

LEGEND

- CENOZOIC**
- TERTIARY**
- 5 PASKAPOO FORMATION: conglomerate, sandstone, sandy shale
- CRETACEOUS**
- UPPER CRETACEOUS**
- 4 EDMONTON FORMATION: light grey sandstone, shale; coal
- MESOZOIC**
- 3 BEARPAW FORMATION: dark grey shale with many concretions
- 2 OLDMAN FORMATION: pale grey sandstone and shale; coal
- 1 FOREMOST FORMATION: sandstone, shale; oyster beds, coal

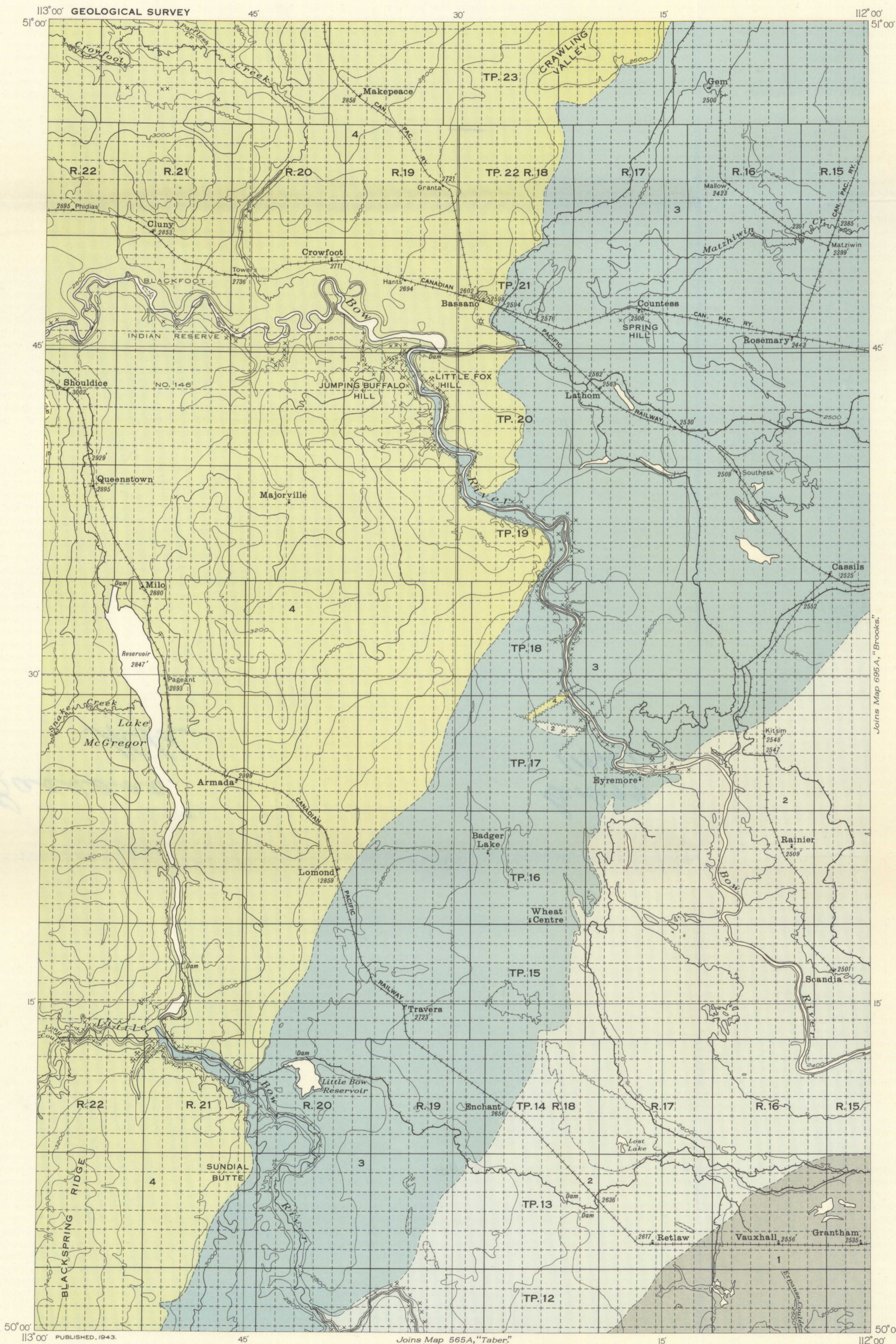
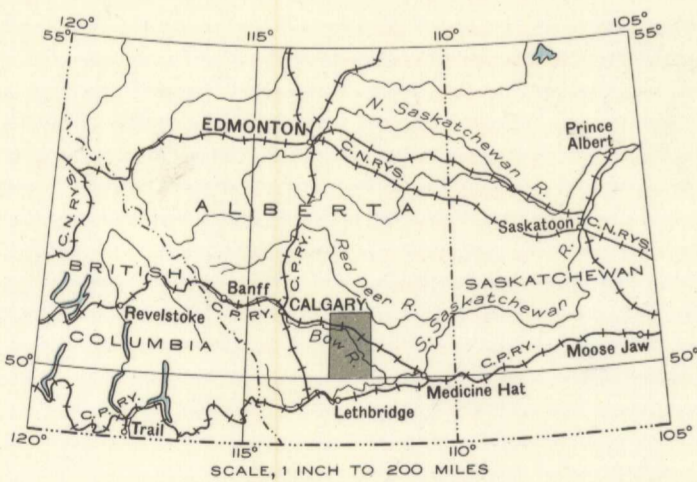
- Areas of rock outcrop..... x
- Coal pits or mine..... x
- Fault.....
- Gas well.....
- Abandoned well.....
- Post Office.....
- Irrigation canal.....
- Township boundary.....
- Section line.....
- Indian Reserve boundary.....
- Intermittent stream.....
- Contours (interval 100 feet).....
- Depression contour.....
- Height in feet above Mean sea-level..... 2725

