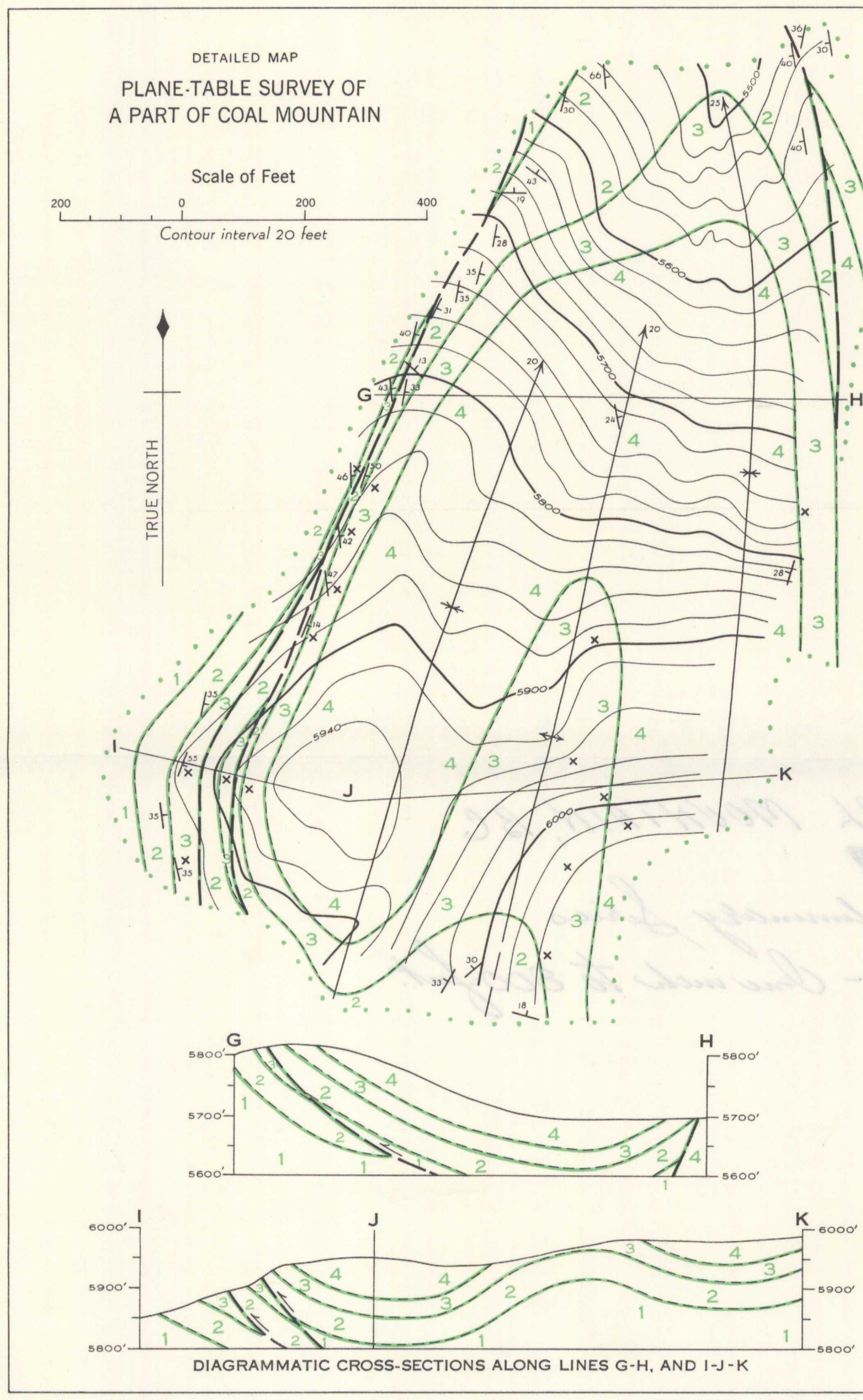
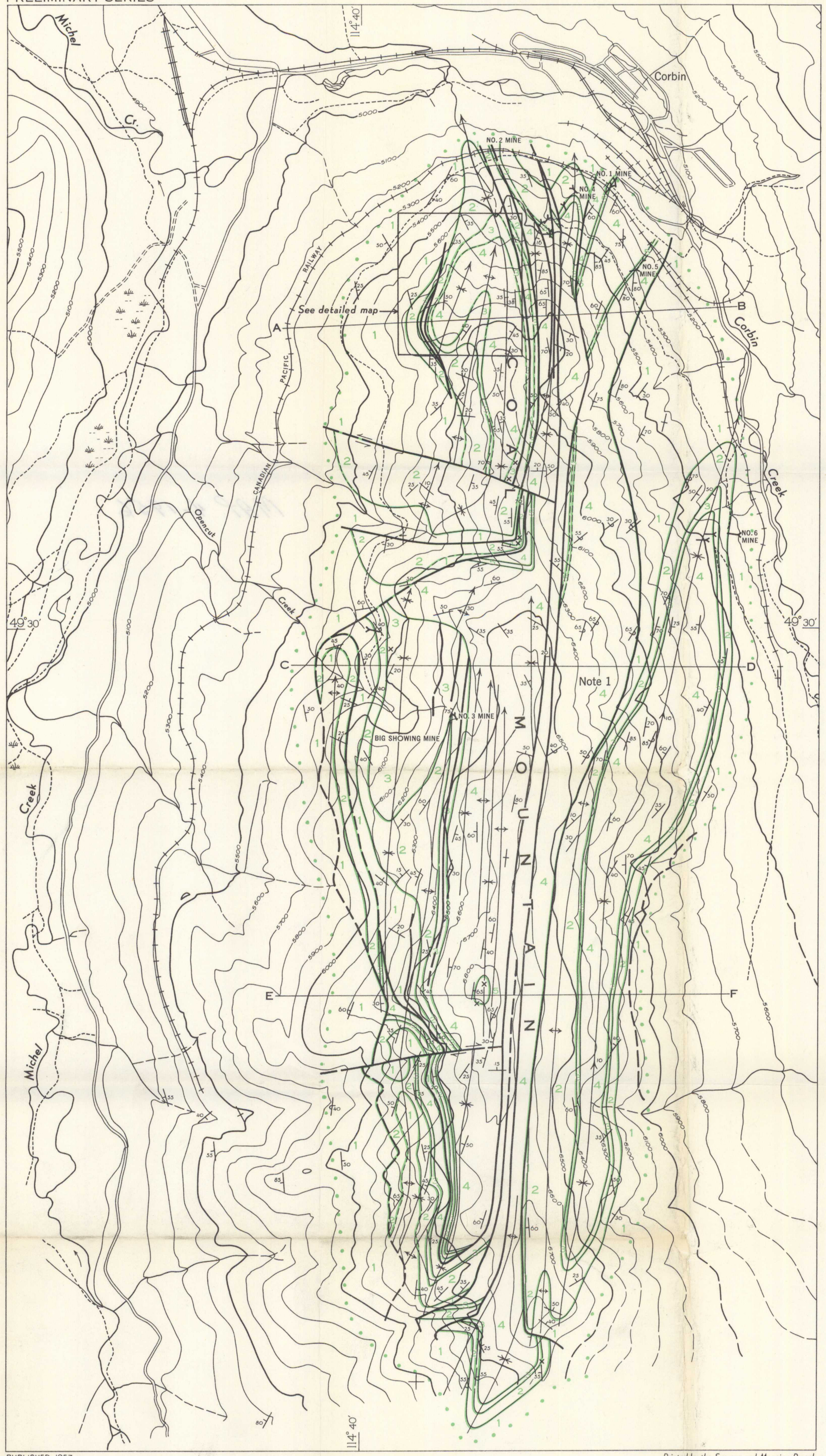
CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS

