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TEXT

of

REPORT ON THE GEOLOGICAL SURVEY

WRIGLEY AREA

N. W. T.

for Permits 2090 - 2105, incl.

prepared for

UNION OIL OF CANADA LIMITED

by

LINK DOWNING COOKE & CO. LTD.

1961

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SUMMARY AND CONCLUSIONS

The area of the geological report is bounded by latitudes 63° to 65° north and longitudes 123° to 127° west A location map showing this area and its relation to the Keller Lake permits follows this summary.

A detailed stratigraphic study was made at 28 different locations of outcrop in the mountains west of the Keller Lake permits. The information gathered from these studies is detailed in the text and appendix of the report and is illustrated in several ways including a stratigraphic table, stratigraphic sections, longitudinal regional stratigraphic sections, structure cross sections, a geological map and photograph album.

The Mackenzie River area has a dramatic history in regard to the exploration for and discovery of hydrocarbons at Norman Wells. The producing field and operating refinery there have been, and still are, the major successful economic ventures north of Wrigley. However, more oil and gas will undoubtedly be discovered in the Mackenzie Plain.

Major oil companies and the Federal Government continue to display an active interest in the area. It encompasses a major portion of the Western Canadian Sedimentary Basin that has proven an attractive area for the search for oil and gas.

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Recent gas discoveries have resulted from exploration that has moved into the Northwest Territories from British Columbia. This summer the oil exploration had progressed northward to Wrigley area, where roads are being cleared and equipment moved into position on the Wrigley Anticline.

The conclusions resulting from the report justify this exploration, as potential reservoir horizons are present in the sedimentary section of the report area and fold structures are abundant.

The "Kee Scarp" reefs or equivalent biostromes were found in the Middle Devonian age strata in the southern map area. This infers that the potential for the accumulation of oil in these strata is as high in the report area as it has been proven to be at Norman Wells. The location of a test well to this upper formation would be more restricted than other older horizons in that proper burial and a desirable structural environment are not always complimentary. However, the Keller Lake permits are considered to be located in a position that may provide adequate impervious cover over the Middle Devonian Formations, provided that post Devonian erosion has not breached this cover. The probability of these formations being warped in anticlinal structures

is high. Similar favorable conditions should be available in the latitude of the McKay Mountains were Upper Devonian and Tertiary cover is available in combination with a variety of structures.

The Mackenzie Plain and Central Plains within the boundaries of the report are recommended areas of interest for all of the older prospective horizons described in this report. These horizons include the Hume Formation, Bear Rock Formation, Lone Mountain Formation, the unnamed Silurian aged strata and the Mount Kindle Formation. All of these rocks contain porous zones, most reflect changes in basin environment during sedimentation and some have biostromal developments.

The Silurian and Ordovician periods provided basin or marginal conditions conducive to the development of large sized biostromes, which may prove from future investigation to be bioherms. The reef in the Silurian strata in the Root River area of the Canyon Ranges is 2, 300 feet thick. The formation thins to 600 feet on the Silurian shelf located in the McConnell Range. Considerable thinning has taken place in the section in 50 miles and the first target area for this horizon should be located in the Mackenzie Plain, on an anticline. However the 600 foot section in the McConnell Range has porous zones and therefore areas east of the McConnell Range are

prospective for finding hydrocarbon accumulations in the Silurian.

The Bear Rock and Lone Mountain Formations are prospective in the Central Plains because they also were found to be porous in the McConnell Range. These strata have been in an "up dip" position to the source reefs throughout geological time prior to the recent mountain building.

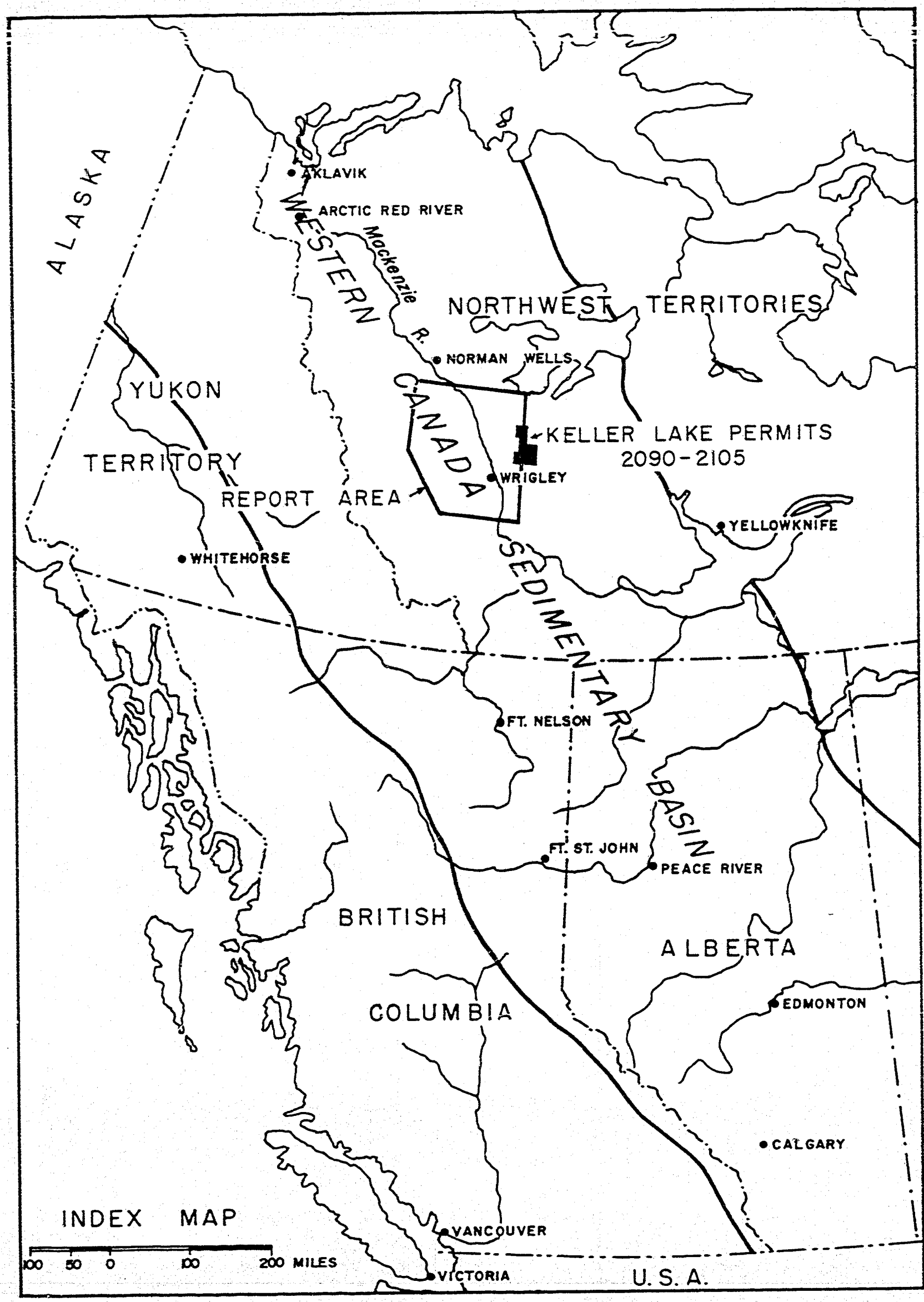
The Hume Formation was generally tight and erosion into the Hare Indian Formation may be general along the front of the McConnell Range as it is at Big Smith River to the north. This erosion would eliminate any prospects for the Kee Scarp in the Keller Lake area and would diminish the prospects for adequate cover over any possible reef development in the Hume Formation. Unfortunately no outcrop other than Pleistocene sandstones were found east of Blackwater Lake. The upper limit of stratigraphic section present under the permits is not known.

Retention of the Keller Lake permits is recommended as they are located in a very favorable area for the exploration of oil and gas. Accessibility to the permits is relatively good considering the facilities available on the Mackenzie River and the existence of a winter road on the Central Plain. Surface conditions appear to be above average for the north country on the permit areas,

as glacial deposits are not inundated with muskeg and good drill sites are available.

Additional evaluations should be made of acreage that might be available on the Mackenzie Plain near Wrigley. A drill hole on a favourable structure here would be the prime recommendation to test the Silurian and Ordovician reefs in an up dip position. Imperial Redstone No. 1 did not test these strata as it bottomed in the dolomites and anhydrites of the Bear Rock Formation.

To facilitate further definition to a "target area" it is recommended that the stratigraphic information of this report be co-ordinated with other regional information known to the client, to construct isopachous and litho facies maps of the prime horizons.



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REPORT ON THE GEOLOGICAL SURVEY - WRIGLEY AREA

NORTHWEST TERRITORIES

INTRODUCTION

The area of this geological field survey is bounded by latitudes 63° to 65° north and longitudes 123° to 127° west. The purpose of the survey was defined to provide detailed stratigraphic sectioning in the McConnell Range of the Franklin Mountain and Canyon Ranges of the Mackenzie Mountains within the latitudes quoted above. Twenty-eight stratigraphic sections were measured totalling 60,000 feet of stratigraphic thickness, samples were collected and described on an average of every 15 feet of thickness. These data are recorded on lithological logs and all samples are crushed and stored in bottles and boxes. A detailed map, on a scale of 1" = 4 miles, showing structure and formation distribution has been included in the report; it has resulted as a by-product of the reconnaissance required to locate stratigraphic sections.

The geological field party was comprised of five geologists who were transported and supplied by aircraft out of Fort Nelson, B.C. Geologists were F.J. Halkow, C.D. McCord, R.G. Perry, H.K. Roessingh and H.R. Young. A G-2 helicopter of Associated Helicopters Ltd. piloted by D. McKay and serviced by T. Manning and a float equipped Cessna-180 of Gateway Aviation, piloted by J. Evans provided full time support to the survey operations. The field cook was W.E. Oreilly

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of Dawson Creek, B. C.

All of the sectioning was completed by the party during June and July 1961 from camps located at Wrigley Airport, Blackwater Lake and Foran Lake. Summaries of sections, profiles, sample crushing and microscope examination were completed in the field, evenings or during bad weather.

R. Hoenson of Link Downing Cooke & Co. Ltd. was draftsman and designer of the report layout, F. J. Halkow was a co-author and assisted R. Hoenson with proof reading. The author extends his appreciation to all personnel for their efforts and co-operation in the succe ssful completion of the geological survey.

Fossil identification on all sections and formations was made by Dr. Samuel J. Nelson of the Department of Geology, University of Alberta. Quotations from his report are used liberally throughout discussions of various formations in the text that follows.

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Clive D. McCord. P. Eng.
Alberta British Columbia

HISTORY OF EXPLORATION AND PREVIOUS GEOLOGICAL WORK

A summary of the early exploration work in the Northwest Territories is given by G.S. Hume in the G.S.C. publication "The Lower Mackenzie River Area", and a more detailed review of the period prior to 1920 in the G.S.C. publication "The Mackenzie River Basin" by Camsell & Malcolm.

The first white man to set foot in the area under review was Alexander Mackenzie, after whom the Mackenzie River is named; but the first geologist to enter the area and report on it was McConnell in 1888. His name has been perpetuated in the McConnell Range of the Franklin Mountains. In 1908 Joseph Keele explored the Keele River from its source to its junction with the Mackenzie River.

The Norman Wells Field was discovered by the Northwest Company (a subsidiary of Imperial Oil Limited) in 1920, at a well located by Dr. T.A. Link, a senior member of Link Downing Cooke & Co. Ltd. As a result of this discovery the Geological Survey of Canada increased exploration work and reports on field work by G.S. Hume, E.M. Kindle, A.E. Cameron, M.Y. Williams and E.J. Whittaker were published in the 1920's.

The entry of Japan and the U.S.A. into the Second World War resulted in the formation of the Canol Project started in 1942. The

project was designed to explore and drill for oil in Fort Norman and adjoining areas and concurrently a crude oil pipeline was constructed to tidewater at Skagway, British Columbia and Fairbanks, Alaska. This was the first large scale exploration work undertaken in the area and resulted in many useful reports, which have been summarized in C.G.S. report by G.S. Hume and T.A. Link.* Reports of the individual geologist have not been published, but are available for examination. Those reports which pertain particularly to the area are:

Keele, R. East Fork of Little Bear River & Kay Mountains	- R. M. Hart
Dahadinni River	- Lt. G.D. Bath
Redstone River	- W.P. Hancock
Wrigley River & Johnson River	- Lt. V.B. Monnett
Mackenzie River from Camsell Bend to Ft. Norman	- Lt. G.D. Bath
Lower Carcajou River Area	- Lt. G.D. Bath
Canyon Creek Area	- F.A. McKinnon

A test well, Imperial Redstone River No. 1 was drilled in the area. It was located 7 miles west of Mackenzie River in the Redstone River Valley, and was abandoned as a dry hole in March 1956 at a depth of 4,874 feet. Additional wildcat wells have been drilled south of Fort Wrigley, all were dry holes, except the recent discovery of large quantities of gas in the Liard River Area near the British Columbia border.

The area from Wrigley to the B.C. border is held solidly under permit by major oil companies. The latest acquisition was made late in 1960 by Pan American Oil Company who paid $253,704.35 for

* Hume, G.S. and Link, T.A., 1945

57,660 acres for one permit on the Wrigley anticline, a structure situated on the Mackenzie Plain.

In the past, the only means of travel for geologists was by float plane to the nearest lake or river and then by foot or canoe along the rivers. Work was time consuming, expensive and restricted to the vicinity of navigable rivers. It was further restricted by the short working season, June to early September. Since 1954, the use of helicopter has both accellerated and widened the scope of geological exploration and major oil companies have continued concentrated programs in the area up to this date. The Geological Survey of Canada conducted the huge Operation Mackenzie in 1957 which included mapping of the Fort Liard, LaBiche, Virginia Fall, Sibbeston, Great Slave, Trout River and Horn River map areas, immediately south and east of this report area.

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PHYSICAL FEATURES

Topography

Physiographic Divisions

The survey area contains four physiographic divisions as defined by Bostock (1948); these are composed entirely of sedimentary rocks. The Interior Plains on the east are bounded on the west by the abrupt rise of the Franklin Mountains, further west the Mackenzie River flows north along the eastern boundary of the Mackenzie Plain, a wide intermontane feature. The west boundary of the report area is located along the Canyon Ranges that form the front of the Mackenzie Mountains. All of these divisions, except the Interior Plains, belong to the Mackenzie Mountain area, a huge eastward arcing extension of the Eastern System of the Canadian Cordillera. These topographic divisions are reflected on the geological map of this report in that the outcrops on the mountain ranges are mapped while the low lying Mackenzie Plain division was not mapped:

> "Franklin Mountains comprise the first ranges of hills and mountains to break the general level of the Interior Plains. They stand out to the east well in front of the Mackenzie Mountains, the main feature of the area, and are separated from them by a broad valley, Mackenzie Plain which is a long, narrow and nearly isolated strip of the Interior Plains." *

The Camsell & McConnell Ranges

Camsell and McConnell Ranges along with Nahanni and Norman

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Ranges comprise the Franklin Mountains:

> "These four ranges are not in line. McConnell Range stands out eastward as a main outer arc supported on the west at the north end by Norman Range and at the south end by Camsell Range." *

These mountains have a topographic character that reflects their structure and stratigraphy. They have been uplifted on relatively narrow, asymmetrical, en echelon anticlines that have ruptured on their east flanks.

McConnell and Camsell Ranges rise on an average to 4,000 feet above sea level or 3,500 feet above the Mackenzie River. The axes of the anticlines are located immediately west of the sharp fronts of the mountain ranges. The oldest rocks outcrop along this axis and the highest peaks in the area, Cap Mountain (5,000 feet) and Mount Clark (4,500 feet), are resistive Cambrian quartzites. The west slopes of the ranges are more gentle than the east scarp and the younger formations are preserved there in an upwarped west dipping position. Flat topped spur-ends composed of Hume Formation strata are believed to be remnants of a peneplain developed prior to mountain building (Page 11 - Photographs). This peneplanation is much more evident on the west slopes of the McConnell Range where the strata, although uplifted, is gently dipping and in fact contains several shallow folds. The resultant topography, particularly in the latitude of Blackwater River, is a range of low flat topped

* Bostock, 1948

mountains, 20 miles in width. In contrast to this widening character of the McConnell Range, the Camsell Range in the report is consistently less than 4 miles in width, a feature that reflects a sharp anticlinal structure.

Stratigraphic compositions result in characteristic physiographic features in both these mountain ranges. In the McConnell's a wide distribution of the thick Bear Rock Formation on the gently dipping west slopes results in a very rugged weathered surface. The caves, castles and bright colors of this formation are quite conspicuous from the Mackenzie River Valley (Page 2- Photographs). In the narrow Camsell Range a prominent topographic feature is the so-called "flat irons" that are present on the west slope along the full length of the range. This feature results from the weathering of the steeply dipping, resistive, layered Hume Formation limestones (Page 14 - Photographs).

The drainage in these ranges is a combination of the main antecedent rivers such as the Mackenzie, Root, Ochre and Blackwater and their numerous consequent tributaries. These tributaries generally express a rectangular drainage pattern. Hodgson Creek near Wrigley and the Saline River are examples of rectangular consequent drainage in the area.

The Mackenzie Plain

The Mackenzie Plain, which for the most part is situated west of the Mackenzie River in the report area, is underlain by recessive weathering Upper Devonian sediments:

> "North of Fort Wrigley, much of the plain consists of flat-lying or gently folded Cretaceous and Tertiary strata through which Palaeozoic rocks project to form the chief elevations and irregularities." *

This physiographic province was not mapped, but a considerable amount of outcrop and structure was noted on cursory observation. Again the topography reflects the structure both in height, relief and in stream drainage. The isolated anticline - scarp mountains Roche-qui-trempe-a-l'eau and Mount Gaudet that rises abruptly 1,000 feet above the Mackenzie Plain are considered to be an extension of the Camsell Range structure to the south.

A most impressive structure in reference to petroleum accumulation is the Wrigley Anticline whose axis runs in a northwest direction between the Wrigley and Johnson Rivers. Topographic expression of this fold is a broad dome rising 1,700 feet above the level of the Mackenzie River. It is tree covered except for occasional resistive strata that serve to outline the structure. Drainage from this structure is of a consequent radial character.

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Generally the narrow Johnson and Dahadinni Rivers appear to be the main streams of this consequent drainage system in the Mackenzie Plain. The broad valleys of the more mature braided rivers such as the Keele, Redstone and Root are antecedent to the formation of the Canyon Ranges and buckling of the Mackenzie Plain. However, the regional radial drainage of the complete Mackenzie System described by Bostock *, suggests that all of the drainage in the Canyon Ranges must be consequent to the general uplift of the system.

The Canyon Ranges

The Canyon Ranges of the Mackenzie Mountains repeat very closely the topographic conditions noted in the McConnell and Camsell Ranges in that structure is the dominating control in the development of topography. The Canyon Ranges are the front expression of the Mackenzie Mountains; they were formed by the development of several folds including an eastward asymmetrical anticline as in the McConnell Range. However, elevations are much higher. The combination of mature traverse rivers and high elevations results in more rugged topography, thus the name "Canyon Ranges". Tree cover is present only in the inter-range valleys that are in the most part synclines. The lack of vegetation is due partly to high elevations but also results from wide distribution of Middle Devonian and older rocks that are not as conducive to plant growth as are the Upper Devonian shales that outcrop in the Mackenzie Valley and west slopes of the McConnell and Camsell Ranges.

* Bostock, 1948.

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Glaciation

Glacial action has had its effect on the regional topography; in rather subtle ways on the McConnell Range and in dramatic ways on the Mackenzie Plain and Canyon Ranges. On the McConnell Range, all valleys are "U" shaped and mountains have been rounded. Glacial erratics can be found on most peaks including Cap Mountain and Mount Clark. Cover in the form of glacial till and gravels is very light.

Contrasting to this light glacial cover a uniformly thick blanket of glacial sand and gravels covers the low land east of the McConnell Range (Page 1 - Photographs). No pre-glacial outcrop could be found in this area and cover persists even on the higher ground. Drainage is poorly developed and consequently streams have not cut into pre-glacial strata.

Similarly, the Mackenzie River Plain has considerable quantities of glacial gravels and sand blanketing its surface. The cover is not as complete as to the east of the McConnell Range. High ground usually reflects anticlinal structures exposing Devonian rocks. The thickest deposits are generally located along the present course of the Mackenzie River where steep, 200 foot silt and gravel banks are characteristic.

Glacial sculpturing is evidenced by "U" shaped valleys and erratics in the Canyon Ranges as in the McConnell Range. a striking

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physiographic feature is located at Foran Lake where valley glaciers have dumped debris to form a tremendous dam across the pre-glacial valley of the Redstone River. This dam has resulted in the formation of Foran Lake and the cutting of young Redstone Canyon twelve miles to the south. The upstream slope of this dam can be seen in the Kodachrome view of Foran Lake on Page 23 (Photographs). The snow covered alpine topography of the Backbone Ranges, to the west of the report area, is also evident in this Kodachrome.

Climate

The climate of the area is extreme, ranging from summer highs in the order of +95° to winter lows in the -70° range. In addition seasonal temperatures are often extreme, ranging throughout +30° to + 95°. A considerable variation was noted during the past field season in the different topographic regions. In regard to the annual variations the main characteristics that affect the field operations during the season are the amount of precipitation and the date of the spring break up.

This past field season provided average weather for the region in regard to helicopter operations. The weather in June on the McConnell and Camsell Ranges was clear with moderate winds and only short infrequent rain storms. In July when the party was operating out of Foran Lake in the Canyon Ranges the percentage of lost time due to high winds and rain increased 100%. It was evident on several occasions that this inclement weather was local to the Mackenzie Mountain System and did not extend eastward to the Mackenzie Plain. The weather for the month of July in these higher mountains was still quite acceptable for helicopter survey. The vegetation west of the Camsell Range and in the McConnell Range reflects a higher annual precipitation than in the Canyon Ranges, precipitation increased again toward the west in

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the Backbone Ranges. It is apparent that ice accumulation caused valley glaciers to flow eastward through the more arid Canyon Ranges in Pleistocene time.

The 1961 spring breakup season, while average, was still a major factor in survey planning. Camp locations were from necessity located first in the south McConnell Range then north and lastly in the west in the high Canyon Ranges. This procedure corresponded within a matter of hours with the timing of ice break up on the lakes in each area.

The ice went out on the lake at Wrigley Airport in a 24-hour period on May 30th; it went out on the west arm of Blackwater Lake in a 2-day period June 8th and 9th. Foran Lake was open some time during the week June 9th to June 15th.

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Accessibility

Transportation for heavy equipment anywhere along the Mackenzie River is provided on a two week schedule by the Dominion Government owned Northern Transportation System out of Hay River. Alberta. This method provides access to the Mackenzie River. Movement of equipment up the tributary rivers from the west is feasible in summer or winter in the wider graded valleys of the Keele and Redstone Rivers.

Access to the Central Plains east of the McConnell Range would have to be either from the north or south along the winter road between Fort Providence and Fort Norman. This road passes along Blackwater River and Lake and traverses the Keller Lake permits.

For survey purposes the transportation systems on the Mackenzie, Liard and Nelson Rivers were utilized for transporting provisions, camping equipment and fuel down stream from Fort Nelson, B.C. Fuel caches were laid down at Wrigley Airport and the mouth of Blackwater River. Transportation of personnel was achieved with the use of a Cessna-180 float equipped aircraft and a G-2 Helicopter. Numerous, deep large lakes in the eastern survey area facilitated access to all outcrop areas. To the west in the Canyon Ranges landing spots for fixed winged aircraft are few and consequently a four or five place helicopter is a necessity for proper utilization of men and flying time with a party of three or more geologists.

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OBJECTIVE OF SURVEY - FIELD & REPORT PROCEDURE

The consulting firm of Link Downing Cooke & Co. Ltd. was retained by Union Oil of Canada Limited to conduct a detailed stratigraphic study of the sedimentary section exposed in the mountains of the McConnell Range and Canyon Ranges in the latitude of Keller Lake. Emphasis was to be placed on the horizons that would be most prospective for the generation and/or accumulation of hydrocarbons in the subsurface of the plains areas of the region. In this regard, specific attention was to be given to the Bear Rock and Mount Kindle Formations. Complete detailed lithologic descriptions of the Paleozoic Formations were requested to facilitate the correlations of stratigraphy and marinal environments which in turn would permit the projection of these characteristics to areas of no outcrop.

The survey party was organized and equipped to measure, describe and sample sections in the field with the detailed aspect of these requirements in mind. Two strip areas were chosen, one along the Camsell-McConnell Ranges and the second along the Canyon Ranges. The most desirable locations for sectioning were selected to provide as complete a composite stratigraphic section of the Paleozoic rocks as possible. Sections were spaced at equal intervals between the latitude limits of the survey area. Samples were taken as closely as

possible to represent every 10 feet of stratigraphic thickness, or in such cases as the Bear Rock Formation,only often enough to be representative of the formation. These samples were examined optically and fully described in the field and were also crushed and further examined with a microscope. The resultant data includes stratigraphic sections and crushed, boxed, field samples similar to those produced from geological supervision of a stratigraphic test well in the Central Plains Area. The efforts applied to this procedure have proven worthwhile; during subsequent work in the Calgary office paleontological data has defined the boundaries of formations on some sections and these boundaries have been carried through all sections on the basis of the detailed stratigraphic descriptions. In some cases these divisions can be substantiated from field observations, but in many cases the stratigraphic changes were not obvious from megascopic examination. An example of this situation is the definition of the boundary between the lower Lone Mountain limey dolomites of Lower Devonian Age and the non-calcareous dolomites of Silurian Age. These rocks are very similar in all aspects except for the occasional microscopic description of "slightly limey" that recurrs in the sample descriptions of the basal beds of the Lone Mountain Formation. The samples were crushed with a cast iron mortar and pestle and microscope

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examinations were made by use of a 6-volt microscope light powered with an automobile wet cell.

A high degree of accuracy of stratigraphic measurement was achieved in the field. Thickness illustrated on the lithological columns included with this report were scaled off cross sections constructed on a scale of 1" = 100' from taped footages and slope angle readings every 100'. The majority of sections are located at right angles to strike of bedding and frequent checks on dip angles were recorded.

Control of thickness calculations on section lines that diverged from a right angle position was achieved with descriptive geometry. Divergence of this type occurred at locations such as the inaccessible cliffs on the Camsell scarp where it was impossible to traverse at right angles to the strike.

Complicated conditions exist at Section LDC-20 where Bear Rock and Lone Mountain thicknesses are anomalous to those measured in other sections in the same area. Repetition or shortening is most certainly caused by fault zones located in covered intervals. Shortening from intra-formational drag folding was observed in the Bear Rock Formation at Section 6.

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The mapping of structure and consideration of fault zones facilitate the location of uncomplicated sections in the majority of cases. Sections are short and complementary to one another.

Several factors - weather, accessibility, structure and stratigraphy were critical to the final results of the field program. Four composite sections were completed at 30-mile intervals along the McConnell Range, whereas only three similar sections were completed in the Canyon Ranges. The major reason for the curtailed general program in the west was the time required for the completion of Section 22 where extremely thick sections of Devonian, Silurian and Ordovician rocks are present. The Canyon Ranges merit more study both for structural geology and stratigraphy.

Geological Map

The map accompanying the report presents an overall geological interpretation for the entire survey area. Considerable mapping of formation distribution and structure was done from fixed wing aircraft. This data has been used to supplement the information gathered from detail stratigraphic sectioning and reconnaissance flights with the helicopter.

Formation distribution in the Blackwater Lake area has been recorded accurately, but in other areas, such as the Canyon Ranges

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detail in certain stratigraphic periods was not possible. A notable example is the Bear Rock Formation. This formation is continuous along both McConnell and Canyon Ranges, but it has been mapped widely in the McConnell Range, where definition was good, and only sparsely in the Canyon Ranges. Here the upper and lower zones of the Lone Mountain Formation and the Bear Rock Formation have not been subdivided except in a local sense, such as in the vicinity of measured sections. Similarly the distribution of Silurian strata are not mapped accurately in their relation to the Mount Kindle Formation and lower unit of the Lone Mountain Formation. These divisions were not clearly known at the time of the geological mapping.

Structural geology is quite interpretive regarding the traces of thrust faults in many areas. This aspect of the map is discussed under structural geology. Two structural sections are included as part of the geological map.

Distribution of Cretaceous aged strata has been adapted to the map from information available on the map produced by Hume and Link, in their Geological Survey of Canada - Paper 45-16. * Similarly, Tertiary strata distribution has been included on the report map as it has been outlined on the Geological Survey of Canada Map 1055A, 1958.

* Hume, G.S. & Link, T.A. 1945

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Stratigraphic Sections

The enclosed prints of 28 stratigraphic sections are self-explanatory. They include a detailed stratigraphic and paleontology record of all data collected in the field with reference to sample numbers. They also illustrate the formation divisions; bedding thickness and zones containing fossils, porosity and petroliferous staining. Thin bedding includes all beds less than 1' thick. Thick bedding includes all thicknesses greater than 1'. Formation intervals are colored to match those on the geological map and summaries of rock types are provided. A color column is intended for use by the client to illustrate the color of the fresh surface of strata and the lithological log could be tinted to illustrate weathered colors. The original Albannine tracings of these sections are available if different formation boundaries result from additional interpretive investigations.

Diagrammatic Longitudinal Sections

One longitudinal section was constructed along each of the McConnell Range and Canyon Ranges. An arbitrary datum line was chosen along the Middle - Lower Devonian boundary to illustrate the regional characteristics of the formations in these sections.

The "line of the section" has not been illustrated on the

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geological map, in either range. Both sections are located along the axis of the respective mountain ranges in a straight line that is a mean of the points illustrating the stratigraphic section locations. The thinning or thickening and relative positions of formations are illustrated and some stratigraphic definitions have been shown in the Silurian. Large size reproductions have been provided to facilitate further stratigraphic studies within formations.

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STRATIGRAPHY

The stratigraphic table which follows is a summary of all sedimentary rocks examined in the field and described in this section of the report.

Detailed stratigraphic studies were made of all formations of Ordovician, Silurian and Devonian periods with the inclusion of younger Cambrian Formations at some localities. Examination of samples and paleontological data indicate that certain formations have exceptional features; these include the unnamed Silurian strata, the Bear Rock Formation, the Hume Formation and the Hare Indian Formation.

The rocks of the Silurian Period were most outstanding by reason of the location of a reef having a thickness of some 2,320 feet. The reef is believed to be biostromal but it may be biohermal in part, (Photographs - Pages 33 and 35). The reef occurs in the Canyon Ranges in the basin or marginal environment of the Silurian seas. The Silurian strata have biostromal zones in the McConnell Ranges (Photographs - Pages 15 and 20), where total thickness is only 500 feet. This area is believed to represent the self environment in Silurian time.

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The Bear Rock Formation has a very unique texture that has been fully detailed. Inasmuch as the Bear Rock Formation is of particular interest it has received additional attention. The report includes an interpretation for the regional relationships of the Bear Rock to the Lone Mountain Formation.

It is proposed that the dolomite of the Lone Mountain Formation is a primary dolomite; that solution of salts in the evaporite phase of the system caused collapse; that the collapse breccia provided the porosity to facilitate passage of solutions after burial; that passage of these solutions caused a chemical reaction of dedolomitization; that intraformational adjustment was localized in the incompetent altered breccia; all of which contributed to the characteristics of the Bear Rock Formation in outcrop in the Wrigley Area.

The reasons for this proposal are:

(i) primary dolomite is preferred to secondary dolomitization in thick tight sedimentary sections such as in the Lone Mountain Formation. *

(ii) the theory of penecontemporaneous brecciation of sediments in the Middle Devonian evaporite basin is favored to other theories of solution after burial or tectonic movements for the initial phase of brecciation. Anhydrite in Imperial Redstone No. 1; angular remnant cavities resembling salt casts and subrounded boulders in Bear Rock outcrop support this theory. (Photographs - Page 8).

*The reference by Kindle and Bosworth, 1921 to "dolostones" in their description of the Lone Mountain type section supports the theory of a precipitated primary dolomite.

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(iii) the increase in the percentage of limestone in the upper zone of the Lone Mountain Formation and in fragments of the Bear Rock Formation is closely related to the increase in porosity in the Lone Mountain system (e.g. - thickening northward of Bear Rock Formation).

(iv) the presence of the interstrata coarse crystalline dolomites along the Lower Devonian, Middle Devonian contact (Photographs - Page 9). This secondary intrusive crystallization could be related to the passage of dedolomitization solutions through the Bear Rock Formation. The environment at the contact could possibly have favored redeposition of the magnesium.

(v) the abundance of granular to gravel size fragments (Photographs - Page 6) in local areas of faulting and the occurrence of Hume Formation strata and Cambrian quartzites as inclusions in the Bear Rock breccia (Photographs - Pages 3 and 4).

The fossils collected from the Bear Rock Formation are representative of both the Silurian and Devonian Periods. This evidence introduces the possibility that the Lone Mountain-Bear Rock system transcends time lines.

The Hume Formation is given specific mention because of the tendency for the upper zone to become reefoid as noted at Summit Creek (Photographs - Page 29). A very petroliferous, argillaceous limestone of the Hare Indian Formation rests directly on top of these porous Hume strata. Similar conditions in a restricted sense, are described in the Hume Formation at Sections 5, 7, 10, 20 and 21.

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Biostromes are also described under the heading "Kee Scarp". The correlation of this reef to the Kee Scarp of Norman Wells is purely conjectural. The presence of any bioherm in the Hare Indian Formation as far south as the Camsell Range is of greatest importance (Photograph - Page 14).

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STRATIGRAPHIC TABLE

Period	Formation Name or Report Reference	Thickness	Source of Nomenclature
	Pleistocene	?	Unnamed
	Tertiary		
CRETACEOUS	Cretaceous		
DEVONIAN UPPER	Imperial Fm.	1000+	Bassett, 1961
MIDDLE	Canol Fm. Kee-Scarp Fm.	100?	
	Hare Indian Fm.	600	
	Hume Fm.	700 -1600	
LOWER	Upper Lone Mt. Fm. / Bear Rock Fm. (0-1100)	1300 -6000	
	Lower		
SILURIAN	Silurian	400 -2800	Unnamed
ORDOVICIAN	Mt. Kindle Fm.	100 -1900	Restricted Divisions this report Terminology from M.Y. Williams, 1923
	Franklin Mt. Fm.	100 -1500	
CAMBRIAN	Saline River Fm.	0 -900	
	? ? Mt. Cap Fm. ? ?	700	
	Mt. Clark Fm.		
PRE-CAMBRIAN	Lone Land Fm.	?	G.S. Hume Summary Report Part B, 1923

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Descriptions of Formations

Proterozoic Era

Pre-Cambrian - Lone Land Formation

This formation was traversed where the strata crops out on the east face of Cap Mountain. The formation was not described but consists of an impressive thickness of red and green hematitic shales with occasional quartzitic sandstone beds near the top. Main purpose of this traverse was to investigate the sedimentary rocks flanking this formation to the east; rocks of Devonian age were found to be overthrust by the Lone Land shales.

Paleozoic Era

Cambrian Period

Rocks of Cambrian age were mapped throughout the survey area and were found to be present in Sections 2, 9, 11 and 13 in the McConnell Range. Reference to the Cambrian was undertaken primarily to establish the completeness of the Palaeozoic above the Cambrian rocks. No attempt was made to investigate and subdivide the different formations within the Cambrian and the geological map reflects only some stratigraphy in this age group. Cambrian rocks are exposed in the McConnell Range along the axis of the main ruptured anticline and they are partly comprised of the more resistive

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quartzites of the Mount Clark Formation that caps the tallest peaks along the range, notably Cap Mountain and Mount Clark.

Definition of the Cambrian Formations was not as obvious in the Canyon Ranges and no detailed examination was made. Considerable mapping of Cambrian rocks was conducted by observation from fixed wing aircraft. It appears that the Saline River Formation in this area is confined to local basins and that the older formation, possibly Mount Clark, is comprised of alternating quartzites and shale beds. However, their relationship is not well known.

Mount Clark Formation

The Mount Clark Formation was interpreted to be represented by the very resistive, white, highly indurated, fine to medium grained, rounded and well cemented, reddish weathering quartzites. As previously stated, it is this formation that causes the remnant high peaks on the McConnell Range and it is also a very mappable unit. In the McConnell Range its thickness appears to be relatively uniform and it is homogeneous in character. To the west in the Canyon Ranges (Photographs - Page 25), the quartzite as a unit is not so readily defined. It appears that several quartzite beds are interbedded with Cambrian shales and the nature of the shales changes from north to south. In the north the shales and quartzites are very

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hematitic and to the south they are drab green grey and black. This formation was described in three sections only, 13, 11 and 2, all of which are located in the McConnell Range. Williams * included this quartzite in the Mount Cap Formation. The division used in this report, reflects the units that are best mapped in the field, a condition that in return reflects a lithology change. The formation boundary is not substantiated by palaeontology as macro fossils were not found in the Cambrian. No attempt was made to measure this section.

Mount Cap Formation

This formation apparently consists of a very soft recessive weathering strata because the intermontaine valleys are located in this stratigraphic interval. Rocks of this age were examined at only two locations, Section 2 and Section 11. At Section 11 (Photograph - Page 18), it outcrops on a scree covered ridge that contains a high percentage of fissile, grey shale and some sandstone. A few trilobite fragments were found in crushed samples but it was impossible to identify them as to exact age. Shale is medium grey, micromicaceous, weathers olive green grey with slight red stain; the sandstone is fine grained, rounded, calcareous, quartzose with abundant secondary limonite and fair intergranular porosity. The trilobite

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fragments found here and trilobite and agnostid fragments found in a Saline River Formation outcrop four miles north of the Blackwater Lake Campsite, were the only organic remains observed in the Cambrian. The thickness of 700 feet measured at Section 11 is considered to be representative of the total Mount Cap Formation.

Saline River Formation

The more outstanding anhydrite beds of the Saline River Formation were noted in small reddish coloured outcrops at the base of mountain slopes in the intermontane valley along the McConnell Range. The formation as a whole is not a readily mappable unit in that the dolomites of the formation do not weather with characteristics appreciably different than the dolomites of the Franklin Mountain Formation. During section work and particularly in the final compilation of stratigraphic sections, the Saline River Formation was observed to be a readily definable unit with a thickness approaching 1,000 feet. The Saline River Formation is described in four Sections, 14, 11, 9 and 2, all in the McConnell Range. The formation is composed of argillaceous dolomites that are tight, thin bedded, sometimes sandy near the top and generally weathering yellow-grey or yellow-orange similar to the overlying Franklin Formation.

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It is a succession of dolomites, limestones, shales, minor sandstone stringers and anhydrite (Photographs-Pages 12, 19 and 21). Shales are black to green and occasionally red, platy, soft, crumbly and contain salt casts. Pink anhydrite is often interbedded with the shale. Sandstones exhibit an iron oxide coloradion on weathered surfaces; they are composed of well cemented rounded quartzite grains; chert beds are also present. Restricted sections of the carbonates are brecciated and rubbly, with much coarse crystalline dolomite and calcite in the matrix. In Section 14 a very diagnostic form of brecciation exists. The zones are less than one foot thick and are packed with thin slabs of argillaceous dolomite 4 to 5 inches long and 1/2 inch thick; they have rounded ends and are in a matrix of dolomite. This unique texture probably represents brecciation from marine waves, currents or tides. The Saline River in the Canyon Ranges is restricted to a basin north of the Keele River. In the latitude of Foran Lake, the Franklin Formation was mapped to be resting directly on quartzites and shales of the Mount Clark Formation. The Saline River Formation was not described in sections of the Canyon Ranges, but some stops were made at Cambrian outcrops on reconnaissance flights. At an outcrop on the right bank of Inlin Brook, anhydrite and shale beds were

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examined and were considered to be equivalent to Saline River strata described in the McConnell Range . Further up stream and stratigraphically higher was a light tan, blocky weathering thin bedded sequence that is probably yellow weathering dolomites of the Saline River Formation as examined at Section 9. These dolomites are fairly wide spread as far north as the Little Bear River and they directly underlie the more resistive dolomites of the Franklin Mountain Formation. The shales mentioned in association with anhydrite in this area are a very hard, sharp, jet black deposit and were confused in air observation with Hare Indian shale. They are unfossiliferous but there is little doubt that they are of Cambrian age, as they are distinct from Hare Indian shales on close comparison. The upper 200 feet of the Saline River at Section 9 consists of thin bedded, tight, yellow-orange to yellow-grey weathering, argillaceous limestones and limy dolomites, underlain by another 200 feet of hard, resistive, thick bedded, cliff forming dolomites containing chert bands, thin lenses of sandstone or sandy limestone and siliceous dolomite.

The Saline River Formation contains the youngest strata of Cambrian age in the report area and is conformably overlain by the Franklin Mountain Formation of Ordovician age. Agnostic and

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trilobite fragments were collected from a limestone outcrop four miles north of Blackwater Lake Campsite (Photograph - Page 19). The strata are considered to be Saline River Formation but the fossils could correspond to trilobite fragments found in the Mount Cap Formation sandstone at Section 11.

> "The agnostic fragments indicate an age from Middle Cambrian to Ordovician. The chances are high that the rocks are either Middle or Upper Cambrian." *

Ordovician Period

Rocks of this age are a prominent feature of the outcrop in the Wrigley area. The period is represented by two units that have been defined by Williams** and were named the Franklin Mountain Formation and Mount Kindle Formation. Each formation has its diagnostic characteristics and each was readily mappable in the restricted sense applied in this report. Formerly there has been considerable confusion regarding boundaries of the periods of deposition in the Paleozoic sediments. The field work has established well defined formation boundaries in the Ordovician and other periods. The initial definition was established by identification of fossils but formation boundaries thus established proved to correspond with lithological changes used in the field to mark the limits of mappable units.

