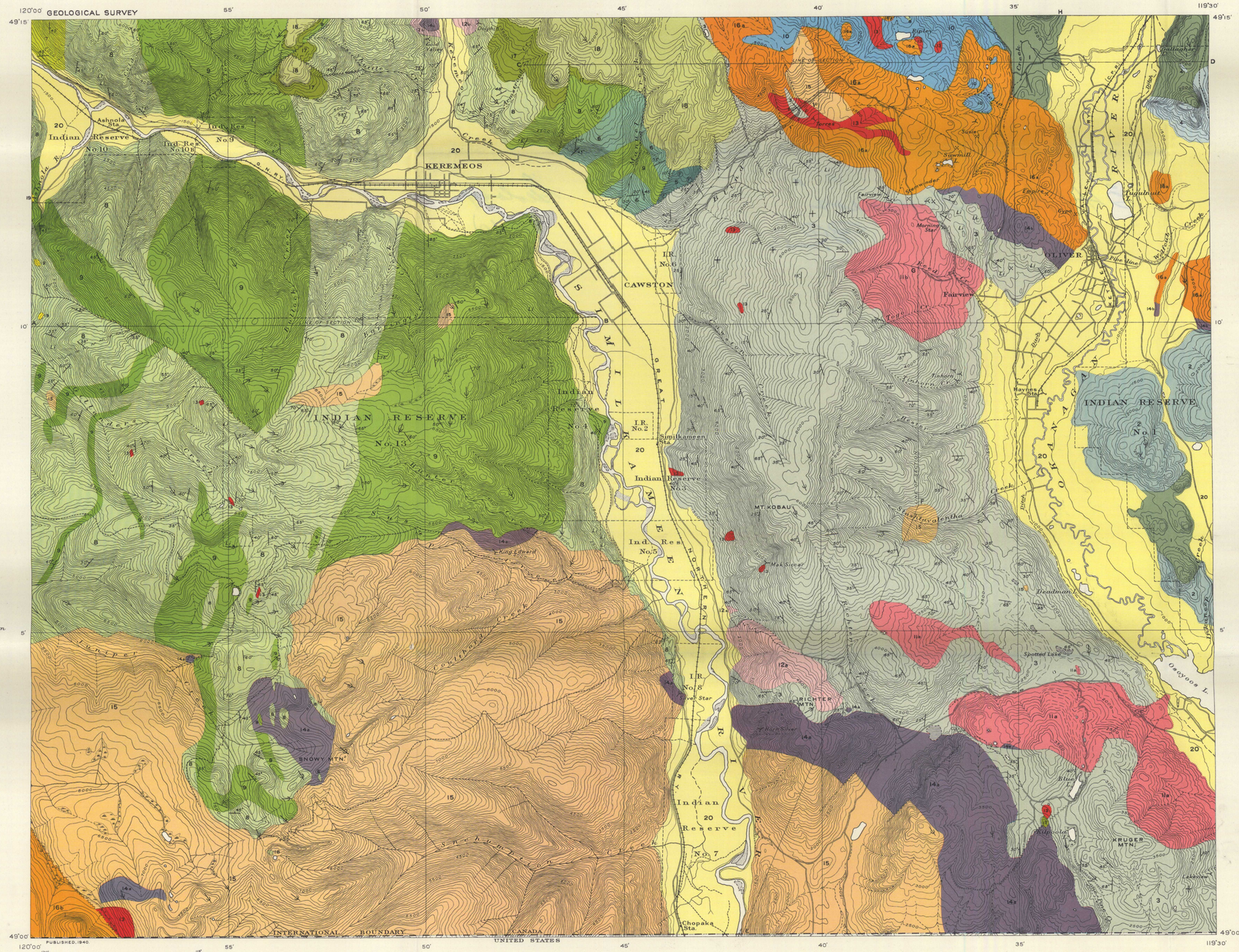
MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY



Structure sections along lines A-B, C-D, and E-F-G-H

GEOLOGICAL SURVEY



PUBLISHED, 1940

LEGEND

CENOZOIC

MODERN

20 — *Recent alluvium, glacial drift*

TERTIARY

PLIOCENE (?)

19 — *Partly consolidated sand, gravel*

EOCENE

18 — *MARRON FORMATION: mainly basaltic lava; some breccia, tuff; conglomerate*

17 — *SPRINGBROOK FORMATION: mainly conglomerate; some sandstone, shale*

MESOZOIC

JURASSIC AND/OR YOUNGER

16 — 16a: *Oliver granite*; 16b: *Cathedral granite*

15 — *Granodiorite*

14 — 14a: *Kruger syenite*; 14b: *Oliver syenite*; 14c: *Olalla syenite*

13 — *Diorite*

JURASSIC (?)