GEOLOGICAL SURVEY OF CANADA

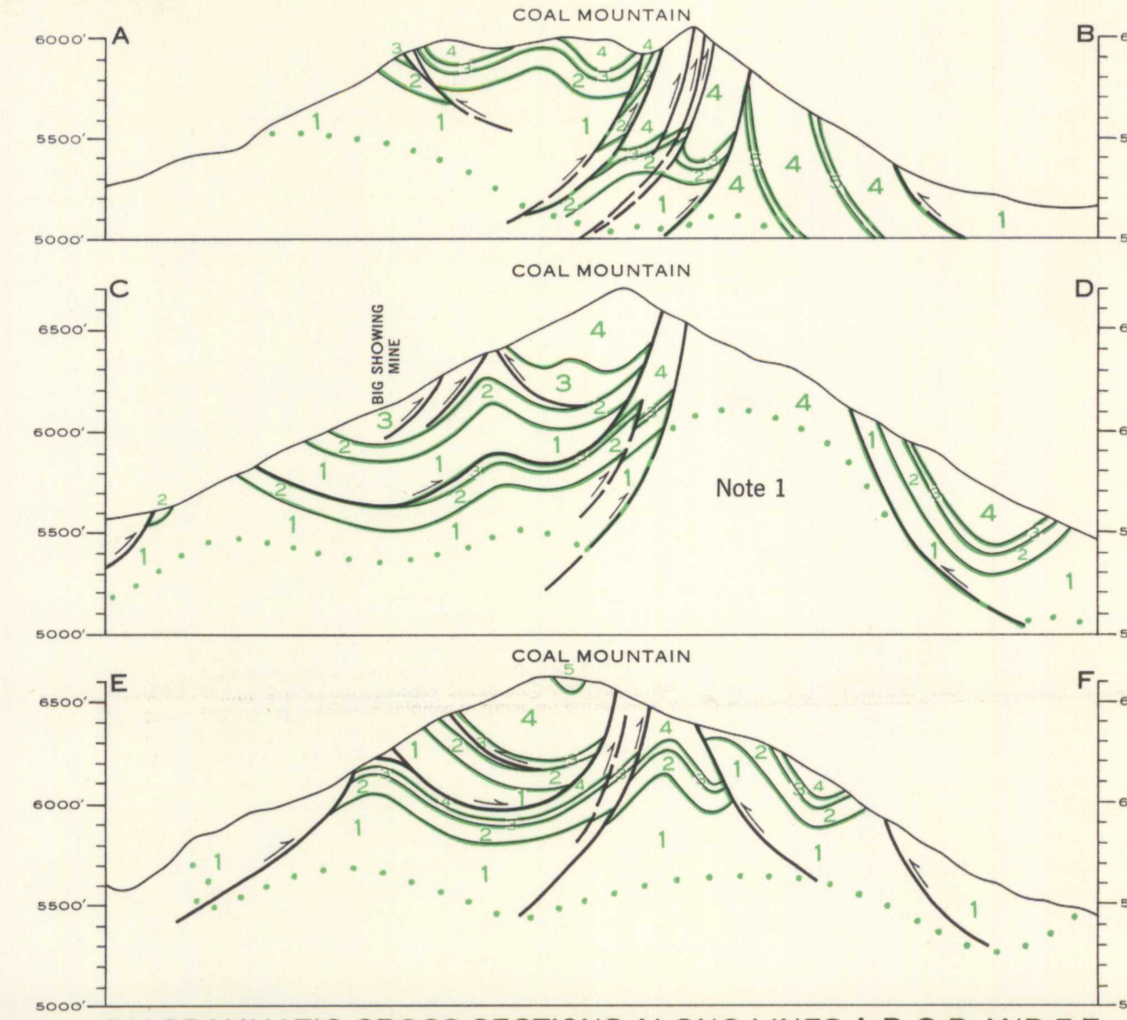
PRELIMINARY SERIES





PUBLISHED, 1957

Printed by the Surveys and Mapping Branch



DIAGRAMMATIC CROSS-SECTIONS ALONG LINES A-B, C-D, AND E-F

LEGEND

MESOZOIC

CRETACEOUS

LOWER CRETACEOUS

4 | 5 — *KOOTENAY FORMATION:* **4**, *Upper sandstone and shale complex*
5, *Upper coal seam or seams*