* Nelson, S.J., 1961
** Williams. M.Y., 1922

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The lithologic changes that determine the boundaries are subtle in some instances, such as between the Mount Franklin Formation of the Ordovician age and the Saline River Formation of Cambrian age. The Franklin Mountain Formation contains rare, poorly preserved silicified corals. No definite age determination could be made for the formation; it is assumed to be Lower Ordovician. The Mount Kindle Formation has a prolific fauna of Gamachian or Richmondian age and fossil identification in the zone of the Ordovician-Silurian contact as restricted in this report verified the upper limit to the Mount Kindle Formation as indicated by lithological change. The Mount Kindle Formation is restricted to a thin horizon averaging 300 feet thick. A thicker zone (500 feet) lying above the Mount Kindle Formation has been identified as Silurian in age. The age determination was not available in the field but a preliminary division had been made, accepting what was considered to be a thick Mount Kindle Formation (Williams), into two units "Upper Kindle" and "Lower Kindle". These divisions were made on the concentration of fossil material in the "Lower Kindle" and also on the change from the very dark grey to black weathering color of the "Lower Kindle" to the light grey tan weathering color of the "Upper Kindle".

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Franklin Mountain Formation

The Franklin Mountain Formation was described in Sections 2, 6, 9 (Photograph - Page 17), 11 and 12 in the Camsell Range and Sections 19 and 24 in the Canyon Ranges. In the west the Franklin Mountain Formation is thin and may possibly lense out entirely southwest of Foran Lake. Here the formation was found to be 100 feet thick lying directly on Cambrian quartzites. The formation thickens considerably northward towards the Keele River where there are excellent exposures on mesa type mountain peaks. In the McConnell Range the formation has a uniform lithology and a relatively uniform thickness, ranging between 1,100 feet and 1,500 feet.

Outcrop areas of the formation are quite predictable in that they are always associated with the cores of anticlinal structures. The formation is a readily mappable unit with its weathered yellow to tan grey color and angular platy character (Photograph - Page 15). The dolomites are tan grey, argillaceous, very finely crystalline, and are alternately thick and thin bedded.

Generally the top of the formation contains maroon and grey shale laminations and beds; light grey to white poorly

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sorted quartzose sandstones, that are well cemented and thick bedded; and medium grey, very finely crystalline, slightly argillaceous, dolomitic limestone that is in part thin bedded and weathers with the same characteristics as the dolomites. The basal part of the formation is comprised solely of dolomite which is predominately argillaceous, thin bedded, often siliceous and generally more recessive than the upper portions. The formation is tight with the occasional zone having poor to fair vuggy porosity, probably as a result of fracturing during mountain building and solution by subaerial erosion.

The upper contact with the Mount Kindle Formation appears conformable in most sections, however the discontinuity of the upper yellow-orange dolomite and maroon shales may be resultant from erosion on the Franklin Mountain Formation. A remnant or high on this Franklin Mountain unconformity may be a major factor contributing to the reef development in the Silurian strata at Section 22. The lower contact with the Saline River has been detailed at Section 9; it also appears conformable but sandstone, argillaceous dolomite and limestones of the Saline River provide stratigraphic definition to this disconformity.

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Mount Kindle Formation

The Mount Kindle Formation is restricted to a narrow zone that varies between 110 and 330 feet thick in the McConnell Ranges. The formation boundaries are well defined, both lithologically and paleontologically and in spite of the formation thickness, the continuity and homogenity of the formation in the area is striking. The formation is distinctively dark grey to black colored on the weathered surface and is readily separated from the lighter weathering Franklin Formation below and the Silurian strata above.

An exception to the consistently thin character of the Mount Kindle Formation in the McConnell Range exists in the Canyon Ranges south of the Redstone River where the Mount Kindle Formation thickens to 1,900 feet. All of the formations in the Silurian and Devonian periods stratigraphically above the Mount Kindle also display similar thickening. This marked thickening in all of these subsequent periods of sedimentation reflects a basin environment that contrasts to a shelf environment to the northeastward in the McConnell Range.

The formation is comprised entirely of dolomite, dark grey-brown to black, finely crystalline, slightly argillaceous, hard,

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often siliceous with chert inclusions which usually exhibit a flattened nodular, or banded configuration. Generally the dolomites are tight, massive bedded and a coral fauna of both colonial and individual types are common. Thin colonial coralline zones weather rubbly and have a reefoid character; they often contain fair to good pin point and vuggy porosity.

The thick Mount Kindle Formation in the Canyon Ranges contains dolomite, very similar to that above, but it is considerably more siliceous with abundant, black and white, chert nodules. Part of the thickening is due to an additional section of thin bedded to slabby limestones that are brown-black, cryptocrystalline with prominent deep brown to red mottling and staining. Calcite inclusions are abundant and the zone weathers brown-grey, rubbly.

It is noted here that the Mount Kindle Formation is restricted to the very fossiliferous base of a formation defined by Williams * and does not include the thicker upper zone that has proven to be of Silurian age. The diagnostic fossil suite for the restricted Mount Kindle Formation of this report is listed below. All of the fossils in the suite are Upper Ordovician with the exception of Manipora feildeni (Etheridge) in Section 19 and Saffordophyllum

*Williams, M.Y., 1922

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in Section 3 which have correlatives in the Red River Formation of Manitoba. The occurrence of Manipora may represent the Middle Ordovician in the sparsely fossiliferous lower portion of the thicker Mount Kindle Formation of Section 19 and indicates that the Middle Ordovician sea was restricted in the west map area (the Canyon Ranges). Saffordophyllum was found above other fossils diagnostic of Upper Ordovician at Section 3 and consequently does not represent Middle Ordovician. The presence of these younger fossils immediately above the Franklin Formation, in the McConnell Range is evidence of the expansion of the seas in Upper Ordovician times to the eastward over the shelf areas.

> "Nearly all the Upper Ordovician suites occur in the lower Kindle and belong to a horizon very high in the system: equating with the Stony Mountain formation of Manitoba. The age is considered to be Richmondian and/or Gamachian. Older Ordovician suites may be present as at Section 19, YH 2655. These could belong to the horizon of the Red River formation of Manitoba considered Middle or low Upper Ordovician. The writer, however, does not advise such correlation unless there is evidence of a definite stratigraphic break with the overlying Stony Mountain correlatives." *

The fossils identified by Dr. Nelson that were collected from the Kindle Formation are:

(i) "A well developed very high Ordovician fauna of Richmondian or Gamachian age - equivalent to the Stony Mountain formation of Manitoba." *

* Nelson, S.J., 1961

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Catenipora sp. nr. C. robusta (Wilson)
Calapoecia anticostiensis Billings
Grewingkia trilobatum (Whiteaves)
Plaesiomys sp.
Lepidocyclus perlamellosus (Whitfield)
Diceromyonia storeya (Okulitch)

(ii) Upper Ordovician (Richmondian or Gamachian)

C. agglomerata (Whitfield)
? Bighornia sp.
Favistella alveolata (Goldfuss)
? Grewingkia sp.
Lepidocyclus capax (Conrad)
Manipora sp., nr. M. amicarum Sinclair
Manipora irregularis (Teichert)
Manipora feildeni (Etheridge)
? Palaeofavosites alveolaries (Lonsdale)
Palaeophyllum sp., cf. P. stokesi
(Milne-Edwards & Haime)
Palaeophyllum halysitoides (Wilson)
? P. prolificus (Billings)
Saffordophyllum n. sp.
? Syringopora sp.

(iii) Upper Ordovician (Richmondian)

Plaesyiomys occidentalis (Okulitch)
Pterinid pelecypod

(iv) Middle or Upper Ordovician
Manipora feildeni (Etheridge)

(v) Ordovician - no finer clibration possible.

Trochonema sp. (s.l.)
? Nyctopora sp. Not diagnostic.
Palaeophyllum n.sp. Not diagnostic.

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Silurian Period

Rocks of Silurian age have proven to contain a 2,300 foot thick reef where they outcrop in the Canyon Ranges between the Redstone and Root Rivers (Photograph - Page 25). The discovery of this reef was unexpected. In fact, until the identification of diagnostic fossils collected from the "upper zone" of the Mount Kindle Formation, the presence of Silurian in the area was not known. However, Kindle and Bosworth * described 500 feet of dark grey massive coralline limestones at the base of the type section at Lone Mountain. They thought that the poorly preserved corals represented a Silurian age. The Silurian was represented on the field map as the upper unit of the Mount Kindle Formation and the immediate assumption was that the lower and upper zones were of the same period. ** The fact is that the Franklin Mountain Formation and the Mount Kindle Formation are of Ordovician age and an additional formation of Silurian age is present. No name has been given to these rocks in this report. Existing terminology, such as "Ronning Group", could not be assigned to the restricted zone mapped as "Silurian" on this survey.

The Silurian rock boundaries have, in the initial sense, been defined on fossil evidence but this fossil evidence is not everywhere available and boundaries have been extended on the basis of

*Kindle, E.M. & Bosworth, T.D., 1921
**Williams, M.Y., 1922

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lithologic changes. The change at the Mount Kindle Formation contact is mainly a change in the weathered color, dark grey in the Mount Kindle and banded tan grey in the Silurian. The contact with the overlying Lone Mountain can be quite closely defined on the stratigraphic sections, even though the lithologic change involves only the change from a dolomite to a slightly limey dolomite. The very thick section of Silurian at Section 22, where the reef is present, thins considerably to the northwest in the Canyon Ranges where it is 1,630 feet thick at Foran Lake (Section 19) and appears to thin further to the north on the basis of aerial districution on the geological map.

In the McConnell Range the Silurian strata has the uniformity and homogenity of those formations that have been described in the Ordovician. The thickness ranges between 500 and 650 feet and is indicated to be thinning to the north of Saline River by a 390 foot interval measured in Section 13. Wherever the Silurian was examined, zones were found abundant in colonial corals, containing fair to good porosity and generally displaying biostromal characteristics (Photographs - Pages 15 and 20).

The formation is composed of resistive very finely crystalline dolomite that is hard and silty with chert concretions, but can be recessive, soft and argillaceous to earthy. The dolomites,

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thin bedded platy, alternating light and dark grey, are fossiliferous with restricted rubbly weathering zones of dark grey beds where fossils are abundant. Porosity is absent to poor except in the thin zones where some vuggy porosity is present.

In the Canyon Ranges at Section 22, the upper 430 feet of the formation is composed of bedded dolomites as described above, but is entirely thin bedded and is banded grey-yellow to dark grey, similar to the banded limestones of the lower Lone Mountain Formation immediately above (Photograph Page 34). The reef below this thinly bedded dolomite is also a dolomite but is continuously thick bedded with a massive shapeless reefoid weathered expression (Photograph - Page 33). It contains good vuggy and intercrystalline porosity, traces of disseminated black flecks and patchy dead brown staining that may be pyrobitumen. The reef is fossiliferous, but the recovery of good specimens is very difficult.

> "Most Silurian fossils come from the upper Kindle and could be interpreted as Middle Silurian. The writer feels, however, that our knowledge of northern Silurian is not yet advanced enough for such delimitation. Hence he has not attempted any finer calibration other than a Systemic one."*

Fossils identified in the collection from the Silurian include:

* Nelson, S.J., 1961

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(i) Pentamerid brachiopod fragments probably belonging to either Conchidium or Virgiana.
Favosites niagarensis Hall
Favosites sp., c.f. F. niagarensis Hall
Halysites sp., cf. H. catenularius Linnaeus
Halysites sp., cf. H. lata Tchernyschew
Pschostylus guelphensis (Whiteaves)
Halysites sp., cf. H. infundibuliformis Buehler

(ii) "Generic or specific identifications are very uncertain because of intense silicification."
"The collection could be either Silurian or Upper Ordovician. The generalaspect is Silurian." *
Brachiopod and gastropod moulds.
Clathrodictyon-like stromato poroids
? Calapoecia sp. or Heliolites sp.
? Favosites sp., nr. niagarenensis Hall
? Favosites sp., nr. F. gothlandicus Lamarck
Orthocone cephalopod siphuncle fragments
Palaeofavosites n. sp.
Palaeophyllum n. sp.
Pentamerid brachiopods.

(iii) Fossils collected from the Silurian at Section 22.

Above reef:

Stromatoporoidal? structures - not identified
Favosites sp.

In Reef -

Halysites sp., cf. H. mirabilis Tschernyschew
H. sp., cf. H. sussmilchi Etherdige

? Favosites sp., - too highly dolomitized for identification.

Highly dolomitized trace of a probable orthocone cephalopod.

*Nelson, S.J., 1961

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Devonian Period

Lower Devonian

Lone Mountain Formation

The Lone Mountain Formation was defined by Kindle and Bosworth * who described a type section on Lone Mountain at Camsell Bend. The formation here is a homogeneous thick series of thin bedded, light grey and black banded "dolostones" and dolomitic limestones (Photograph - Page 30). In the map area this formation is split into two units referred to as the lower and upper.

The breccia of the Bear Rock Formation could be considered a facies that separates the two units of the Lone Mountain Formation. A full discussion on the distribution and origin of the Bear Rock breccia is presented in the consideration of the Bear Rock Formation below.

The Lone Mountain Formation in the McConnell Range is primarily represented by the continuous lower unit whose thickness ranges from 300 feet to 590 feet and repeates the uniform depositional conditions represented by other thin but continuous formations in the Silurian and Ordovician Periods. The upper unit of the Lone Mountain Formation has been described in the McConnell Range but is restricted

*Kindle, E.M. & Bosworth, T.D. 1921

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to the south in Section 1 and 3. It thins rapidly from 1,940 thickness in Section 5 on the Camsell Range to zero near the Ochre River. The thinning results from a transition from a basin environment to a shelf environment and is also complimentary to a thickening of the Bear Rock Formation from 300 feet at Section 5 to 1,000 feet at Ochre River (see Longitudinal Section).

The lower unit of the Lone Mountain Formation in the McConnell Ranges is quite similar in lithology to the Lone Mountain type section described by Kindle and Bosworth.* It is comprised of dolomite that is light brown-grey, finely crystalline, slightly argillaceous, generally tight with some patchy good intergranular porosity and is alternately thick and thin bedded. The dolomite as in Section 1 always has a percentage of beds that are slightly calcareous. The upper unit of the Lone Mountain Formation changes from a dolomite in the south to a dolomitic limestone in the north, similar to the lithological change noted in the fragments of the Bear Rock Formation. In Section 1 it is comprised of thick bedded rubbly weathering limestone that is light grey, dolomitic, finely crystalline and weathers cavernous with a yellow stain. Coarse crystalline, calcite veins are common.

*Kindle, E. M. & Bosworth, T. D., 1961

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A condition that is unique to the upper unit is the very high percentage of coarse crystalline dolomite and in some cases calcite and barite that is found to be present at the boundary with the Hume Formation. This condition was described at Sections 4 and 5 (Photographs - Pages 9 and 13) in the Camsell-McConnell Ranges and in all of the sections in the Canyon Ranges. The coarse crystalline carbonates are intrusive material in that they are present as beds between the stratified Lone Mountain dolomitic limestones. Explanation of this phenomenon is that solutions entered along and adjacent to the Lone Mountain-Hume Formation contact (which probably is a disconformity) after brecciation of the Bear Rock or during orogeny. This interstrata coarse crystallization also extends into the Hume Formation. The thickness of the total zone is normally only 100 to 200 feet, but in some instances, such as at Sections 4, 5 and 22 the zone involves a section of 1,300 feet.

The contact zone between the Bear Rock Formation and Hume Formation may represent an unconformity that combines:

(i) disconformity at the top of the Bear Rock resulting from a regression of the Lower Devonian seas at the time of salt solution in the formation and

(ii) a disconformity at the end of Lone Mountain time. However all contact zones between the upper Lone Mountain and Hume Formations appeared conformable in this report area (except for the presence of the inter-strata coarse crystalline zone), which is in accordance with Stelk's conformable and transitional contact description at Bear Rock.*

*Warren P.S. & Stelck, C.R., 1949

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"Identifiable fossils from the Lone Mountain are Devonian, but it cannot be proven whether they belong to the Lower or Middle portion of the System." **

The fossils identified include:

Upper Zone

Amphipora sp. (very poorly preserved)

Lower or Middle Devonian, likely the latter.

Remnants of coralline structure related to Favosites limitaris Rominger.

Lower or Middle Devonian, likely the latter.

Lower Zone

?Amphipora sp.
?Syringopora sp.

Strophomenid brachiopods.

"I cannot identify these as to age. I would guess that they may be Silurian on negative evidence, i.e. I have not yet seen anything like them in the Devonian." **

Silurian?

Possible stromatoporoid -- internal structures not preserved.

"On the basis of the type of calcification (and assuming it was a stromatoporoid) I would be inclined to assign a Devonian age as being more probable than a Silurian one." **

Devonian?

**Nelson, S.J., 1961

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has been noted from continued solution of the Bear Rock breccia (Photograph-Page 16). The presence of material that is definitely foreign to Lower Devonian lithology is evidence of some brecciation by faulting. In a small canyon 4 miles south of Blackwater Lake, the Bear Rock Formation breccia contains rounded boulders of Cambrian quartzite and anomalous contorted slabs of bedded Hume Formation limestones (Photographs - Pages 3 and 4). In addition, drag folding was observed in the Bear Rock at Section 6 and consequently the large volume of finer brecciation that constitutes the matrix of the formation in many localities probably developed during orogenic adjustment.

Mountain building is not proposed as the sole or original factor to cause brecciation in the Bear Rock. On the contrary, the numerous angular, powdery limestone inclusions and the abundance of subangular breccia fragments support the theory forwarded by Warren and Stelck* that the formation was originally a collapse breccia resulting from salt solution. The soft powdery, angular limestone inclusions are probably remnant from the solution of impure anhydrite. The fragments that show some rounding may have been penecontemporaneous in origin, being rounded from short limited

*Warren, P. S. & Stelck, C.R., 1949.

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transportation (0.5 miles)** during recession of Middle Devonian seas; or the moderate rounding may have resulted from circulation of solutions in the formation after initial collapse. This primary brecciation was the factor that caused a concentration of intra-formational adjustment in this formation.

Direct evidence of the original presence of salt in this formation, such as the location of actual anhydrite or gypsum, was not found in any of the stratigraphic studies, however gypsum has been described in the formation where it was examined at the north end of "Bear Rock" by Stelck,* and in Imperial Redstone No. 1.

A lithologic change in the Lone Mountain-Bear Rock system parallels the regional distribution of the Bear Rock breccia. This phenomenon is the change from the homogenenous thick series of dolomite and dolomitic limestone strata of the Lone Mountain Formation at Camsell Bend to the bedded limestone of the upper unit of Lone Mountain and the limestone fragments of the Bear Rock Formation to the north and east wherever the Bear Rock breccia is developed. The lower unit of the Lone Mountain Formation is unaffected by this change (except at Section 22) and remains a series of alternately thin and thick bedded dolomites throughout the map area.

*Warren, P.S. & Stelck, C.R., 1949
**Pettijohn, F.J. P. 406, 1949

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The phenomenon described in relation to the Lower Devonian-Middle Devonian contact (interstrata coarse crystallization) is present where the Hume Formation lies directly on the Bear Rock Formation just as it was present where the Hume Formation lies on the upper zone of the Lone Mountain Formation. Probably these veins of coarsely crystalline calcite and dolomite are related to the lithologic change from dolomite to limestone in the Bear Rock and upper Lone Mountain Formations below the contact.

Fossils have been found at several locations in the Bear Rock Formation and in all but two cases have been identified as Lower Devonian in age. The exceptions are, at Section 12 BR where a Silurian age fossil was collected and Devil's Kitchen where Middle Devonian-Hume fossils were collected. There is no doubt that this formation is Lower Devonian in age and in lieu of a paleontological explanation for the exceptions the fossils could easily be out of position as a result of plucking and brecciation by faulting. Indeed, Section 12 BR is considered to have been measured on a fault scarp.

> "The Bear Rock Formation, hitherto considered pre-Hume contains definite representatives of both the Silurian and Devonian Systems. The Devonian fossils are particularly interesting in that some are definitely a Hume assemblage." *

*Nelson, S.J., 1961

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- such as those collected at the "Devil's Kitchen", a Bear Rock outcrop 7 miles southwest of the Blackwater campsite, (Photographs - Pages 5 and 6). The suite includes:

Syringopora sp.
Favosites nitella Winchell
Favosites alpenensis Winchell
Atrypa sp., cf. A. andersonensis Warren
Gastropod: indet.
Dechanella sp.

"These Bear Rock fossils are definitely Middle Devonian (Eifelian) and are a Hume assemblage." *

Other fossils collected from the Bear Rock Formation are as follows:

West of Cap Mountain

?Clathrodictyon sp.
Favosites limitaris Rominger

"This collection is Devonian and is suggestive of a Middle Devonian (Eifelian) Hume correlation." *

Section 8 West of Twin Peaks

?Syringopora sp. "(generic identification very uncertain) Not diagnostic."*

Amphipora sp.

"Lower or Middle Devonian, probably the latter." *

Section 12 BR Southeast of Mount Clark

Halysites sp., nr. H. nexus Davis
Halysites sp. (immature specimen)

Silurian.

*Nelson, S.J., 1961

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Section 17 Foran Lake

"Extremely poorly preserved ostracod or brachiopod fragments."*

A variety of characteristics described on different occasions at different localities in the Bear Rock Formation in the McConnell Range are recorded below and are excerpts from summaries written in the field:

Camsell Range

The Bear Rock Formation is only 300 feet thick at Section 5 in the Camsell Range, where the matrix is a limey earthy dolomite containing fragments of dolomite, dolomitic limestone and some limestone. Calcite veins are common and contribute to the rubbly, yellow stained surface that develops when weathered. A distinction is made at this locality between the brecciation that developed in the 1,740 feet thick upper unit of the Lone Mountain Formation from extreme concentration of calcite and dolomite veins in some zones. These breccia possess a clean matrix, original bedding is quite evident and weathering does not result in vuggy cavernous outcrop. The Bear Rock breccia contains solution cavities and "box works" as is common to the formation at other localities. It contains small fragments 1" in diameter, light and medium grey, finely crystalline, often earthy and soft, eroding and leaching out easily leaving angular cavities in the harder matrix. Dolomitization or "dedolomitization" after brecciation is evidenced by the presence of a 30 foot zone containing both limestone fragments and limestone matrix.

Southeast of Wrigley Airport (Photographs - Page 9)

"Typical" Bear Rock breccia was described at this location. Interbedded limestones and dolomites of the upper zone of the Lone Mountain Formation rest above the breccia. These beds have a considerable "intrusion" of coarse crystalline calcite crystals and

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breccias have developed in some beds. They are comprised of a matrix of the coarse crystalline calcite with fragments of laminated Lone Mountain dolomite. The true Bear Rock breccia below the Lone Mountain strata obviously originated from the thin bedded limestone with which it interfingers. The limestone is very finely crystalline with faint thin argillaceous laminae and scattered pinpoint vugs. Fragments are angular in the breccia and 1/8" to several inches in diameter; they are cemented in a light grey, very finely crystalline limestone matrix. Some coarse calcite crystals are present and angular vugs are common. Coloring on the weathered surfaces is grey and ochre; the presence of barite may contribute to this coloration.

West of Williams Peak (Photographs - Pages 7 and 8)

Massive, shapeless outcrops characterize the Bear Rock in this locality as it does in most instances. Three fault zones were noted in this outcrop which is considered to be the basal zone of the formation. Inclusions vary from a fine grained dark brownish-grey dolomite to a whitish and yellowish-grey argillaceous and chalky limestone. They are minute to several inches in diameter and are mostly angular, but some pieces show some rounding of the edges (Photograph - Page 8). The chalky limestone weathers out at surface, leaving angular cavities which give this formation the characteristic vuggy "box work" appearance (Photograph - Page 8). In some cases the chalky limestone has only been partially removed showing the residue in a soft pliable condition. The matrix consists of a medium grey, fine grained, hard limestone, which is fractured, contains some secondary calcite on fractures and some scattered small vugs. Some light brown staining occurs in parts. The rock weathers to a light grey, mottled with yellowish-grey and forms a sharply angular rubble in the scree. Local spots have abundant quantities of earthy rust colored limonite (Photograph - Page 4).

About 14 inches of finely bedded limestone breccia overlies the massive breccia, the bedding being warped and broken. The breccia is similar in composition to the one below it and is in turn overlain by the same massive breccia for about 6 feet. In one locality it seemed that the underlying massive breccia had ruptured the finely bedded limestone breccia and flowed above it, but in

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another locality the warped finely bedded breccia seemed to be breaking up and forming an inter-connecting breccia. These features suggest two phases of brecciation in that the coarse breccia is comprised of fine breccia fragments. This characteristic has been recorded in a Photograph - Page 3.

These fine and coarse breccia zones are what can be seen from a distance as rudimentary bedding. The porosity of the breccia appears of an excellent vuggy quality on the weathered surface, but the majority of the vugs and caves result from sub-aerial erosion (the solution of inclusions that are not inter-connected). There are however, some scattered true vugs and considerable interfragmental porosity in the breccia matrix. Measurements of Bear Rock Formation in Sections 1 and 3 indicate a marked thickening of this formation to 750 feet from the 300 feet measured in the Camsell Range. The thickening is upward at the expense of the upper zone of the Lone Mountain Formation. It has thinned from 1,940 feet to 450 feet in the same distance.

Blackwater Lake Area

Outcrop south of Blackwater Lake and downstream along Blackwater River is outstanding because of its intense salmon coloring and its "hoodoo" like weathering. Both outcrops appear to have resulted from the weathering of a zone in the Bear Rock that has experienced much secondary brecciation due to intraformational movement and faulting.

The obvious and repeated characteristics of the Bear Rock here include:

(i) curved exfoliation in pseudo beds 1 to 3 feet thick (the interfaces between these exfoliations are covered with a powdered or pea size breccia whereas the massive rock contains various sizes); and

(ii) large bedded inclusions of very finely crystalline laminated limestone, of the Hume Formation.

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Several of these inclusions are 10 to 40 feet long and tabular in shape. South of Blackwater Lake, there are bedded inclusions 200 to 500 feet long which probably comprised one continuous slab up to 1,000 feet long, before it was badly contorted and broken. Adjacent to the bedded material a zone of fault breccia runs through the Bear Rock. The "normal" Bear Rock breccia occurs in its massive state both east and west of the bedded inclusions.

Bear Rock that has been rebrecciated by faulting is composed of poorly cemented gravel size fragments of the original breccia, plus fragments of the Hume Formation. The ochre or salmon color of the formation is most prominent near the fault zones and is caused by the presence of limonite and hematite. Presumably iron sulphides entered the formation via fault zones and oxided at the surface. Photographs on Pages 3, 4, 5 and 6 were included in the report to illustrate the evidence of this faulting, namely: a rounded quartzite boulder; three stage brecciation; bedded Hume limestone inclusions; ochre staining from iron oxides and random fragment size sorting in a loose matrix of gravel size fragments.

Evidence of original brecciation from salt solution is also present in these outcrops.

(i) "Box work" cavities were formed in a matter of minutes by dropping diluted acid on bedded fragments taken from the Bear Rock. Soft, light grey, powdery limestone dissolved out and a box work of thin angular ridges remained (see Phogograph - Page 8).

(ii) Small angular birds-eye vugs were common in the matrix of larger breccia boulders and also in some brown limestone inclusions. These vugs are very suggestive of salt casts.

Devil's Kitchen - 8 Miles Southwest of Woodman Head

This location is prominent by its topographic expression of spires or "hoodoo" remnants of Bear Rock breccia. The Hume Formation strata are present some distance to the west and the Kindle Formation is exposed to the east. Rocks other than Bear Rock were not observed in the immediate area of observation.

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The lithology of the Bear Rock Formation is primarily a breccia which varies in certain aspects from one station of examination to the other especially as the examination proceeded stratigraphically downward.

The first six stations or stops of observation revealed a breccia composed primarily of:

(i) Fragments of limestone - dark brown to dark grey, sometimes black, generally lithographic to very fine grained and ranging from 1/8" to 1' to occasionally larger boulder sizes. They are angular to subrounded and in part well rounded. Occasionally they are argillaceous and sometimes dolomitic. Many fragments exhibit their original structure - laminated to thin bedded and platy. The larger boulders are brown-grey, sucrose to granular dolomite that has argillaceous laminations, is platy bedded, crumbly.

(ii) Matrix is a limestone - brown to brown-grey, argillaceous with varying amounts of calcite crystals filling fractures and vugs. Some prominent brown coarse crystallized aragonite was observed. Porosity in the breccia matrix ranges from pin point, irregular vugs, to vugs that are a few inches in diameter. The small vugs are angular and larger ones are rounded and lined with calcite and aragonite crystals. Limestone fragments contain some fracture porosity and rare fine pin point to vuggy porosity.

The breccia above is massive with no semblance of bedding, it weathers from light grey, to medium to yellow-brown-grey, and often has large patches of rust staining. The topographic expression is usually spires, "hoodoos", ridges and prominent "cathedral-like" remnants.

Stratigraphically downwards the breccia changes to a dominantly argillaceous, "till-like" assemblage composed of angular to rounded, brown-grey, sucrose, granular dolomite and dolomitic limestone (predominant) and lithographic or very finely grained limestones (subordinant) in a yellow-grey to tan, limy, soft, argillaceous, clay-like ground mass. The fragments are small (1/2 inch to 3 inches), with occasional large boulders (1 to 3 feet) and the section is not as firm or well cemented as

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the breccia above.

Further down in the Formation another breccia is hard and well cemented and is composed of dense limestone fragments (some show argillaceous laminations) and a hard lithographic limestone matrix. Vugs and angular cavities are abundant. This resistive breccia causes the coalescence of streams draining the cirque shaped outcrop above and a single stream drops in waterfalls from this point downward to the Blackwater River. Beneath the waterfall a shale breccia outcrops. These shales are olive green to brown and were thin bedded but have been tightly folded and crumpled.

The lowest breccia exposed consists of lithographic limestone fragments in a brown grey argillaceous limy matrix. It is well cemented and the occurrence of cavities or vugs is rare.

The angular cavities present in the Bear Rock appear to be due to the leaching out of some of the fragments composing the rock unit as evidenced by the box work configuration and occasional inclusion of bedded or laminated limestone.

The pulverized breccia overlying the hard resistive section could probably be due to slippage or gliding of overlying, more competent beds, in a low angle thrust-fault movement. Fault movement may explain the rounded boulders or this may result from weathering rounded, rounding during salt solution and formation collapse, or possibly rounding out during transportation before cementation into a breccia. However the presence of completely angular fragments in association with rounded to well rounded fragments in the same rock unit is hard to explain.

At present, it is thought that the Bear Rock is primarily a solution type breccia which has been further modified by fault movement or secondary stage of brecciation resulting from intraformational adjustments.

Twin Peaks

Characteristics of the Bear Rock Formation in the vicinity of Twin Peaks has been detailed on stratigraphic Sections 6, 8 and 10. In summary, the formation is a limestone breccia, with fragments of light

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and dark brown to black, cryptocrystalline, in part argillaceous, tight limestone with variable vuggy and interfragmental porosity. Calcite is prominent in veining, cavity liming and fracture filling. Fragments are angular and range from minute to cobble size. Some remnants are of bedded limestone 3 feet in length. The outcrop is a repetition of rounded massive knobs that weather yellow-grey and brown-grey with numerous vugs, cavities and caves. "Box works" casts within the solution cavities are common. Large boulders of Hume limestone are concentrated in a randomly oriented position immediately below the formation boundary with the Hume, within the Bear Rock Formation. Immediately above the boundary the Hume beds have fractured from the slump folding described above. The fractures are intruded with Bear Rock breccias.

At Section 6 the abundance of coarse crystalline calcite suggests rebrecciation of the formation during uplift, folding and faulting. A large "S" shaped drag fold could be seen in the formation on the north ridge of Section 6. This feature was not evident at the location, but is quite discernible at a distance of 4 miles.

Mount Clark

Bear Rock at the latitude of Mount Clark is described in Section 12 BR. The breccia here is a limestone as it is generally in the McConnell Range. The outstanding feature of the outcrop at this location is the presence of a 200 foot thick section of thin and thick bedded dolomite. The dolomite is dark brown-grey, finely crystalline to granular and it contains thin rust siliceous laminations. Halysites sp. nr. H. nexus Davis of Silurian age was collected from these beds. This may be evidence that the Lone Mountain-Bear Rock Formations cross time lines between the Silurian and Devonian periods.

Big Smith River

On the left bank of Big Smith River Bear Rock breccia outcrops in a steeply inclined slice of strata uplifted in an imbricated thrust fault system. Section 15 BR describes the formation here. It is a limestone breccia as before except that angular dolomite fragments are present throughout the breccia in addition to limestone fragments. The lower formational contact with the Lone Mountain was exposed and was found to be gradational.

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The basal Bear Rock consists of 60 feet of thin and thick bedded, highly fractured and locally brecciated dolomites. Brecciation is restricted to bedding planes and a 10 foot limestone breccia below the dolomites is considered to be the base of the Bear Rock Formation.

Canyon Ranges

South of Redstone River

Section 22 includes description of the Bear Rock in outcrop that was available, generally the formation is recessive and occupies inter-range valleys. A thick 2,530 foot interval represents the formation at this location and although the beds of the Lone Mountain Formation above and below are conformable, thickening (or thinning) of the incompetent Bear Rock Formation from intraformational folding or faulting is always probable. The central section of 1,200 feet is covered. The outcrop in the upper third of the formation is comprised of alternatively thin and thick bedded dolomites. They are yellow-brown in thin beds and medium grey in thick beds, cryptocrystalline, tight, siliceous and weathers yellow-grey with rust mottling. Brecciation is restricted to minor zones along bedding planes.

Limestone and limestone breccia comprise the lower 630 feet of the formation at Section 22. Two-thirds of the outcrop is breccia, grey and brown-grey to yellow and orange-yellow, with cryptocrystalline fragments in light grey cryptocrystalline limestone matrix. It is interbedded with thin light grey to dark grey and yellow-grey banded limestones. The basal 300 feet is a more massive breccia with traces of limestone bedding.

Foran Lake

Several sections were measured to the southeast, west and north of Foran Lake in an attempt to define the relation of the Bear Rock Formation to the Lone Mountain Formation. Section 18 is considered to be the most representative of conditions that existed before the area was deformed by faulting. The upper and lower units of the Lone Mountain Formation are not complete in this stratigraphic section, but a composite interpretation of the complete Middle Devonian strata in this area has been provided on the longitudinal section of the Canyon Ranges included in the report.

The Bear Rock at Section 18 is a limestone breccia 860 feet thick that weathers to a massive light grey to yellow-grey outcrop. The matrix

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is dark brown-grey limestone, argillaceous in part. Fragments are angular, dark brown limestone that are laminated in part, their size is generally 1 to 2 inches but ranges up to 1 foot. The limestone is crumbly and in part earthy. Calcite veins are abundant in restricted zones, and the breccia is generally tight with some poor to fair intergranular and scattered vuggy porosity also in zones. Solution vugs and small angular cavities develop on the weathered surface. The soft powdery limestone that dissolves out of the angular casts may be remnant from a prior solution of anhydrite crystals. Rare thin beds of pink limestone occur within the breccia, it is cryptocrystalline, tight, with scattered vugs and weathers with a yellow stain.

Summit Creek

Section 16 was located across the Bear Rock Formation where it outcrops to the west of Summit Creek on the north side of the Keele River. The Bear Rock here is a limestone breccia 1,070 feet thick. It lies in an apparent conformable position immediately beneath thick bedded limestones of the Hume Formation.

Three zones are present in the outcrop - a resistive breccia above and below with a 570 foot thick recessive breccia in between. The top 300 foot zone of breccia has a matrix of brown-grey, medium crystalline limestones whose volume is minor compared to the quantity of walnut sized dolomite fragments. Randomly oriented blue-grey limestone fragments up to 1 foot in diameter are present near the top of the formation. They are laminated to platy. Porosity ranges from poor to good pin point, to good intercrystalline where the breccia is cemented by coarse crystalline calcite.

The central breccia zone has a matrix of dark brown and light cream limestone, that is granular with fair intergranular porosity. Small angular vugs are formed from the leaching out of soft powder limestone inclusions. Fragments range from pea size to 2 foot long, bedded limestone slabs. These inclusions are generally coarse crystalline to sucrose with fair intercrystalline porosity. They are earthy, crumbly, chocolate brown in color.

Limestone breccia again comprises the lower zone that weathers massive, cavernous, crusty, rounded, rubbly and yellow tan in color. The matrix is cream-grey, medium crystalline to granular limestone

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with fair intercrystalline porosity. Fragments are predominantly bedded and laminated and are 1 to 6 inches thick. They are subrounded, very finely crystalline, tight, dolomitic in part, and weather to "box work" vugs.

Middle Devonian

Hume Formation

Outcrop of the Hume Formation is present along the flanks of all mountain ranges in the map area. Generally the strata is in a steeply dipping attitude on either flank of anticlinal structures and dips under the bordering low lands often without any outcrop of younger formations. However, in several instances, the Hume Formation has been described overlying the Lone Mountain Formation in an apparent conformable sequence and is bounded at its upper limit with Hare Indian Formation shales.

The seven sections that were measured in the Camsell-McConnell Ranges to describe the Hume Formation do not include the upper boundary. The relatively consistent erosion of this formation down to a thickness of 400 to 600 feet suggests peneplanation of post Devonian and/or post Cretaceous age that removed all of the younger formations, including the Upper Hume. This peneplanation is further evidenced along the west flank of the McConnell Range near Blackwater River. The mountains here are flat lying and gently folded and are consistently capped with the lower portion of the Hume Formation. This peneplain characteristic in the

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Hume Formation appears to be restricted to the areas of mountain building, which suggests that post Upper Devonian peneplanation took place after the initial doming of the present structures. As a result the erosion surface truncated Imperial, Kee Scarp and Hare Indian Formations adjacent to the mountain areas and strata of progressively older age down to the middle of the Hume Formation, across the dome structures. Subsequent uplift and renewed erosion have resulted in the dissection of the peneplanated domes such that only remnants of the original surface are preserved by resistive Hume Formation. A theory that the remnant thickness of 400 to 600 feet represented very nearly the total Hume Formation - with only the Hare Indian removed by erosion has proven incorrect on the interpretive longitudinal sections constructed for this report. Minimum thickness of the formation is probably 700 feet.

Strata of the formation consists of alternately thick and thin bedded limestones that are dark grey to black with a somewhat brownish-tinge, very finely crystalline to cryptocrystalline and tight. Fossils are not widely distributed throughout the strata but thin zones are prolific in fauna, including numerous brachiopods, corals and gastropods. The formation is resistive and scarp forming on the spurs that flank the mountain anticlines. It weathers a light grey to yellowish-grey and

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occasionally has yellow to orange mottled staining, generally reflecting a minor amount of coarsely crystalline calcite veining. The formation is cliff forming and weathers nodular to rubbly where massive beds contain abundant coralline fossils However the scree from the Hume is generally angular and platy. The limestones of 1/2 inch to 4 inch thicknesses are interbedded with black shale laminations. Recessive inter-cliff zones contain thin bedded highly argillaceous limestones:

> "Where possible the writer has tried to refer Hume formation fossils to either lower or upper Hume. This is based upon previous zonations principally by Crickmay and by Bassett. The writer has some doubts, however, about the validity of these zonations. Hence if the palaeontological correlations to "lower" and "upper" Hume do not fit the field stratigraphic interpretations, it is probably best to rely upon the latter."*

Hume fauna - Middle Devonian (Eifelian), includes

Upper Hume

Atrypa sp.

Note: the Atrypa was destroyed during extraction. It wasccoarse ribbed and may have been an immature A. andersonensis Warren, a species characteristic of upper Hume.

Atrypa arctica Warren?

Billingsastraea nevadensis Stumm?
Columnaria rhenana (Frech)?
?Dechenella sp.
Elytha compacta (Meek)
Favosites limitarus Rominger
Favosites nitella Winchell

*Nelson, S.J., 1961

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? Martiniopsis sp.
?Schuchertella sp.
Spinulicostata stainbrooki Crickmay
Utaratuia acupicta Crickmay

Lower Hume

Billingsastraea trichomisca Crickmay?
Favosites alpenensis Winchell
Schuchertella adoceta Crickmay
Syringopora sp.
Utaratuia stevenci (Chapman)?

Hume Formation (undivided)

Amphipora sp.
Alveolites vallorum Meek not diagnostic.
Brachiopod and crinoidal debris - not identifiable.
Cup coral: indet.
Gastropod fragments.
Hexagonaria impedita Crickmay?
?Martiniad brechiopod mould - not identifiable.
?Productella sp.

No porosity was reported in the Hume Formation of the McConnell Range except for rare poor vuggy porosity in the basal beds where some coralline fossils are present. The inter-strata coarse crystalline dolomite that is usually present at the Middle-Lower Devonian contact often has good intercrystalline porosity.

The Hume strata immediately underlying the Hare Indian Formation at Summit Lake does have good interfragmental porosity. The texture of the outcrop is quite rubbly and therefore the type of porosity was not well definied, but an abundance of Favosites alpenensis and Favosites nitella corals suggests a reefoid texture.

