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PRELIMINARY MAP
REDCLIFF, ALBERTA

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DESCRIPTIVE NOTES
REDCLIFF MAP AREA, ALBERTA

The oldest exposed rocks are those of the Foremost formation. Beneath it, as indicated by rock samples obtained during the drilling of deep wells, lies some 2470 feet of, chiefly, 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 1520 feet consists mainly of dark grey shales, the base of which marks the base of the Upper Cretaceous. These shales correspond, in large part or entirely, to the Alberta formation as defined in southernmost Alberta. Underlying Mesozoic strata consist of about 385 feet of sandstones and shales that, presumably, represent the Blairmore and Kootenay (Lower Cretaceous) and Fernie (Jurassic) formations of more western areas. The Mesozoic rocks rest on cherty, Palaeozoic limestones and the deeper wells are believed to have penetrated strata of both Mississippian and Devonian age.

The FOREMOST formation (1) is composed mainly of brackish water sediments. The base of the formation is not exposed but several incomplete sections indicate that it is not less than 250 feet thick. The uppermost 100 feet includes much carbonaceous shale and many thin coal seams. One seam of workable thickness is mined at several places to supply a local market. The lower part consists of brown to grey sandstone and sandy shales with bands of ironstone and several beds made up largely of oyster shells.

The OLDMAN formation (2) is of freshwater origin and is composed mainly of pale grey to buff sandstones and

sandy shales, with numerous ironstone bands and some bentonite. Thin coaly beds and carbonaceous shale occur in the upper part. A complete section, 306 feet thick, is exposed on South Saskatchewan River at Rapid Narrows in township 17, range 3. The formation is famous for its rich vertebrate fauna. The remains of large dinosaurs are common in the 'Bad Lands' region of Red Deer valley near Steeveville.

The BEARPAW formation (3) consists of dark grey shale of marine origin. It is the youngest formation in the region and has been eroded from much of the map-area. Outcrops are few and small and in no place is more than the lower 50 feet of the formation exposed. On many steep slopes the Bearpaw shales and underlying Oldman beds are involved in large slumps of the magnitude of landslides.

The general structure of the bedrock is simple, much of the map-area being underlain by the east limb of a broad anticline plunging gently northward to northeastward. The strata dip only a few feet to the mile. Sufficient information is not available to determine structural details but the general dip between widely separated points can be measured quite closely. On Saskatchewan River, levels on a workable coal seam show a rise westward from Redcliff of 180 feet in a distance of about 23 miles. Along the western edge of the map-area, between township 16 and Red Deer River, the base of the Bearpaw shales show a northward dip of about five feet to the mile. In places and for short distances the strata may be seen to steepen but no reversals of the general north and east dips were observed. Subsurface contours obtained from records of deep wells, suggest a small east-trending syncline between Medicine Hat and Redcliff.

Gas in commercial quantity occurs at Redcliff and Medicine Hat but the limits of the field have not been determined. The gas has long been used for domestic and industrial purposes. It occurs at a depth of from about 900 to 1200 feet, depending, chiefly, on the elevation of the well sites. Elsewhere gas has been discovered in exploratory wells over a large part of the map-area and in sufficient amounts, at many places, to be used for small irrigation projects.