3 — *KOOTENAY FORMATION: Mammoth coal seam*

2 — *KOOTENAY FORMATION: Basal sandstone*

JURASSIC

FERNIE GROUP

1 — *Sandstone, shale*

Note 1. *Exposures inadequate for delineation of structures in this fault block*

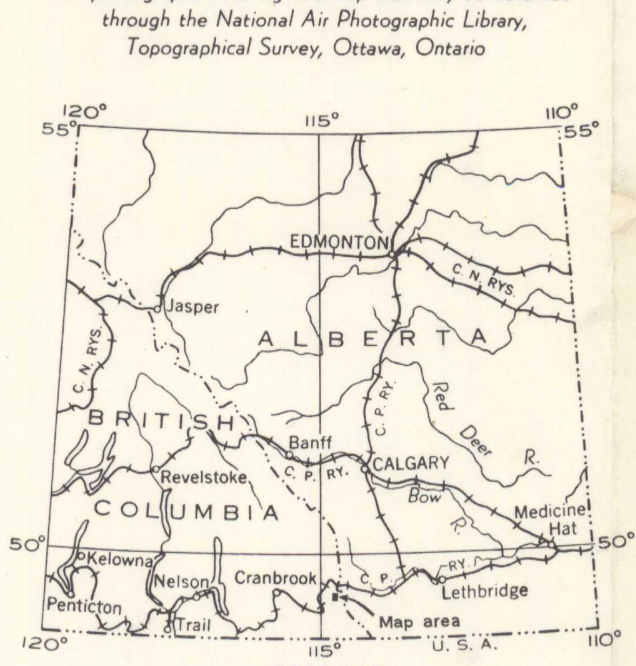
Geological boundary (defined approximate)
Bedding (horizontal, inclined, vertical, overturned)
Fault, thrust (defined, approximate)
Fault, tear (defined, approximate)
Anticlinal axis (defined, approximate, arrow indicates direction of plunge of axis)
Synclinal axis (defined, approximate, arrow indicates direction of plunge of axis)
Coal prospect or occurrence
Coal adit

Main highway
Other roads
Trail
Marsh
Intermittent stream
Contours (interval 100 feet)

Approximate magnetic declination, 21°45' East

Cartography by the Geology Cartography Unit, 1957

Air photographs covering this map-area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario



INDEX MAP

Geology by D. K. Norris and R. A. Price, 1955
Compilation and Descriptive Notes by D. K. Norris

MAP 4-1956

4-1956

COAL MOUNTAIN

KOOTENAY DISTRICT

BRITISH COLUMBIA

Scale: One Inch to 800 Feet = $\frac{1}{9,600}$

Feet

800 0 800 1600 2400

DESCRIPTIVE NOTES

Coal Mountain lies between the headwaters of Michel and Corbin Creeks, 10 miles south of Crowsnest station and 3 miles west of the Alberta-British Columbia boundary. The coal-mining camp of Corbin lies at the northern tip of the mountain and is connected with British Columbia Highway No. 3 by a 15-mile gravel road down Michel Creek valley. Active operations at Corbin were begun in 1908 and continued intermittently for 40 years. With the cessation of underground mining in 1935 the branch railway connecting the main line of the Canadian Pacific Railway with the town of Corbin at McGillivray was torn up and since then coal from the Big Showing strip mine has been trucked out.

Coal Mountain is within the Rocky Mountains on the western flank of the Crowsnest coal basin. Immediately to the north lies Middle Mountain, to the northwest Tent Mountain 5 miles south of Crowsnest station on the Alberta-British Columbia boundary, and to the west Mount Taylor.

Several steeply west-dipping faults repeat the strata on Coal Mountain in a manner not unlike the imbricate structure found in certain parts of the Disturbed Belt. These faults continue north to Middle Mountain and dip west under Tent Mountain. Tent Mountain therefore lies structurally west of Coal Mountain. Faults on Tent Mountain may extend southward to Mount Taylor.

Contorted Jurassic strata of the Fernie group constitute the core of Coal Mountain and no completely exposed section of these beds could be observed in any single fault slice. No attempt was made to subdivide the Fernie beds as exposures are scarce. However, the Passage beds and the underlying dark brown, rubbly, silty, concretionary shales were recognized on the lower slopes of the mountain. The glauconitic 'Green beds' were also observed at one place, low on the east slope of the mountain. The contact between the Fernie group and the Kootenay formation was drawn at the top of the Passage beds which is marked by a distinct colour change, especially on the weathered surface, between the dark grey, carbonaceous, basal sandstone of the Kootenay formation and the brown sandstones of the Fernie group.

The thickness of Kootenay strata on Coal Mountain could not be established with certainty because of structural complication. The lowest 200 feet of measures contain two coal seams, the Mammoth seam immediately overlying the basal sandstone and, 140 feet stratigraphically above it, the Upper seam. These two seams may be correlatives of the two lowest seams on Tent Mountain, as the stratigraphic sequence and interval between them are similar.

The possibility of additional seams on Coal Mountain stratigraphically still higher rests on the structural and stratigraphic relations of the coal seams containing No. 1 and No. 5 mines. From the data available no definite decision could be reached.