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Hare Indian Formation

Bassett's * subdivisions of the Middle and Upper Devonian are employed in the report and the Hare Indian Formation is interpreted to be those shales and sandstones that are positioned between Hume Formation below and the Imperial Formation above. Where the Canol and Kee Scarp Formations are present they are positioned at the boundary between the Hare Indian and Imperial, the age division from Middle Devonian to Upper Devonian is also located in this zone (see remarks on the Kee-Scarp Formation). The shales of the Hare Indian were observed from the air west of the Camsell Range between the Root and Wrigley rivers and were examined and described at Sections 13 and 15 north of Mount Clark in the McConnell Range. At Section 13 the strata of the formation is composed of: sandstone, which is clear, quartzose, sub-angular and contains excellent intergranular porosity; and shale which is black, friable, unfossiliferous and weathers with rusty colored staining. Upstream from Section 15 on Big Smith Creek an outcrop of shale very similar to that at Section 16 was examined and was noted to be in an unconformable relation with silty shales and siltstone of Cretaceous age. No fossils were found in the Fort Creek shales. Plant remains and questionable fossil material were collected from the Cretaceous outcrop but were declared to be non-diagnostic by Dr. Nelson.

*Bassett, H.G., 1961

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Aerial reconnaissance of the Canyon Ranges indicated a wide aerial distribution of the Hare Indian shales flanking anticline structures as in the McConnells and also underlying the surface in several of the inter-range valleys. Outcrop is not abundant but may be present in any cutbank of the rivers in these valleys. The black, fissile shales of the formation were examined 2 miles west of Summit Lake where they are exposed at the contact with the underlying Hume Formation limestones (Photograph - Page 29). The basal strata of the Hare Indian is a very argillaceous limestone and contains abundant Tentaculites gracilistriatus Hall var., that are diagnostic Middle to Upper Devonian. This limestone is notable also in that it has an extremely strong petroliferous odor on impact. In regard to this petroliferous shale, reference is made to the upper Hume Formation at this locality in that it is rubbly and contains a high content of colonial corals Syringopora sp. and Alveolites vallorum Meek.

Section 23 near Foran Lake in the Canyon Ranges was designed to include descriptions of the Upper and Middle Devonian formations. Here the Hare Indian Formation is 600 feet thick but because of the lack of fossil control could possibly be up to 800 feet thick; the shale is black, in part light green, fissile to platy and is interbedded with minor limestone and siltstone. The section is only 16% exposed.

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Key Scarp-Canol Formations (Photograph - Page 14)

Brief mention of these formations is included as a result of the mapping of a biostromal type limestone outcrop to the west of the Camsell Range. This thin (100 foot) biostrome is situated in a higher stratigraphic position than the Hare Indian shales that were noted in limited outcrop on the tributaries of the Wrigley River. The reference to these strata under the term Kee Scarp cannot be substantiated with detailed stratigraphic or fossil evidence but similarity of this development to the Kee Scarp is considered to be reason enough to draw a parallel conclusion. Fossil identification, in fact, has proven this biostrome to be of Middle Devonian age, which would require it to be below the Middle-Upper Devonian boundary rather than above the boundary where the Kee Scarp and Canol Formations are usually placed.

This limestone outcrop has been referred to by Hume* as the Leiorhynchus zone that he describes as follows:

> "alternating thin beds of limestones and shales in which the shale becomes increasingly preponderant downward and the limestone beds became thicker and more abundant upwards until the whole becomes a limestone phase of sedimentation."

The fossil suite collected here was identified to be of Upper Devonian age at that time. They included:

Leiorhynchus sp.
Camarotoechia contracta
Schizophoria lowensis
Athyris angelica
Rhynchonella duplicata

*Hume, G.S., 1921

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Another fauna was collected as follows:

"In this zone was found a coral reef in which a number of fine crinoid heads were discovered. The fauns of the coral reef differs somewhat from the rest of the fauna seen elsewhere and is, therefore, given separately:

Cladopora
Cyathophyllum sp.
Diphyphyllum arundinaceum
Phillipsastroea verneuili
Phillipsastroea sp.
Anlopora sp.
Eatonia sp.
Atrypa reticularis
Hypothyris cuboides
Leiorhynchus sp.
Spirifer sp.

This excellent collection should facilitate a confirmation or revision of the Middle Devonian Hume age assigned to the limited fossil suite collected for this report (see below). Middle Devonian dating would place this biostrome in an equivalent position to Kee Scarp according to the formation divisions by Bassett. **

The presence of this discontinuous bioherm in the vicinity of Camsell Bend underlines the prospects for encountering reservoirs within the Middle Devonian in the Central Plains at this latitude, or in fact anywhere between Camsell Bend and Fort Norman. The prospects in the Mackenzie Plain are negative in the Wrigley area, as the Hare Indian is at the surface, but prospects may be positive to the north in the latitude of the Keel River. The Wrigley anticline was observed on

**Bassett, H. G. 1961

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one occasion in an overflight and was distinguishable by the outcrop of a resistive strata which could be a sandstone or a limestone. Possibly the bioherm mapped at the Root River is also outcropping on this domal structure.

Five fossils were identifiable from the poorly preserved speciments forwarded to Dr. Nelson:

Stromatoporoids: indet.
Coenites. sp.
Elytha compacta Meek?
?Atrypa sp.
Favosites limitarus Rominger
?Billingsastraea sp. (generic identification uncertain)

"This is a Hume fauna but cannot be calibrated closer."

Upper Devonian

Imperial Formation

Nominal attention was given to the Imperial Formation distribution in the map area. The formation's presence is most obvious in the areas west of the Camsell Range at Root River and east of the Canyon Ranges at Foran Lake. Stops were made on Imperial Formation outcrops to the south of Moose Prairie and the formation has been described in Section 23 southwest of Foran Lake. Here the strata consists of shale that is brown-grey, silty, laminated to platy, micromicaceous, that weathers a light brown to yellow-grey. It outcrops

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with minor amounts of siltstone that is grey, very argillaceous, micaceous; and limestone that is medium grey, argillaceous very finely crystalline, tight and platy. 1,000 feet of this section was measured with less than 30% of the section outcropping.

Mesozoic Era

Cretaceous Period

Cretaceous strata were examined at only one locale during the field survey but this age of sediments has a wide distribution in the Mackenzie Plain as mapped by Hume & Link.* The outcrop examined was located on Big Smith Creek, upstream from Section 15. The strata rests unconformably on the Hare Indian shales and is composed of medium grey shales, interlaminated and disseminated with light grey, very finely grained, shaly siltstone and minor carbonaceous material. The strata contain some siliceous fossil (?) remains that appear to be plant fragments or worm borrows but which are unidentifiable. This formation was observed on aerial reconnaissance to extend 4 miles up the Big Smith Creek beyond the Hare Indian shales and was also observed outcropping in a very similar manner in the cutbanks of St. Charles Creek, 12 miles to the north. The distribution of this formation has been indicated on the geological map and has been adapted from Hume and Link in areas of Grotto Creek, Little Bear, Keele, Redstone, and Wrigley rivers.

*Hume, G.S. & Lin, T.A., 1945

Cenozoic (Tertiary) Era

These sediments are mentioned here in reference to their distrubtion as illustrated on the Geological Survey of Canada Map 1055A, District of Mackenzie, 1958. The sediments were not examined during the field survey but their distribution has been included on the geological map. They are a series of shales and sandstone with coal. Conglomerates, and limestones are also present.

Quaternary Era

Pleistocene Period

Glacial deposits have not been mapped for the report. Gravels and sandstone are widely distributed on the Central Plains, where no pre-Pleistocene outcrop could be found, and on the Mackenzie Plain where 200 foot cutbanks of Pleistocene sandstone and silt are prominent along the Mackenzie River. Erratics of glacial origin were found on mountain peaks in the McConnell Range and were common on the mountain slopes of the Canyon Ranges. In the inter-range valleys of the Canyon Ranges glacial cover is not abundant and the general environment of sharp peaks and "U" shaped valleys suggests that the area was glaciated by alpine glaciers that carried all the debris eastward into the plains area.

One large glacial Moraine is an impressive feature of the southeast shore of Foran Lake. This Moraine has blocked a pre-

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Pleistocene Redstone River valley and its shape mimics a tremendous, man-made, earth filled dam. Grades on the upstream and downstream side are remarkably consistent over the face of the dam and all irregularities in former profile are filled to meet the designed grade to the crest of the dam. The crest is approximately 800 feet above the old river channel or 500 feet above the present lake level.

STRUCTURAL GEOLOGY

All of the mountain ranges in the map area have been uplifted as anticlines that in many places are asymmetrical and have been thrust to the point of rupturing. The majority of fault symbols on the maps are located theoretically rather than their being representative of fault features seen in the field. In many cases the requirement for a thrust fault is obvious from the structural relationships of sedimentary formations. In other cases, such as a continuous thrust fault illustrated on the map along the east side of the McConnell Range, a fault is necessitated by the frequent recurrence of vertically standing strata on the east limb of the McConnell anticline. This fault would be the sole fault along which the main thrust took place. Additional faulting has been mapped to the west of the sole fault within the mountains and they are considered to be branches from the sole fault that enclose the thin long zones of steep dipping strata in a general imbricated fault system. To the west of this fault zone the McConnell Mountains are the eroded remnants of upper Devonian to Ordovician sediments that are gently folded and have experienced peneplanation in post Devonian time. They have also experienced advanced stream sculpturing since the latest uplift.

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Gentle folds of Upper and Middle Devonian strata are present on the Mackenzie Plain and are of a character very similar to the folding on the west limb of the McConnell anticline. These folds have been mapped along the front of the Canyon Ranges and to the south in the Wrigley River area. The Camsell-Scarp has resulted from the rupture of one of these more acute folds and the resultant thrust fault is an en-echelon component of the Norman, McConnell, Camsell and Nahanni Ranges thrust complex. A gentle fold was mapped between Camsell Range thrust and the Mackenzie River.

The structure in the Canyon Ranges is essentially parallel to that described in the McConnell Range but uplift has been greater and the present structure has been complicated by the folding and breaching of the thrust fault, with the result that in a local area one could interpret an east dipping thrust. Evidence of the thrusting is not too obvious and structural geology was not a prime objective of the survey but faulting was encountered on several sections and formational distributions enable theoretical locations of the faults. One additional structural feature that is indicated on the examination of the geological map is the probable existence of lateral movement on the thrust faults in the Canyon Ranges. This feature was not initially evident in the McConnell Range, but on review of the map of this area lateral displacement probably is also present there.

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Immediately north of the Keele River between Inlin Brook and Summit Creek the imbricated fault structure becomes very complicated. The outcrop in this area are scarce and time did not permit detailed examinations of them. The fault pattern presented is necessary to explain the relationship of the formations and structures known to exist. Some discussion of structure is included in a consideration of topography in the report, wherein it is mentioned that resistive quartzites and distinctively colored shales of the Cambrian period have been brought to the surface in the axes of anticlines. Another topographic feature related to structure that has not been mentioned, is the occurrence of cold water mineral springs. These springs are located in the Redstone River Valley where it cuts through the Canyon and Tigonankweine Ranges.

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ECONOMIC GEOLOGY

The prime economic aspect of geology of this area is the potential the sedimentary section has for the generation and accumulation of hydrocarbons. Certainly the prospect for finding oil is high when the Mackenzie River area is considered in a regional sense. Producing oil wells at Norman Wells and the active oil and gas seeps reported at intervals along the river valley downstream from Bear Rock attest to this evaluation.

In a local sense the same prospects apply; as the survey has proven that biostromes of the upper Devonian exist in the Wrigley Area as well as to the north. These could be potential reservoirs where they exist in down faulted or undisturbed positions, in inter-range valleys or on the Central Plains (Keller Lake Permit). In addition, several older horizons have proven to be very prospective for oil generation, so that all porous formations of post Ordovician age could be potential reservoirs in the proper sub-surface environment.

The Hume Formation has proven to have limited porous reefoid zones. The Bear Rock is a tremendous potential reservoir because of its brecciated open texture. The upper and lower units of the Lone Mountain often have good intergranular porosity in medium to coarse grained dolomites. Intergranular porosity is also available for oil accumulation along the Lone Mountain-Hume Formation boundary.

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Silurian age strata have proven to be the dramatic sedimentary asset of the Wrigley map area. This formation has reefoid zones wherever examined, it has a wide distribution and it exhibits characteristics of a marine environment that may change from a deep sea basin to marginal shelf areas. Biostromal and possibly biohermal reef masses have developed along the transition zone from deep to shallow sea. This formation would be the prime target for any test to be drilled in the Mackenzie Plain at this latitude.

Below the Silurian beds another prospective oil generating horizon; the Mount Kindle Formation of Upper Ordovician age, is represented over the entire report area. This formation never contains the porosity observed in Silurian beds, but its colonial coral fauna is prolific. This thin 300 foot formation has a definite biostromal character as the fossils are restricted to the upper portion of the formation when it thickens to 1,900 feet in the Canyon Ranges.

Presumably the biostromal Mount Kindle represents the Upper Ordovician and thickening to the west results from the addition of Middle Ordovician sediments.

Structures to facilitate oil accumulation in the porous formations present in the Wrigley area are abundant. Numerous gentle folds have been mapped in the Mackenzie Plain and presumably folds were developed in the Central Plains east of the McConnell Range prior

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to the uplift and rupture of the acute structures in those mountains.

Favourable structures are also available within the mountain ranges in inter-range valleys and on top of some of the thrust slices as folded faults were observed in the Canyon Ranges. Conditions are similar to the foothills and front ranges of Alberta where gas and oil discoveries are continuing to be made.

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APPENDIX

to

REPORT ON THE GEOLOGICAL SURVEY

WRIGLEY AREA

N.W.T.

prepared for

UNION OIL OF CANADA LIMITED

by

LINK DOWNING COOKE & CO. LTD.

1961

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SUMMARY
of
STRATIGRAPHIC SECTION LDC - 1

Co-ordinates: 63° 17' N & 123° 11'W

Geographic Location: McConnell Range of Franklin Mountains
4 miles due south of Mount Kindle

Geologists: R. Perry, H. Young & C. D. McCord

Date Measured: June 5, 6, 9 & 26, 1961

Formations Described:

	Thickness	
Middle Devonian		
Hume	440	incomplete
Lower Devonian		
Lone Mountain (upper)	450	
Bear Rock	750	
Lone Mountain (lower)	570	
Silurian	480	
Ordovician		
Mount Kindle	190	
Franklin Mountain	170	incomplete
Total	3,050'	

Sample Record: Bagged - 96 samples at approx 18' strat interval of exposed section
Crushed - 96 samples in 2 boxes
Sample Identification:- Box 1 - June 5 P1-P17
June 26 Mc1745-Mc75
June 9 P1205-P1100
Box 2 - June 9 P1080-P10

Photographs: Page 11

Air Photo Reference: A12579-390

SECTION 1

The first section of the field program was located in the vicinity of Mount Kindle, where Silurian, Ordovician and Cambrian sections have been described in past literature. A study of the complete sedimentary sequence from the Middle Devonian - Hume Formation down to the Ordovician - Franklin Mountain Formation was possible at this location. The section traversed the strata where they outcropped on the shallow dipping west limb of the McConnell Range anticline.

The section was revisited on two occasions to review the geology and fill in gaps as the party became more cognizant of geology in the area. Consequently the sample numbers vary throughout the section and measurements were not always made in the same direction in different formations.

Strike of beds was 185° and they dipped at 22° in the Hume and 26° in the Mount Kindle Formation nearer the axis of the anticline. The entire section is well exposed; no faulting or drag folding was observed.

SUMMARY
of
STRATIGRAPHIC SECTION LDC - 2

Co-ordinates: 63°19'N & 123° 8'W

Geographic Location: McConnell Range of Franklin Mountains
4 miles SE (135°) of Mt. Kindle

Geologists: C. D. McCord, H. Young & F. Halkow

Date Measured: June 6, 9 & 26, 1961

Formations Described:

	Thickness	
Silurian	220	incomplete
Ordovician		
Mount Kindle	190	
Franklin Mountain	1110	
Cambrian		
Saline River	450	incomplete
Total	1,970'	

Sample Record: Bagged - 143 samples, at approx. 10' stratigraphic intervals of exposed section.
Crushed - 143 samples, in 3 boxes
Sample Identification:-

Box 1	June 9	Mc1060-Mc30
	June 6	Mc 0 -Mc270
Box 2	June 6	Mc 280-Mc970
Box 3	June 6	Mc 980-Mc1700
	June 26	Y1625 -Y 0

Photographs: Page 12

Air Photo Reference: A12579-390

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SECTION 2

Section 2 is on the southernmost exposed east limb of a south plunging regional anticline in the Mount Cap area. The profile commenced at the top of the ridge and traversed down slope along the west-facing scarp towards the axis of the anticline which trends north-south along the valley floor. Profile slope ranged from 40° in the Mount Kindle Formation near the top to almost flat in the Saline River Formation in the valley. Average strike is 010° with dip of 28° southeast. Some of the bedding in the basal Franklin Mountain exhibits drag folds indicative of movement along bedding planes, however much of this part of the section is considerably scree covered. The Saline River which is generally soft and recessive is, except for sparse outcrops, all wood covered.

SUMMARY

of

STRATIGRAPHIC SECTION LDC - 3

Co-ordinates: 63° 22'N & 123° 25'W

Geographic Location: McConnell Range of Franklin Mountains
4 miles due west of Williams Peak

Geologists: C. D. McCord, H.R. Young & F. Halkow

Date Measured: June 7, 1961

Formations Described:

	Thickness	
Middle Devonian		
Hume	460	incomplete
Lower Devonian		
Lower Lone Mountain	390	
Bear Rock	60	incomplete
Total	910'	

Sample Record: Bagged - 102 samples, at approx. 10' stratigraphic intervals of exposed section
Crushed - 102 samples, in 2 boxes
Sample Identification:- Box 1 June 7 Mc1-Mc940
Box 2 June 7 Mc950-Mc1650

Photographs: Page 11

Air Photo Reference: A12607-249

SECTION 3

Section was measured on the southwest scarp of a west dipping ridge near the western limits of the Franklin Mountains. The ridge and the valley floor are fairly well wooded and exposures are present only on the scarp face. Measurement commenced at the rim of the valley in Hume Formation and terminated in scree at the base of exposed Bear Rock a short distance above the valley floor. The slope averages 30° and is partially covered by scree or grass, necessitating jogging profile laterally for best continuity of exposed section. Attitude of strata indicate a strike of 315° and a dip of 8°-12° S.W. At this location the bedded grey and brown-grey Hume limestones are underlain by a section of white, very coarse crystalline, dolomitic limestone, which in turn is underlain by calcite-veined Upper Lone Mountain brown dolomites lying on Bear Rock breccia.

SUMMARY

of

STRATIGRAPHIC SECTION LDC - 4

Co-ordinates: 63° 02'N & 123° 06'W

Geographic Location: McConnell Range of Franklin Mountains
6 miles NE (050°) of Old Fort Island

Geologists: H. K. Roessingh, R. G. Perry & F. Halkow

Date Measured: June 8, 1961

Formations Described:

	Thickness	
Middle Devonian		
Hume	610	incomplete
Lower Devonian		
Upper Lone Mountain	110	incomplete
Total	720'	

Sample Record: Bagged - 54 samples, at approx 8' stratigraphic interval of exposed section
Crushed - 53 samples, in 1 box
Sample identification:- Box 1 HR1-HR750

Photographs: Page 13

Air Photo Reference: A12590-413

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SECTION 4

This section has been measured along, or parallel to, the axis of a local anticline that has been dissected. Vegetation covers all but the relatively steep slopes of the scarp face the gradient of which ranges from approximately 22° to 30°. Measurement commenced in Hume rocks at the top, proceeded down the north facing scarp and terminated at the lowermost exposure of Lone Mountain Formation some distance above the floor of an abandoned stream channel that dissected the anticline. Present at this section too, is the white coarse crystalline limestone typical of secondary recrystallization. Its stratigraphic position is at or near the Hume-Lone Mountain contact and it interfingers upward into the Hume and may interfinger with the underlying Lone Mountain.

SUMMARY

of

STRATIGRAPHIC SECTION LDC - 5

Co-ordinates: 63° 02' N & 123° 43' N

Geographic Location: Camsell Range
15.5 miles SW (215°) of Wrigley Airport

Geologists: H.K. Roessingh, F. Halkow & H.R. Young

Date Measured: June 9, 11 & 27 &
July 27, 1961

Formations Described:

	Thickness	
Middle Devonian		
Hume	630	complete?
Lower Devonian		
Upper Lone Mtn.	1,740	
Bear Rock	300	
Lower Lone Mtn.	535	incomplete
Total	3,205'	

Sample Record: Bagged - 165 samples at approx. 17' stratigraphic intervals of exposed section
Crushed- 165 samples in 3 boxes
Sample Identification:-

Box 1	June 11	HR 201-HR 242
Box 2	June 9	HR 101-HR 139
Box 2	June 27	HR 140-HR 155
Box 3	June 27	HR 156-HR 191
Box 3	July 27	YH 20-YH 400
Box 4	July 27	YH 425-YH 675

Air Photo Reference: A-12701-255

Photographs: Page 14

SECTION 5

This section completely traversed the Camsell Range. Although it has been completely measured, the Hume is mostly covered at this location. A better exposed Hume was examined four spurs south and the data incorporated into one composite section. The Hume and Upper Lone Mountain comprise the western dip slopes of the range, the Bear Rock the crest or ridge, and the Lower Lone Mountain the scarp face on the east side. Attitudes vary from 345° strike and 30° SW dip in the Hume to 360° strike and 53° W dip at base of Bear Rock to 005° strike and 49° NW dip near base of Lower Lone Mountain. Except locally, the slope on the west side ranges from 15° to 36°, whereas the gradient of the scarp face ranges from 40° to a near vertical cliff.

SUMMARY
of
STRATIGRAPHIC SECTION LDC - 6

Co-ordinates: 64° 08'N & 123° 35'W

Geographic Location: McConnell Range of Franklin Mountains
4 miles NW (335°) of Twin Peaks

Geologists: R.G. Perry, H.R. Young & C.D. McCord

Date Measured: June 13, 14 & 18, 1961

Formations Described:

		Thickness	
Middle Devonian			
	Hume	20	incomplete
Lower Devonian			
	Bear Rock	720	
	Lower Lone Mtn.	330	
Silurian		510	
Ordovician			
	Mt. Kindle	240	
	Franklin Mtn.	1220	incomplete?
	Total	3040'	

Sample Record: Bagged - 161 samples, at approx. 10' stratigraphic intervals
Crushed - 161 samples in 3 boxes
Sample Identification:-

Box 1	June 18	P5535-P4470
Box 2	June 18	P4460-P4350
	June 14	P4340-P1600
Box 3	June 14	P1540-P1300
	June 13	P1260-P1

Photographs: Pages 2 & 15

Air Photo Reference: A12620-31
A12606-361

SECTION 6

Section 6 was designed to provide a complete section of Ordovician, Silurian and Devonian rocks at a location mid-way between Blackwater Lake and Mount Clark. It was measured on two different ridges that are remnant on the west flank of the McConnell anticline. The ridges are Cuesta shaped and the section was measured up the scarp face.

Drag folding in the Bear Rock Formation necessitated a relocation of the section from the north ridge to the south. At the south section the upper portion of the section in Bear Rock and Hume formations was described. These descriptions were located stratigraphically by measuring back eastward to the Mount Kindle - Franklin Mountain contact.

The strata strike was 305° and the dip gradually flattened from 44° in the Franklin Formation near the axis of the anticline, to 25° in the Hume Formation to the west.

Exposure of all formations was good except for the Silurian beds which were mostly tree covered on the dip slope of the Cuesta. Stratigraphic studies at Sections 8, 10 and 12 are supplementary to this section and provide additional stratigraphic information or verify thickness measured in this section.

SUMMARY
of
STRATIGRAPHIC SECTION LDC - 7

Co-ordinates: 63° 43' N & 123° 33' W

Geographic Location: McConnell Range of Franklin Mountains
11.2 miles due east of mouth of Johnson River

Geologists: H. K. Roessingh & F. Halkow

Date Measured: June 14, 1961

Formations Described:

		Thickness	
Middle Devonian			
	Hume	410	incomplete
Lower Devonian			
	Bear Rock	460	incomplete
	Total	870'	

Sample Record: Bagged - 21 samples, at approx. 10' stratigraphic intervals of exposed section
Crushed - 21 samples, in 1 box
Sample Identification:- Box 1 HR 401 - HR 421

Photographs: Nil

Air Photo Reference: A12701-207

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SECTION 7

Section 7 is approximately halfway between the crest and the outermost surface expression of the long western limb of the huge asymmetrical anticline that is the structure of the McConnell Range in this area. Dip is gentle at 5° to 9° SW and strike is 330°. Most of the area is well covered and exposures are present only on the steeper slopes of valley walls. Traversing upwards from the valley floor, measurement commenced at the first Bear Rock exposures and terminated in Hume at the top. After jogging approximately one-half mile south along the rim another profile was measured and examined downwards into the first Bear Rock exposure and the data integrated into one section using a Coral bed as a datum.

SUMMARY
to
STRATIGRAPHIC SECTION LDC - 8

Co-ordinates: 64° 05'N & 123° 52'W

Geographic Location: McConnell Ranges of Franklin Mountains
10 miles due west of Twin Peaks

Geologists: C. D. McCord & H. R. Young

Date Measured: June 17, 1961

Formations Described:

		Thickness	
Middle Devonian			
	Hume	130	incomplete
Lower Devonian			
	Bear Rock	940	
	Lower Lone Mtn.	300	
Silurian		80	incomplete
	Total	1,450'	

Sample Record: Bagged - 68 samples, at approx. 18' stratigraphic intervals of exposed section
Crushed - 68 samples, in 2 boxes
Sample Identification:- Box 1 June 17 Y3450-Y260
Box 2 June 17 Y240 -Y 0

Photographs: Page 16

Air Photo Reference: A12639-79

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SECTION 8

Section 8 is near the axis of a broad anticline 12 miles west of the front of the Franklin Mountains. The ridges are capped with limestones of Hume Formation and the upland surface represents an ancient peneplain that has been uplifted over a broad area. Stream incision has revealed the underlying Bear Rock, lower Lone Mountain and Silurian beds. Measurement of section began just above one of such streams and proceeded up easterly along a spur of Silurian, lower Lone Mountain and Bear Rock strata and terminated in Hume formation at the highest outcrop on the mountain. Since the Bear Rock-Hume contact was found obscured, an exposure of the contact approximately one-half mile east was examined and the data integrated into one composite section. Average strike is 060° with a dip of 8° southeast. Beds are generally well exposed with vegetation cover restricted to the flat mountain tops and valley floors.

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SUMMARY

of

STRATIGRAPHIC SECTION LDC - 9

Co-ordinates: 63° 38'N & 123° 19'W

Geographic Location: McConnell Range of Franklin Mountains
5 miles due east of Table Mountain

Geologists: H. K. Roessingh & F. Halkow

Date Measured: June 16, 17 & 18, 1961

Formations Described:

		Thickness	
Lower Devonian	Bear Rock	350	incomplete
	Lone Mtn. (lower)	400	
Silurian		440	
Ordovician	Mt. Kindle	330	
	Franklin Mtn.	1,300	
Cambrian	Saline River	760	incomplete
	Total	3,580'	

Sample Record: Bagged - 158 samples, at approx. 16' stratigraphic intervals of exposed section
Crushed - 158 samples in 3 boxes

Sample Identification:-

Box 1	June 16	HR 501-HR 555
Box 2	June 17	HR 556-HR 601
	June 18	HR 602-HR 610
Box 3	June 18	HR 610-HR 658

Photographs: Page 17

Air Photo Reference: A13290-97

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SECTION 9

Section 9 is on the steep eastern limb of the regional anticline that is the structure of the McConnell Range in the area Examination and measurement commenced in Bear Rock on the eastern dip slope, traversed westward through Lone Mountain and Silurian up into the Mount Kindle at the top of the ridge and down the west scarp face through the Franklin Mountain and terminated at the last accessible exposure, well into the Saline River Except for the eastern dip slope the section is well exposed and exhibits a strike of 360° and a dip of from 65° E on the dip slope to approximately 32° E on the scarp face The axis of the anticline is a north-south trending creek valley immediately to the west of the terminus of the section with the eastern limb being a paralleling ridge that is in here the highest segment of the range.

SUMMARY
of
STRATIGRAPHIC SECTION LDC- 10

Co-ordinates: 64° 08' N & 123° 42' W

Geographic Location: McConnell Range of Franklin Mountains
6 miles NW (300°) of N. peak of Twin Peaks

Geologists: F. Halkow & H.R. Young

Date Measured: June 19, 1961

Formations Described:

	Thickness	
Middle Devonian		
Hume	480	incomplete?
Lower Devonian		
Bear Rock	200	incomplete
Total	680'	

Sample Record: Bagged - 34 samples, at approx. 11' stratigraphic intervals of exposed section
Crushed - 34 samples, in 1 box
Sample Identification:- Box 1 June 19 HY1090-HY 0

Photographs: Page 17

Air Photo Reference: A12620-31

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SECTION 10

Section is immediately west of the axis of a regional syncline trending in a general NW-SE direction. Measurement commenced at creek level in Bear Rock strata, proceeded up the east flank of the valley and terminated in Hume Formation at the top of a sheer cliff of 85 feet of grey limestone. This limestone forms the rim of the valley and is also the surface of the surrounding topography. The profile is a series of steep cliff - forming outcrops with intervening scree covered slopes of 23° to 30°+. Attitude of exposed sections is a dip of 6° E and a strike of 350°. The Bear Rock/Hume contact is covered but was picked just above the top of a prominent Bear Rock exposure on a change in slope and scree type and color.

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SUMMARY

of

STRATIGRAPHIC SECTION LDC - 11

Co-ordinates: 64° 00'N & 123° 20'W

Geographic Location: McConnell Range of Franklin Mountains
7 miles NW (330°) of Woodman Head

Geologists: C.D. McCord, R.B. Perry & H.K. Roessingh

Date Measured: June 24, 1961

Formations Described:

	Thickness	
Ordovician		
Franklin Mountain	1,500	complete
Cambrian		
Saline River	980	
Cap Mountain	700	
Mount Clark	30	incomplete
Total	3,210'	

Sample Record: Bagged - 28 samples, at approx. 33' stratigraphic intervals of exposed section
Crushed - 28 samples in 1 box
Sample Identification: Box 1 June 24 Mc1620-Mc3460

Photographs: Pages 18 & 19

Air Photo Reference: A12620-44

Link Downing Cooke & Co. Ltd.

SECTION 11

Section 11 is on the west limb of the large anticline that in this area forms the front of the McConnell Range. The axis, is a northwest-southeast trending valley and the traverse of the section which was down the northeast facing scarp, terminated at the bottom of this valley. Measurement, which began at the base of the Mount Kindle Formation, included the Franklin Mountain, Saline River, Cap Mount- and Mount Clark. All formations were found to be in normal sequence and there was no indication of repetition or faulting. Average strike is 300° with the dip ranging from 30° to 35° southwest.

The Saline River and Cap Mountain formations were very poorly exposed at this location as they are everywhere in the McConnell Range. However, Section 11 is valuable in that the conformable sequence of all strata facilitates the measurements of these recessive formations.

SUMMARY

of

STRATIGRAPHIC SECTION LDC - 12

Co-ordinates: 64° 15'N & 123° 56'W

Geographic Location: McConnell Range of Franklin Mountains
18 miles NW (315°) of Twin Peaks

Geologists: F. Halkow & R.B. Perry

Date Measured: June 25, 1961

Formations Described:

	Thickness	
Lower Devonian		
Bear Rock	470	incomplete
Lower Lone Mtn.	350	
Silurian	650	
Ordovician		
Mount Kindle	290	
Franklin Mountain	190	incomplete
Total	1,950'	

Sample Record: Bagged - 28 samples, at approx. 13' stratigraphic intervals of exposed section
Crushed - 28 samples, in 1 box
Sample Identification:- Box 1 June 25 FH190-FH2880

Photographs: Page 20

Air Photo Reference: A 12539-198

Link Downing Cooke & Co. Ltd.

SECTION 12

Section 12 is on the southwest limb of a ruptured anticline trending NW-SE, the axis of which is immediately to the NE of the terminus of the section. Measurement commenced near top of ridge, well within the Bear Rock, and traversed eastward along crest of spur and down the slope of mountain where it terminated below the top of Franklin Mountain formation some distance above the valley floor. Sampling and examination was carried out through the lower part of Bear Rock, the lower Lone Mountain and into the Silurian. The remainder of the section was measured only for formational thicknesses. Formation contacts were covered but were established usually on change in slope and change in scree between exposures of known rock types. The attitude of the beds did not show any appreciable variation from an average of 120° for strike and 21° W for dip.

SUMMARY

of

STRATIGRAPHIC SECTION LDC 12BR

Co-ordinates: 64° 18'N & 123° 44'W

Geographic Location: McConnell Range of Franklin Mountains
15.6 miles NW (337°) of N peak of Twin Peaks

Geologists: H.K. Roessingh & F. Halkow

Date Measured: June 30, 1961

Formations Described:

		Thickness	
Lower Devonian			
	Bear Rock	960'	incomplete
	Total	960'	

Sample Record: Bagged - 16 samples, at approx. 30' stratigraphic intervals of exposed section

Crushed- Nil

Sample Identification:- June 30 HR701-HR716

Photographs: Nil

Air Photo Reference: A12639-71

Link Downing Cooke & Co. Ltd.

SECTION 12 BR

This section is located on an isolated dome-shaped mountain to the northeast of where the McConnell Range takes a more westerly swing. The entire section is a Bear Rock examination; measurement and description commenced below the lowermost exposures on the northeast slope, proceeded upwards to the southwest and terminated in brush cover above the highest exposure near the top of the mountain. Attitudes range from a strike of 100° and dip of 15° northeast to a strike of 140° and dip of 10° southwest and indicate flexuring of a small local anticline. However, the mountain is its expression of the northeast rim of a very well defined syncline on the east edge of the McConnell Mountains. The syncline is possibly bounded by faults along both limbs and the slope measured in this section is the fault scarp on the east limb of its syncline.

SUMMARY

of

STRATIGRAPHIC SECTION LDC - 13

Co-ordinates: 64° 29' N & 124° 17'W

Geographic Location: McConnell Range of Franklin Mountains
5 miles NW (330°) of Mount Clark

Geologists: C.D. McCord, F. Halkow, H.R. Young & R.B. Perry

Date Measured: June 30, 1961

Formations Described:

		Thickness	
Middle Devonian			
	Hare Indian	430	incomplete
	Hume	770	
Lower Devonian			
	Bear Rock	690	
	Lower Lone Mtn.	590	
Silurian		390	
Ordovician			
	Mt. Kindle	200	
	Franklin Mtn.	850	incomplete-faulted
Cambrian			
	Mt. Clark	35	incomplete
	Total	3,955'	

Sample Record: Bagged - 66 samples, at approx. 14' stratigraphic intervals of exposed section

Crushed - 66 samples in 2 boxes

Sample Identification:- Box 1 June 30 Mc0-Mc2150
Box 2 June 30 Mc2160-Mc2390

Photographs: Nil

Air Photo Reference: A13437-164

Link Downing Cooke & Co. Ltd.

SECTION 13

This section was measured in a northeast direction across the northern portion of the mountain where strike trends at 305° and dips range from 75° to 85° southwest. Measurement commenced in a small "V" shaped notch where the Franklin Mountain is in fault contact with Cambrian quartzites of the Mt. Clark Formation; it traversed up over a ridge comprised of resistive Franklin Formation dolomites. The Kindle-Franklin contact zone was also represented by a "V" shaped notch where the scree from each formation covered one side of the depression. A second ridge was comprised of near vertical Kindle strata, then the traverse terminated in the recessive weathering Lone Mountain and Bear Rock formations on the east flank of the mountain. Outcrop was not continuous, much of section being covered with scree and vegetation. Hume and Hare Indian formations were not measured but were calculated from cursory examination of outcrop, aerial reconnaissance and measurements from aerial photos.

SUMMARY

of

STRATIGRAPHIC SECTION LDC- 14

Co-ordinates: 64° 29' N & 124° 26' W

Geographic Location: McConnell Range of Franklin Mountains
9 miles NW (305°) of Mount Clark

Geologists: C.D. McCord, R.B. Perry & H.K. Roessingh

Date Measured: July 1, 1961

Formations Described:

		Thickness	
Cambrian	Saline River	600	incomplete
	Total	600'	

Sample Record: Bagged - 36 samples, at approx. 13' stratigraphic intervals of exposed section

Crushed- 35 samples, in 1 box

Sample Identification:- Box 1 July 1 HR20-HR240

Photographs: Page 21

Air Photo Reference: A11974-194

SECTION 14

Good exposures of a thin bedded carbonate series was noted in the bluffs of isolated mesa type mountains to the northwest of Mount Clark. A stratigraphic section was located on one of these scarps to provide information on the Franklin Mountain Formation at this latitude.

The Formation outcropping at Section 14 is not Franklin Mountain Formation, but Saline River Formation. The strata are in an unusually high topographic position as a result of a broad doming uplift that is located to the west of the front fault of the McConnell Mountains in this area.

The limestone strata is horizontal so stratigraphic thickness were calculated simply by correction for profile slope angle. The diagnostic anhydrite beds of the Saline River Formation were not in outcrop here but probably underlie the scarp face in a similar topographic position to the anhydrite outcrops in cut banks of the Saline River 10 miles to the south.

SUMMARY
of
STRATIGRAPHIC SECTION LDC- 15

Co-ordinates: 64° 40' N & 124° 29' W

Geographic Location: McConnell Range of Franklin Mountains on Big Smith Creek, 12 miles east (095°) of Old Fort Point

Geologists: H.R. Young & F. Halkow

Date Measured: July 1 & 2, 1961

Formations Described:

		Thickness	
Middle Devonian			
	Hume	370	incomplete
	Total	370'	

Sample Record: Bagged - 29 samples at approx. 10' stratigraphic intervals of exposed section

Crushed- 29 samples in 1 box

Sample Identification: - Box 1 July 1 YH 0 - YH 340
July 2 YH 350-YH 445

Photographs: Page 22

Air Photo Reference: A11974-148

Link Downing Cooke & Co. Ltd.

SECTION 15

Measurement and examination of this section commenced in Hume rocks with the first cliff-forming beds at a point where they emerge from creek level. The traverse proceeded up on the north flank of the valley and terminated at the highest exposure of Hume some distance back of the rim of the valley. The exposed Hume consists of two prominent sheer cliff-forming beds of fossiliferous limestone separated and underlain by scree covered slopes. These beds dip gently westward until they successively disappear below creek level Eastward they continue rising for some distance, then flatten out and remain relatively constant before again dipping down and disappearing below water level Measurement of the attitude of the rocks indicated a strike of 025° and a dip of approximately 5° northwest

SUMMARY
of
STRATIGRAPHIC SECTION LDC 15BR

Co-ordinates: 64° 38' N & 124° 29' W

Geographic Location: McConnell Range of Franklin Mountains
12.8 miles southeast (107°) of Old Fort Point

Geologists: R.B. Perry & H.K. Roessingh

Date Measured: July 2, 1961

Formations Described:

	Thickness	
Lower Devonian		
Bear Rock	450	incomplete
Lower Lone Mtn.	110	incomplete
Total	560'	

Sample Record: No record of samples collected

Photographs: Nil

Air Photo Reference: A11974-150

SECTION 15 BR

Section 15 BR is at the northern exposed limit of an imbricate fault structure having a west facing scarp and an eastern dip slope. Immediately to the south-west is a ruptured anticline trending north-northeast. It is on the plunging northeast flank of the anticline that this fault slice is positioned trending north-west. Measurement and examination began in Lone Mountain Formation at the lowest exposure on the west flank of the mountain, proceeded eastward and terminated in Bear Rock on top of the Ridge. Strike was measured at 330° and dip at 55° northeast.

SUMMARY
of
STRATIGRAPHIC SECTION LDC - 16

Co-ordinates: 64° 19' N & 126° 02' W

Geographic Location: Canyon Ranges of Mackenzie Mountains
nine miles northwest (315°) of mouth of Summit Creek

Geologists: C. D. McCord & H. K. Roessingh

Date Measured: July 6, 1961

Formations Described:

		Thickness	
Middle Devonian			
	Hume	170	incomplete
Lower Devonian			
	Bear Rock	1,070	
	Lone Mountain	140	incomplete
	Total	1,380'	

Sample Record: Bagged - 33 samples, at approx. 25' stratigraphic intervals of exposed section
Crushed - 33 samples, in 1 box
Sample Identification:- Box 1 July 6 Mc2670-Mc 0

Photographs: Page 28

Air Photo Reference: A12063-60

SECTION 16

This section is on the west limb of the Summit Creek anticline that trends northwest-southeast. A small creek, paralleling the anticline axis, has cut in exposing Hume, Bear Rock, and lower Lone Mountain beds in the east facing scarp. It is this scarp that was measured and described. Traverse had commenced in the creek bed at the lowermost exposed beds of lower Lone Mountain and terminated on top of the ridge in Hume Formation. Strike was found to be 310° and dip 17° southwest.

SUMMARY

of

STRATIGRAPHIC SECTION LDC- 17

Co-ordinates: 63° 48' N & 126° 02' W

Geographic Location: Canyon Ranges of Mackenzie Mountains
5 miles southeast (135°) of Foran Lake Observation Monument

Geologists: F. Halkow, R.B. Perry & H.R. Young

Date Measured: July 5, 1961

Formations Described:

	Thickness	
Lower Devonian		
Lone Mountain (upper)	60	incomplete
Bear Rock	730	incomplete?
Lone Mountain (lower)	160	
Total	950'	

Sample Record: Bagged - 47 samples, at approx. 13' stratigraphic intervals of exposed section
Crushed- 47 samples, in 1 box
Sample Identification:- Box 1 July 5 HYP 1-HYP2560

Photographs: Page 30

Air Photo Reference: A12063-39

SECTION 17

Section 17 is on the east limb of a ruptured anticline the axis of which is in the lowland immediately to the west. Measurement began in lower Lone Mountain well down the west facing scarp, proceeded through the Bear Rock upwards along a gully, and terminated in upper Lone Mountain some distance below the top of the ridge, still on the scarp face. Strike was measured at 127° and dip at 16° northeast. A fault with an apparent low-angle to bedding was noted to be present in the Bear Rock Formation and it could be possible that beds adjacent to the measured section may very well be faulted, in fact a low angle folded fault is interpreted to be present above this section to explain the presence of a dark weathering strata thought to be Kindle Formation on the peak of this mountain.