Geology by J.S. Stewart, 1941.

Base-map prepared by the Topographical Survey, 1942, from Federal Government maps published in 1921 and 1923, revised from aerial photographs taken by the Royal Canadian Air Force in June 1937, August and September 1939. Cartography by the Drafting and Reproducing Division, 1943.

DIAGRAM OF TOWNSHIP SHOWING NUMBERING OF SECTIONS

31	32	33	34	35	36
30	29	28	27	26	25
19	20	21	22	23	24
18	17	16	15	14	13
7	8	9	10	11	12
6	5	4	3	2	1



DESCRIPTIVE NOTES

The oldest rocks in the map-area are those of the Foremost formation. Beneath them, as indicated by drill samples, lies some 2,200 feet of strata composed largely of marine shales of Upper Cretaceous age. The upper part of this assemblage corresponds to the Pakowki formation, beneath which lie beds equivalent in age to the sandstones of the Milk River formation typically developed in areas to the south. The lowermost 1,600 to 1,800 feet consists mainly of dark grey shales, the base of which marks the base of the Upper Cretaceous. These shales are believed to represent, in large part or entirely, the Alberta formation as defined in southernmost Alberta. Underlying Mesozoic strata consist of 500 to 750 feet of sandstones and shales that presumably represent the Blairmore and Kootenay (Lower Cretaceous) and Fernie (Jurassic) formations outcropping in the foothills region to the southwest. Their combined thickness is greatest in the southern part of the map-area and gradually thins northward. The Mesozoic rocks rest on cherty Palaeozoic limestones. A deep well at Eyremore, (sec. 26, tp. 17, rge. 18) penetrated some 1,550 feet of limestone that is thought to be in part of Mississippian and in part of Devonian age.

The FOREMOST FORMATION is not exposed within the map-area, but its presence is inferred from the occurrence and dip of outcrops on Oldman River to the south and on Bow River to the east. The formation is composed mainly of brackish water sediments. The uppermost 100 feet includes much carbonaceous shale, and several thin coal seams. The lower part consists of brown to grey sandstone and sandy shale with thin bands of ironstone and several beds made up largely of oyster shells. Judging from deep well drillings, the formation is 350 to 400 feet thick.

The OLDMAN FORMATION is not well exposed within the map-area, but elsewhere, and in well samples, is seen to be composed chiefly of pale grey to buff sandstones and sandy shales of freshwater origin. Bands of ironstone occur throughout. Coal seams occur in the upper part and are mined at Eyremore and at Lethbridge. Fossils are not plentiful. They consist of freshwater molluscs and the remains of large dinosaurs. The formation varies in thickness from about 400 to 500 feet.

The BEARPAW FORMATION consists essentially of dark grey shale of marine origin. Calcareous concretionary bands are numerous and in many places contain well preserved fossil molluscs. Bentonite occurs in beds a few inches thick and, apparently, persistent over wide areas. Well logs, and several incomplete sections exposed on Bow River indicate that the Bearpaw is 550 to 600 feet thick.