12 — 12a: *Richter Mountain hornblendite*; 12b: *Olalla pyroxenite*

11 — 11a: *Osoyoos granodiorite and associated rock types*; 11b: *Fairview granodiorite and associated rock types*

TRIASSIC OR OLDER

9 — *OLD TOM FORMATION: greenstone; basalt flows, sills, bosses; some diorite*

8 — *SHOEMAKER FORMATION: chert; some tuff, greenstone*

7 — *INDEPENDENCE FORMATION: chert, greenstone*

6 — *BARSLOW FORMATION: argillite*

10 — *Altered rocks of dioritic composition, origin uncertain.*

PALAEOZOIC

PERMIAN

5 — *BLIND CREEK FORMATION: limestone*

CARBONIFEROUS (?)

KOBAU GROUP

3 — *Quartzite, schist, greenstone*

1 — *VASEAUX FORMATION: paragneiss, schist, quartzite*

4 — *Pegmatite, gneissic granite, age unknown.*

2 — *Gneiss; age and origin unknown.*

Li — *Limestone lenses of various horizons*

Geological boundary (defined, approximate, assumed)

Bedding (inclined, horizontal)

Fault (defined, approximate, assumed)

Glacial striae

Fossil locality

Mine adit

Shaft or large pit

Spring

Names of Mineral Properties shown thus: Empire

Geology by H.S. Bostock, 1929, 1930.

DESCRIPTIVE NOTES

Mining has been in progress in one or other part of the map-area since the early nineties when the gold-bearing veins of Fairview camp were discovered. Since that time gold, silver, copper, magnesium sulphate, silica, and lime have been produced. The veins of Fairview camp and vicinity are grouped in a northwest-trending belt and occur mainly in rocks of the Kobau group (3) and within a mile of the contact of the Oliver granite (16a). Gold-bearing veins are also found in this granite. Copper deposits are grouped about the Olalla pyroxenite stock (12b). Syenite bodies (14a) along the borders of the granodiorite (15) on either side of and close to Similkameen river contain deposits which have produced silver. Prospects have also been found in these rocks on Susap creek and Snowy mountain.

An area of Mesozoic and earlier stratified rocks extends from east of Okanagan valley westwardly to Princeton. It is cut by intrusives and partly covered by Tertiary rocks but as a whole forms a nearly continuous belt. It is divisible into four irregular segments, each composed of a group of rocks that on the whole is younger than the group forming the adjoining segment to the east of it. The Vaseaux formation (1) and other gneissic rocks of mainly Palaeozoic age lie along Okanagan valley and form the easternmost segment. To the west of this, between Okanagan and Similkameen valleys, is a segment occupied by the Kobau group of late Palaeozoic age. West of this is a third segment extending northwesterly along Similkameen valley to Winters creek beyond the map-area. This segment is composed of a group of several, closely-folded formations including the Blind Creek (5), Barslow (6), Independence (7), Shoemaker (8), and Old Tom (9). The Blind Creek formation contains Permian fossils and is believed to be the lowest member of the group on the east side of the segment; on the west side, beyond the map-area, the lowest members are the Bradshaw and Independence formations in the latter of which fossils of doubtfully Mesozoic age have been found. The strata of the third segment are thus believed to be either of Permian age or Permian and younger. Still farther west is a fourth segment of formations bearing Triassic fossils and in which all the strata are presumably of Triassic age or younger. The relationships between the four segments are obscured by drift-filled valleys, faults or intrusive contacts. Okanagan and Similkameen valleys may follow fault zones along which the formations to the east have been uplifted with respect to those to the west. In the present area the Kobau group dips west under Similkameen valley and underlies the formations farther west. The same general relationship holds west of Blind creek.

The Vaseaux formation includes abundant conspicuously stratified gneisses of various types and also schists, quartzites and small lenses of limestone. The formation is intruded by a great many sills of pegmatite and gneissic granite some of which are apophyses from larger, separately mapped bodies, (4). West of Okanagan river the position of the boundary between the Vaseaux formation and a group of altered rocks, (10), is uncertain owing to metamorphism in the proximity of the Oliver granite and to a paucity of outcrops. The massive granite-gneiss (2) shows no stratification. The Kobau group comprises a great thickness of metamorphosed, stratified rocks mainly of sedimentary origin. The quartzite members are thinly-bedded and commonly micaceous or graphitic. There are also fine grained, siliceous, mica schists and others containing chlorite, hornblende, graphite and talc. The associated greenstones are variously sheared. The rocks between Blind and Keremeos creeks are greatly faulted and it is probable that slices of other formations than those represented are present. The Shoemaker formation is composed mainly of dark, bluish-grey chert. Similar chert forms part of the Independence formation. Some light grey, green and red cherts occur in the Old Tom formation, but the principal members are green lavas. The Old Tom also includes small intrusive bodies of similar composition and related to the volcanic rocks.