SUMMARY

of

STRATIGRAPHIC SECTION LDC- 18

Co-ordinates: 63° 51'N & 126° 30' W

Geographic Location: Canyon Ranges of Mackenzie Mountains 11 miles due west of Foran Lake Observation Monument

Geologists: F. Halkow, H R. Young & R.B. Perry

Date Measured: July 6, 1961

Formations Described:

	Thickness	
Lower Devonian		
Lone Mtn. (upper)	150	incomplete
Bear Rock	860	
Lone Mtn. (lower)	130	incomplete
Total	1,140'	

Sample Record: Bagged - 44 samples, at approx. 11' stratigraphic intervals of exposed section

Crushed - 44 samples in 1 box

Sample Identification:- Box 1 July 6 PYH 5 - PYH2175

Photographs: Page 24

Air Photo Reference: A12055-317

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SECTION 18

This section is to the west of the axis of a long broad anticline which in this area plunges gently to the southeast. The ancient uplifted land surface has been considerably dissected by stream erosion leaving an assortment of ridges, pinnacles, domes, mesas and spurs suggestive of badland topography. The traverse was down the east face of one of these ridges. It began in the upper zone of Lone Mountain Formation at the crest and terminated in lower Lone Mountain some distance above a dry creek bed. Strike is 165° and dip varies from 5° to 12° southwest. To the southwest the dip appears to be abruptly steeper, while to the northeast it is gentle and relatively flat.

SUMMARY

of

STRATIGRAPHIC SECTION LDC- 19

Co-ordinates: 63° 54' N & 126° 06' W

Geographic Location: Canyon Ranges of Mackenzie Mountains
4 miles NE (025°) of Foran Lake Observation Monument

Geologists: H. K. Roessingh, R. B. Perry, H. R. Young & F. Halkow

Date Measured: July 7 & 10, 1961

Formations Described:

		Thickness	
Lower Devonian			
	Bear Rock	80	incomplete
	Lower Lone Mtn.	800	
Silurian		1,630	
Ordovician			
	Mt. Kindle	590	
	Franklin Mtn.	380	incomplete
	Total	3,480'	

Sample Record: Bagged - 200 samples, at approx. 10' stratigraphic intervals of exposed section

Crushed - 199 samples in 4 boxes

Sample Identification:-

Box 1	July 7	HR6250-HR0
Box 2	July 7	YH20-YH890
	July 10	YH905-YH1290
Box 3	July 10	YH1300-YH1880
Box 4	July 10	YH1895-YH3190

Photographs: Page 27

Air Photo Reference: A12063-132

SECTION 19

Section 19 is located on an anticline close to where it plunges to the south. Measurement was done by two parties and commenced well within the Silurian on the east facing scarp slope. One traverse was carried westward, up the slope to the ridge then down the western dip slope and across a saddle to a knoll where Bear Rock is exposed as an east facing cliff. The upper part of the Silurian and Lone Mountain were covered in the saddle.

The second traverse was carried eastward along the spur and then down the north facing flank to a prominent resistive bed. Section was then jogged eastward again laterally along this bed to the crest of the spur and continued down where it terminated in Franklin Mountain scree just above the valley floor. Strike of the beds is 345° and dips which are erratic in the lower part of section, averaged from 13° to 22° southwest. A persistent streak of brecciation, transgressing bedding at an estimated 1°-2° is indicative of a low-angle fault within the Silurian.

SUMMARY

of

STRATIGRAPHIC SECTION LDC- 20

Co-ordinates: 63° 57' N & 126° 13' W

Geographic Location: Canyon Ranges of Mackenzie Mountains
7 miles N.W. (345°) of Foran Lake Observation Monument

Geologists: H.K. Roessingh & R.B. Perry

Date Measured: July 10, 11, 12 & 13, 1961

Formations Described:

		Thickness	
Middle Devonian	Hume	820	incomplete
Lower Devonian	Bear Rock	380	faulted?
	Lower Lone Mtn.	1,660	faulted-repeated
Silurian		790	incomplete
	Total	3,650'	

Sample Record: Bagged - 126 samples, at approx. 12 foot intervals of exposed section

Crushed- 124 samples in 3 boxes

Sample Identification:-

Box 1	July 11 HR 0-HR3150
Box 2	July 10 HR 0-HR1190
	July 12 HR3150-HR4950
Box 3	July 13 HR5800-HR8500

Photographs: Nil

Air Photo Reference: A12063-218

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SECTION 20

Section 20 is on the west limb of an anticline that westward passes in to a syncline. Traverse began in Hume Formation, proceeded eastward along a creek and terminated in Silurian beds. Strike is 335° while dip ranges from 45° southwest in the Hume Formation where the anticlinal limb steepens towards the syncline, to 24° in the Silurian as it approaches the axis of the anticline. The section is anomalous in that Bear Rock breccia and the Hume Formation are in contact. Other sections north, west and south of Foran Lake indicate that the upper zone of the Lone Mountain Formation is present between the Bear Rock and Hume formations. Also, the lower Lone Mountain is anomalously thick. Postulation is that the upper Lone Mountain and part of the Bear Rock Formation has been faulted out and that the lower Lone Mountain has been repeated.

SUMMARY

of

STRATIGRAPHIC SECTION LDC-21A

Co-ordinates: 63° 24' 30" N & 125° 31'W

Geographic Location: Canyon Ranges of Mackenzie Mountains
12 miles southeast (124°) of mouth of Martin Creek

Geologists: F. Halkow & H.R. Young

Date Measured: July 11, 1961

Formations Described:

	Thickness	
Middle Devonian		
Hume	835	incomplete
Lower Devonian		
Lone Mountain	15	incomplete
Total	850'	

Sample Record:

Bagged - 47 samples, at approx. 9' stratigraphic intervals of exposed section
Crushed - 47 samples, in 1 box
Sample Identification:- Box 1 July 11 HY1760-HY8

Photographs: Nil

Air Photo Reference: A12061-383

SECTIONS 21A & 21B

Section 21A commenced in the lower Lone Mountain on the north flank of the mountain, proceeded upwards and terminated in Hume Formation, at the top of the 'mesa-like' mountain. As a large portion of Hume beds were found to be covered, Section 21B was measured to observe the better exposed upper portion of Hume. This section commenced on the east flank of the mountain, proceeded upwards, and terminated at the top by tying in to Section 21A. It was intended to integrate the two sections but structural configuration and the absence of correlative zones prevented this.

On Section 21A the strike is 159° and dip is 18°E, while on Section 21B the strike is 140° and the dip ranges from 27° to 48° to 5° W. The sections are on the west and east limb of a syncline that is plunging to the south.

SUMMARY

of

STRATIGRAPHIC SECTION LDC-21B

Co-ordinates: 63° 24' 30" N & 125° 30' 50" W

Geographic Location: Canyon Ranges of Mackenzie Mountains
12 miles southeast (124°) of mouth of Martin Creek

Geologists: F. Halkow & H.R. Young

Date Measured: July 12, 1961

Formations Described:

		Thickness	
Middle Devonian	Hume	786'	incomplete
	Total	786'	

Sample Record:
Bagged - 43 samples, at approx. 12' stratigraphic intervals of exposed section
Crushed - 43 samples, in 1 box
Sample Identification: Box 1 July 12 HY915-HY 0

Photographs: Nil

Air Photo Reference: A12061-383

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SUMMARY
of
STRATIGRAPHIC SECTION LDC - 22

Co-ordinates: 63° 15' 45" N & 125° 19' 30" W

Geographic Location: Canyon Ranges of Mackenzie Mountains
23.6 miles southeast (145°) of mouth of Martin Creek

Geologists: F. Halkow, H.R. Young & H.K. Roessingh

Date Measured: July 17, 19, 20, 23 & 26, 1961

Formations Described:	Thickness	
Middle Devonian		
Hume	1	incomplete
Lower Devonian		
Upper Lone Mountain	2,140	
Bear Rock	2,530	
Lower Lone Mountain	1,366	
Silurian	444	
Silurian Reef	2,320	
Ordovician		
Mount Kindle	1,895	
Franklin Mountain	70	incomplete
Total	10,766'	

Sample Record: Bagged - 327 samples at approx. 20' stratigraphic intervals of exposed section

Crushed- 327 samples, in bottles in 6 boxes

Sample Identification:-

Box 1	July 17	HY 0-HY 2330
Box 2	July 17	HY 2360- HY 2500
	July 19	HY 2525-HY 4682
Box 3	July 19	HY 4710- HY 5340
	July 20	HY 8020-HY 11,550
Box 4	July 20	HY 11,600-HY 12,320
	July 23	HY 12,450-HY 13,925
Box 5	July 23	HY 13,950-HY 15,100
	July 26	HY 15,120-HY 15,875
Box 6	July 26	HY 15,900-HY 19,440

Photographs: Pages 33, 34 & 35

Air Photo Reference: A12022-194

SECTION 22

Section 22 traverses most of the west limb of an anticline the axis of which is a short distance east of the terminus of the section. Measurement commenced at the Hume/Lone Mountain contact on a mountain on the west side of the range, traversed along the crest in a north-easterly direction, thence eastward down into and across the valley, and on to and along a spur of the core of the range. At the eastern terminus of the spur the section was jogged north to another spur and continued until it terminated in Franklin Mountain rocks which form a prominent north-south ridge. Strike varies from 340° to 002° and dips range from 36° west in the upper Lone Mountain to 70° west in the Franklin Mountain Formation. All strata measured, from the Hume to the Franklin Mountain, do not show any repetition or displacement but indicate a complete stratigraphic sequence. A continuous cross section on a scale of 1" = 100' was used to calculate true thickness on this section.

SUMMARY
of
STRATIGRAPHIC SECTION LDC- 23

Co-ordinates: 63° 49' N & 125° 56' W

Geographic Location: Canyon Ranges of Mackenzie Mountains
8 miles SE (115°) of Foran Lake Observation Monument

Geologists: H.K. Roessingh & R.B. Perry

Date Measured: July 17, 18 & 19, 1961

Formations Described:

	Thickness	
Upper Devonian		
Imperial	1,020	incomplete
Middle Devonian		
Hare Indian	600	
Hume	1,580	
Lone Mountain (upper)	720	
Bear Rock	710	incomplete?
Total	4,630'	

Sample Record: Bagged - 161 samples, at approx. 13' stratigraphic intervals of exposed section

Crushed- 161 samples in bottles, in 3 boxes

Sample Identification:-

Box 1	July 17	HR 0 - HR 5200
	July 18	HR 5201 - HR 5700
Box 2	July 18	HR 5720 - HR 9500
Box 3	July 19	HR 6200A - HR7700A

Photographs: Page 30

Air Photo Reference: A 12061-179

SECTION 23

Section 23 commenced in the Upper Devonian shales within the syncline just to the east of the main Canyon Range. It traversed westward through Hare Indian, Hume and Lone Mountain formations on the first main ridge of the range. Poor exposures at this location necessitated jogging north and continuing the section along the next spur. Section terminated at a fault well within the Bear Rock. West of this fault the Bear Rock is repeated at least once, possibly twice. Strike of beds is fairly consistent at 335° while the dip varies from 25° E in the Upper Devonian shales to 70° in the Hume.

SUMMARY

of

STRATIGRAPHIC SECTION LDC- 24

Co-ordinates: 64° 14'N & 126° 03' W

Geographic Location: Canyon Ranges of Mackenzie Mountains
7 miles due west of mouth of Summit Creek

Geologists: H. K. Roessingh, H. R. Young & R. B. Perry

Date Measured: July 20 & 21, 1961

Formations Described:

		Thickness	
Silurian		850	incomplete
Ordovician			
	Mount Kindle	200	
	Franklin Mountain	80	incomplete
	Total	1,130'	

Sample Record: Bagged - 82 samples, at approx. 13' stratigraphic intervals of exposed section
Crushed - 82 samples, in bottles in 2 boxes
Sample Identification:-

Box 1	July 21	HR 2015-HR 1260
Box 2	July 21	HR 1240-HR 720
	July 20	HR 700-HR 0

Photographs: Pages 20 & 28

Air Photo Reference: A12063-56

SECTION 24

This section was measured up a steep east facing fault scarp on a mountain located on the eastern rim of a broad syncline. The fault resulted from the rupture of a sharp anticline that is located on strike to the south of this section.

Measurement began below the top of the Franklin Mountain Formation, continued upwards over the crest of the mountain and terminated in Silurian age rocks in the western dip slope area. Beyond the terminus of the section the area is covered with vegetation and outcrops are few. Strike of beds was 335° and dip 18° west. Formational contacts were sharp and well defined.

SUMMARY

of

STRATIGRAPHIC SECTION LDC - 25

Co-ordinates: 64° 03'N & 126° 00'W

Geographic Location: Canyon Ranges of Mackenzie Mountains
15 miles NE (020°) of Foran Lake Observation Monument

Geologists: H. K. Roessingh, C. D. McCord & F. Halkow

Date Measured: July 22, 1961

Formations Described:

	Thickness	
Middle Devonian		
Hume	1,040	incomplete
Total	1,040'	

Sample Record: Bagged - 55 samples at approx. 14' stratigraphic intervals of exposed section
Crushed - 55 samples in bottles in 1 box
Sample Identification:-
Box 1 July 22 HMH2300-HMH 0

Photographs: Page 26

Air Photo Reference: A12063-48

SECTION 25

Section 25 is located immediately west of the crest of a long northwest-southeast anticline that is overthrust in the north (Section 24) &plunges gently south in the vicinity of Moose Prairie. Section measurement began in the lower Hume Formation at creek level, proceeded up a tributary to the creek and terminated at the top of the second resistive cliff in the Hume strata. Strike varies from 135° to 155° while dip ranges from 8° southwest to 48° southwest. This wide variation in dip is attributed to drag folding and local faulting observed in the sediments as the west flank of the anticline steepened to the west.

KELLER LAKE BLOCK

LAND DESCRIPTIONS OF PERMITS

Permit 2090
Grid area bounded on the South by 63° 40' Lat., on the North by 63° 50' Lat., on the East by 121° 30' Long., and on the West by 121° 45' Long.

Permit 2091
Grid area bounded on the South by 63° 40' Lat., on the North by 63° 50' Lat., on the East by 121° 45' Long., and on the West by 122° 00' Long.

Permit 2092
Grid area bounded on the South by 63° 40' Lat., on the North by 63° 50' Lat., on the East by 122° 00' Long., and on the West by 122° 15' Long.

Permit 2093
Grid area bounded on the South by 63° 50' Lat., on the North by 64° 00' Lat., on the East by 122° 00' Long., and on the West by 122° 15' Long.

Permit 2094
Grid area bounded on the South by 63° 50' Lat., on the North by 64° 00' Lat., on the East by 121° 45' Long., and on the West by 122° 00' Long.

Permit 2095
Grid area bounded on the South by 64° 00' Lat., on the North by 64° 10' Lat., on the East by 121° 45' Long., and on the West by 122° 00' Long.

Permit 2096
Grid area bounded on the South by 64° 00' Lat., on the North by 64° 10' Lat., on the East by 122° 00' Long., and on the West by 122° 15' Long.

Permit 2097
Grid area bounded on the South by 64° 00' Lat., on the North by 64° 10' Lat., on the East by 122° 15' Long., and on the West by 122° 30' Long.

Permit 2098
Grid area bounded on the South by 63° 30' Lat., on the North by 63° 40' Lat., on the East by 122° 15' Long., and on the West by 122° 30' Long.

Permit 2099
Grid area bounded on the South by 63° 30' Lat., on the North by 63° 40' Lat., on the East by 122° 00' Long., and on the West by 122° 15' Long.

Permit 2100
Grid area bounded on the South by 63° 30' Lat., on the North by 63° 40' Lat., on the East by 121° 45' Long., and on the West by 122° 00' Long.

Permit 2101
Grid area bounded on the South by 63° 30' Lat., on the North by 63° 40' Lat., on the East by 121° 30' Long., and on the West by 121° 45' Long.

Permit 2102
Grid area bounded on the South by 63° 30' Lat., on the North by 63° 40' Lat., on the East by 121° 15' Long., and on the West by 121° 30' Long.

Permit 2103
Grid area bounded on the South by 63° 30' Lat., on the North by 63° 40' Lat., on the East by 121° 00' Long., and on the West by 121° 15' Long.

Permit 2104
Grid area bounded on the South by 63° 40' Lat., on the North by 63° 50' Lat., on the East by 121° 00' Long., on the West by 121° 15' Long.

Permit 2105
Grid area bounded on the South by 63° 40' Lat., on the North by 63° 50' Lat., on the East by 121° 15' Long., and on the West by 121° 30' Long.

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PHOTOGRAPHS

FOR

REPORT ON THE GEOLOGICAL SURVEY

WRIGLEY AREA

N.W.T.

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CONSERVATION
Northwest Territories & Yukon Territory

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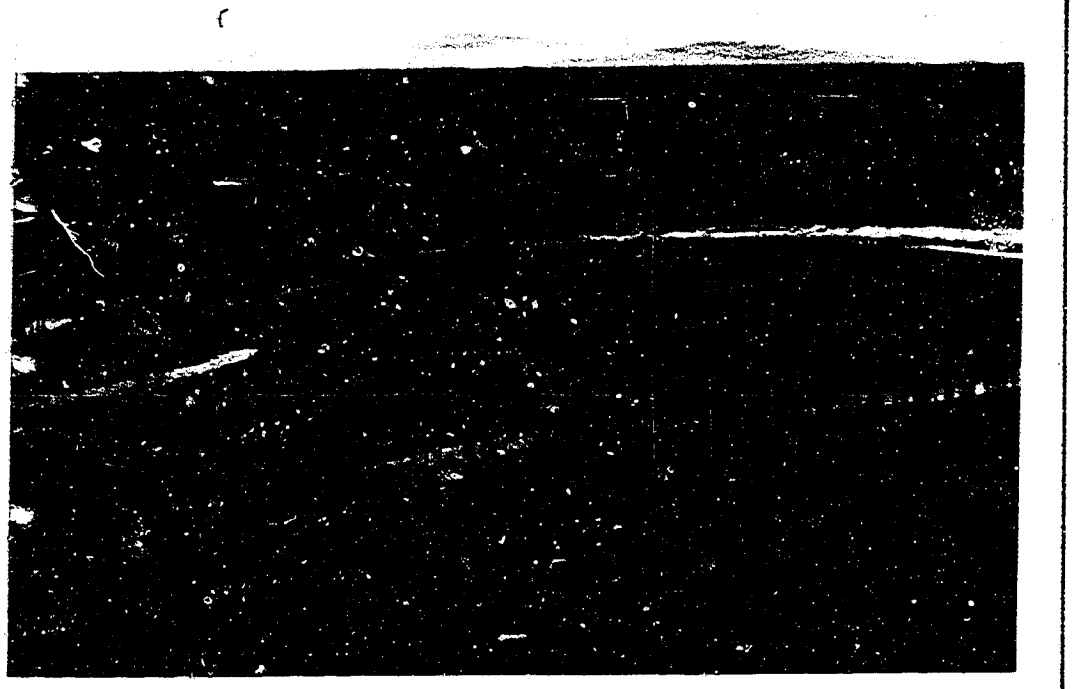
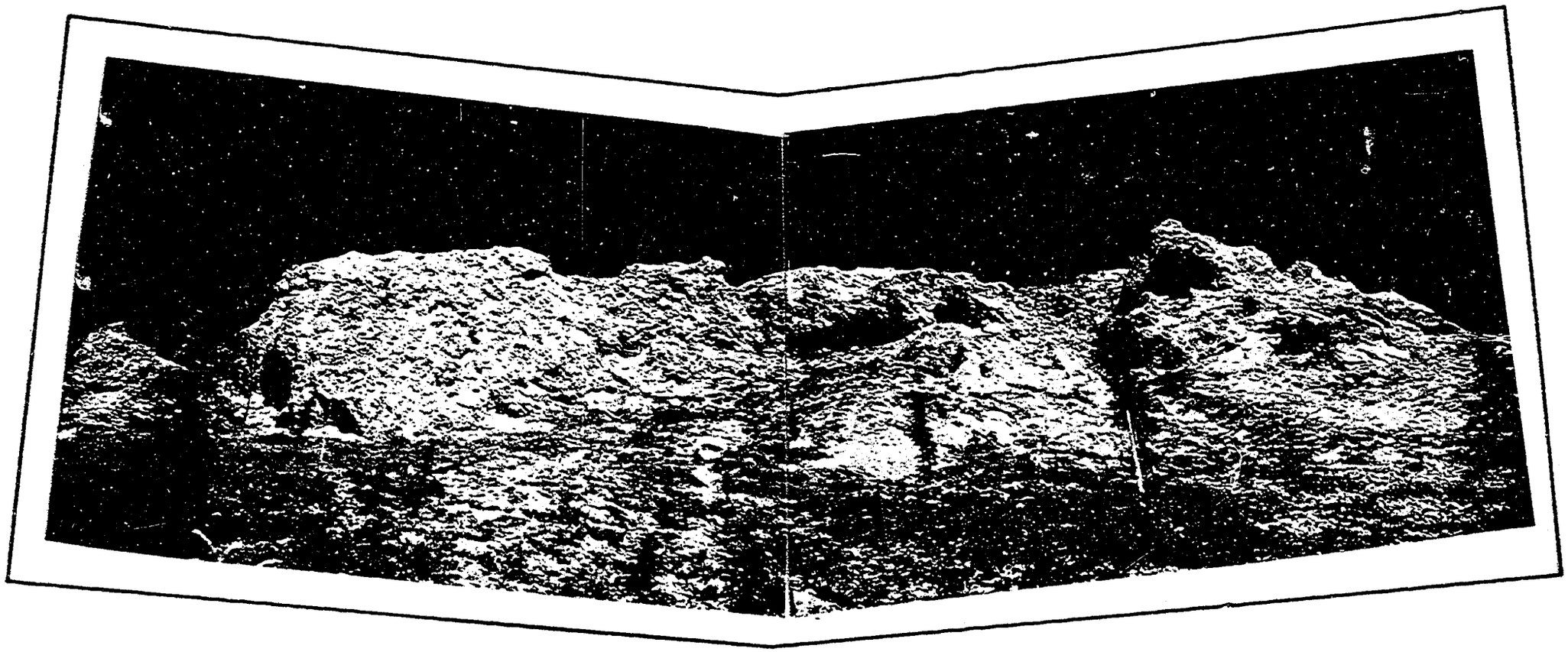


View to southwest from Keller Lake permit: Pleistocene buff colored, clean sandstone in cutbanks of Blackwater River 24 miles upstream from Blackwater Lake; Cap Mtn. on skyline.

View of terrain on Keller Lake permit 6 miles southeast of location above. The same blanket deposit of Pleistocene sandstone forms the shore of the lake.



Bear Rock Formation: a view of the escarpment slope of a massive west dipping bed. View is to the west from the position of the contact of the Bear Rock Formation and Silurian strata at Section 6. The outcrop is rubbly, cavernous and strikingly stained at this location.

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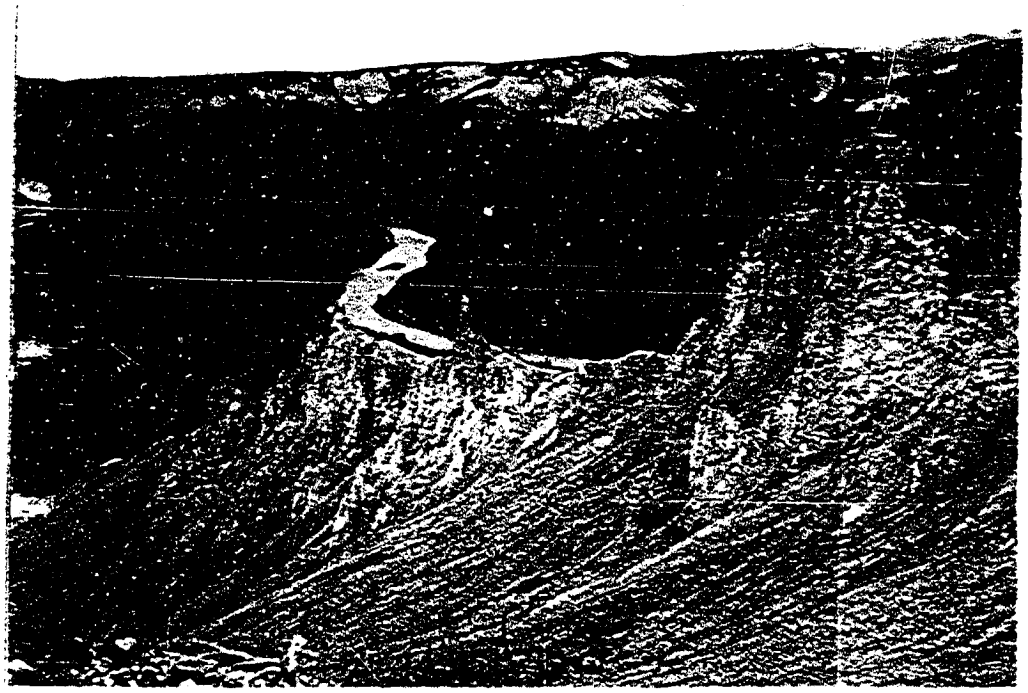
Bear Rock outcrop 4 miles south of Woodman Head: two and possibly three stages of brecciation are indicated here.
(1) Ochre colored granular ground mass
(2) Large angular grey breccia boulder enclosed in (1)
(3) Rounded, fractured Limestone cobble enclosed in (2)

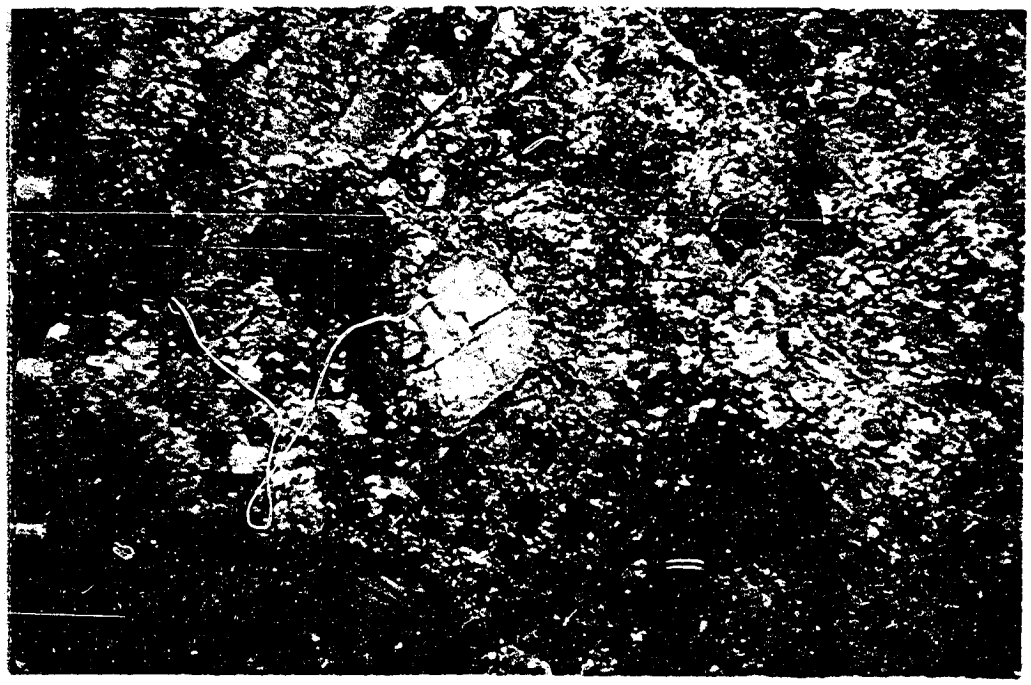
Bear Rock outcrop in Canyon 4 miles south Woodman Head: rounded reddish boulder is quartzite - presumably from the Mount Clark Formation. The pictures on this page are evidence of brecciation in the Bear Rock Formation as a result of intraformational adjustment during diastrophism.

Bear Rock Formation outcrop west of Cap Mountain: abundant limonite occurs as patches in these lower Bear Rock beds. A variety of shapes of vugs are present including round, angular and boxwork.

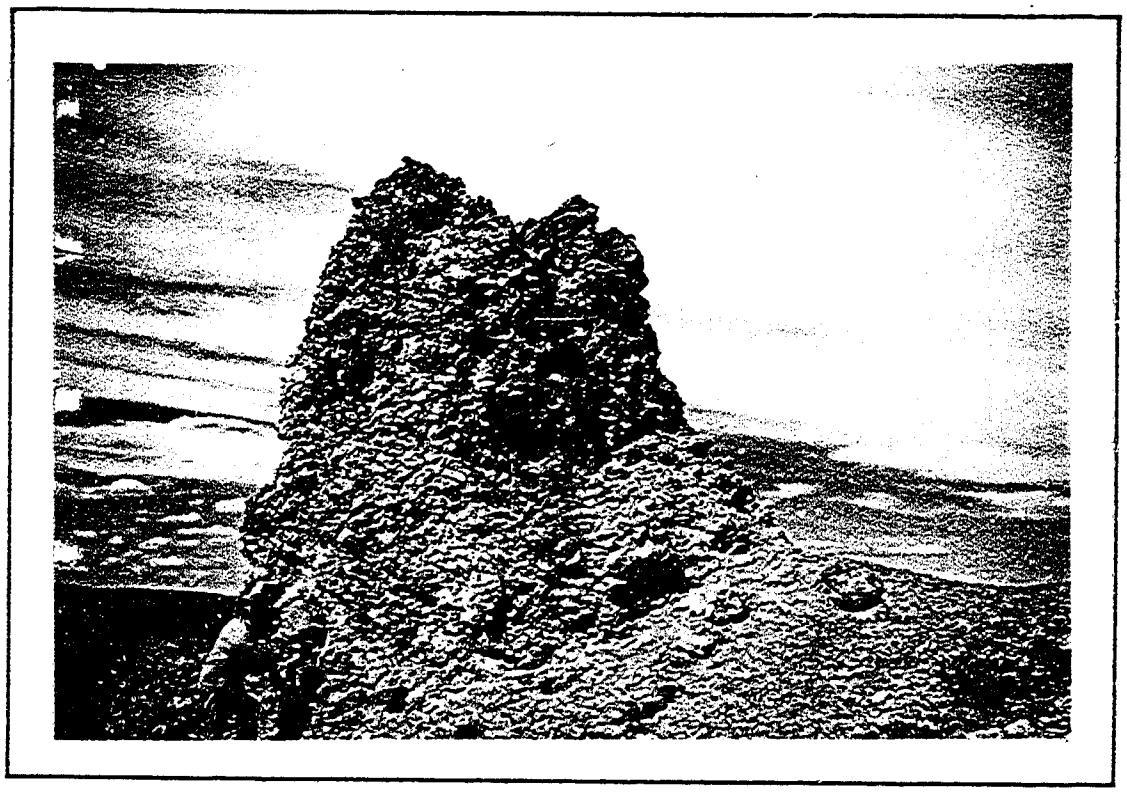
Large rounded boulder of Hume limestone in Bear Rock Formation 4 miles south of Woodman Head. The parting planes reflecting thin bedding within the boulder are quite evident here.



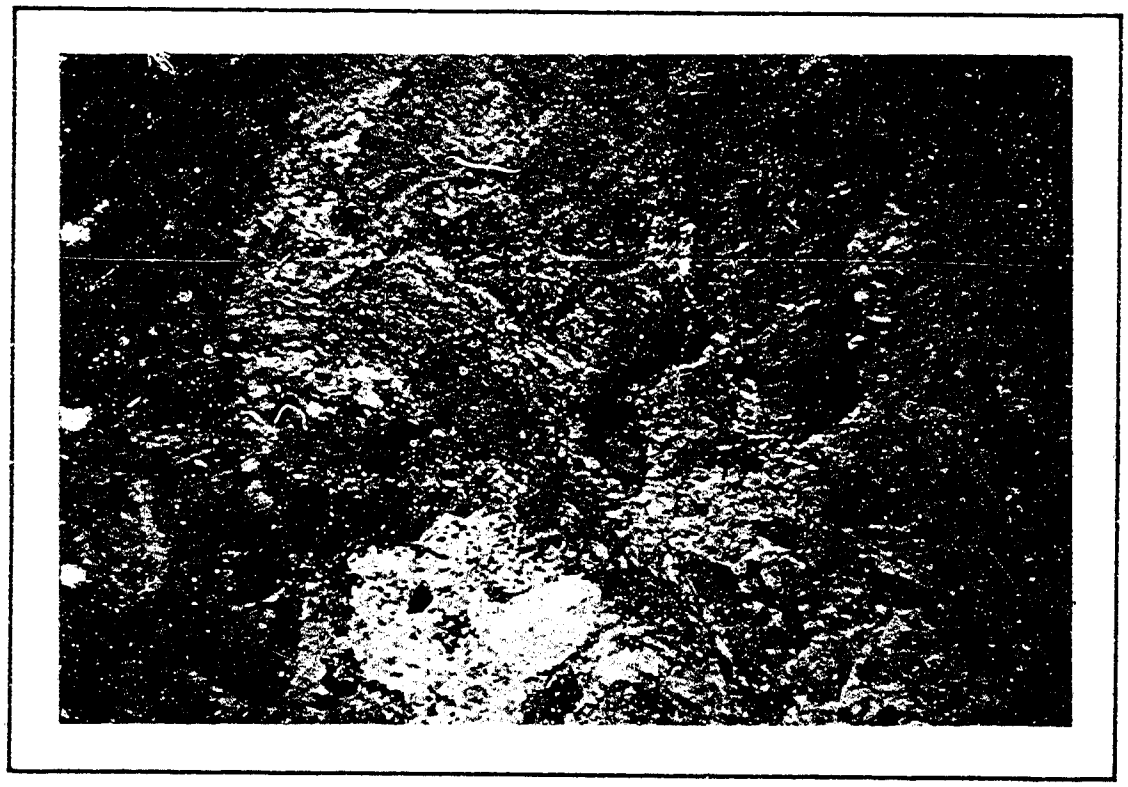
Bear Rock on left bank of Blackwater River: limonitic staining and badlands type of erosion predominate in the isolated cirque shaped outcrop. The feature was referred to as, "The Devil's Kitchen."



Close up view of texture of the Bear Rock breccia on the left bank Blackwater River: a granular limestone matrix and cobble size subangular fragments predominate here. Note the platy parting in the lower fragment; continued weathering of the fragment will produce a boxwork.



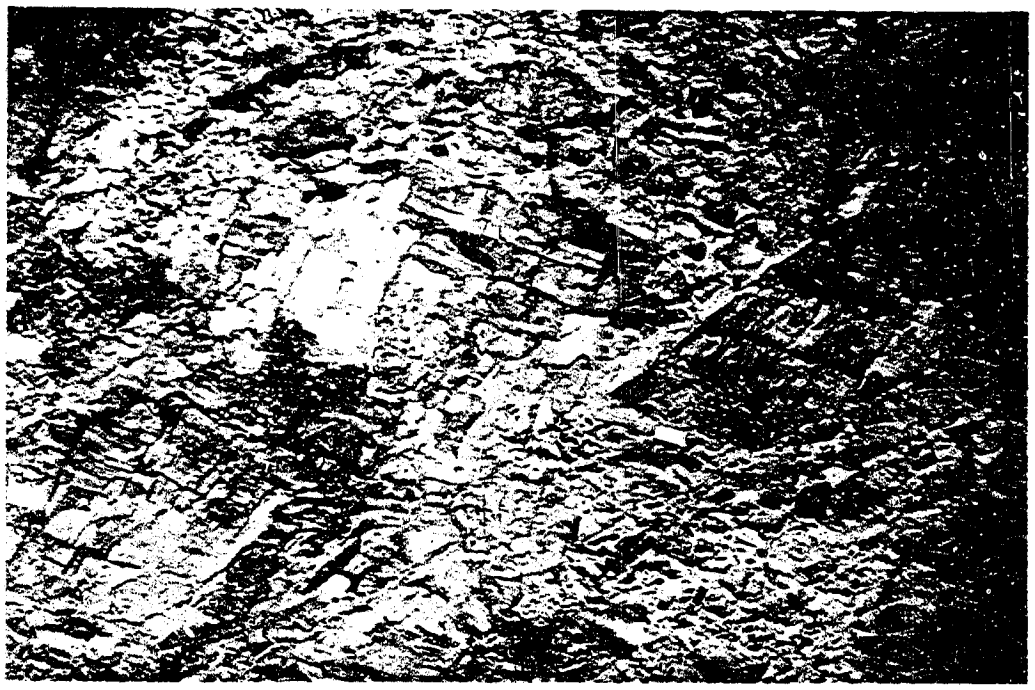
Bear Rock on left bank of Blackwater River: granular to gravel size ground mass containing angular, blocky 2 foot boulders. Bedding that dips downward to the right is evident in this view. Geologist is Fred Halkow.



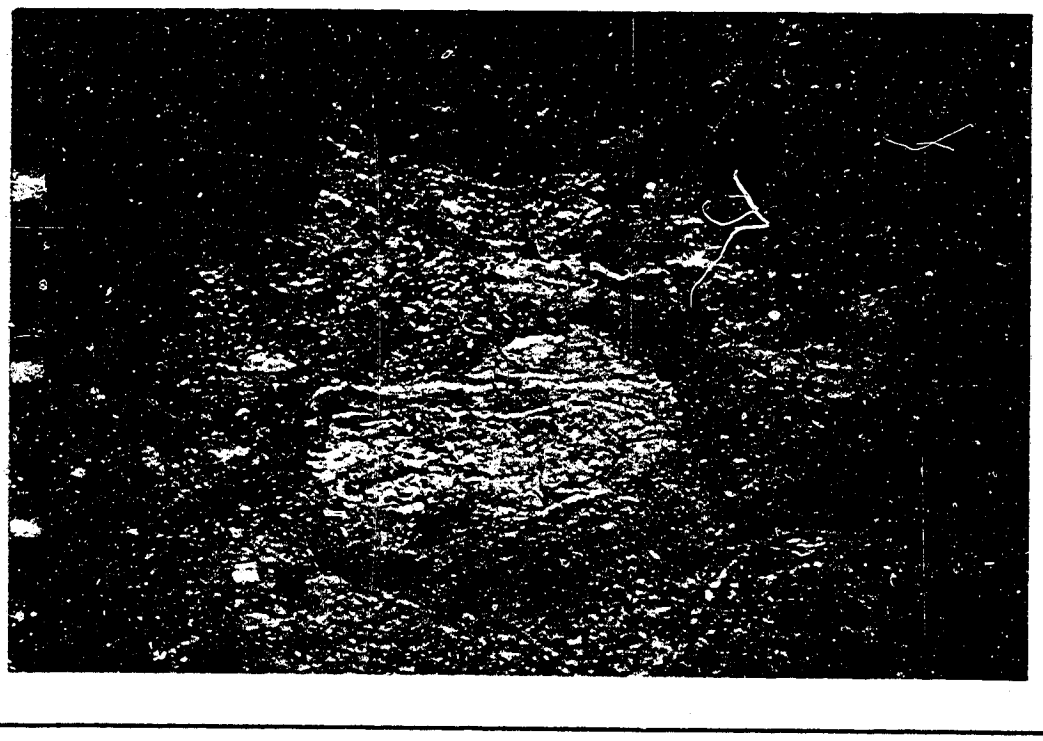
Bear Rock outcrop on left bank of Blackwater River: photo illustrates variety of weathered colors present; secondary crystallization of calcite has cemented small, rounded limestone fragments at base of picture.

Bear Rock breccia exposed on Section 1: large block boulders are in a granular to gravel sized matrix as at Blackwater River Page 6. The first ridge in background is a spur of exposed Bear Rock Formation. The second ridge is comprised of Williams Peak on the left and Mt. Kindle on the right. Mt. Clark formation quartzites outcrop on Cap Mtn. on skyline.

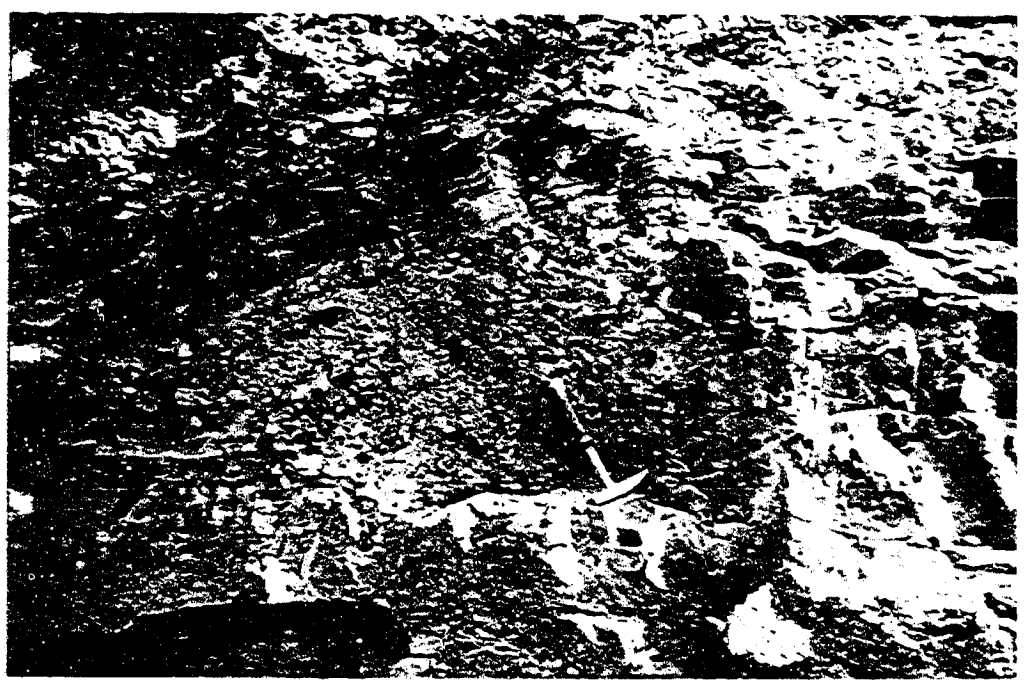
Bear Rock breccia: West of Cap Mtn.; cavities remnant from plucked out, subrounded fragments and from leaching out of angular granular limestone inclusions both evident here. The granular limestone is possibly remnant from the solution of impure salt crystals.