The EDMONTON FORMATION contains sediments of both fresh and brackish water origin and is transitional, in its lower part, into the marine strata of the Bearpaw. It consists of fine grained sandstones, sandy shales, ironstone bands, carbonaceous shales, and coal. Two coal seams that occur in the lower part of the formation are mined on Bow and Little Bow Rivers. They are separated by about 108 feet of shales and sandstones. Coal also occurs in the upper part of the formation and has been mined from a seam that outcrops southwest of Reid Hill (secs. 24 and 25, tp. 16, rge. 23). What is probably the same seam is being worked from slopes sunk on the prairie (sec. 25, tp. 15, rge. 23 and sec. 8, tp. 16, rge. 23) just west of the map-area. Dinosaur bones are common in the Edmonton. A bed of volcanic ash 1 foot thick is exposed in a coulee near Gleichien (SW 1/4 sec. 24, tp. 22, rge. 23) just west of the map-area. Exposures are not sufficiently continuous to yield a reliable estimate of thickness, but in a deep well (sec. 9, tp. 16, rge. 23) about 4 miles west of the map-area the Edmonton is assigned a thickness of 1,050 feet of sandstone and shales.

The PASKAPOO FORMATION is not exposed in the map-area but basal beds outcrop in valleys to the west. The position of the Edmonton-Paskapoo contact is inferred from these exposures. It is believed that the Paskapoo rests on an eroded surface of the Edmonton, as in places the basal Paskapoo strata are of well sorted coarse quartzite conglomerate.

The strata within the map-area dip on an average of only a few feet per mile toward the west, northwest, or north. In the coal mines north-east of Champion, the upper coal seam in the Edmonton dips about 80 feet per mile toward the west. At Eyremore the beds dip nearly due north. Along Bow River, the base of the Blackfoot coal seam has the following elevations: 2,776 feet (L.S. 7, sec. 33, tp. 20, rge. 19); 2,755 feet (L.S. 14, sec. 33, tp. 20, rge. 19); 2,752 feet (L.S. 11, sec. 4, tp. 21, rge. 19); 2,737 feet (L.S. 1, sec. 6, tp. 20, rge. 20); 2,708 feet (L.S. 6, sec. 32, tp. 20, rge. 20); and 2,671 feet (L.S. 2, sec. 1, tp. 21, rge. 21). These indicate that the seam dips almost due northwest on an average of 20 to 25 feet per mile. The coal seam worked at the Fraser mine near Little Bow River (NW 1/4 sec. 25, tp. 14, rge. 22) is correlated with the Blackfoot coal seam on Bow River. At the Fraser mine, the elevation of the base of the coal seam is 2,924 feet. At the Blackfoot mine (SE 1/4, sec. 1, tp. 21, rge. 21) the base of the same seam has an elevation of 2,674 feet. The difference in elevation represents a drop toward the north of 250 feet in a distance of about 40 miles.

One group of faults is mapped on Bow River near Eyremore. There a downfaulted block of the Edmonton has a vertical stratigraphic displacement of about 300 feet. The strike of the individual faults could only be determined approximately.

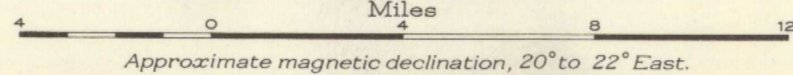
A deep well was drilled near Eyremore (SE 1/4 sec. 26, tp. 17, rge. 18) at a surface elevation of 2,700 feet. It entered Palaeozoic limestone at 4,020 feet and reached a total depth of 5,590 feet. Nothing of value was encountered. The well is located on a faulted inlier of the Oldman formation and on beds that, where exposed about a mile to the east of the well, show some steep dips. About 4 miles west of the map-area (L.S. 9, sec. 9, tp. 16, rge. 23) a well was drilled to a depth of 2,750 feet. The elevation at the well site is 3,334 feet. No oil or gas was encountered. A glauconite bed marks the contact of Bearpaw and Oldman formations at a depth of 1,610 feet. The same bed has been recognized in well samples from the Eyremore well (sec. 26, tp. 17, rge. 18) to the Northwest Treaty well (sec. 17, tp. 8, rge. 23). Another glauconite bed that occurs at or near the top of strata equivalent to the Milk River formation, was encountered in the Champion well (sec. 9, tp. 16, rge. 23) at a depth of 2,740 feet. This bed has been recognized in well samples from the vicinity of Princess (sec. 11, tp. 20, rge. 12) to Keho Lake (sec. 17, tp. 11, rge. 22).

The Hudson's Bay Oil and Gas Company drilled a deep test well near Keho Lake (L.S. 2, sec. 17, tp. 11, rge. 22) at an elevation of 3,270 feet. The well commenced in the lower part of the Edmonton. It encountered the Edmonton-Bearpaw contact at 300 feet; the Bearpaw-Oldman contact at 890 feet; the Milk River glauconite horizon at 2,050 feet; the Palaeozoic limestone at 4,920 feet; and was abandoned at 4,942 feet.

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MAP 741A
BASSANO
WEST OF FOURTH MERIDIAN
ALBERTA

Scale, 253,440 or 1 1/4 inch to 4 Miles



741A