Coal Mountain consists of three north-trending structural units termed the western, central and eastern fault slices. The central slice is bounded on the west by west-dipping faults that extend the length of the mountain and on the east by an east-dipping fault. The workings of Nos. 2, 3, and 4 mines and the Big Showing are in the western slice, Nos. 1 and 5 mines in the central and No. 6 mine in the eastern slice. In all three units the coal measures have been closely folded and, locally, the folding of the strata is accompanied by folding of the fault planes. Flexing of the more westerly of these west-dipping faults has contributed to the thickening of the coal in the Big Showing. As a consequence of the folding of this fault, a west-dipping splay developed, the trace of which cuts across the structures immediately north of the Big Showing. The change in trend of the synclinal axis in the northern half of the eastern fault slice appears to be the result of movements on this fault, accentuated perhaps by displacement on the left-hand tear fault that lies approximately 2,000 feet north of the Big Showing.

On the northern tip of Coal Mountain, in the western fault slice, is an area apparently favourable for stripping operations. The coal measures have been folded into two synclines with an intervening anticline which plunge about 20 degrees north. The most easterly of these folds persists to the base of the mountain because it plunges about 5 degrees more steeply than the other two. It is highly probable that the Mammoth Seam, normally 15 to 25 feet thick, may be thickened in the cores of the folds. Moreover the strip-ratio is favourable as the plunge of the structures is about equal to the slope of the mountain side. It is evident however that the seam is largely unroofed in this area and deep weathering of the coal has probably taken place. Two minor east-dipping faults repeat the coal on the west flank of the westernmost syncline but do not affect the main mass of coal.

A further possibility is the northward extension of the Big Showing. That the Mammoth seam has been considerably thickened is evident from the map and structure section C-D. The present open pit is indicated as coal outcrop on the map. It is probable that coal in economic amounts is still recoverable immediately north of the worked-out area because of the steep north plunge of the structures (35 degrees) into the gully north of the open pit.

In the eastern fault slice the Mammoth seam has been folded into a prominent syncline which plunges 10 degrees north. The coal in the northern half of the structure was won by surface methods and under-ground at No. 6 mine. On the east flank of the syncline 3,000 feet south of the portal considerable gas was issuing from subsidence cracks, and the rocks were too warm to be touched comfortably. It is evident that the underground fires of 1929 on the west flank of the syncline have spread all through the mine. There are however stripping possibilities in the southern half of the syncline. The tightness of the fold suggests a considerable thickening of the coal in its core although cover is doubtless over 100 feet thick along most of the axial region.

The stratigraphic position of the seams worked in Nos. 1 and 5 mines could not be established because of lack of detailed information on the structure within the central fault slice. However the structural position of this slice relative to those on either side would suggest that it contains younger Kootenay strata. The beds are largely overturned with steep dips to the northwest and consist of black, crossbedded, carbonaceous, quartz sandstone, and black, carbonaceous, silty shale suggestive of the sandstone and shale complex containing the Upper seam on the west side of the mountain. The inconsistent attitudes between Nos. 1 and 5 Mines may be due to an east-dipping fault, in which case the seams in the two mines are the same and probably equivalent to the Upper seam.

Underground mining at Corbin has met with little success in spite of the large tonnage of coal in the mountain. The history of the mines has been one of endless difficulties arising from attempts to extract coal from steeply dipping and highly deformed seams. The coal moreover is susceptible to spontaneous combustion. Underground fires are costly and almost inevitably lead to abandonment of the mine. Hence emphasis has been placed on strip mining whereby the thickened coal in the cores of folds is won relatively free of these hazards and at roughly one-third the cost of underground operations.

Whether or not strip coal from Coal Mountain might be placed on the market at present is dependent on a number of factors. First is the demand for a medium volatile, bituminous coal of poor coking properties that is highly comminuted and contains an average of 20 per cent finely divided ash (screening alone would be inadequate to reduce the ash content to a favourable value). Second, is the necessity for an initial investment in an exploratory drilling program. Third is the installation of a retarding conveyor system or aerial tramway from the pits to surge bins at the foot of the mountain. This would be a decided advantage over building and maintaining strip roads, especially in winter weather. And last, further stripping on Coal Mountain would necessitate the building of a screening plant and washery at McGillivray or the meeting of additional haulage costs between McGillivray and a nearby tipple. In either instance the 12 miles of gravel road between Corbin and McGillivray would have to be repaired and considerable work done on existing bridges.

MAP 4-1956
COAL MOUNTAIN
BRITISH COLUMBIA