Bear Rock: west of Cap Mountain; prominent boxwork weathered surface very suggestive of leached out anhydrite. No anhydrite is present, however, and below the surface the cavities are filled with granular limestone which possibly is remnant from earlier salt solution.

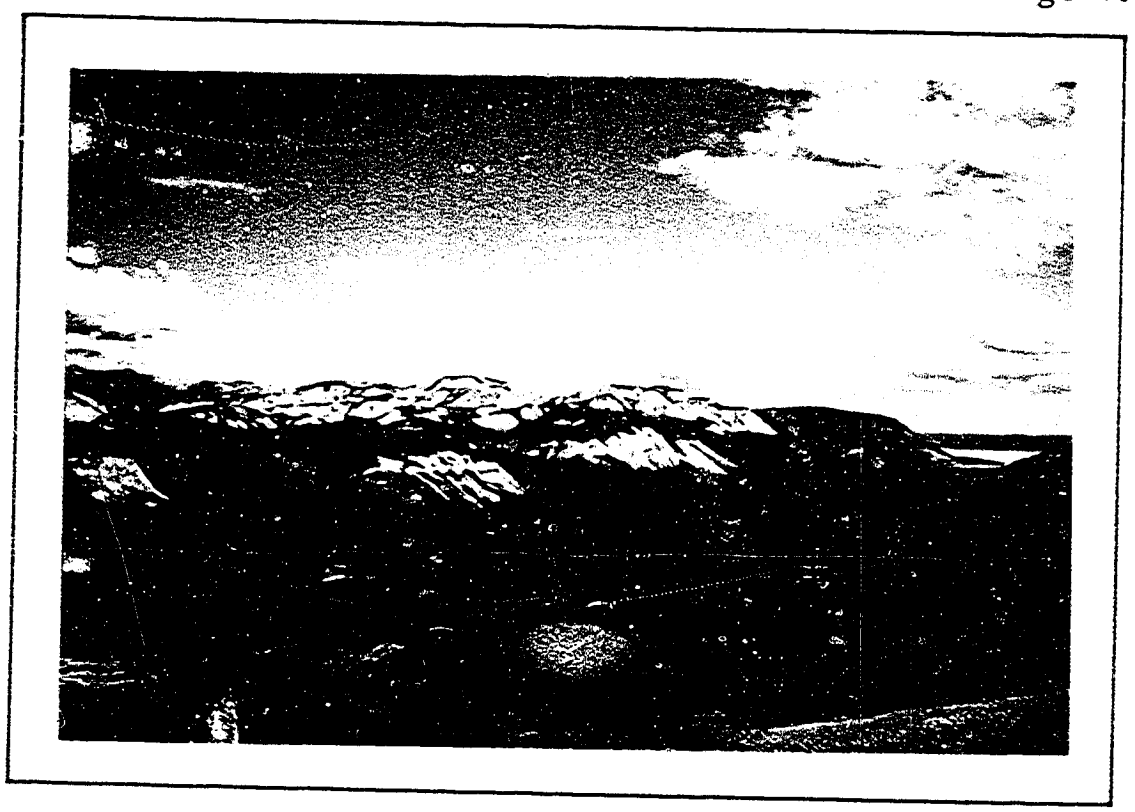


Bear Rock: west of Cap Mountain, granular to gravel size, limestone ground mass enclosing a round boulder of laminated limestone. Other smaller rounded cobbles are also present.

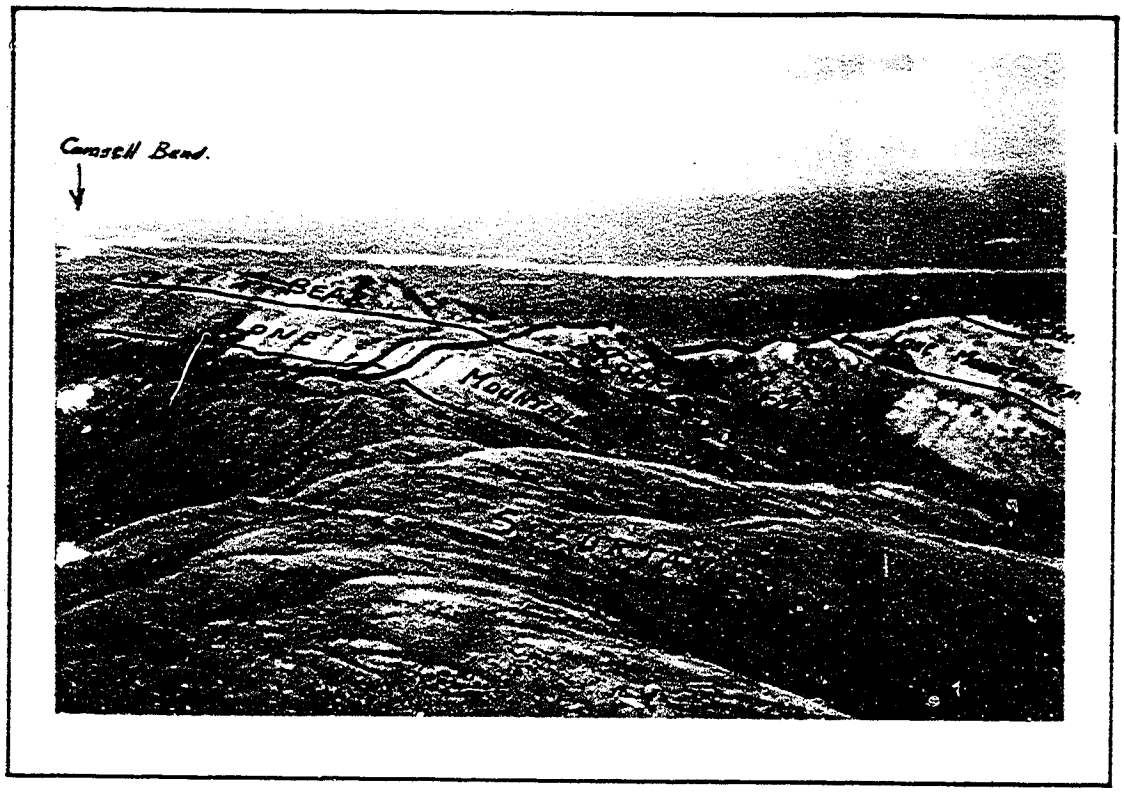


Bear Rock breccia southeast of Wrigley Airport. Here the Limestone breccia is interfingered with very finely crystalline, laminated, argillaceous limestone. The breccia is composed of angular fragments of the bedded limestone cemented in part by coarse calcite, abundant angular vugs result from leaching out of fragments.

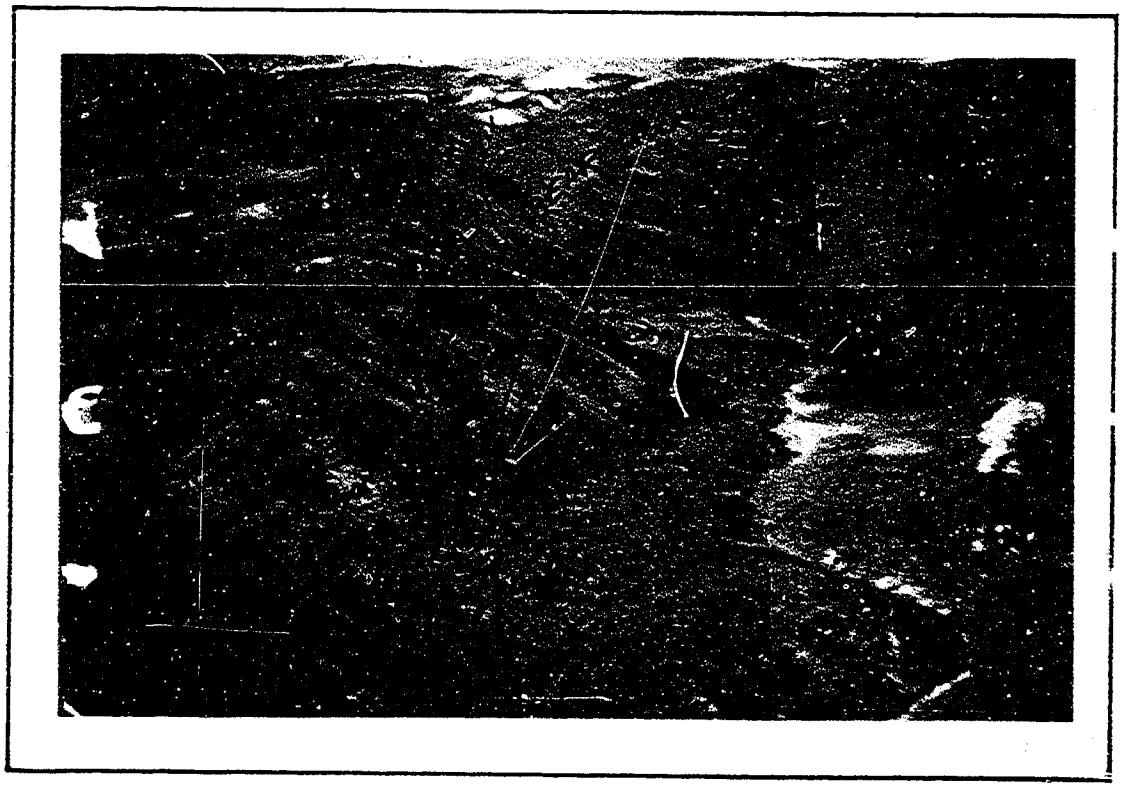
Coarse crystalline dolomite southeast of Wrigley Airport. This phenomenon has been noted throughout the whole map area at the formational boundary between the Hume and Upper Lone Mountain.



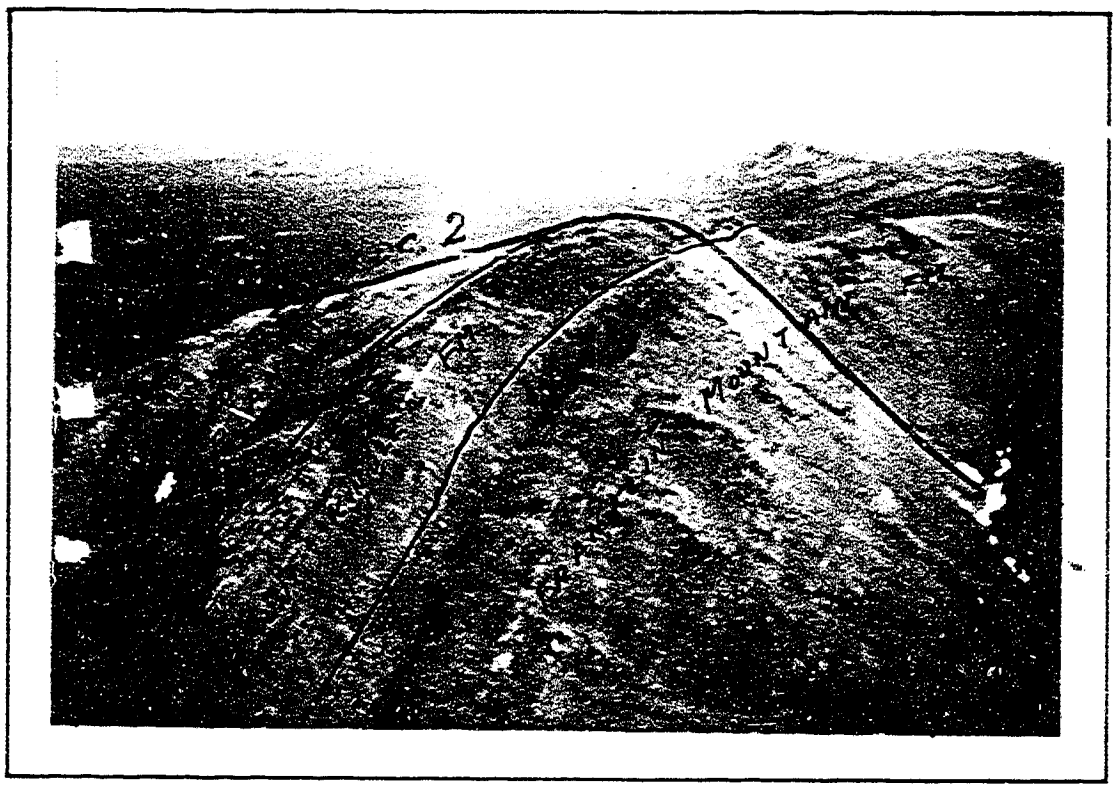
Blackwater River and Blackwater Lake: view is to the northeast from the "Devil's Kitchen." The light colored formation is Bear Rock on gentle west flank of McConnell Range anticline; the dark mountain by the lake is composed of strata of the Kindle and Franklin Formations on the steep east flank of the anticline.



Location of stratigraphic study at Section 1 - four miles due south of Mount Kindle. View is to the southwest with the Mackenzie River flowing to the right in the picture and Wrigley Airport located on right edge of photo. The Camsell Range is on skyline.

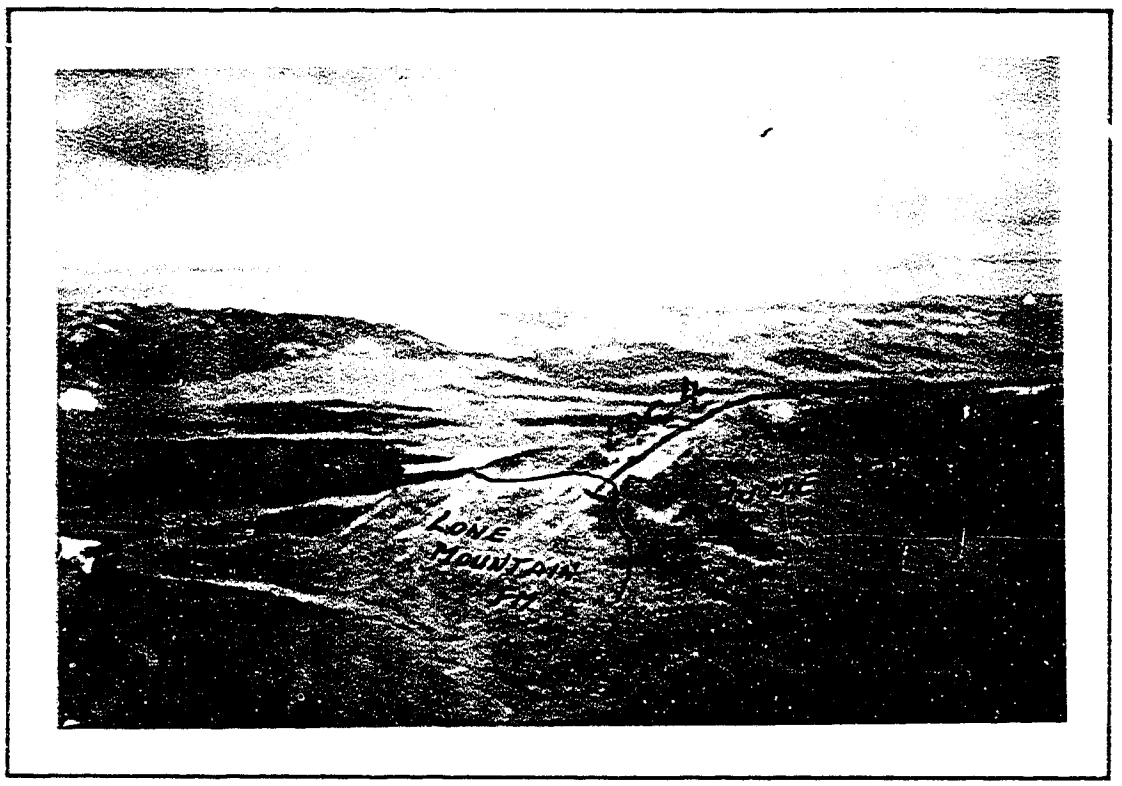


Location of stratigraphic study at Section 3 - four miles due west of Williams Peak. The light colored Bear Rock spurs result from erosion of the gently dipping west flank of the McConnell Range anticline. The flat topped spur end at left is probably the erosional expression of the Hare Indian - Hume Formational boundary; view is easterly.

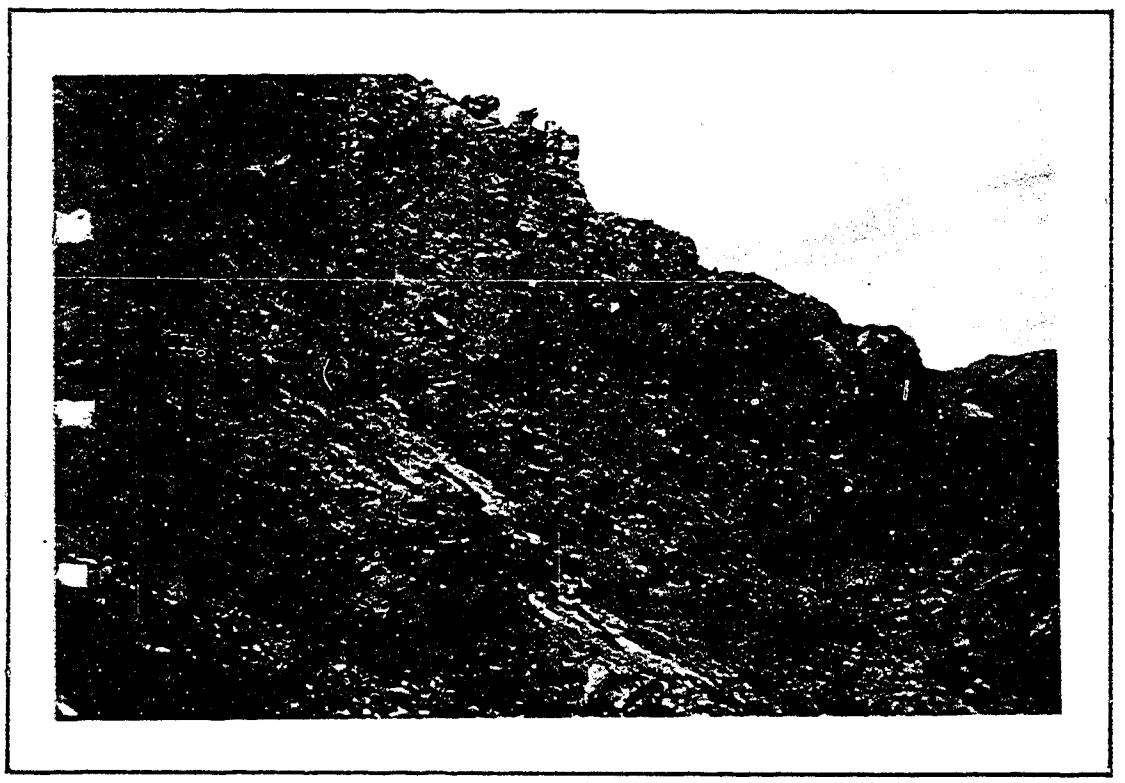


Location of stratigraphic study at Section 2 - four miles southeast of Mount Kindle. The black weathering Mount Kindle Formation is resistive in the area and caps many mountain peaks such as this one. View is to the southeast.

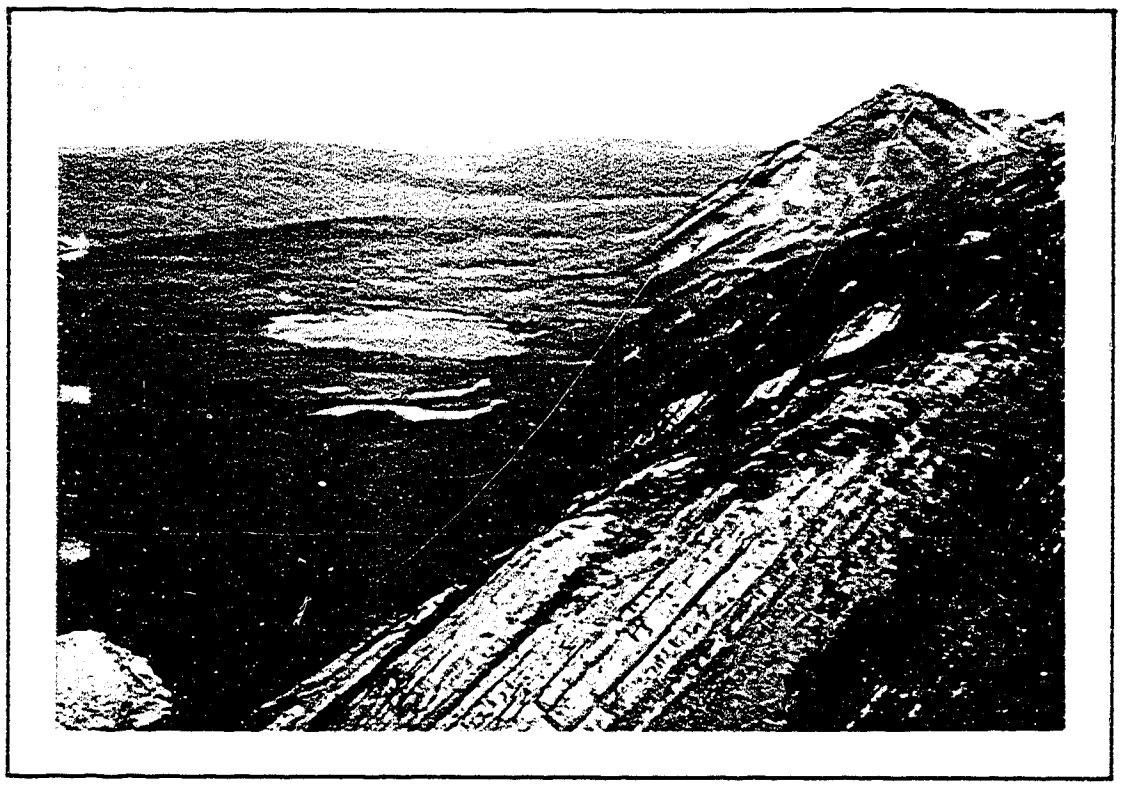
Close up view of Saline River Formation included in stratigraphic Section 2. Pink and white anhydrite was abundant in beds of soft fissile red and green weathering limey shale.



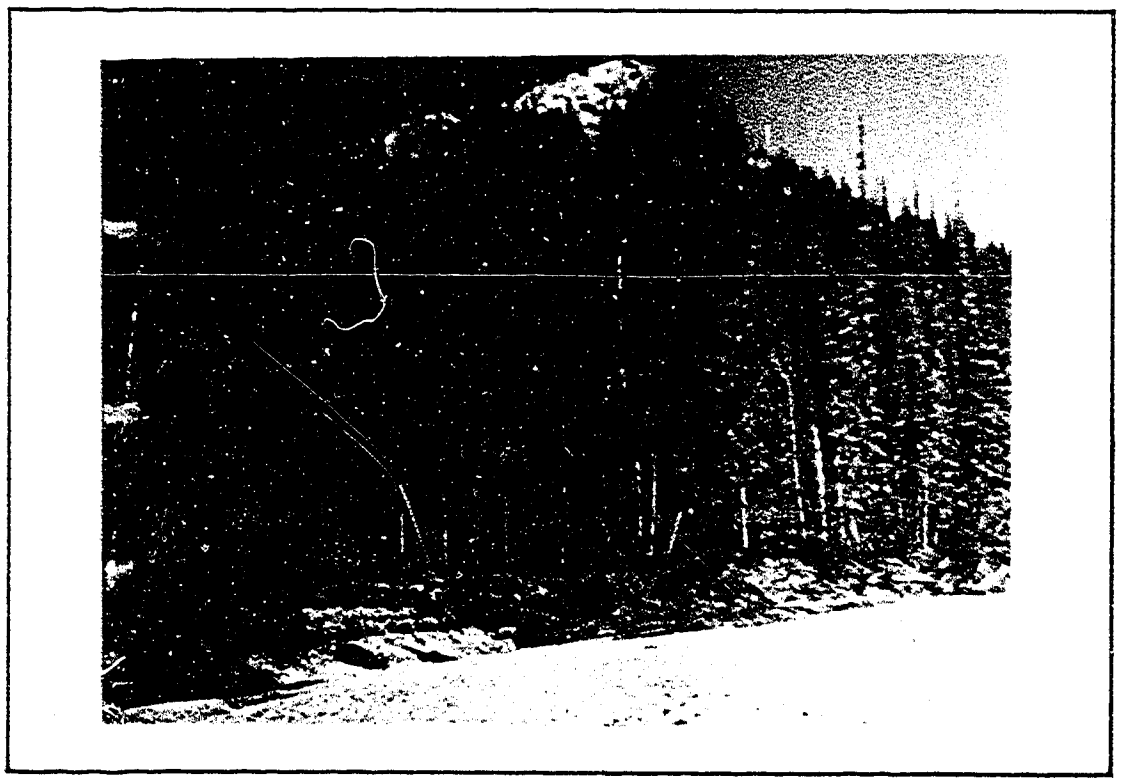
Location of stratigraphic study at Section 4 six miles northeast of Old Fort Island. View is to the southeast with the subdued southern end of the McConnell Range on the skyline.



Close up view near Hume - Lone Mountain Formation contact showing development of massive coarse crystalline dolomite zone on top of Lone Mountain strata. Outcrop is located five miles northeast of Section 4.

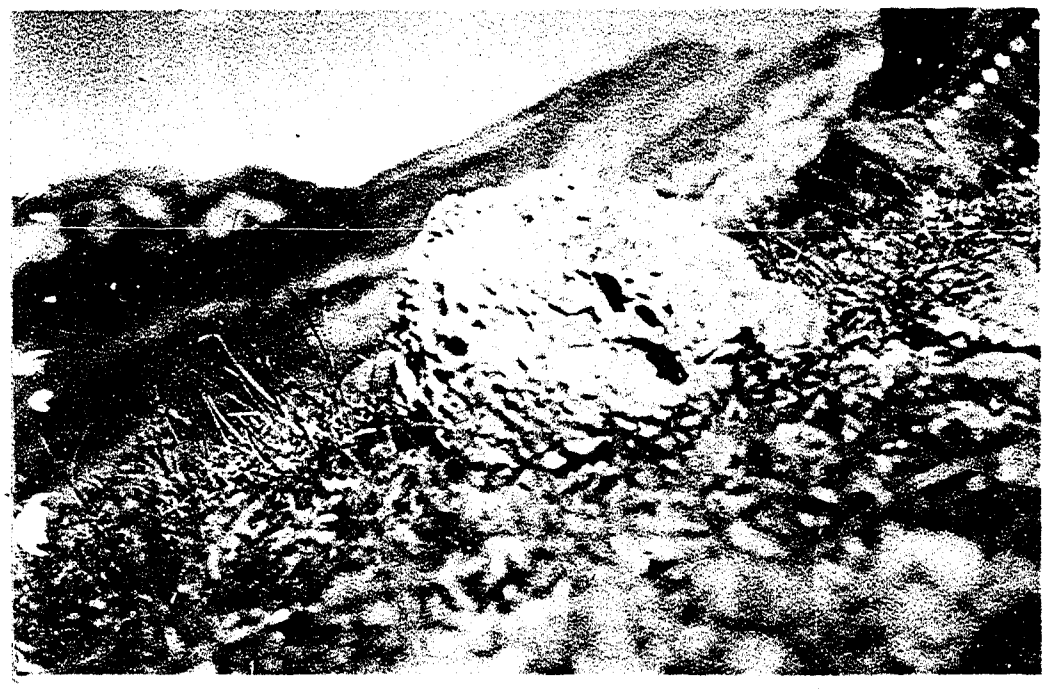


Location of stratigraphic study at Section 5 on Camsell Range 15.5 miles southwest of Wrigley Airport. View is to the northwest showing west dipping Hume Formation flat irons resting on Lone Mountain strata.

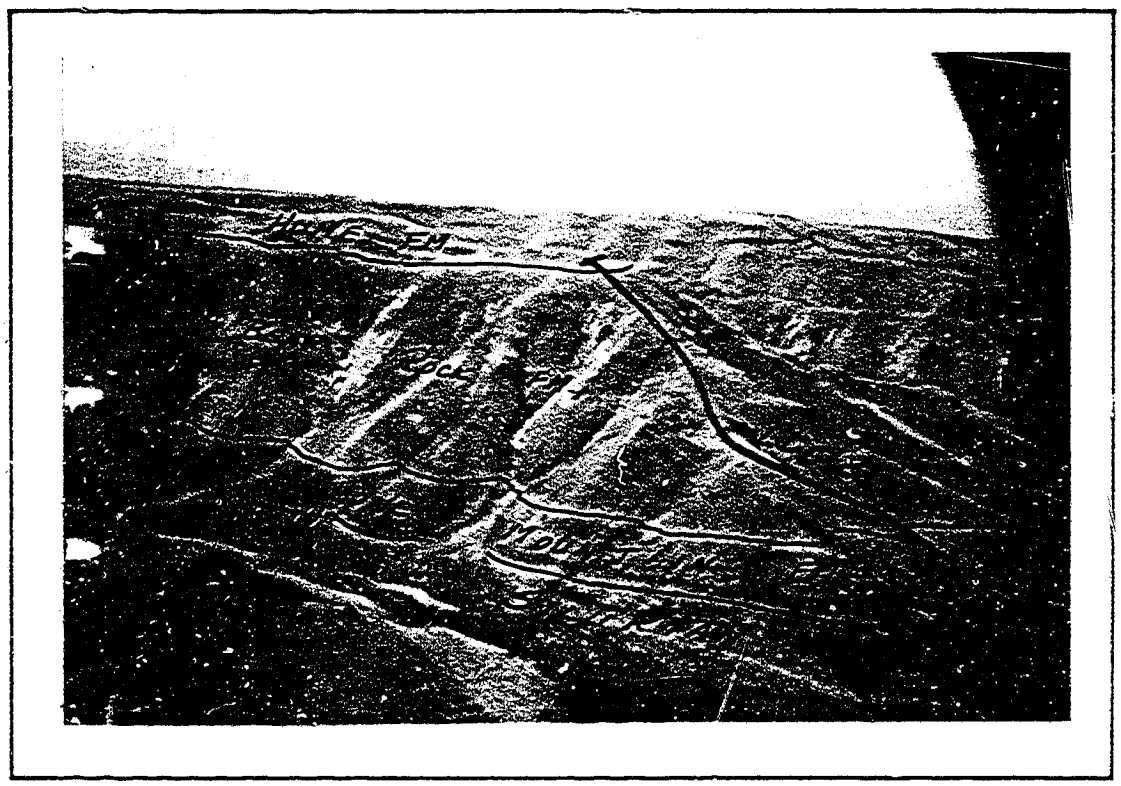


A view of a biostromal reef mass within the Hare Indian Formation. View is to the north from the left bank of the Root River sixteen miles southwest of Section 5. This reef is in an equivalent position to the Kee Scarp Formation at Norman Wells.

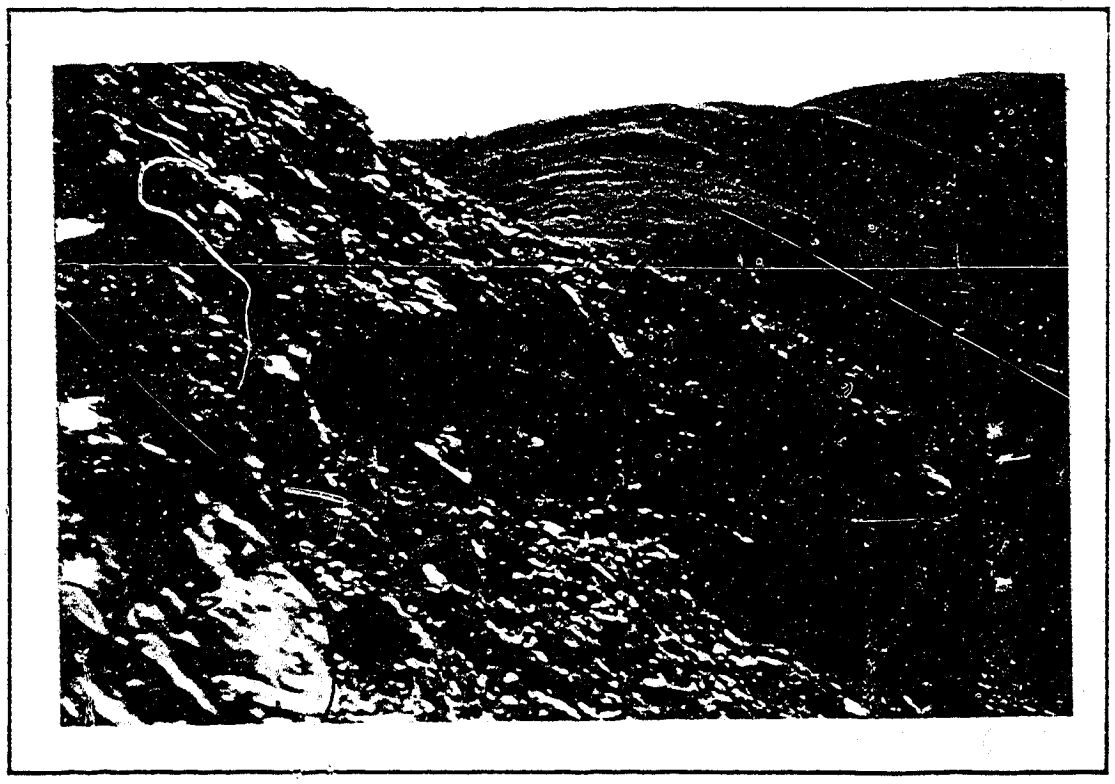
View to southeast from Section 6. This photo includes a cross section of all of the formations studied at Section 6. The massive bedding in the Bear Rock Formation and recessive character of the strata of Silurian age are both evident here.



A close up view of cauliform structures in the recessive Silurian strata in Section 6. The abundance of colonial material such as this suggests a thin biostromal reef at this location.



Location of stratigraphic study at Section 8 ten miles due west of Twin Peaks in the McConnell Range. View is to the southeast with Blackwater River valley in the haze at middle background.



Close up view of Hume - Bear Rock Formation contact at Section 8. The collapse of large bedded fragments of Hume Formation into the brecciated Bear Rock Formation is obvious at this outcrop. The picture does not illustrate this structure well but the saddle that can be seen in the Hume beds in the background is a result of solution and collapse of the Bear Rock Formation.

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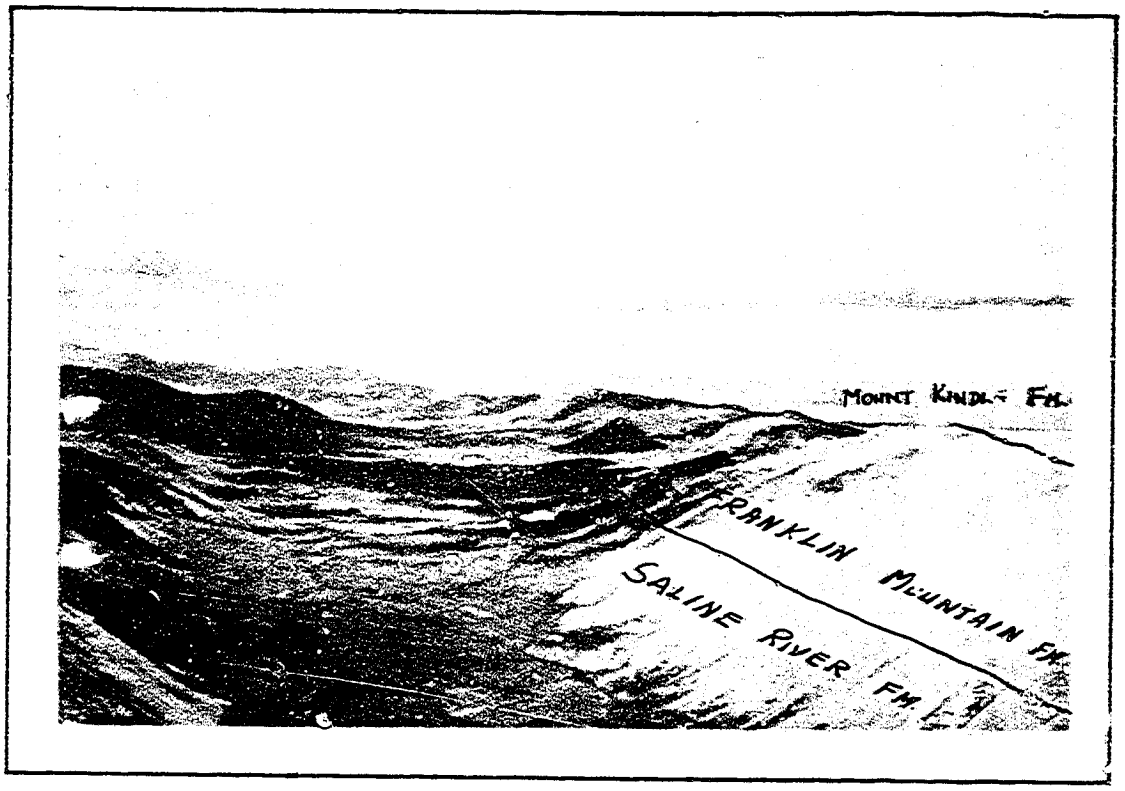
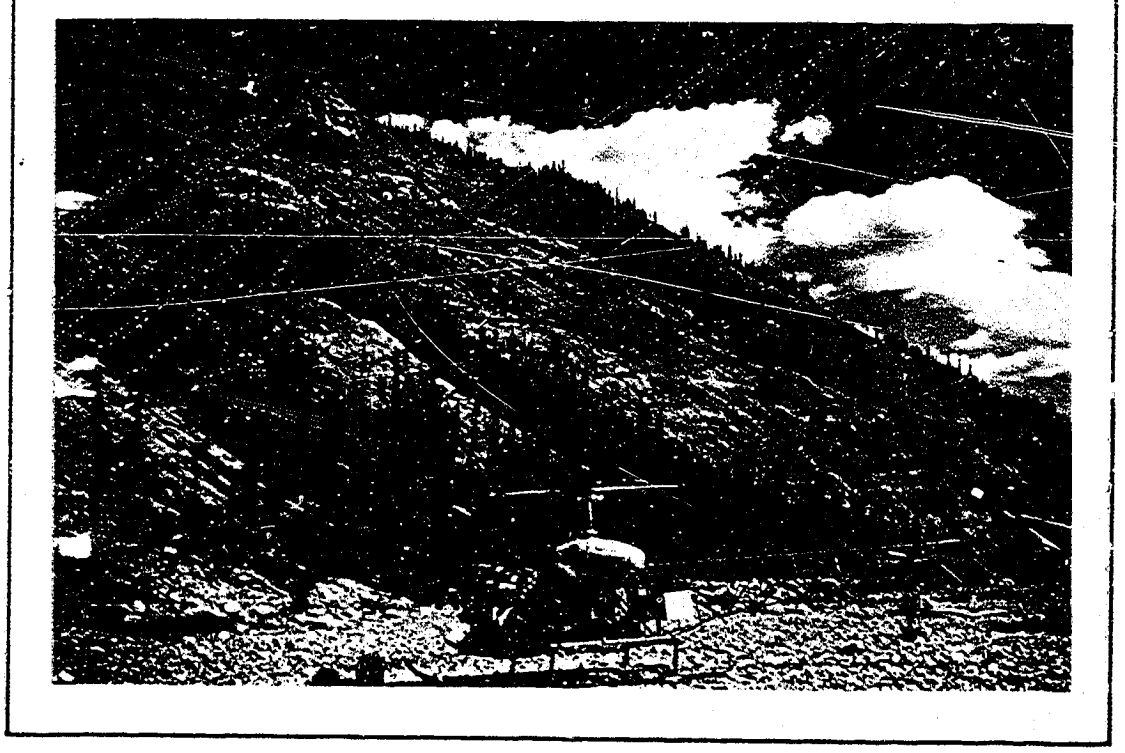
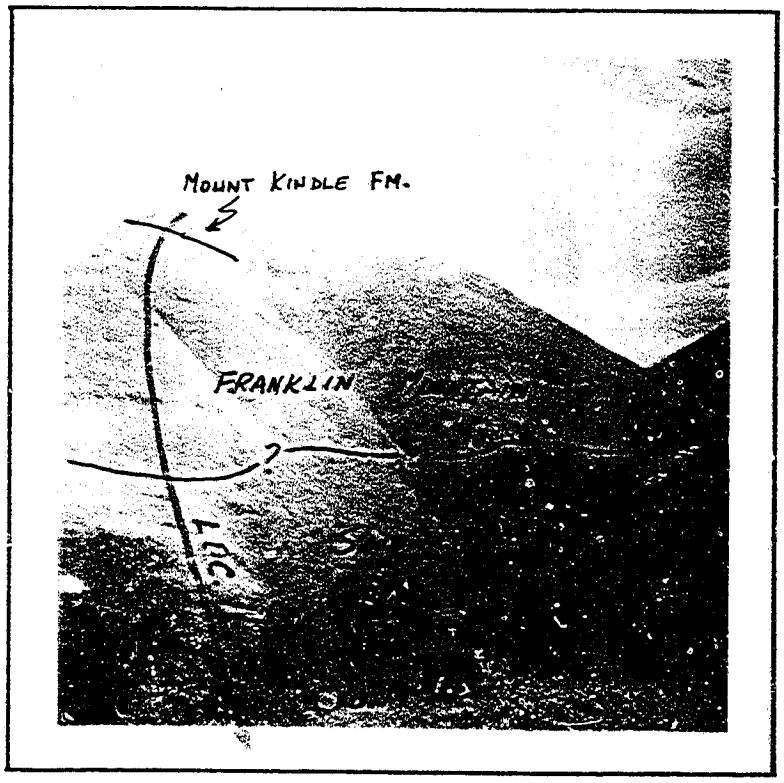


Oblique view to northeast of McConnell Range taken at a point four miles north of Section 9. The east dipping strata of the Franklin and Saline River Formations, described in this section, outcrop on the right of the photo. The valley is located on the axis of the McConnell anticline. Blackwater lake is in right background.