The altered rocks of group (10) are commonly foliated or stratified. They vary in grain and in mineral composition. Patches of quartzite and of massive hornblende-rich diorite are present. In part, the members of the group appear to underlie areas of the Shoemaker formation to the north of the map-area and elsewhere they may represent metamorphosed equivalents of the Independence and still older formations.

The intrusive rocks of the area, with the exception of the Fairview (11b) and Osoyoos (11a) bodies, indicate a succession from ultrabasic and alkaline to more siliceous types. The syenites (14) have been invaded and largely replaced, except on their outer margins, by intrusions of granodiorite and granite. The Kruger syenite (14a) and granodiorite (15) exhibit a concentrically zoned structure centred where Similkameen river crosses the International Boundary. The outer zone of the syenite, half a mile wide, is medium-grained and rich in dark minerals, mainly pyroxene. Inward from this body a second zone, composed of medium-grained, dark, and more feldspathic alkali syenite, forms the main part of the Kruger syenite and extends from Similkameen river to the International Boundary. Inward from this, a third zone, about 1,000 feet wide, follows the contact between the Kruger syenite and the granodiorite. It is composed of rocks that are coarser-grained and considerably more feldspathic than those of the outer two zones. Despite its relative narrowness, this third zone is continuous from near the Horn Silver mine in Similkameen valley to the Boundary. The granodiorite adjacent to it and for over a mile from it contains syenitic phases. Typical granodiorite forms the hill adjacent to the river at the International Boundary. Other areas of Kruger syenite are of similar types to those of the interior zones just described. Though adjacent phases of the Kruger syenite and the granodiorite grade into each other, dykes of interior phases intrude the exterior phases and, west of Similkameen river, the granodiorite intrudes the syenite. The Oliver granite is mainly porphyritic except in its central part where it has a uniform texture. Towards its contacts it becomes more basic and on its south side it grades, in places, into a dark syenite (14b). The diorite (13), and granodiorite, (15), lying within the area of Oliver granite, have been intruded by the granite. Elsewhere diorite is intruded by granodiorite. The Osoyoos and Fairview intrusives (11a and 11b) include types varying from granite to diorite, granodiorite and quartz diorite being the most abundant. Some of the small bodies mapped as diorite are like dioritic phases of the Osoyoos and Fairview intrusives and may be contemporaneous with them. The age of the Osoyoos and Fairview bodies (11) relative to other intrusives in the map-area is not known, but they are believed to be older as they are more sheared and altered.

The Springbrook formation (17), rests upon a pre-Tertiary rock surface of steep relief. It is composed of soils, alluvium, talus, stream and lake deposits which accumulated in the valleys before and during the earlier extrusions of the Marron volcanics, (18). In its thicker parts the Springbrook formation is composed of coarse, basal conglomerates containing huge angular boulders. These grade upwards into more worn and sorted conglomerates. Uppermost strata include beds of polished pebbles, sandstones and white tuffaceous silts. In adjoining areas to the north these beds contain plants of presumably late Eocene age. The volcanic rocks of the Marron formation were extruded over hills of pre-Tertiary rocks and into valleys partly filled by the Springbrook formation. They filled these valleys and accumulated to a thickness of over 4,000 feet and are believed to have covered all but the highest parts of the map-area.

Glacial striations and deposits are present up to the highest summits in the area. The steep relief of ridges transverse to the movement of the ice protected many parts from scouring. Deeply-weathered rocks underlie the sides of the deeper parts of some creek gulches, notably those between Susap and Snehumption creeks.

Scale, 1 Inch to 200 Miles

Approximate magnetic declination

MAP 341A

KEREMEOS

SIMILKAMEEN DISTRICT

BRITISH COLUMBIA

Scale, 1000 or 1 Inch to 1 Mile

Miles 0 1 2

Contour interval 100 feet

Elevations referred to Mean sea-level

Legend

Road	Stream (flow disappearing in places)
Road not well travelled	Marsh
Trail	Sand or gravel bar
Power transmission line	Pipe line
International boundary	Ditch
Indian Reserve boundary	Contours
Lake and stream (position approximate)	Contours (position approximate)
Intermittent lake and stream	Depression contour

Base-map prepared by the Topographical Survey, 1935, from map supplied by the British Columbia Department of Lands. Cartography by the Drafting and Reproducing Division, 1939.