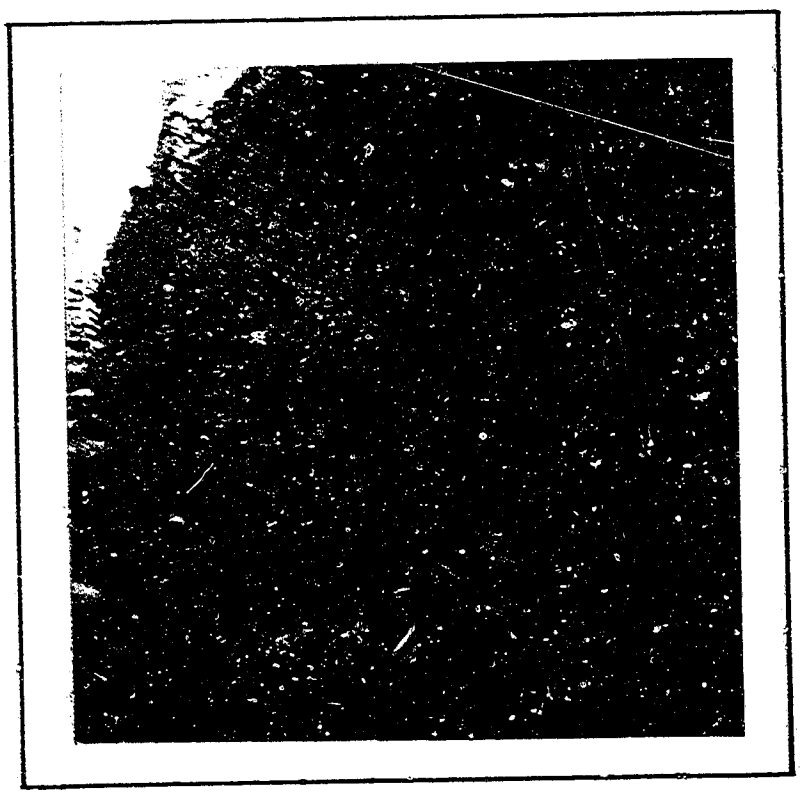
Location of stratigraphic study at Section 10 six miles northwest of Twin Peaks. The Hume Formation outcrops at the top and Bear Rock Formation outcrops at base of this photo. Bedding can be seen in both formations, with the Hume strata being more resistive.

Close up view of the Kindle-Franklin Formation contact near the peak of the Mountain in photo below. Thirty feet of banded light and dark dolomite comprised the basal Kindle at this location. The Franklin is less resistive, thinner bedded, consistently light grey weathering.

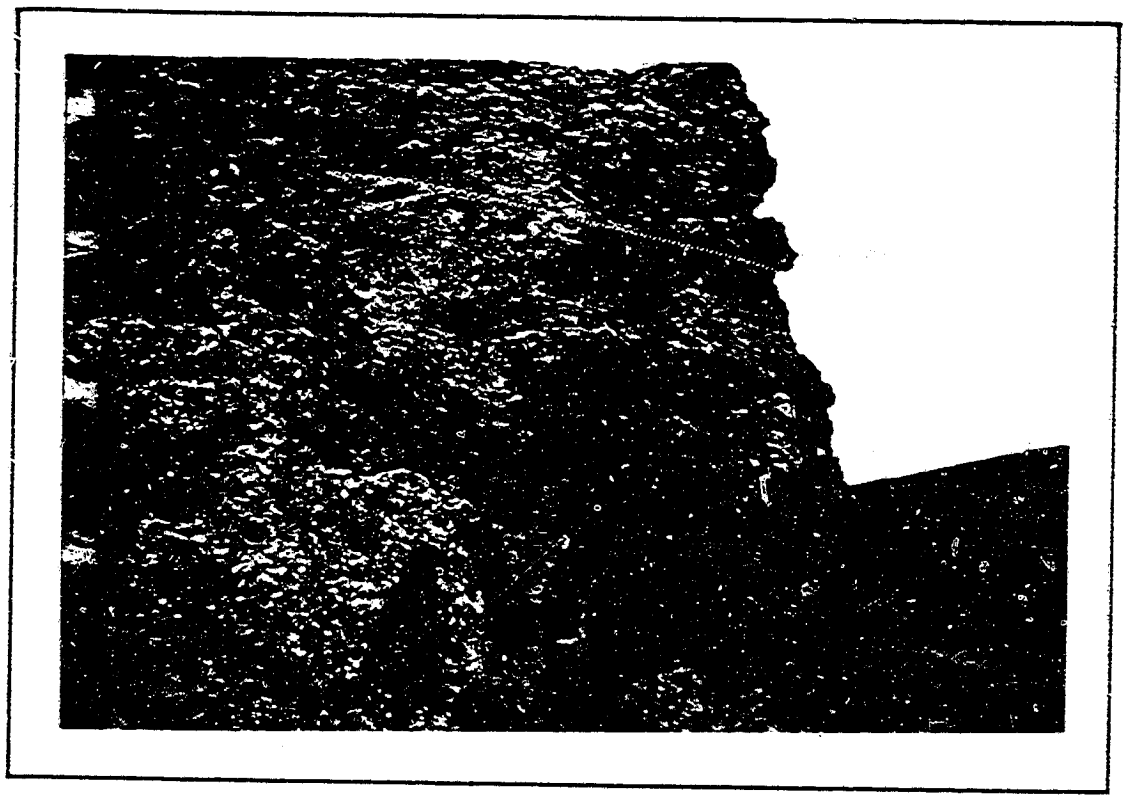


Location of stratigraphic study at Section 11 seven miles northwest of Woodman Head. The Franklin Formation outcrops on the steep mountain scarp; Saline River Formation underlies the tree covered bench and Cap Mountain Formation is poorly exposed in the valley below the bench. View is to the west from a ridge of Cambrian quartzite.

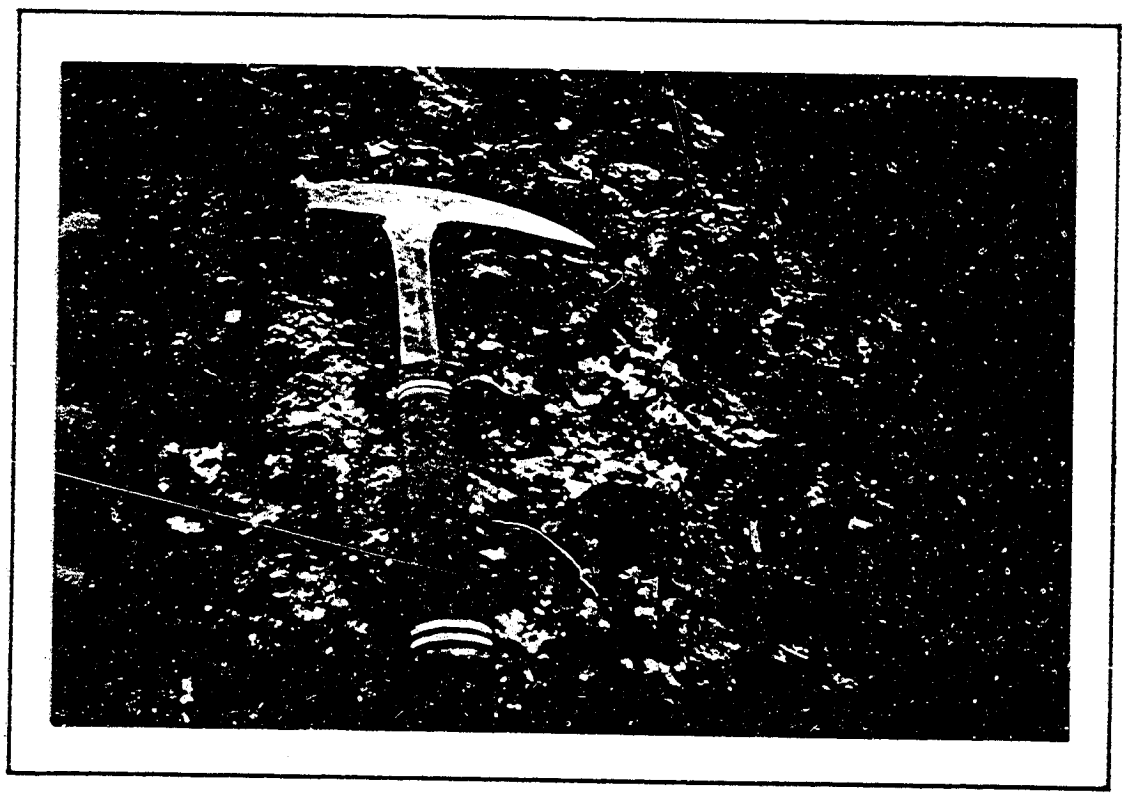
A view of Saline River Formation outcrop half way between Blackwater Lake and Section 11. Location is in the inter-range valley that parallels the axis of the McConnell Range anticline. The outcrop is dark grey, argillaceous, flaggy limestone.



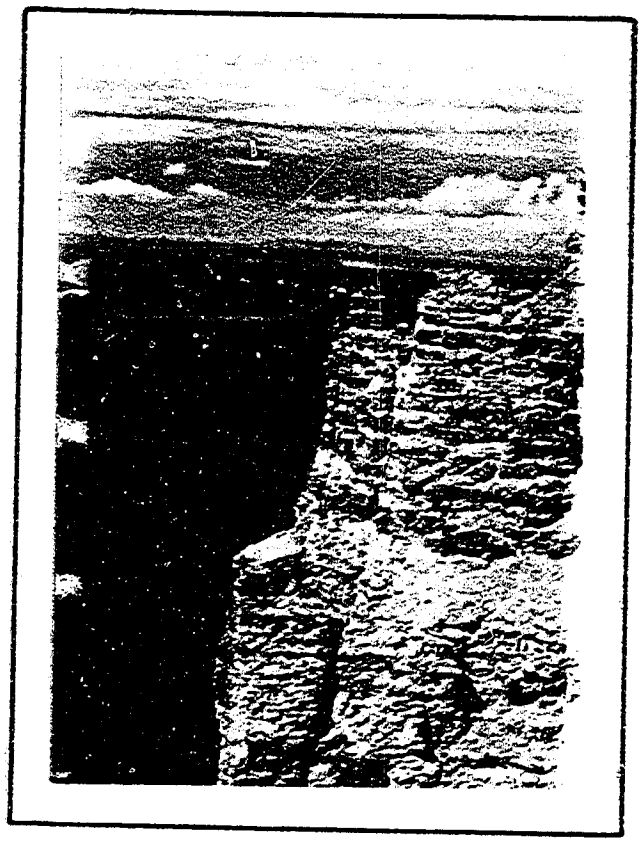
View of Saline River Formation at Section 11. Outcrop here is of interbedded shale and dolomite. The shale is brown grey, fissile, arenaceous and weathers hackly. The dolomite is very dark grey, very finely crystalline, with pyrite nodules.



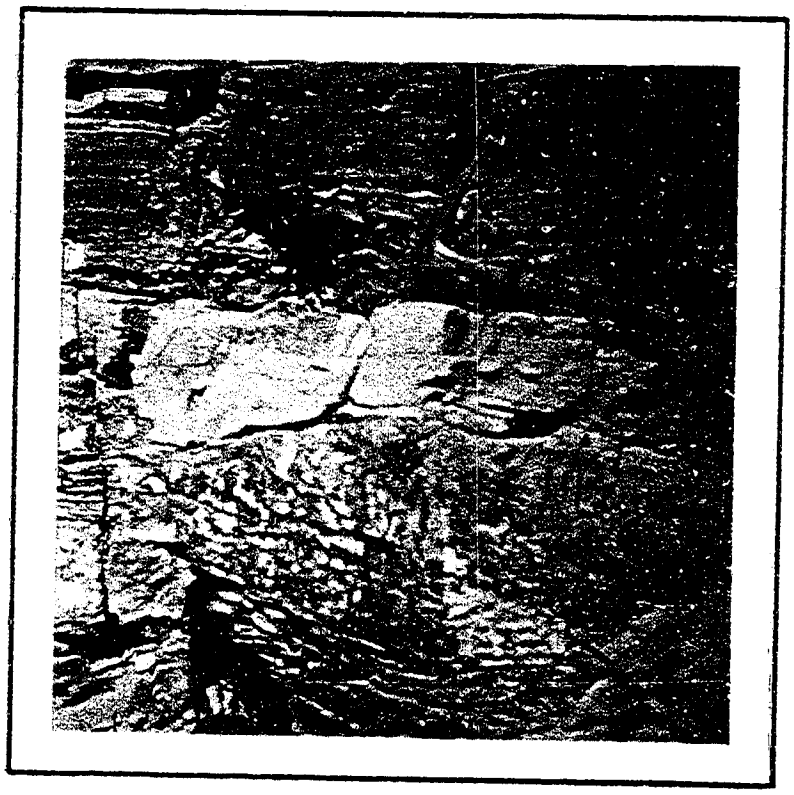
Close up view of rocks of Silurian age at Section 12, eighteen miles northwest of Twin Peaks. The character of this fossiliferous zone is very reefy - as was a similar zone at Section 6 see cauliform structure Page 15.



Silicified Silurian fossils in outcrop on Section 24 near the Keele River sixty miles west of the Silurian outcrop shown above. The dolomite beds contained patches of these fossils wherein the corals were so numerous they comprised the total rock volume.

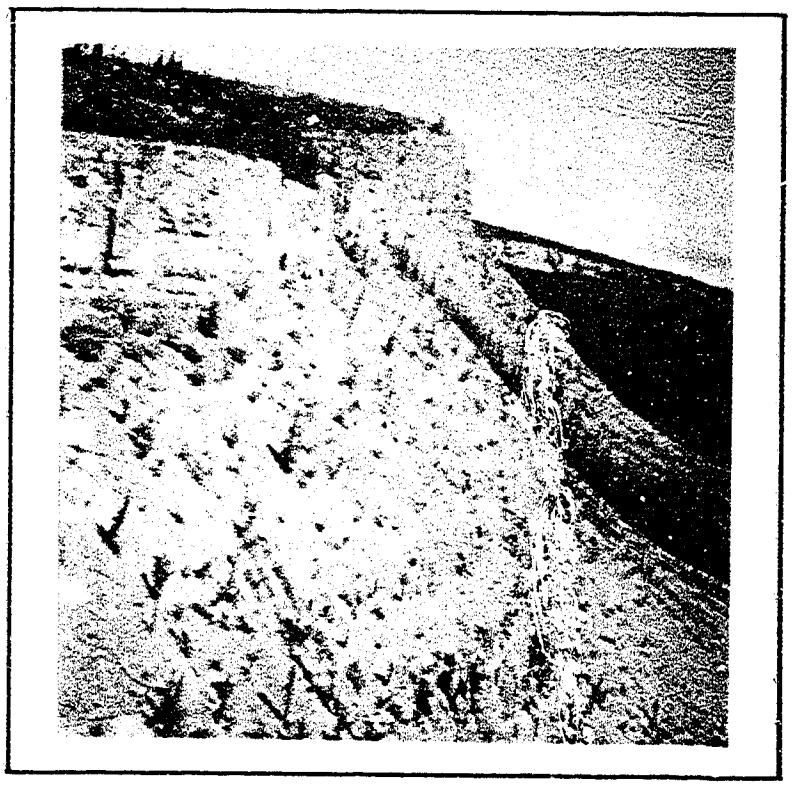


View of Saline River Formation in scarp measured at Section 14. The Mackenzie River at Old Fort Point and the mountain named "Bear Rock", can be seen in the background. View is to the northwest.



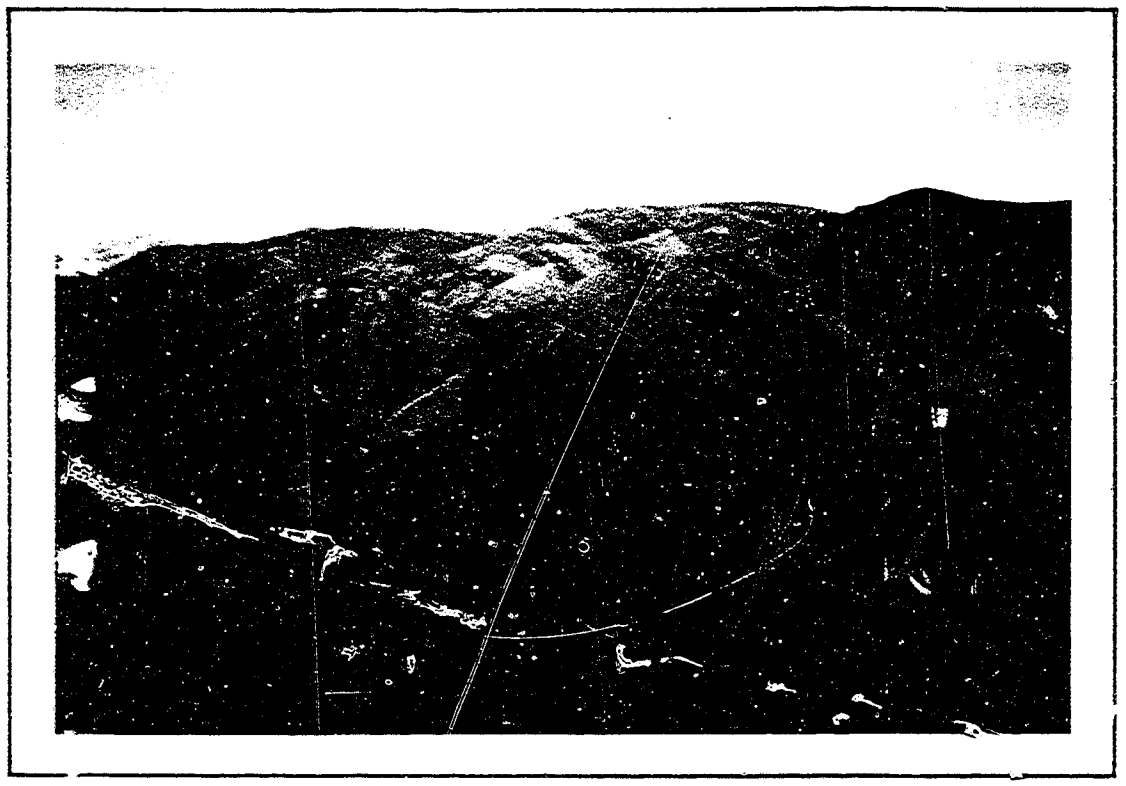
Close up view of laminated, argillaceous limestones and slabby conglomerates described in the Saline River Formation in Section 14, located nine miles northwest of Mount Clark.

Cretaceous shale and siltstone outcropping in cutbank of the Big Smith Creek. These beds lie unconformably on Hare Indian Formation shales. The outcrops of both these formations were examined four miles upstream from Section 15.

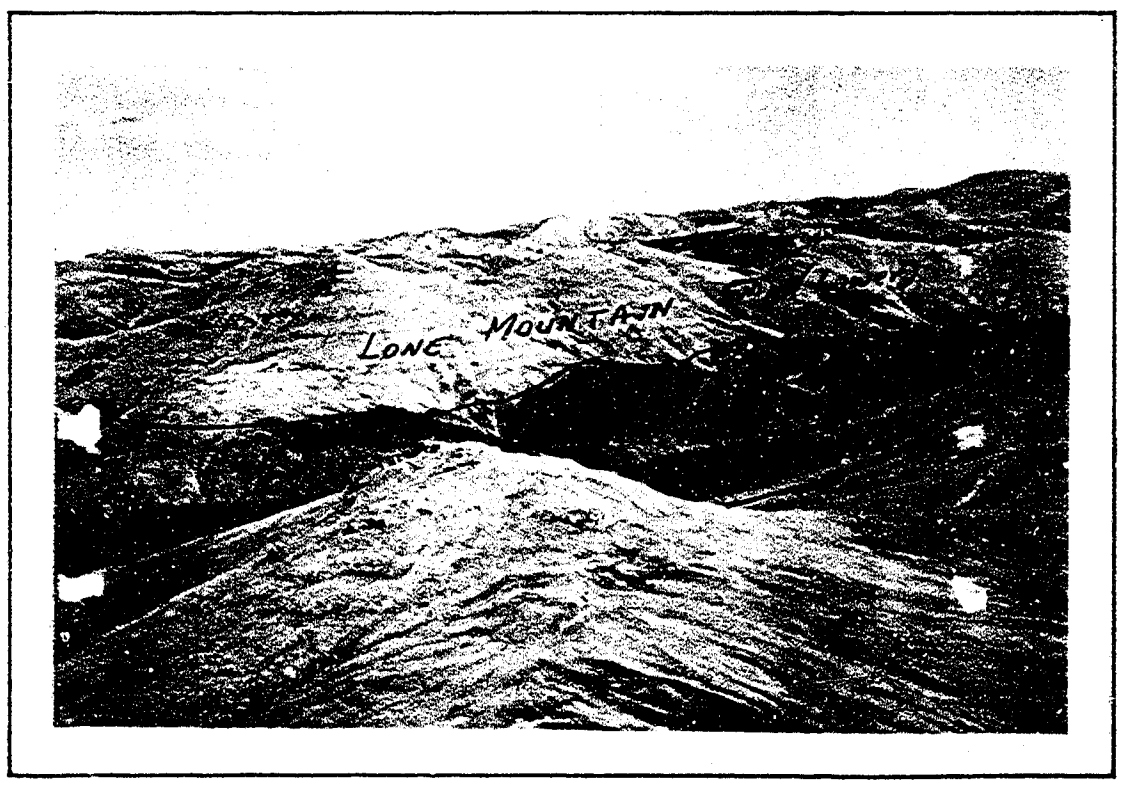


Location of stratigraphic study of Hume Formation at Section 15 on right bank of Big Smith Creek 12 miles east of Old Fort Point. The formation is soft weathering, buff colored and weathers into Karst topography on the low lands on the left bank of the river.

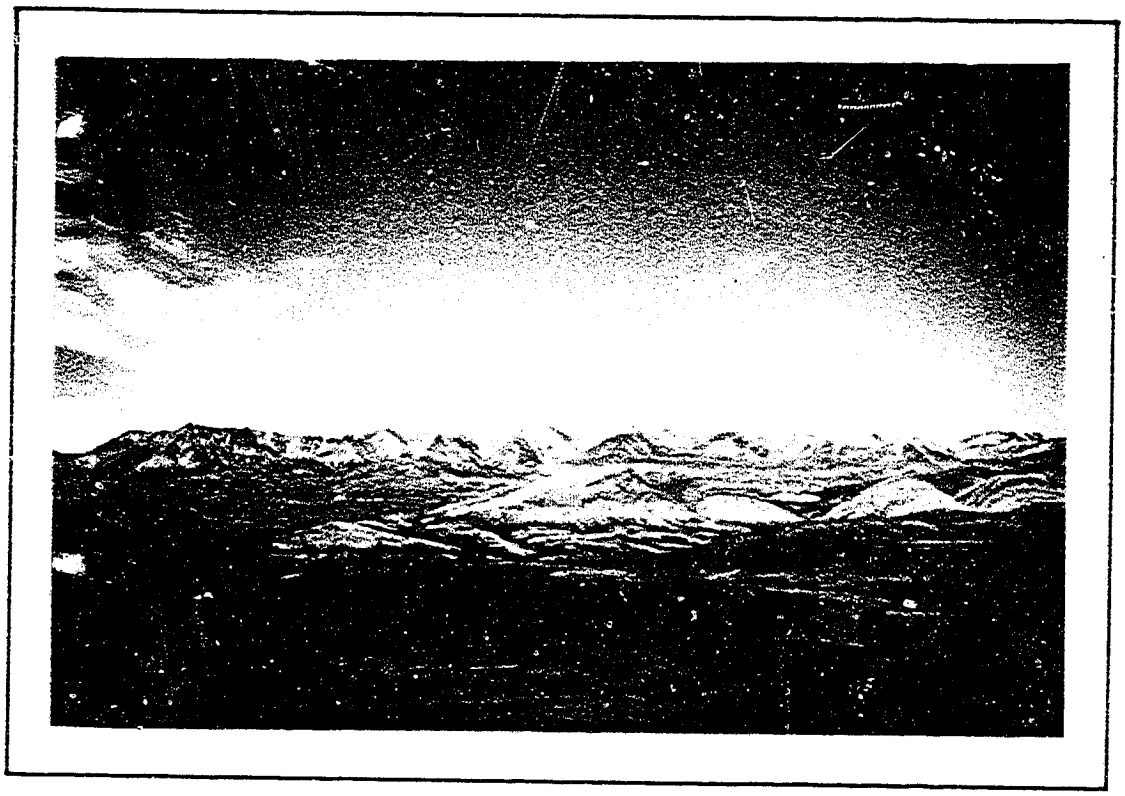
Scenic view of Foran Lake. View is to the southwest from Section 19 showing a glacial dam in the foreground; the campsite on the right foreground; the numerous tan grey rounded mountains of Lone Mountain Formation comprising all of the middle ground and the snow covered Backbone Range on the skyline.



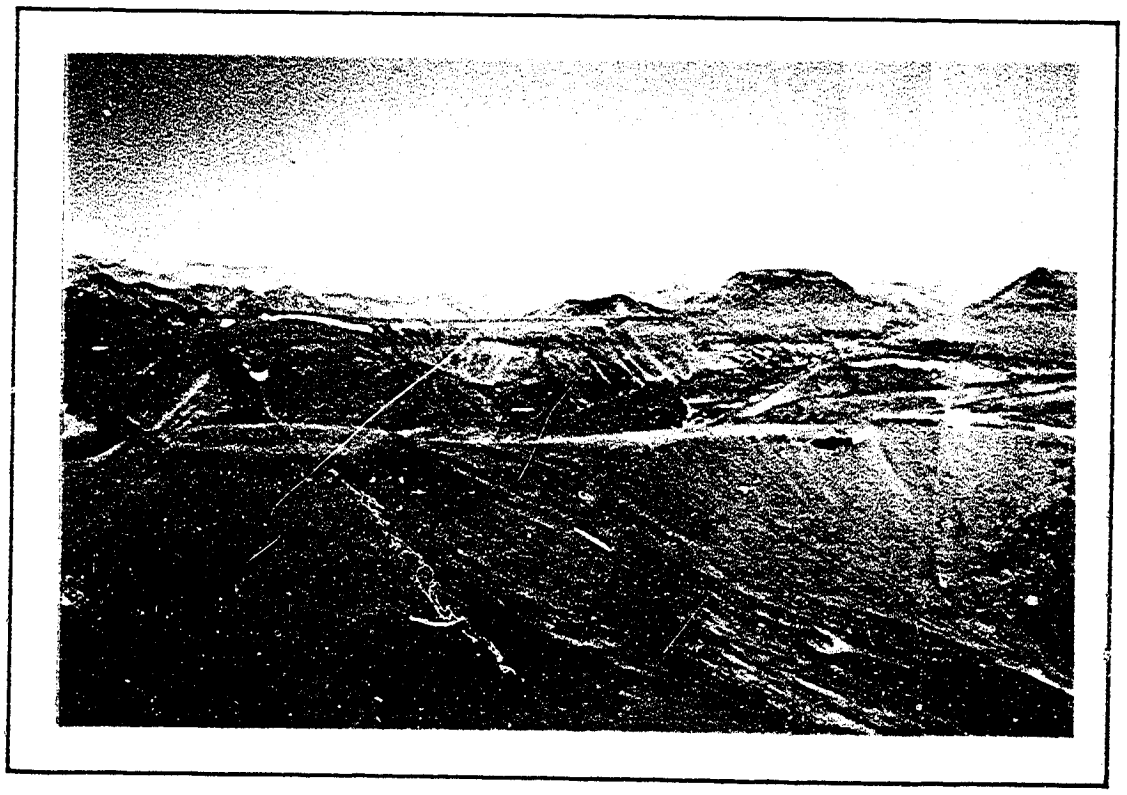
Franklin Mountain Formation in the axis of the acute Canyon Range anticline ten miles north of Foran Lake. Dark Kindle Formation strata is present on the flanks of the anticline. View is to the southeast.



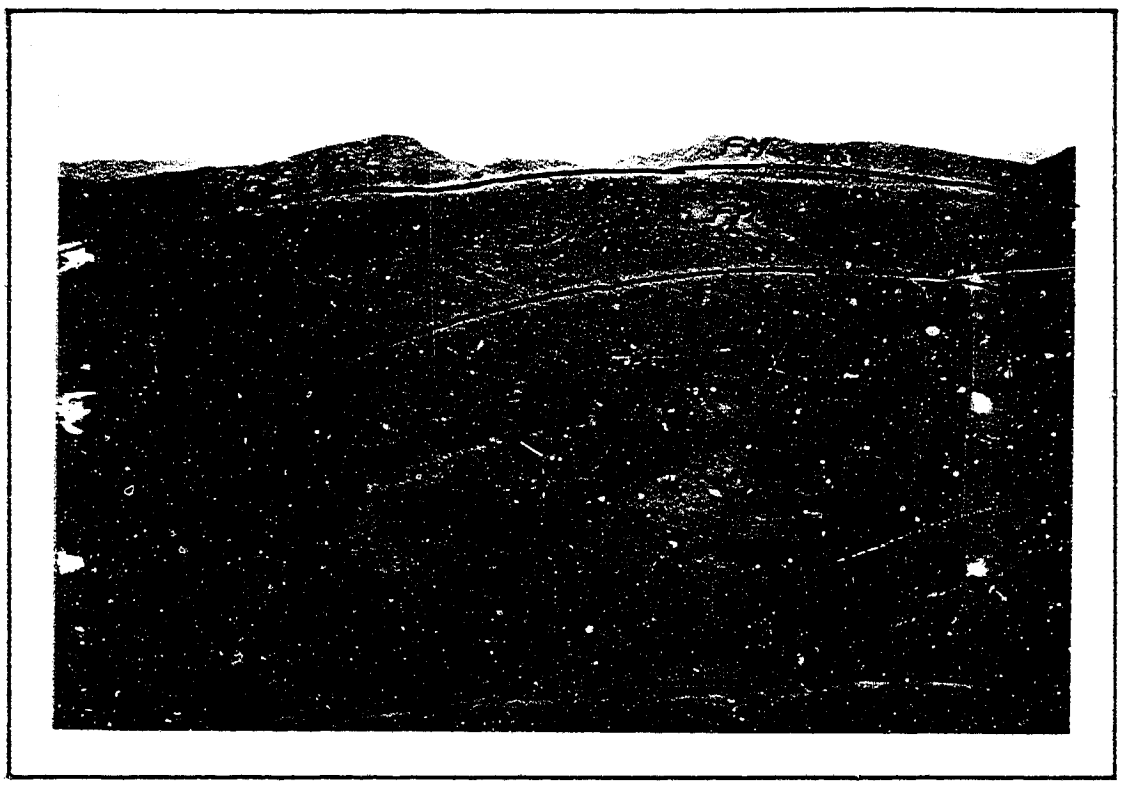
Lone Mountain Formation as it outcrops on the south plunging nose of the broad anticline on the west side of the Canyon Ranges. The lack of vegetation and tan coloring is suggestive of "badland" topography.



A westward view from Section 18 eleven miles west of Foran Lake. The rugged high mountains are of Cambrian quartzites and shales in the Tigonankweine Range. A plunging anticline in Lone Mountain strata can be seen in the middle ground.

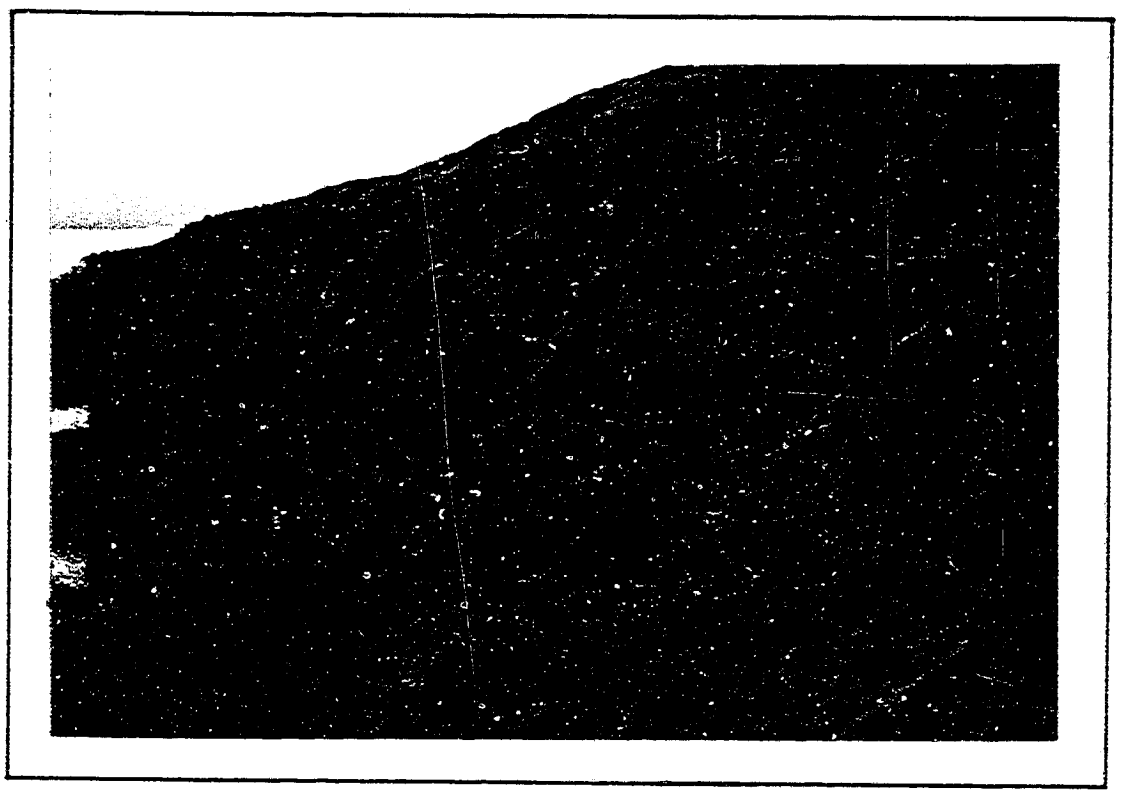


Rust weathering Cambrian quartzites on the left bank of the Keele River at the mouth of Nainlin Brook. The strata is on the axis of the anticline that forms the Tigonankweine Range in the photo above.



Location of stratigraphic study of Hume Formation at Section 25 - fifteen miles northeast of Foran Lake. The broad curve of the Moose Prairie anticline can be seen on the skyline in this southerly view.

Hume Formation limestones outcropping in Creek at Section 25. The massive limestone beds are dipping steeply toward the west on the west flank of the anticline in the above photo.

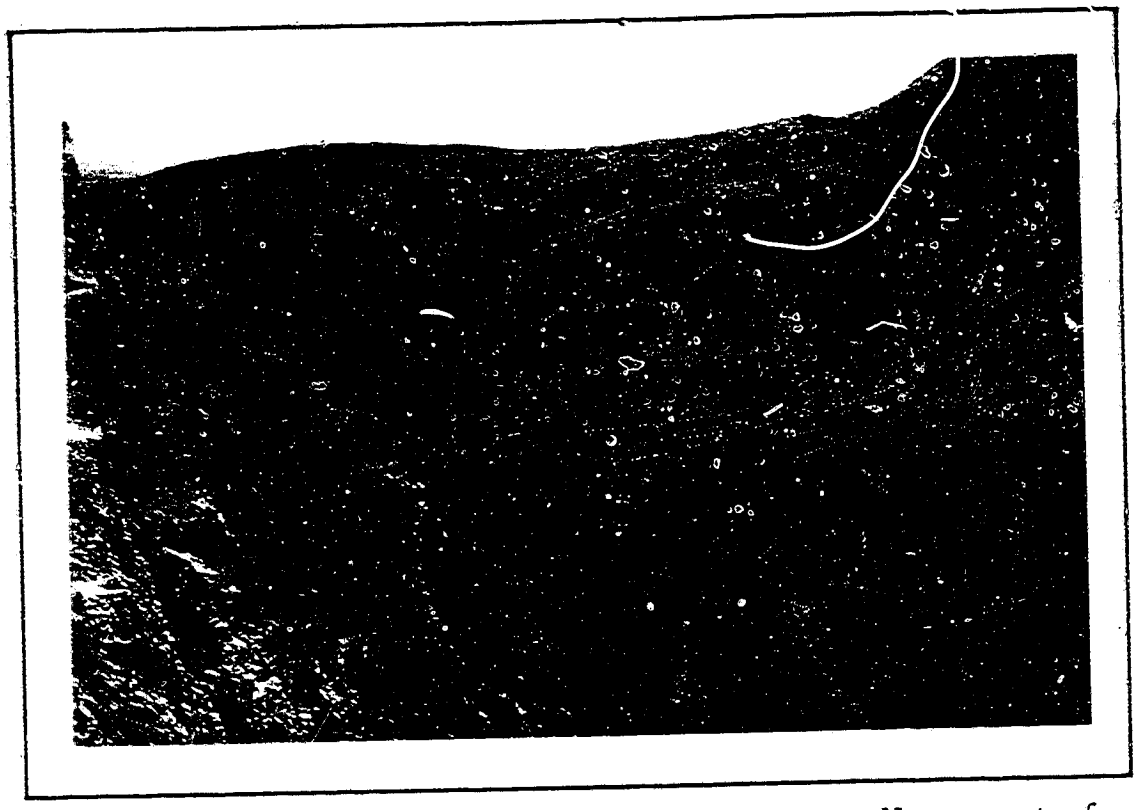


Outcrop view of 1,700' thick dolomite strata of Silurian age at Section 9, four miles northeast of Foran Lake. The resistive cliff contains chert bands; the strata above is reefoid in part.

View of the lower portion of Section 9. The white zone is a brecciated low angle fault zone. Below this point the very fossiliferous basal Silurian and Mount Kindle Formations outcrop.

View to north from Section 24. The highest mountains are composed of lower Lone Mountain Formation located in the axis of a northwest trending anticline. Hume and Bear Rock Formations were described in Section 16 on the west limb of this anticline.

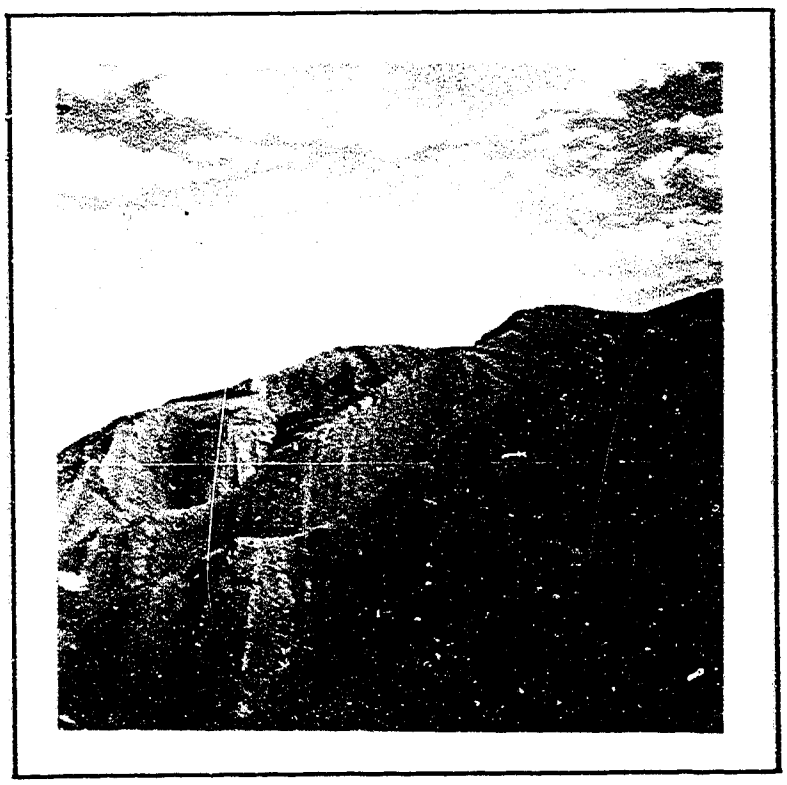
View to northeast from Section 24. The outcrop in foreground is fossiliferous Silurian dolomite and the cutbanks on the Keele River are in Hume Formation. Summit Creek Valley is in the middle ground and Mount Clark dominates the skyline.



View of the Middle Devonian outcrop two miles west of Summit Lake. Fossiliferous, rubbly weathering upper Hume limestone is at left of photo and Hare Indian shales can be seen outcropping in the vegetation. Petroliferous, argillaceous limestone was collected from the small notch at the Hume-Hare Indian contact at left.

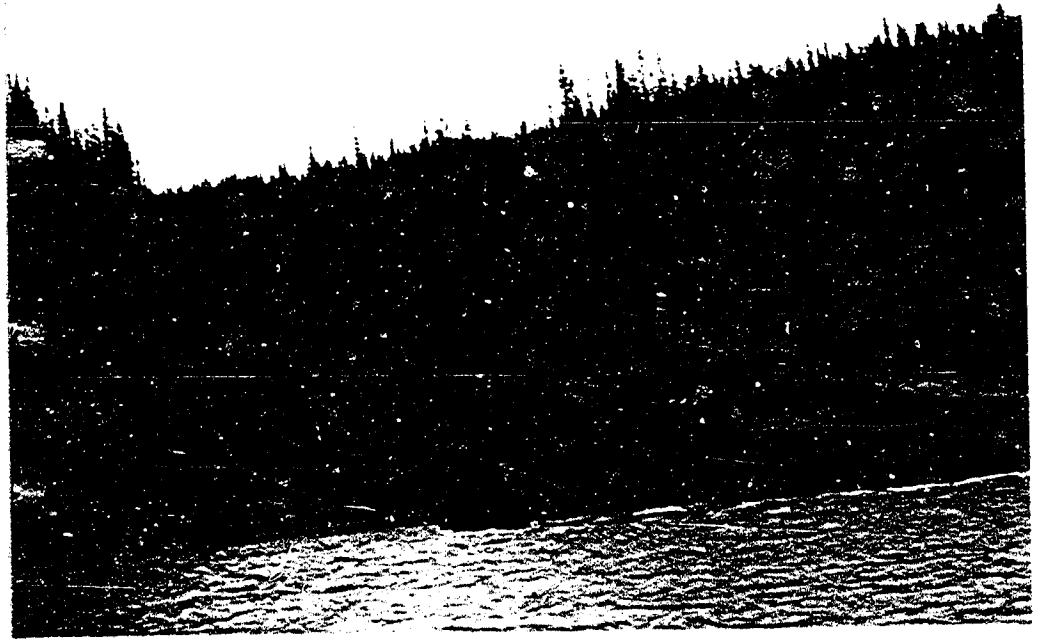
Close up view of resistive angular weathering lower Hume limestone; the waterfall drops over a ten foot bed. The beds dip steeply northeast on the east flank of the anticline shown on Page 28.

Close up view of outcrop on Section 17: this banded character is typical of dolomites of the Lone Mountain Formation.

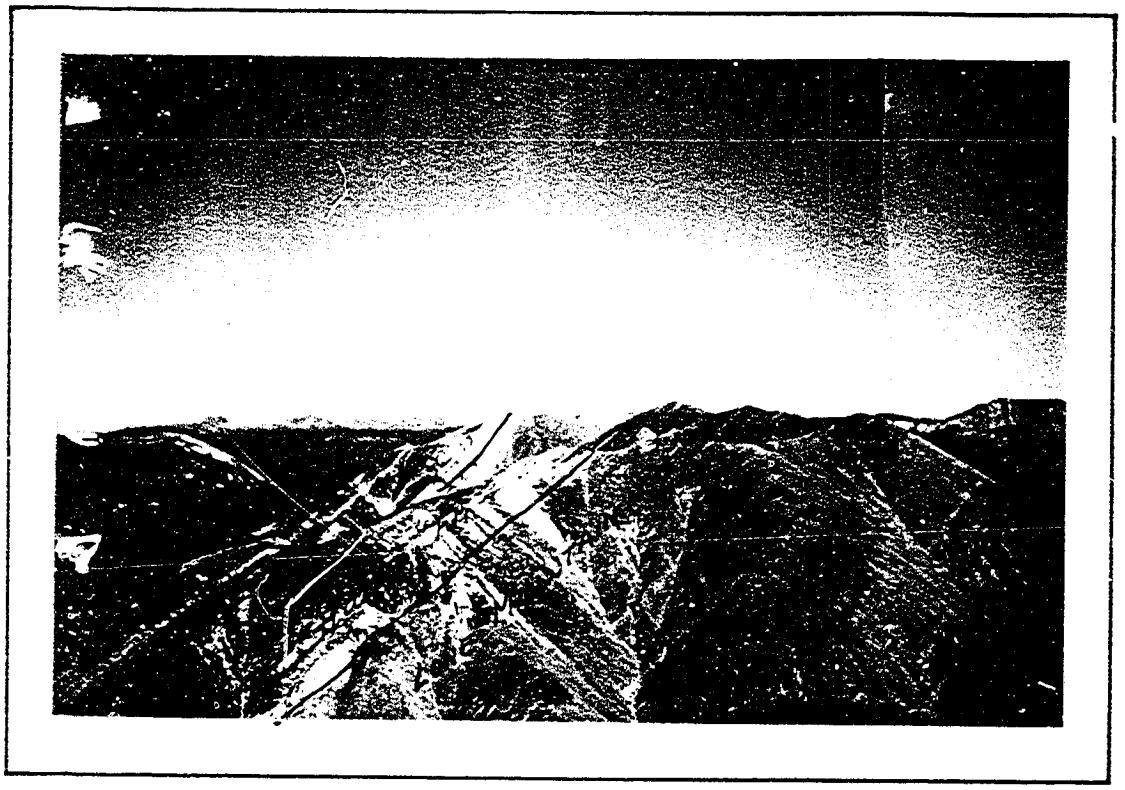


View to the south from Section 23: Vertical Hume strata on east limb of the asymmetrical anticline east of Foran Lake. Local folding indicates intraformational adjustment.

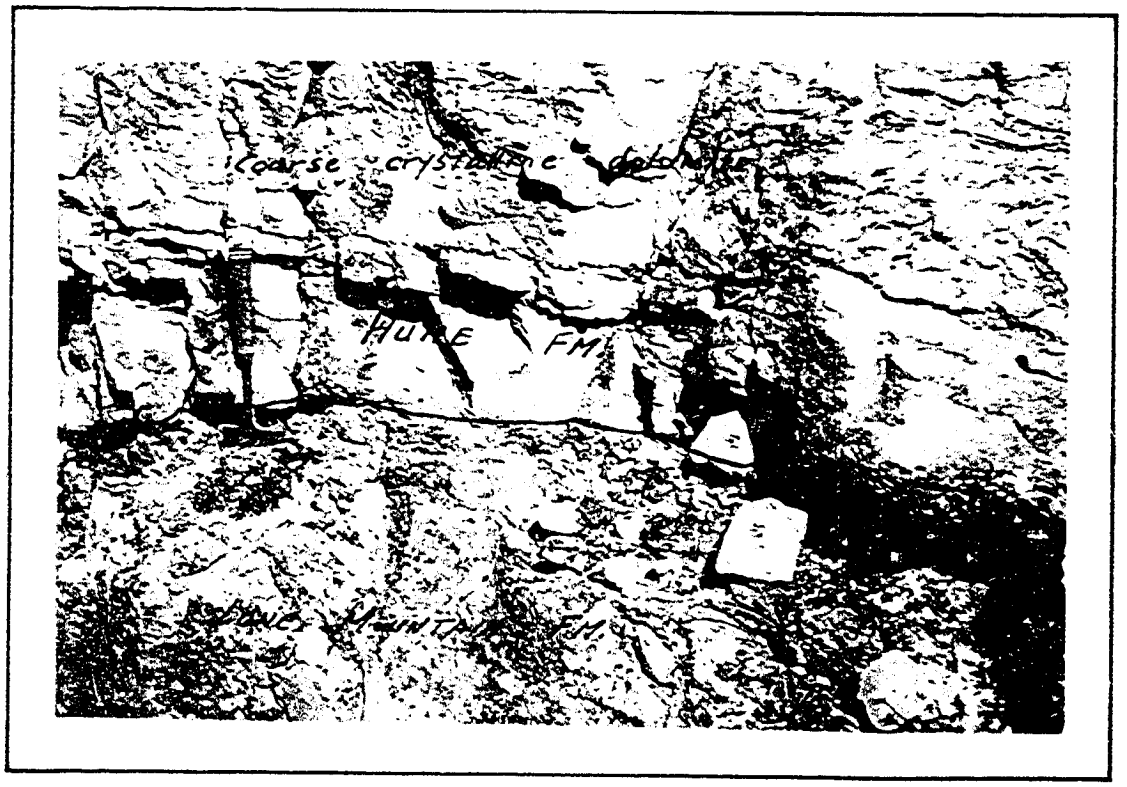
View of Hare Indian shale outcrop in the canyon of the Redstone River 26 miles southeast of Foran Lake. Geologist is Harvey Young.



View of Hume outcrop in Redstone River Canyon. The outcrop is downstream from the photo above. Dip is to the west on the west limb of the "Canyon Anticline."



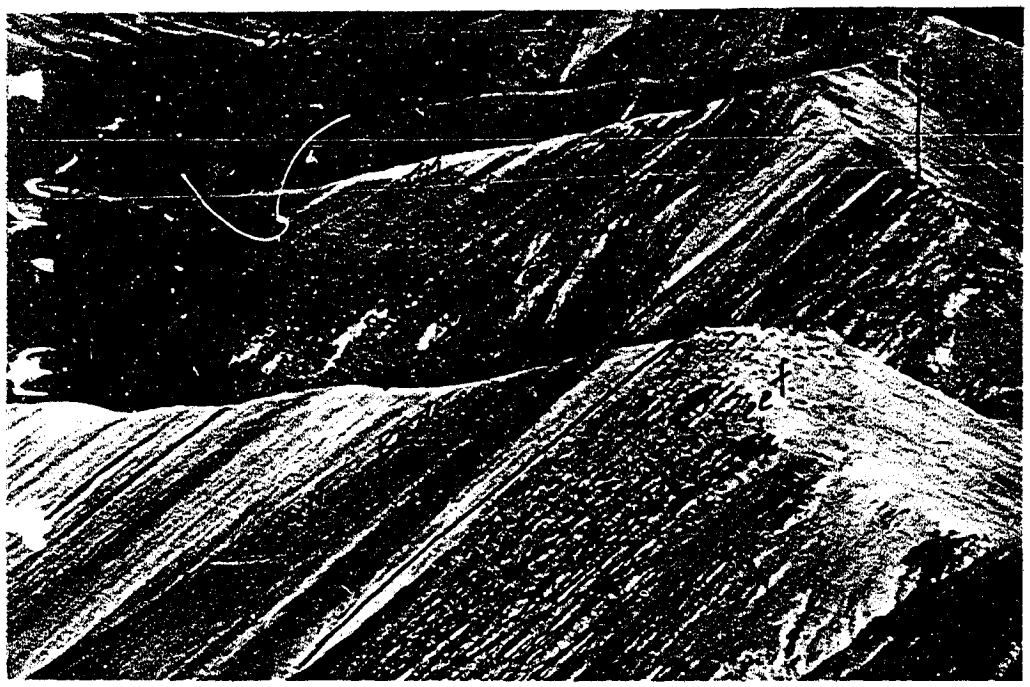
View to northwest toward Foran Lake from Section 22. Resistive Hume Formation strata weathers as "flat irons" on the steep west limb of a Canyon Range Anticline. The isolated mountain to left is an expression of the south end of a south plunging en echelon anticline.



Intra-strata coarse crystalline dolomite at the Hume-Lone Mountain Formation contact, Section 21. This phenomenon was also illustrated in the McConnell Range Page 9.

Oblique aerial view of the mountains immediately north of Section 22. The Silurian reef thins northward as does the argillaceous upper Franklin Mountain strata. The stratigraphic log for the area represents a section across this entire mountain range from Hume Formation to Franklin Formation. All of the strata is dipping steeply west.

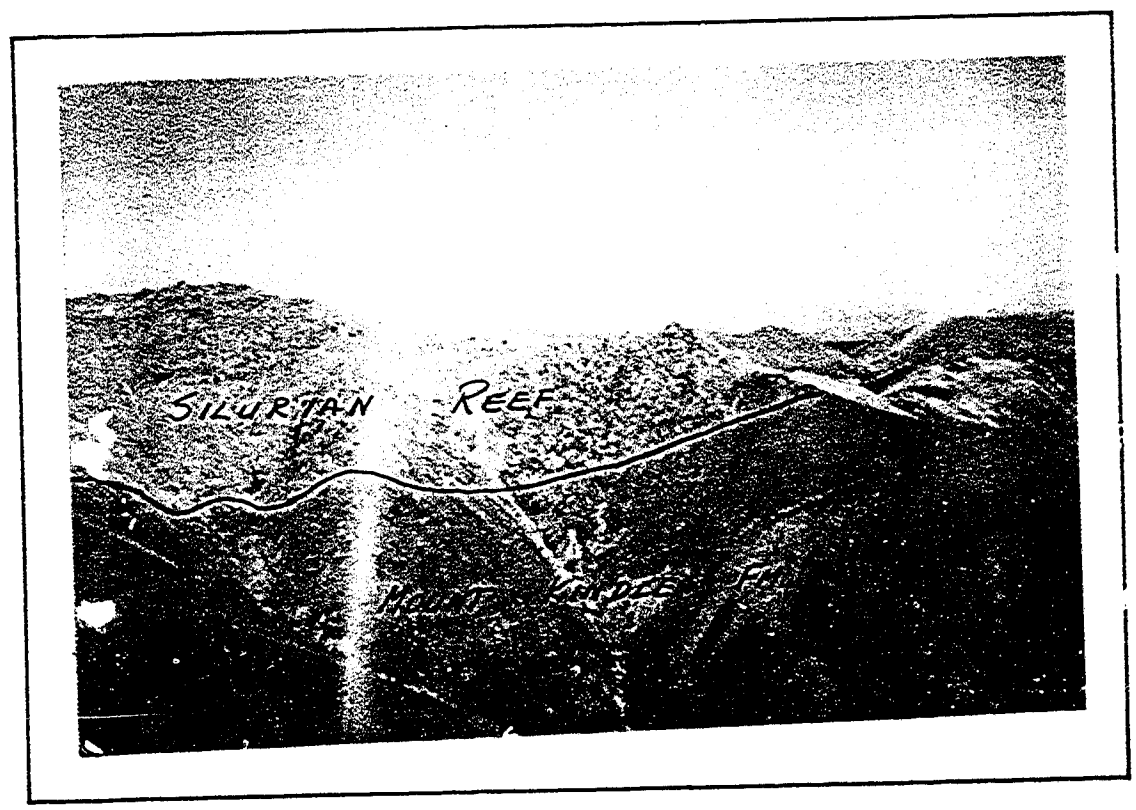
View to the north from the central portion of Section 22. The rubbly debris in foreground, on the second ridge and in the saddle on skyline is weathered expression of a thick Silurian reef.



An oblique aerial view, to the northwest, of the Lower Devonian-Silurian contact at Section 22. Bear Rock Formation weathers in a recessive manner in this area. The rubbly weathering, bedded Silurian reef is somewhat more resistive than the strata above it.

Close up view of the Mount Kindle-Franklin Mountain formation contact at Section 22. The diagnostic weathered colors of the formations are well illustrated in the photo. View is to the north.

Close up view of the upper Franklin Mountain Formation. The tan, purple and orange weathering strata is only of local distribution. These upper beds can be seen to lense out on the photo Page 33, then dark grey Kindle strata lies directly on the light grey Franklin strata illustrated on the skyline in this photo.



An aerial view to the west, of the massive resistive weathering Silurian Reef where it caps the 5,017 foot peak immediately south of Section 22.

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.- I

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 17' N. - 123° 11' W.
Geographic Location : 4 miles due South of Mount Kindle

Geologists : Perry, Young, Mc Cord
Date of measurement: June 5, 6, 9, 26, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION	MEMBER	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY TYPE	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION			0 - 692					June 5	P.1 Limestone - dk. gy-bk. crypt. - bd., lt., fair wh. cht. vns.		
										P.2 Limestone - dk. gy-bk. crypt.-arg., lt., p.pres. foe. (coral(ipset), 30° bedding w/ s.s & lt. brn.; earthy; arg.	105' Limestone, dk.gy-bk crypt.-arg., thick bedded fossiliferous	
										P.3 Limestone - dark. gy-bk. crypt. v.f. sln., arg., lt., aaata wh. sln. calc. foe. s.s.		
											65' Covered	
										P.4 Limestone - dk. gy-bk. vf. sln. arg. rare p. press. foe. few aaata calc. lt. aaa.		
										P.5 Limestone - med. brn.gy. vf. sln., sl. arg., lt. w/bae. stn.	80' Limestone, dk. brn. gy., vf. xln., arg., thin bedded but rubbly bds., occ. fine calc.sla. some bioclitic stn.	Brachiopod and gastropod molds
											60' Covered	
										P.6 Limestone - med. brn. gy. vf. sln., sl. arg. bd. lt. wthre. lt. gry., sli.		
										P.7 Limestone - dk. gy., sl. arg., bd., lt., wthre. yel. gy. f. rubbly, aaata & vue.chl		
										P.8 Dolomitic Limestone - limey dol. vf. sln.-mac. dk. brn., fairly mott.int. grain por., small vugs, some calc. vns.	115' Limestone, m. brn. gy. sl. arg. siltstone bds., rubbly bds., 2-3' bds. 2-3' platter ppr. bds.	
											25' Covered	
										P.9 Limestone - lt. brn. gy., f. sln. dot. l/g grd. to limey dol., vuggy slite. patches, rusty	10' Limestone, lt. brn. gy. dol int. vuggy,rubbly.	
										Dolomitic Limestone - limey dolomite, wh. lt. gy. f. sln. yel. brn. stn.,cavernous rubbly, wthre. lt. gy.	10' Limestone, dolomitic, lt. gy., cavernous,rubbly wthr. to platten stn.	
											40' Covered	
										P.10 Dolomitic Limestone - limey dol., wh. lt. gy., f. sln., wthre. lt. gy. rubbly	60' Limestone, dol.lt. gy-f. sln., rubbly	
											135' Covered	
										P.11 Dolomitic Limestone - ley. dol., yel. gy. & w. gy., f.g., few vue. yel. sln. calc a. vugs clomin, cavernous	45' Limestone, dr-l. f.g., cavernous, r-l. calc. vns.	
										Dolomitic Limestone - ley. dol., lt. gy. w/yel. & brn. stn. common, pred. crypel. lt. rare vugs, few wh. sln. calc. vns. P.12	35' Covered 90' Limestone, dolomitic ppr. blue,wh. common, lt. gy. rare vugs, calc vns.	
											95' Covered	
										P.13 Dolomitic Limestone - lt. brn., v.f. sln., w/few calc. lined vugs, brecc. aaa.	90' Limestone Breccia, massive, vuggular,	
											90' Covered	
										P.14 Dolomitic Limestone - ley. dol., lt. brn., vf. sln., lt., yel. brn. stn., brecc.		
										P.15 Dolomitic Limestone - yel. gy., brecc., bd., aaaa., vuggy, wthre., lt. yel. gy.		
										P.16 Dolomitic Limestone - ley. dol., lt. brn. gy. & w. gy. vf. sln., v. sl. arg., rare vugs, wh. stn. calc., f. brecc.	310' Limestone Breccia - the matrix is dolomitic L.S. grading to limey dolomite & dolomite, lt. gy. to wh., vf. xln. matrix is mic & vugs. In pt. suggest-ive of algal structure, some zone suggestive of intergranular porosity the weathered surface of the breccia has a texture of cavities that are sub aerial solution cav-ities?. The included fragments are dk. brn. gy. dol. to wh. & yel. gy., arg. chalky L.S. pebbles, the latter a fraction of an inch to 4 ins. ft. in diam. They are rounded & in some parts with some subrounded pieces. Chalky L.S. pebbles are common in veg small angular unit resem.	
										P.17 Dolomitic Limestone - ley. dol., vf. sln. lt. a. brn. & gy. brn. arg., a few vugs, massive	See Photo Page 7 - Vugs Drags	
									June 9			
									June 25		30' Covered	
									Wc 1245	Dolomite - lt. gy. crypel. tt. wthre. lt. gy. & yel. gy., aaa.	5' Dolomite as below	
											15' Covered	
									Wc 1660	Dolomite - lt. brn. gy. crypel. tt. sl. arg., wthre. lt. tan	85' Dolomite, lt. brn. gy. f. sln. to crypl., sl. arg., thin bedded but slty tight, weathers to cuttur	
									Wc 1500	Dolomite - lt. brn. gy., w/yel. rusty stn., f. sln., tt, wthre. lt. gy.-tan.		
									Wc 1500 Wc 1490 Wc 1435 Wc 1405	Dolomite - lt. w. gy. crypl. tt. sl. arg., sl. calc. Dolomite - lt. brn. gy., f.m. sln., calc., few vugs, w/wh-yel. sl. calc. Dolomite - lt. brn., f. sln., tt, wthre wh. sln. calc. Dolomite - w. gy. w/sl. brn. stn., tt, sl. calc., thin bdd.	60' Dolomite, w. gy. w/pink to brn. coal. vf. sln.	
									Wc 1390	Dolomite - lt. w. gy., v.f. sl., tt., wthre. yel. gy., platty, thin bdd. & mass.	bd., tight thin bedded wthre. yel gy	
									Wc 485 Wc 430	Dolomite - lt. gy. brn., f. sln., tt. sl. calc., platy bedding Dolomite - w. sh. gy. w/brn. coal, v.f. sln., sl. calc., sl. arg., tt.		
									Wc 465 Wc 440 Wc 740 Wc 680 Wc 680 Wc 530 Wc 430	Dolomite - dk. brn., f. sln., l/p suc., tr. int. gran. por., rubbly Dolomite - lt. brn. gy., f. sln., p. intergran. por., bdd. 1-3 ft. Dolomite - lt. brn. gy., f. sln., tt. wthre. lw. gy., rubbly Dolomite - lt. gy. brn., v.f. sln., tt. sl. calc., sl. arg. in pt., wthre. w. lm.gy Dolomite - lt. brn. gy., f.m. sln., calc., few vugs, w/wh-yel. sl. calc. Dolomite - lt. brn., f. sln., tt. wthre wh. sln. calc. Dolomite - w. gy. w/sl. brn. stn., tt, sl. calc., thin bdd. Dolomite - lt. gy. brn., f. sln., tt. sl. calc., platy bedding	95' Dolomite, lt. brn. gy., f. sln. sl. calc. sl. arg. patchy, int. gran. por., rubbly, thin bedded-in part rubbly w/thin coven ed interval	
									Wc 430	Dolomite - w. sh. gy. w/brn. coal, v.f. sln., sl. calc., sl. arg., tt.		
									Wc 330 Wc 330 Wc 330 Wc 105 Wc 75 June 29	Dolomite - lt. gy. & grey., f. sln., few vugs, shot. wh. c. sln. calc. Dolomite - lt. gy. & grey., f. sln., few vugs, shot. wh. c. sln. calc. Dolomite - lt. gy. & lt. brn., v.f.sl., sl. & p.p. vugs, a. sln. aaa. Dolomite - w. gy., crypl., lt., sl. arg., lt gy. chl. nod., bdd. 1-2 ft. wthre. lt. gy.	50' Dolomite, crossbed. gy f. sln., stand. cuttur sli. calc & short and int. sln. & vuggy por	
											45' Covered	
									July 5 Wc 1200 Wc 1180 Wc 1145 Wc 1135 Wc 1120 Wc 1085 Wc 1050 Wc 1033 Wc 1005 Wc 990 Wc 923 Wc 915 Wc 845 Wc 830	Dolomite - lt. yel. gy. f. & m. sln. sl. calc. shnl. calc. lined vugs Dolomite - sh. y. lt. gy., f. sln., mac., sl. calc., vugs com. wthre. gy & yel.thin Dolomite - lt. yel. gy., w/sh. chl. bnd., p. pres. colonial cor., wthre. yel. gy. Dolomite - buff, f.g. bd., vuggy, wthre. yel. gy., thick bedded, (4 ft. plus) Dolomite - brn. gy., crypl., tt., bd. bedded 2-4' wthre. yel. gy.	95' Dolomite, buff-lt.yel.gy f. sln., rubbly, thin bdd. 95' Dolomite, lt. brn. gy. f. sln., stand. cuttur, rel. poor to good vuggy por wthre. yel.-gy., massive 20' Dolomite, brn. gy., crypl. tt, bd. thin bedded 45' Dolomite, lt. brn. gy. f. sln., massive, stand. cuttur, rel. poor to good vuggy por. Brachiop-oda Bed.	
									Wc 810 Wc 780 Wc 765 Wc 745 Wc 720 Wc 705	Dolomite - lt. brn. gy., v.f. sln. tt. chl. nods. wthre. brn. gy., thn. & w. bdd. Dolomite - a. gy. lt. brn. gy., v. f. sln., vuggs common, chl. nods., wthre. m.dk-gy. Dolomite - lt. gy. w/sl. brn. coal, v.f. sln. tt., wthre. lt. gy. in beds 3' Dolomite - lt. gy. crypl. tt. bd., wthre. lt. gy. bdd. 4"-1' Dolomite - w. gy. v.f. sln., sl. calc., rare vugs, few chl. nods., sli. cor. wthre. lt. & w. gy., bdd. 6"-3', rare vuggy porosity	60' Dolomite, brn. gy., v. f. sln., wod. to thick bdd siltstone, v. tt. out. 25' Dolomite, lt. gy. crypto f. sln., thick bdd. wth. wod. zone.	Pentamerid brachiop d Coal generally idea lfSalisbury Silurian
									Wc 650		35' Covered	
									Wc 360 Wc 330 Wc 320	Dolomite - dk. brn. gy. fel. calc., tt., chl. nods., wthre. w. gy. & rubbly, some calc. vns.	30' Dolomite - fl. brn gy.	Pelmatozoan s. sp Tab ulate(?) Favosite s. for Ordovician(?) Silurian?
									Wc 310 Wc 300 Wc 280 Wc 260	Dolomite - a. gy., sandstone & colonial cor., massive Dolomite - lt. brn. w/sl.stn., p. intgr. stn. por., sl. calc. some vugs, wthre. dk.gy Dolomite - dk. brn. gy., m. stn. in pt. suc., in pt. tt., int. stn. por., vuge Dolomite - lt. brn. gy., m. stn., tr. por.	80' Dolomite wod. brn. gy., f. sln., sl. calc. sl. arg. rubbly & thin bdd. in part, wthin zone fair int.stn. & vuggy por. rel. poor, some zone of dk.brn. gy. dol. sl. arg. rubbly appearance & pel. texture, wthre. to lt. gy.	Favositella stewarti (Caldwell) Favosites s. sp. Halysites(?) Catenipora(?) Pleurodictyum(?) s. sp. cf. Favosites s. sp. (Silica-Bedford Sh.) Catenipora s. sp.
									Wc 440 Wc 430	Dolomite - a. gy., v.f. sln., tt. sl. calc., calc. nodle., wthre. dk. gy., rubbly, some colonial corals Dolomite - w. gy., f. sln., sl. calc., tt., wthre. dk. gy., fr. wh. sln. calc.	Dry test - 30' Continue to drill ahead, no show. Core - 30' Continue to drill ahead, no recovery in the Stony Rin. of Kootenay Formation and/or Chaeteo.	Upper Ordovician (Richardson, 1961)
									P. 380 P. 360 P. 340 P. 320 P. 310	Dolomite - a. gy. v.f. sln., t.t., w/patches lt. gy. ch. wthre. lt. gy. halysites Dolomite - a. gy. w/brn. coal, v.f. sln., sl. calc., tt., fr. lt. gy. dbl., wthre dk. gy., rubbly, Fos. Chaetetes(Dolomite - lt. med. brn. gy. crypl. sl. calc., tt., wax., wthre. yel. brn. gy.		Catenipora s. sp. / Favosites s. sp. / Halysites s. sp. / Favosites s. sp.
ORDOVICIAN	FRANKLIN MT. FM.			3000					P. 180 P. 130 P. 115 P. 35 P. 15	Dolomite - a. gy. brn. v.f. sln. tt. some pel. stn. hard, poor exposure Dolomite - yel. gy. & buff, thin bed. wthre. yel. gy. Dolomite - yel. gy. & buff, f. and a. sln. tt., bd., thin & w. bdd. (8"-18") wthre. yel. gy. Dolomite - yel. gy. & buff, f. & m. sln., tt., bd., wthre. w. gy. Dolomite - lt. gy. w/yel. stn., v.f. sln., tt., sl. calc., bd., thn. bdd., some wh. ool. vns.	50'Covered interval 10'Poor outcrop 20'Covered interval 80' Dolomite, buff, thin bdd. from 12 bed. sln. outcrop., not millerous,tt wthree.Dol. rusty, wthre. pelmatoz	

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-2

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-B

Co-Ordinates : 63° 19' N. - 123° 8' W.
Geographic Location : 4 Miles S.E. Mt. Kindle

Geologists : C.D. Mc.Cord, F. Halkow, H.Young
Date of measurement : June 6-9-26, 1961

FOSSIL SYMBOLS

F	Fossiliferous	≡	Stromatopora
B	Brachiopoda	♈	Foraminifera
G	Gastropoda	⊙	Crinoid
ϟ	Coral	⩕	Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
Dolomite	Limestone Breccia	Calcareous Shale	Siltstone
Dolomitic Limestone	Dolomite Breccia	Anhydritic Shale	Ironstone
Argillaceous Limestone	Rugose to Rubbly	Salt Casts	Sandstone
Argillaceous Dolomite	Coarse Crystallization	Pyritic Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY G. FAIR POOR NONE	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
SILURIAN					B			June 9	Brachiopods marker bed 5½' thick - numerous large sections of Brach. valves	5½' Brachiopods Bed very abundant large size brach. valves (3")	
								Mc 1040	Dolomite - dk. gy. v.f. xln., silty, hd., rare wh. dolomite stln. arg		Palaeofavosites a. sp.
								Mc 1045	Dolomite - as in pt. brec., vfrs. lt. gy. & dk. gy., banded appearance, abnt.calc		
								Mc 1000	Dolomite - as. 1'-2' beds, sl. foss., colonial corals		
								Mc 940	Dolomite - as. crystl., arg.,lt.		
								Mc 950	Dolomite - as. few cbl, crnc, vfrs. dk. gy.		
									Dolomite - as. not as arg., as., brn.-purplish gy., v.f. stln.		
								Mc 920	Dolomite - a. brn. gy., v.f. xln., lt., sl. arg., occ. fossils		
								Mc 930	Dolomite - gy. tan, crystl., lt., minor, p.p. vugs, sl. arg., Foss., vfrs. rubbly	70' Dolomite, dk. gy. v.f.xln. silty, hd. arg. banding. Colonial corals present, to pt. siliceous to chert	
								Mc 700	Dolomite - dk. gy. brn., l.-l., sl. arg., mas., l.-2' beds		
								Mc 725	Dolomite - gy. brn., v.f. xln., minor scat. p.p. porosity, sl. arg.		
								Mc 600	Dolomite - dk. brn. gy., v.f. xln., tr. por., sl. arg., fossiliferous, vfrs vuggy		
								Mc 630	Dolomite - gy. brn. crystl., lt., sl. arg.		
								Mc 600	Dolomite - dk. brn., crystl., lt., w/few p.p. vugs, sl. arg., brachiopods		
								Mc 550	Dolomite - gy. brn. crystl., lt., yel. sol., sl. arg., siliceous, unfossiliferous		
								Mc 660	Dolomite - as. w/few fossils, sl. siliceous	140'Dolomite, dk. gy. brn. crystl. generally lt. w/some poor p.p. porosity Alternately thick & thin bedded, sometimes rubbly, fossil corals & Brachiopods abundant	Stromatoporoids indet. ? ? Favosites sp. or ? micgrecensis ? ? Calapoecia sp. or Heliolites sp.
								Mc 340	Dolomite - dk. gy. brn. crystl., lt., arg., platty, bdd., vfrs. lt. gy., brachio- pods, strm., corals		
								Mc 230	Dolomite - dk. brn., v.f. xln., lt., arg., vfrs. tan to brn.		
								Mc 140	Dolomite - dk. brn., v.f. xln., sl. arg., lt. gy. xln. sl. dol., in pt. gran.-breccia, crinoid		
								Mc 60	Dolomite - as. v.f. xln., tr. c. xln. wh. dol., rare vugs, sparce fossils,		
								Mc 30	Dolomite - as. v.f. xln., lt., tr. wh. calc. dol., sil., vfrs. sed. gy.,		Pentaenrid brachiopods
								June 6	Dolomite - as.		
								Mc 10	Dolomite - as. v.f. xln., tr. wh. dol., slts., sl. arg. calc., foss., some		
								Mc 30	Dolomite - as. sl. mottled, gran., arg. mottling, sulpherous, mass., vfrs. w/vuggy		
								Mc 70	Dolomite - dk. gy. brn., crystl., lt., minor wh. dol. stln., foss.		
								Mc 100	Dolomite - dk. gy. brn., v.f. xln., minor p.p. por., calc., in pt. vuggy		
								Mc 120	Dolomite - gy. tan, limey, gran., lt. p.p. por., wh. calc. stln., vuggy in pt.,fos		
								Mc 140	Dolomite - lt. to dk. gy., gran., good por., coarse, abundant,	90'Dolomite, gy. brn. f. xln arg. mottling, in pt.wthn vuggy w/coarsely stln. dol. occ. fossil horizon w/fair to good p.p. and vuggy porosity,only spar- cely siliceous.	
								Mc 160	Dolomite - dk. gy. brn., f. xln., sl. arg., sl. foss., vuggy		
								Mc 180	Dolomite - as. calc. mottled w/gy. tan.-w. xln. dol., corals abund., few vugs,calc		
								Mc 200	Dolomite - as. tr. c. xln., wh. dol., vfrs. nod., occ. Fos.		
								Mc 220	Dolomite - lt. gy. w/dk. gy. algae patches, vfrs. rubbly		
								Mc 250	Dolomite - dk. gy. brn. to tan, mottled, lt., in pt. arg., corals		
								Mc 290	Dolomite - as. corals decreasing to base of bed		
								Mc 270	Dolomite - dk. brn. gy., bl. tinge, f. xln., lt., sl. arg., occ. coral		
								Mc 280	Dolomite - as. somewhat granular in texture, minor fossils	50'Dolomite, gy. brn. corral line arg., gran., mottled vfrs. rubbly - massive.	
								Mc 290	Dolomite - as. massive, lt., fewer corals int. bdd. w/yel. tan cht. irreg. lenses		
								Mc 300	Dolomite - as. gy. brn., f. xln., lt., hrd, 10" beds, vfrs. yellow		
								Mc 320	Dolomite - dk. gy. brn., v.f. xln., lt., hd., sl. arg., w/fossils		
								Mc 330	Dolomite - as. massive, vfrs. lt. gy., w/bl. cht. inclusions	30'Dolomite, gy. brn. f. xln lt., siliceous, w/chert nodes, vfrs. yellow	
								Mc 340	Limestone - dk. brn., mottled w/fleckes w/wh. Calc., hd., sil., vfrs. gy. w/calc	15'Limestone & Dolomite,pink bedding, siliceous, w/ch. vfrs.-yel.-tan.	
								Mc 355	Dolomite - dk. brn., v.f. xln., earthy, arg., lt., vfrs. yel. tan, platy, w/ch.		
										50'Covered interval	
								Mc 440	Chert - gy.-wh., c. xln.- minor off wh. drusy ch. mas. 8' bed, vugs & fract.	8'Chert bed, wh. c. xln., mass., vugs & fractures	
								Mc 450	Dolomite - lt. tan, gran. to sucrose, a few vugs		
								Mc 470	Dolomite - as. sucrose, mas. 15' bed w/quartz infilling in vugs	40'Dolomite, lt. gy.-tan sucrose, a few vugs & fractures w/quartz stln. infilling - gen. tt.	
								Mc 480	Dolomite - lt. gy. tan, v.f. x. tt.		
								Mc 500	Dolomite - tan, v.f. stl. tt., fine maroon mottling - arg. laminations		
								Mc 520	Dolomite - as. yel.-tan., m. xln., platy bdd.		
								Mc 530	Dolomite - gy. tan, v.f. xln. tt., arg. mottling more common		
								Mc 545	Dolomite - as.		
								Mc 550	Dolomite - as. siliceous, massive, bdd		
								Mc 570	Dolomite - as. yel.-tan, v.f. xln., druzy, tt., fine calc. veining		
									Dolomite - thin bedded		
								Mc 590	Dolomite - gy. tan, crystl. tt., siliceous, concoidal fractures, arg. laminae		
								Mc 600	Dolomite - gy. brn. to crystl., lt., bd., vfrs. yel.-orange, siliceous laminae		
								Mc 610	Dolomite - lt. tan, gry., f. xln., lt., bd., slightly siliceous		
								Mc 620	Dolomite - as. crystl., lt., faint maroon mottling, sl. limey, nod. cht.		
								Mc 640	Dolomite - as. bbund., lt. bl. green & maroon, dol. shale lenses		
								Mc 650	Dolomite - purple-gy., w. xln., in pt. granular, thin bedded		
								Mc 660	Dolomite - yel. tan, v.f. xln., tt., thin bdd.		
								Mc 670	Dolomite - dk. bl. gy., v.f. xln., lt., massive bed		
								Mc 685	Dolomite - as. massive		
								Mc 700	Dolomite - tan, v.f. xln., tt., maroon (arg.) mottling common, thin bdd. wthrs.tan		
								Mc 710	Dolomite - gy., sl. tan. f. xln., lt., bd., wthrs. yel-brn., thin bdd. earthy		
								Mc 720	Dolomite - yel. tan, earthy, faint maroon tint., calc. veins	590'Dolomite, gy. tan to dk. gy. brn., vfrs. tan to yel.-brn. Alternately thick & thin bedded. Characteristically mottled various shades of maroon, reflecting varying arg. content of rock, purple & green col. banding common in pt. Cross-bedding, Ripple mark, Shale pigs, dessi- play a conchidal surface, cross-sections of lamin- ations shows structure similar to cross bedding in a sm. Occas. thin ch. horizon	
								Mc 730	Dolomite - as.		
								Mc 740	Dolomite - lt. gy. off wh. f. xln., minor ochre stn., vfrs. w/p.p. vugs		
								Mc 770	Dolomite - tan, v.f. xln., lt., sl. siliceous, sl. arg., tr. maroon tint		
								Mc 790	Dolomite - cream, rust speckling, f. xln., tt., maroon sh. laminations		
								Mc 800	Dolomite - dk. gy. brn., f.-v. stl. micro sucrose, tt., bd., sl. arg. finely bdd.		
								Mc 810	Dolomite - purple tan, mottled, crystl., arg.		
								Mc 820	Dolomite - wh.-tan, micro-sucrose, purple shale lamination		
								Mc 830	Dolomite - lt. gy. tan, f. xln., faint bl. tint, massive		
								Mc 836	Dolomite - as. rust mottling		
								Mc 860	Dolomite - dk. gy. w. xln.		
								Mc 870	Dolomite - as. dk. gy. [illegible] pt. bdd. w/lt. brn. dol., vfrs. purple, maroon &		
								Mc 880	Dolomite - as. [illegible] v.f. xln., lt., maroon laminations abundant, crosa-bedded		
								Mc 890	Dolomite - as. [illegible] laminae - concoidal shaped parting planes		
								Mc 900	Dolomite - dk. brn. micro-gran., hd., bk. sh. partings		
								Mc 920	Dolomite - lt. tan, gy. f. xln. limey		
								Mc 930	Dolomite - as. tr. xln. wh. dol. and calc. Fossils protrude on wthrd. surface		
								Mc 940	Dolomite - gy. brn. m. xln., pt. granular		
								Mc 956	Dolomite - lt. tan.-gy., f. xln., limey w/chert nodules		
								Mc 960	Dolomite - as. granular		
								Mc 970	Dolomite - dk. gy. w. xln. granular		
								Mc 980	Dolomite - dk. gy. brn., gra., scatt. fossils., algal type dark patches in lt. gy.		
								Mc 990	Dolomite - dk. brn. gy., v.f. xln., scattered vugs, w/dol. stln.		
								Mc 1000	Dolomite - yel. gy. f. xln., lt., sl. arg., earthy, black shale partings, platy.		
								Mc 1020	Dolomite - dk. brn. purple, m-c. xln., prom. red-brn speckling, massive		
								Mc 1030	Dolomite - tan-gy. f. xln., lt., 1' beds		
								Mc 1040	Dolomite - dk. gy. gran. & yel. tan. v.f. xln., arg., thinly interbedded		
								Mc 1050	Dolomite - gy. brn., v.f. xln. lt., arg., prom. sh. lamine		
								Mc 1060	Dolomite - as. yel. brn., v.f. xln., arg., earthy, faint shale laminae		
								Mc 1080	Dolomite - dk. brn. gy., sl. purplish tinge, f. xln.		
								Mc 1090	Dolomite - tan-gy., v.f. xln., rare brn. fleche		
								Mc 1100	Dolomite - lt. gy., m. xln., w/c. xln. wh. dol., brecc. cross bedding		
								Mc 1130	Dolomite - dk. brn. & brn. gy. v.f. xln., siliceous		
								Mc 1140	Dolomite - yel. f. xln., tt., arg., mottled w/red brn. sh. partings		
										210'Covered interval	
								Mc 1400	Dolomite - purplish gy. v.f. xln. tt., bd., siliceous, brn. sh. laminae, concoidal partings		
								Mc 1420	Dolomite - gy. f. xln., silty, tt., bd.		
								Mc 1430	Dolomite - tan, v. f. xln. tt., dk. brn. banding		
								Mc 1440	Dolomite - dk. brn., f. xln., lt., sl. arg.		
								Mc 1460	Dolomite - as. black	110' Dolomite gy brn. in pt purplish, f xln, tight, in pt silty thick & thin bedded, arg. w/some brn. sh. laminae, chert horiz., gen. tt.	
								Mc 1470	Dolomite - v. lt. gy. crysl. earthy, arg. sl. limey, cherty		
								Mc 1480	Dolomite - as. [illegible] sl. bl. tinge, v.f. xln., lt., bd., int. bdd. w/lt. gy.		
								Mc 1490	Dolomite - dk bl. gy. f. xln., sl. siliceous		
								Mc 1500	Dolomite - tan gy., crysl., lt., bd., rare vugs		
								Mc 1510	Dolomite - gy. brn., limy, arg., silty, crumbly,drag folds above this bed		
								Mc 1530	Dolomite - dk. bl. gy., crysl., bd., siliceous w/chert	30'Covered 50'Dolomite, dk. bl. gy. crysl., siliceous, tt. w/chert.	
								Mc 1580	Dolomite - as. sl. arg.		
								Mc 1600	Dolomite - lt. tan, crysl., bd., siliceous, tt., faint maroon mottling, cherty		
										55'Covered interval possibly Saline R. Shale	
								Mc 1700	Dolomite -lt. gy. tan, crysl., sl. limy, in pt. earthy, arg., brecciated w/c xln. dol. & calcite, vfrs., cavernous, rubbly	15'Dolomite - brecciated, rubbly	
CAMBRIAN	SALINE RIVER FORMATION								The Franklin Mountain - Saline River Formation Boundary could be lo- cated anywhere within this covered interval. The outcrop at Mc 1700 was considered to be sometime in the Dolomite above in the Franklin Mountain Formation - so it is considered to be in a section of Saline River shale that is recessive and does not outcrop.	310'Covered interval possibly Saline R. Formation Shales	
								June 26			
								Y 1665	Shale- Purple Red - Limy interbedded with green platy shales and anhydrite in 2-3" beds. Outcrop very soft and crumbly & in situ earth forming beds	60'Shale, soft, green & maroon w/pink anhydrite beds	See Photo Page 12
								Y1625	Shale - green, soft, irregularly interbedded with pink-rose colored anhydrite maroon, very soft shale partings, w/salt casts in green shale		
									A measured distance of 1625 feet was traversed across a flat lying low land on strike with the section described above. The traverse ter- minated at an outcrop of pink colored quartzites of Mt. Clark Formation where the bedding had a strike of 53° Azimuth and dipped 8° to the northeast. The strata in the section described above has strikes aver- aging 15° Az and dips 28° to the southeast. The flat area below this section must contain the Cap Mountain thrust fault, and the detritus of grey and black siliceous shales and rusty weathering platy dolomite would suggest the formation involved in the thrust zone at the locality would be part of the Saline River Formation. Samples Y-0 Y-100 Y-200 Y-300 are of Cambrian quartzite and Saline River Shales and dolomite near the Quartzite outcrop.		

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.- 3

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-S-B

C.D. Mc.Cord,
F. Halkow, H.R. Young

Co-Ordinates : 63° 22' N. - 123° 25' W.
Geographic Location : 4 miles due West of Williams Peak

Geologists :
Date of measurement : June 7, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION							June 7	Limestone m gy brnish, f xln to m xln, thick bedded.	Top of Limestone Eroded	Favosites alpenensis Winchel
								Mc 40	Limestone dk gy brn tinge, v f xln, calc xtls corals		Middle Devonian (Elfelian)
								Mc 50	Limestone v f xln calc xtls, fos fragments, (brachiopoda), tight, sl nodular.		Martiniad brachiopod would
								Mc 80	Limestone crpxln, calc xtls, tight, trace foss fragments, wthrs in nodular fashion		identifiable Middle Dev?
								Mc 90	Limestone m brn gy, v f xtln, calcite xtls prominent		
								Mc 110	Limestone m gy, v f xtln, tight, minor calc xtls, fos fragm, massive bed		
								Mc 120			
								Mc 150	Limestone lt tan gy, crpxl, tight, thin bedded	180' Limestone - m brn gy, v f xln,lt,thk bdd w/zones of thn bdd,foss,tr coarse calc xtls,wthrs, m gy, nodular.	
			100					Mc 200	Limestone brn gy, m xtln to granular tight, mass, bdd		Brachiopod & Crinoid fragments
						F		Mc 220	Limestone blk, brn tinge, crpxl, tight, rare calc xtls, braciopoda & trilobites		Martinlopsis sp.
						B		Mc 250	(prod'us) thin bedded		Atrypa andersonensis Warren?
						G		Mc 260	Limestone dk gy, brn tinge, crpxl, trilobites, brachs and gastropoda		possible Tamature specie
								Mc 280	Limestone drk gy - blk, m pt m xtln, calc xtls, fos fragments, mass bdd, in pt nod.		Martiniad brachiopods
								Mc 290	Limestone blk, brn tinge, crpxl, tt, tr calc xtls, fos fragm, mas, nodular		? Dechenella sp.
								Mc 300	Limestone aa horn coral in scrco.wthrs, m gy in pt.nod.		
								Mc 310			
			200							80' Covered interval.	
											scree fossil
											Favosites alpenensis Winchell
								Mc 490	Limestone m gy sl tan, crpxl, tight, tr calc x hard		Billingsastraea trichostesca
								Mc 510	Limestone aa lt gy grdg to dk gy, wthrs yel gy		Crickm
								Mc 540	Limestone dk gy sl brn crpxl, tight, in pt m brn gy, siliceous, in pt laminated		Middle Devonian (Eifelian)
								Mc 550	Limestone m gy sl brn v f xtln, tight, sl arg, even textured, thick bdd		
			300					Mc 570	Limestone m gy brn f xtln, tight, some calc veining, thick & thin bdd		
								Mc 590	Limestone dk gy crpxl tight, orange calcite veining		
								Mc 610	Limestone gy brn, crpxl, tight, sl arg, calc xtls, wthrs lt gy, irregular bed thk		
								Mc 630	Limestone bk, faintly mottled, crpxl, arg, thin, bdd-platy	200' Limestone - thk & thn intbd,m gy to blk,tt,sl arg,	
								Mc 650	Limestone dull gy brn tight, faintly, bk mottled, crpxl, arg, thick & platy intbd	sil lam, calc vning,wthrs lt	
								Mc 660	Limestone pale gy, tight, crpxl, calc veining, even textured	gy & yel gy,in pt platy.	
										(70ft exposed)	
								Mc 710	Limestone dk gy in pt sl brn tinge crpxl tight tr calc xtls, thick bedded		
			400								
								Mc 790	Limestone dk gy brn, crpxl tight, tr f calc xls, massive bdd		
								Mc 810	Limestone md tan gy, wthrs, lt gy		
								Mc 830	Limestone dk gy brn, crpxl tight, minor xtln calc veining, wthrs dk gy, thick bdd		
			460					Mc 840	Limestone gy tan, crpxl to vf xtln, tight, grdng to gy brn crpxl		
								Mc 860	Dolomitic Limestone white crs xtln, massive, in pt crumbly (intxl/por?) w/brn marl	40' Dolomitic Limestone &	
							x	Mc 890	stn, micro banding, wthrs wh & bk mottled	Limy Dolomite - white, crs	
								Mc 910	Dolomite aa w/yellow brn patches, tr green cus staining	xtln,mass,crumbly (intgran	
			500					Mc 920	Limestone off white, m xtln, w/dk brn gy, crpxl Limestone - lenses out	por), lam, wthrs resistive,	
							x	Mc 940	Dolomitic Limestone - Lmy,dol, dk brn, micro sucrose, finely lam, styl, thin calc	white & blk mott, also brn &	
								Mc 950	Dolomite Lmy, m brn, micro granular, crumbly, fine por, arg. vns.	gn stn.	
							P	Mc 970	Breccia Lmy, dol & ls, brn lmy pieces in wh xtln, Ls matrix	40' Breccia, Dolomite frags	
								Mc 980	Breccia aa 6-8 inch particles, no bedding, solution along joints	in Ls mtx. Fragments 6-8",	
								Mc 1000	Breccia aa dolomitic, dk brn, in pt porous, calc veining	subang,dk brn,microgran,poor	
			100				P	Mc 1020	Breccia aa	p.p. por, mtx is wh,med xln,	
								Mc 1040	Dolomite limy, dk brn, aa, sl por, crumbly calc veins, color varies to dk brn to	mass,w/coarse xln calc as vns	
								Mc 1060	gy brn, v fxtl fine laminations (arg) tight,		
								Mc 1070	wthrs dk gy		
								Mc 1090	Dolomite aa abundant calcite		
								Mc 1110	Dolomite aa earthy dense, f g bedded 6-8 inches		
								Mc 1120	Limestone dk gy, sl bluish crpxl, brecciated in calc matrix		
								Mc 1150	Dolomite dk brn-bk, sl bluish micro sucrose tight, arg, sl limey	160'Dolomite - lmy,dk brn,	
			200							micro sucrose,arg,thk & thn	
							P	Mc 1230	Dolomite lmy, dk brn, micro gran, pp, to vuggy porosity, sl arg calcite infilling	bdd,calc vns,in pt breec,wthrs	
							v	Mc 1240	in bottom of bed. wthrs purplish brn, platy bdd	dk gy,crumbly in earthy.	
								Mc 1250		Section is 65% exposed	
								Mc 1350	Limestone tan gy, v f xtln tight, trace calcite xtls, nod to rubbly, wthrs yel, mass	50' Limestone - brn gy, v f	
									irreg wthr surface	xln,tt,calc xtls com,mas w/th	
								Mc 1390	Limestone brn gy, v f xtln, mottled, tight, sbund calc xtls, wthrs m gy	bdg & brec at base,wthrs yel	
			300					Mc 1410	Limestone aa w/dk brn gy, sl bluish v f xtln, calc xtls wthrs yel	gy, rubbly.	
							P	Mc 1430	Limestone dolomitic, brn, granular, minor calc xtls pp por, sl arg, tr brec		
							x	Mc 1440	Dolomite Lmy, lt brn, sucrose, silty, some fine gran porosity		
							v	Mc 1460	Dolomite brn blk, brecc, inter-xln to.vuggy por, abund calcite		
							P	Mc 1470	Dolomite Lmy - yel tan to brn, micro gran, sbund calc xtls pp por.	80' Dolomite- lmy, tan gy-	
								Mc 1490	Dolomite Lmy aa	brn gy, gran, fair to good	
								Mc 1500	Dolomite Lmy aa, yel tan, granular, mottled in pt	vuggy & intgran por,sbnt calc	
								Mc 1520	Dolomite dk gy-brn, f xtln to gran, tight, pp porosity sl brecc	xls, wthrs mot,lt gy,in pt	
			390				P	Mc 1530	Limestone lt gy tan, micro gran, calcite xln, slightly dolomitic	yel, rubbly.	
								Mc 1550	Dolomite Lmy, dk brn, sucrose, sbund. calc xtls		
	BEAR ROCK FM.						x	Mc 1570	Breccia yel to brn bk, dolomite and xtln calcite, porous		
	LONE MOUNTAIN FORMATION (Upper)							Mc 1580	Limestone in pt dolomitic, lt tan gy, f xtln to sucrose, in pt brecc	60' Breccia - ls mtx,dol,sbnt	
							x	Mc 1600	Dolomite lmy, gr tan, earthy to coarse xtln, porous, brecc	coarse xtln calc,good intxln	
							v	Mc 1610	Limestone dolomitic aa abundant coarse xtln calcite	& vuggy por, w/dol frags,brn	
								Mc 1630	Limestone dolo aa mottled, tr, pp porosity, brecciated	to tan gy,earthy,lmy,porous,	
			60				P	Mc 1650	Limestone yel tan gy f xtln to m gran mottled, tr porosity, brecc, wthrs cavernous	wthrs mas,rd,cavernous,lt gy	
										w/yel stn.	
									End of Outcrop		
		1000									

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.- 4

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 02' N. - 123° 06' W.
Geographic Location : 6 miles N.E.(50°AZ) of Old Fort Island
Geologists : Halkow, Perry, Roessingh
Date of measurement: June 8, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION			HR 10	Limestone - dk brn gy, crpxl, tf, wthrs nod, some cup coral, not identifiable, coral & foss casts, gy-tan Ls bds up to 3' thick	40' Limestone - dk brn gy, tf well bdd, wthrs nod, tr brn stn	Cup coral - not identifiable
				20			
				40	Limestone - aa, well bdd, lam, thn vns calc, arg appearance in pt; tr brn stns.		
				50		60' Covered interval	
			100	60	Limestone - dk brn gy, tf, crpxl, some crin stems & foss frag, wthrs gy, thn bdd.	20' Limestone - dk brn, gy, tf, crpxl, foss, thn bdd.	?Productella sp. Middle Devonian
				80			
				90		90' Covered interval	
			200				
				100	Limestone - dk gy to dk brn gy, crpxl, tf, thk bdd, wthrs gy, nod.		
				110	Limestone - aa above.	60' Limestone - dk brn gy, crpxl, tf, thk bdd calc vns brn stn, wthrs nod, abnt foss in restricted horizons	Hexagonaria impedita Crickmay? Middle Devonian Eifelian
				120	Limestone - aa above abnt corals, calc vnd, tr lt brn & gn stns.		
				130	Limestone - tan gy, crpxl, tf, well bdd & lam, calc vnd, tr lt brn stns		
				150	Limestone - dk gy brn, crpxl, tf, thk bdd to mas, calc vnd, foss at base, arg appearance in pt.		
				170		30' Covered interval	
			300	230	Limestone - dk brn gy, crpxl, tf, calc vnd, mas, wthrs gy, tr pale gn, lt brn & yel stns, some blk specks.		
				250			
				260	Limestone - aa above, tr small round blk incls.		
				290			
				300	Limestone - dk gy brn, crpxl, tf, calc vnd, tr lt brn stn, rare small vugs, mas.		
				310			
			400			220' Limestone - dk brn gy, crpxl, tf, rare small vugs calc vns, s rd blk incl comm, stng comm, brn, yel & pale gn; thk bdd wthrs grey. 80ft exposed	
				410	Limestone - gy tan, crpxl, tf, some calc vnd, tr yel stns.		
				420	Limestone - aa above, rare black specks.		
				430	Limestone - dk brn gy, crpxl, calc vnd, thk bdd, tf, unfoss, wthrs gy, appears arg in pt, hd, tr lt brn, yel & pale gn stns.		
				440			
				450			
				480	Limestone - aa above, v f xln, calc vns, tr blk specks		
				490	Limestone - dk gy, calc vns pale gn & lt brn stns.		
		500	500	500	Limestone - aa above, less calc, fewer stains.		
				510	Limestone - dk brn gy, crpxl, tf, calc vnd, thk & thn bdd, tr lt brn stns.		
				520			
				530	Limestone - aa above, massive, tr rd blk specks.		
						40' Covered interval	
				600	Limestone - gy, crpxl, tf, calc vnd, cherty, some yel & pale gn stns.	40' Limestone - gy, dk brn gy, crpxl tf abnt calc in vns & nests, w/yel & pale gn stn, chty in pt.	
				610	Limestone - aa above, abnt calc veins & nests.		
				620	Limestone - aa above, abnt calc w/yel & pale gn staining.		
			610	630	Limestone - v dk brn gy, crpxl, tf, calc vnd, some stns as above.		
LOWER DEVONIAN	LONE MOUNTAIN FM. (Upper)			639			
				640	Limestone - v lt crm, f xln, fair int xln por & some s vugs, tr lt brn, pale gn & yel stns, calc vnd, cherty & w/intbds blk Ls at 10-20'. Brecc, lam in pt, brec Ls incrs downwards	110' Limestone Breccia - dk gy to v lt crm, calc vns & nests abnt, tr & vugs sucrose in pt + fair intxln por mixed with lam crpxl ls, bdd ½-2' thk, blk specs & dendritic blk incl sugg of manganese oxides, wthrs gy w/yel & pale gn stn comm.	
				658			
				670			
				680	Limestone - aa above, blk incls in dendritic patterns		
				700	Limestone - dk gy, crpxl, tf, calc vnd.		
				720	Limestone - as above, fewer calc vns.		
				730	Limestone - as above.		
			110	740	Limestone - lt brn gy, crpxl, brec & calc vnd, tr aa vugs, sandy.		
				750	Limestone - as above, abnt yel stnd calc in vns & nests, rare blk specs, tr isolated vugs		

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.- 5

CAMSELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 02' N. - 123° 43' W.
Geographic Location : 15.5 miles S.W. (215°) of Wrigley Airport

Geologists : Roessingh, Halkow, Young
Date of measurement : June 9, 11, 27, July 27, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE | FORMATION | THICKNESS | LITHOLOGICAL LOG | COLOUR | FOSSILS | POROSITY | SAMPLE NUMBER | DETAIL LITHOLOGICAL DESCRIPTION | LITHOLOGICAL SUMMARY | PALEONTOLOGICAL RECORD

MIDDLE DEVONIAN — HUME FORMATION

Top dip slope Camsell Bend

MB 201 Limestone - dk brn gy, crypt, sl sil,calc ls(Lost Cat),shal Cur overlying and chl bd. rubbly, wthrs w dy.

MB 202 Limestone - brn blk crypt,sl sil,sl.ti,thk and bed,wthrs w dy.

MB 203 Limestone - dk brn,crypt,fissg,calc incl,platy,shal Breach,wthrs brn.

MB 204 Limestone - brn blk,crypt,ti,mar thn calc incl,thk bdd,wthrs w dy.

MB 205 Dolomite - lt yel gy, w sln,gran,fet purp mot,sil thk & thn bdd,wthrs lt gy.
MB 206 Limestone - brn blk,crypt,bd, platy,wthrs w gy.
MB 207 Limestone - w gy,crypt,bd,sil,thk bdd,wthrs lt gy.

MB 208 Limestone - as, mar calc incl,wthr lt yel gy.

MB 209 Dolomite - wh,sl sin,gran,sl por,tr/sol w/dk gy,thk bdd ls,
MB 211 Dolomite - wh, v sln,gran,tr/sol w/brn-blk/dk brn dy dol lam,wav,wthrs rubbly.

MB 212 Limestone - dk brn gy,crypt,ti,wh calc incl,thk bdd,wthrs lt gy.
MB 213 Limestone - dk brn gy,crypt,ti,sil,thn calc wav lam,thk bdd,wthrs w brn sy.
MB 214 Limestone - brn gy,crypt,sl sil,mar calc incl,thk bdd,wthrs w gy.
MB 215 Limestone - as, dk brn gy.

MB 216 Limestone - as, bro blk, thn bdd.
MB 217 Limestone - dk brn gy,crypt,ti,thk bdd,wthrs lt gy.

MB 218 Limestone - as, sl sil thk bdd, rd brn mot,wthrs yel-gy.
MB 219 Limestone - dk brn gy,crypt,ti,bd,sil,frac,wthrs lt gy,nplt,stery.

MB 220 Dolomite - w brn gy,v sln, lrrng lam,w/wh v sln dol,calc incl.
MB 221 Limestone - brn blk, crypt,ti,bd, mar wh dol mot,thn bdd,wthrs lt gy.

MB 222 Dolomite - w v lt brn gy to wh, v sln, wthrs lt gy.

MB 224 Limestone - brn blk,crypt,ti,sl sil,wvl bd,wthrs dk gy.
MB 225 Limestone - dk brn gy, v f sln,ti,platy wthrs lt brn dy,concrete bz dol as.

MB 227 Dolomite - yel-wh, v sln,gran, undertain by dk brn gy, platy to thk bdd ls.

MB 229 Limestone - brn blk,crypt,ti,sl sil, thn bdd,wthrs w gy.

MB 230 Limestone - tan gy,crypt,smooth tex,thk bdd,wthrs w gy & undertain by dol as.
MB 231 Limestone - dk brn gy,crypt,ti thn wh calc vein,thn bdd,wthrs lt gy.

MB 232 Dolomite - dk gy, f sln, microgran, v f sln wh dol mot, mas,wthrs lt brn.
MB 233 Dolomite - as, lt drg lam. in pt brec w/mach wh dol & calc vein, mar rh stronhh.

MB 234 Dolomite - dk gy brn, f sln, ti, sod & brec as.
MB 235 Dolomite - as, grys, fair por.
MB 236 Dolomite - w brn gy, f sln, gran, calc laminated,thk bdd,
MB 237 Dolomite - dk brn gy, v f sln, microgran, ti, prom wh dol & calc vein & incl.
MB 238 Dolomite - lt gy brn, crypt,ti,sil,v sln,wh dol & calc vein,mar rust stn,crushly fract,wthrs yel-gy.

MB 239 Dolomite - dk gy brn,v f sln,ti,sl sil, microgran,wh dol & calc vein,wthrs purp brn.

MB 241 Dolomite - brn blk, v f sln, microgran, sod as.
MB 242 Dolomite - as, blu-wsh w/k stn wh dol, in pt brec.
MB 101 Dolomite - dk brn gy,crypt, lay, sod & in pt brec w/abnt wh dol.
MB 102 Dolomite - as, as.
MB 103 Dolomite - dk gy,crypt, as, v f, calc, dol vein.

MB 104 Dolomite - dk brn gy, f sl, brec in v v stn wh dol & calc vn por.

MB 105 Dolomite - wh blu/ gy, pnbp in brec.
MB 106 Dolomite - v dk brn gy, crypt, sl sty,ti, mar thn wh dol & calc vein.
MB 107 Dolomite - as, mar ti sty, wt sty ln.

MB 108 Dolomite - tan gy,crypt,sl sty, prom wh gy sl calc & dol vein,in pt brec
MB 109 Dolomite - wh sl brec, calc vi incl
MB 110 Dolomite - wh brec as, w/dk brn gy crypt dol frag.
MB 111 Dolomite - dk brn gy, crypt,ti, wh dol & calc vein in pt brec.
MB 112 Dolomite - as.

MB 113 Dolomite - wh, v sl sil an brec w/dk brn gy crypt. sl calc dol frag.

MB 114 Dolomite - brec, as
MB 115 Dolomite - v dk brn gy, crypt, sl arg*, calc vein, in pt brec.

MB 116 Dolomite - w brn gy, crypt, to gt w sln, mas, calc & dol ass.
MB 117 Dolomite - v dk gy, crypt, to pt calc, when wh dol vein, in pt brec.

MB 118 Dolomite - v dk gy, v f sl, much vein or brec w/mas w v sln dol.

MB 119 Dolomite - dk brn gy, f to m sl, vug or lowel brec as.

MB 120 Dolomite - dk brn gy, f sln, mar calc vein, mas, wthrs rubbly.
MB 121 Dolomite - dk brn gy, v f sln, mar wh calc vein, undertain by gy brn wvl bdd dol

Interbedded with light grey dolomite

MB 122 Dolomite - lt gy, v f sln, dk gy thn calcar lam,rare calc or dol vein, platy.
MB 123 Dolomite - dk brn gy, v f sln, prom wh dol & calc vein mas, mas.

MB 124 Dolomite - as or brn, f sln, thk bdd,wthrs dk gy rubbly & slt banded w/lt gy dol.

MB 125 Dolomite - w brn gy, w sln, good stn & p.p. por, sl lay.

MB 126 Dolomite - w gy, crypt,sl lay, prom v wh wh dol & calc vein & lowel brec.

MB 127 Dolomite - dk brn gy, v f sl, microgran,fine calcar lam,calc & dol vein as.
MB 128 Dolomite - w gy, crypt bd, in pt rhly calc & dol vein & lowel brec as.

MB 129 Dolomite - w tan gy,crypt,mar wh dol vein,thk bdd,wthrs lt yel gy.

MB 130 Dolomite - w tan gy,crypt,mar wh dol vein,thk bdd,wthrs lt yel gy.

MB 131 Dolomite - dk brn as crypt sl sil mar thn calc & dol vein,thk bdd,wlt lt & dk gy banded

MB 132 Dolomite - ,sl ar,sl sbi,-as-, brec thn bdd

MB 133 Dolomite - w brn gy,crypt,sl arg*,sl sil,mar wh dol vein,thk bdd,wthrs lt gy.

MB 134 Dolomite - as, chty.

MB 135 Dolomite - w brn gy,crypt,bd, wthrs lt gy.
MB 136 Dolomite - dk brn gy, f sl, bd, thk bdd, wthrs dk gy rubbly.

MB 137 Dolomite - dk brn gy, v f sl, tr, mar thn wh dol & calc vein.

MB 138 Dolomite - dk brn gy, v f sln, chl bnds, thk bdd, mar vein as.

MB 139 Dolomite - dk brn gy,crypt, mar vein as, wthrs dk gy.
MB 140 Dolomite - dk brn gy,crypt,ti, bdd 8"-10", wthrs lt gy.
MB 141 Dolomite - as, frac, wthrs w gy.

MB 142 Dolomite - w gy, f sl, lay, ti, locally brec w/v stn wh calc.

MB 143 Dolomite - blk, v f sln, non-brec or vug, sl to thk bdd,wthrs dk gy.
MB 144 Dolomite - dk gy, v f sln, sl lay, wthrs w gy.

MB 145 Dolomite - dk brn gy, v f sln, sl lay, as p.p. por, thk bdd, wthrs gy.

MB 146 Dolomite - dk brn gy, v f sl,lay, mar v stn wh dol vein, wthrs gy.

MB 147 Dolomite - as, thk bdd.

MB 148 Dolomite - dk brn gy, crypt, mar v stn wh dol vein, wthrs lt gy.
MB 149 Dolomite - lt gy, crypt, sl lay, ti, bd, wthrs yel-gy.

MB 150 Dolomite - v dk brn gy, v f sln, ti, wh v stn dol vein, wthrs dk brn gy.

MB 151 Dolomite - as.

MB 152 Dolomite - lt brn gy, f sl lam, lay, fair por, bdd 12", wthrs w gy.

MB 153 Dolomite - w gy, crypt, ti, sl lay, ti, bd, frac wthrs w gy.

MB 154 Dolomite - w brn gy,crypt,sl arg (?),prom v stn wh dol vein, wthrs w gy.

MB 155 Dolomite - lt brn gy,crypt,sh v stn dol vein,thk bdd,wthrs lt brn gy.
MB 156 Dolomite - v dk brn gy, crypt,sl,bd,color lam,wh dol incl,wthrs lam brn gy.

MB 157 Dolomite - v dk brn gy, crypt,ti, wh dol incl & vein, thn bdd, wthrs gy.

MB 158 Dolomite - as, lrg cr stn wh dol incl,wthrs dk brn gy.
MB 159 Dolomite - w brn gy, f sln,lay, pnbp-vug (fest), lrg wh dol incl, wthrs lt gy.

MB 160 Dolomite - lt gy, sl lay, f sln, fet cut lam dol incl as, wthrs lt gy.
MB 161 Dolomite - v dk brn gy, v f sln, ti, wh dol incl in pt v brec.

MB 163 Dolomite - dk brn gy, v f sln, ti, sl brec w/wh dol as shown.

MB 164 Dolomite - v dk brn gy, v f sln, calc, brec w/v v stn wh calc.
MB 165 Dolomite - blk, v f sln, brec w/calc as.
MB 166 Dolomite - as, rod or locally brec w/wh calc as.

MB 167 Dolomite - as.

MB 168 Dolomite - as.

MB 169 Dolomite - as.
MB 170 Dolomite - dk brn gy, v f sln, vug & incl wh calc locally brec.
MB 171 Dolomite - dk brn gy, crypt, wh calc vein,incl & brec as.
MB 172 Dolomite - as, brec.
MB 173 Dolomite - lt brn gy, f sl,sl lay,ch/ty,brec w/wh calc,bdd,wthrs lt gy brn.
MB 174 Dolomite - as.
MB 175 Dolomite Limestone - lt brn gy, v f sln, rthy, wh calc vein, wthrs as.

MB 176 Dolomite - dk brn gy,crypt,ti,frac,prom wh calc vein,thk bdd,wthrs lt gy.

Dol, Ls Brec - lt brn gy, v f sln,frag ls lt gy,rthy dol lm wh calc vein.
MB 177 Limestone Brec - dk brn gy, dol, in v vug wh dol & calc vein in pt gy mtx, wthrg wtng sal leaving lst-mass surf.

MB 178 Limestone Breccia - lt & dk gy, v f sln dol frag in wh calc wtx,bdg remainin,slt v vug in pt gy mtx,in frag in stn wh dol & calc vein,wthrs rough.

MB 179 Breccia - as.
MB 180 Limestone Breccia - dk gy sh blk, crypt dol ls frag in v stn wh calc wtx,thk bdd
MB 181 Limestone Breccia - lt & dk gy, as.
MB 182 Limestone Breccia - lt & w brn gy,f sln, sucr,arg,sol, wh calc vein,some bdd rems

MB 183 Breccia - lt & w brn gy, w sln, ang dol frag in wh calc & lt yel ln mtx,wthrs lam & gy

MB 183 Dolomite - lam gy - crypt,ti, sl. thn bdd, wthrs yel gy.
MB 184 Dolomite - lt brn gy,crypt,ti,5"thk wthrg yel-gy thn bdd slightly arg,lt gy brn dol.
MB 185 Dolomite - gry-wh gy f sln,ti,sndy, v thn bdd,wthrs yel brn.
MB 186 Dolomite - dk brn gy,crypt,ti,bd,thk bdd,wthrs yel brn.
MB 187 Dolomite - grn gry, f sln, ti, arg, thn bdd, wthrs yel-gy.
MB 188 Dolomite - blk,crypt,bd,ti,calc filled frac,wvl bdd 2-4",wthrs arg,lt gy.
MB 189 Dolomite - yel gy-gy, f sln,ti,sl,thk to thn bdd,wthrs yel gy to lt gy pel

YS 20 Dolomite - lt brn gy,crypt,ti,bd,multiple f vuggy calc filled frac,thnbdd,wthrs yel gy
YS 25 Dolomite - as, thn vuggy calc lam & wh calc thn vn.
YS 30 Dolomite - as, mar chc bnd,mas, wthrs mot buff-gy.
YS 40 Dolomite - w brn gy, crypt,rust & vuggy thn lam wh,thn bdd,color lam,wthrs w gy pel
YS 80 Dolomite - as
YS 100 Dolomite - w brn gy,crypt,ti,arg,platy,wthrs yel mott fawnish
YS 115 Dolomite - dk brn gy,v f sln,ti,sl,fair rust lam stn,bdd 1",wthrs w brn.
YS 125 Dolomite - w gy,crypt,bd,brtl,sil,mas,wthrs mot buff-gy.
YS 135 Dolomite - w gy,tan stn & mot,crypt,ti,mas,wthrs yel-gy,platy,wthrs vuggy pel.
YS 145 Dolomite - dk tan gy,crypt,sl sil,thn calc filled frac wthrs mot,tan gy & rust
YS 155 Dolomite - dk brn gy,crypt,ti,sl sil,thn calc filled frac,wthrs mot,vuggy rubble.
YS 165 Dolomite - dk gy,crypt,ti,sl sil,wvl bdd 2-3",wthrs w gy,vug,rubble.
YS 175 Dolomite - lt tan gy,crypt,vuggy lam stn,mas,wthrs tan gy mot,pel-tan.
YS 205 Dolomite - lt yel gy,crypt,ti,bd,thk bdd,wthrs w pel gy.
YS 235 Dolomite - gy tan,crypt,thn bdd,wthrs sl gy & tanby wthrng mas,dol underlain by mas gy dol.
YS 240 Dolomite - dk gy brn,crypt,ti,thn calc vein,thn bdd,wthrs w tan gy.
YS 290 Dolomite - as, sl pnbp lrregr
YS 300 Dolomite - as, sl pnbp lrregr

YS 305 Dolomite - dk gy-,crypt,sl bd,prom thn calc vein in pt brec wthrs dk brn gy w l
YS 475 Dolomite - w brn gy crypt bi frac & lam & vn & v stn wh calc vein,wthrs mot to
YS 480 Dolomite - as.

YS 485 Dolomite - as.
YS 490 Dolomite - tan gy mot mar, crypt, v sln wh calc incl,mas,sil,wthrs mot gy brn.
YS 495 Dolomite - lt pel tan, crypt, lay, arg, calc vein,thn bdd,wthrs pel grnsy.
YS 499 Dolomite - purp brn gy,crypt,thn wh calc infil frac,vug stn low lowr,wthrs

YS 510 Dolomite - as, wthrs grn sy w/purp stng & pel mot.
YS 520 Dolomite - dk gy brn,crypt,bd, prom fine frac calc filled,mas,wthrs w grt ey.
YS 530 Dolomite - as, locally bent strong bdg,wthrs w tan w/rust lam mot.
YS 570 Dolomite - blk,crypt,f to m sl calc vein,mar rd stg wtx,thn strng bdd,wthrs dk gy
YS 580 Dolomite - dk brn gy,crypt,thn wh calc vein,mar rd stn,wthrs dk gy.
YS 630 Dolomite - w gy brn, f sln, rar vug, mas,wthrs w gy.
YS 660 Dolomite - w brn gy brn, v f sln,rar vugs, mas,wthrs dk gy w/thn strng bdg mmb.
YS 675 Dolomite - wh gy brn,crypt,sl vugs, calc filled frac thn bdd, wthrs dk gy.

Base of Camsell strep

LONE MOUNTAIN FORMATION (Upper)

LOWER DEVONIAN

LONE MOUNTAIN FORMATION (Lower)

BEAR ROCK FORMATION

Lithological Summary

1530' Limestone - dk brn gy ls, blk crypt,calc incl, fossil frag, Lost Cat Member overlying Camsell Bend Member, Camsell bed unconformably overlies Lone Mountain Formation. Suggestive of our regular pervasive interval, the ls as a whole is more argillaceous than the lower 1000' of Lone Mtn.

(205 covered)

1230' Dolomite - dk brn gy, crypt, sl sil (sometimes argillaceous), calcar lam/bedding, ls gy dol thn bdd, mar vug/ frac, rare fossil frag, lower portion exhibits prim dense of wh dol & mar calc. vein, Camsell bed - Lone Mtn. Fm. unconformable contact.

535' Limestone and Dolomite breccia - ls & dk gy to ltbn mtx,some wh calc vein,wthrs rubbly, Lone Mtn. Fm. unconformable with Bear Rock Fm.

Steep cliff

135' Covered-presumed Bear Rock

very poorly preserved fossil fragments, appear to most like Stromatopora than Silurian.

Steep Cliff

Stromatopora

Stromatopora

Stromatopora

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.- 6

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

L.D.C.- 6

Co-Ordinates : 64° 08' N. - 123° 35' W.
Geographic Location : 4 miles N.W. of Twin Peaks

Geologists : R.G. Perry, H.R Young
Date of measurement : June 13-14-18, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION, FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	POROSITY	FOSSILS	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
	HUME FM.						June 18 P 5355	Limestone - fl bra f sln, tl, w/arg, fos casts, thin bedded Limestone - w/sm calcite veins	30' Limestone - fl bra gy, f sln, tl, arg, fossiliferous	Progenitary ? stratoid colony and nautiloid ind. identified by
							P 5690	Limestone - tl gy bra w/pel vuggy stn - f sln, dol, w/bra + gy, resistance of bedding vugs lined w/dol xln.	23' Covered interval	
					v		P 5695	Limestone - tl bra, f sln, mucrone, in part dol. w/arg, sm, brecciated, a few vugs, w/dol. f & m xln calcite	25' Limestone, m gy bra, f sln, arg, tl, sm, in pt brecc sme vugs w/dol xlns	
					v		P 5400	Dolomite - w bra gy, f xln, w/fr xln xln calcite		
							P 5405	Limestone - buff-brn, crumbly, arg, highly fractured, some suggestion bedding		
							P 5380	Limestone - dk gy, f sln, tl bra, tr por, wax.		
					x		P 5385	Limestone - tl gy, arg, brecciated, inter xln por		
							P 5345	Limestone - m gy, bl arg, sl tr inter xln por, crpsl		
					v x		P 5390	Limestone - tl gy, f sln, in part w xln, weathers m gy, wax, breccated, sl frac, tr int xln por w/few vugs		
							P 5395	Limestone - m gy & bra gy, f xln, arg, tl, brecc, wax.		
							P 5400	Limestone - m gy, f sln, tl, arg, tl		
					x		P 5205	Limestone - m gy & bra gy, w xln, wi bra, poss inter stn porosity	See Photo Page 3	
							P 5240	Limestone - tl gy & bra gy, crpsl, tl, w/dol & pel calcite, weathers m gy, wax, breccia		
							P 5229	Limestone - v tl gy, wx, w/inter xln & vuggy por, m gy weather.		
							P 5200	Limestone - m gy & bra, f sln, arg, slight w/rare vugs, wax.		
							P 5180	Limestone - m gy & bra, rusty pel xln, f sln, w/brachiopod, wax.		
							P 5170	Limestone - m gy & gy bra, f sln, arg in pt, pervasively vuggy, lined vugs, breccia, weathers tl m gy & pel gy.		
							P 5095	Limestone - tl gy & bra gy, m xln, in part mucronic, sl arg, tnl xln por.		
							P 5059	Limestone - tl gy, v f xln, sl arg, a few vugs		
							P 5045	Limestone - as above w/pel rusty stn, vugs, w/n calcite, w/brn m gy.		
							P 5035			
							P 5010			
							P 4985	Limestone - tl gy bra gy, crpsl & vug stn, a few vugs, c xln calcite, brecc, wax.		
							P 4940	Limestone - tl gy w/pel xln, f xln, w/xln calcite, w/brn m gy.		
							P 4885	Limestone - tl gy bra gy, crpsl, sl arg, small vugs, w/ xln calcite		
							P 4841	Limestone - tl gy & bra gy, f & m xln, rare vugs		
							P 4810	Limestone - tl gy-brn, buff, crpsl/mucrone mucrone, a few small vugs, wax.		
							P 4780	Limestone - tl gy bra gy, f sln, sl arg, vugs, w/dol calcite		
							P 4680	Limestone - tl gy & bra gy, micro mucrone, tl, w/brn m gy, rubbly		
							P 4680	Limestone - breccc, tl gy-brn gy, sl dol, sl arg, w/m xln calcite, tl		
							P 4645			
							P 4630			
							P 4600			
							P 4545	Limestone - tl mic, crpsl+v f xln, v sl arg, tl, brecc.		
							P 4500	Limestone - m gy bra, sl arg, dol, rusty vugs, breccly, sl xln calcite		
					v		P 4480	Limestone - m gy & bra gy, v f xln, sl arg, few vugs, tr xln calcite, w/ba lt brn		
							P 4470	Limestone - tl gy & bra gy, v f xln, sl arg, few small vugs, tr xln calcite		
							P 4440	Limestone - tl gy & bra gy, crpsl, v f xln, sl arg, few small vugs, tr xln calcite		
							P 4420	Limestone - m gy & bra gy, f xln, tl, sl arg, few vugs		
							P 4400	Dolomite - m gy w/sl brn cast, f xln, sl arg, tl, rubbly ebbing, micromucrone i/p		
							P 4380	Limestone - tl m bra gy, crpsl, tl, w/dol, brecc, xln calcite		
							P 4360	Limestone - m gy w/brn cast, f xln, dol i/p, arg, rare small vugs		
							P 4320	Limestone - Limestone - tl med brn & gy brn, f xln, arg, rare vugs, xln calcite		
							P 4280	Limestone - tl m gy brn, f xln, dol, arg, tight		
							P 4240			
							P 4120	Limestone - wh & tl gy buff, v f xln & mucrete, i/p dol, sl arg, m gy, rubbly weathering, i/p bedded, vugs & later green por	2'	
							P 4082	Limestone - tl gy brn, f sln, dol, sl arg, vugs		
							P 3920	Limestone - as, micromucrone i/p, tl, w/bra m gy-dk gy, rubbly, w/some 2" bedding		
							P 3905	Limestone - tl gy & brn gy, v f xln i/p micromucrone, dol i/p, arg, rare vugs, w/brn m gy, bedded 12"	120' Limestone brn to buff-gy w/dol micromucrone, dol i/p, arg, sl argillaceous, soft, friable, sl arg, sl dolo, small veg calcite lined vugs, rare pel beds, vugs up to 1/4 pt gy, in pt rubbly	
							P 3870	Limestone - tl gy as above, w/rare small vugs, weathers to m gy, rubbly		
							P 3830	Limestone - wh cream, micromucrone to v f xln, soft, sl arg, sl dol, calcite lined vugs		
							P 3810	Limestone - wh cream, micromucrone to mucrone, soft, friable, rare small vugs, tr sl arg, rubbly		
							P 3795	Limestone - tl bra, v f xln, sl arg, dol, small vugs common, xln calcite where a pel xln, bedded 4"		
							P 3760	Dolomite - v tl gy, crpsl, sl calc, tl, hard, tl pel gy w/bring	25' Dolomite v tl gy, crpsl sl calc, tl, hard, when tl pel gy	
							P 3710	Limestone - wh-cream, micromucrone, sl arg, soft, small vugs common, when tl gy	50' Limestone As, white to cream colour, when tl gy.	
							P 3660	Limestone - pel bra-buff, v f xln to micromucrone, arg, i/p soft & friable, small vugs common, i/p calcite lined, when tl gy		
							P 3670	Limestone - wh-cream, v f xln, dol, sl dol, sl arg, vugs common, tl gy weathering		
							P 3580	Dolomite - Limestone - cream w/sl pink coal, and sla in mucrone, soft, porous	13' Limestone, dolo, as above	
					v		P 3530			
							P 3510	Dolomite - wh-cream, v f xln, sl arg, sl calc, wkd p-p & veg vugs, when pel gy, bdd	2'	
							P 3490	Dolomite - v tl gy, brn, crpsl, sl calc, tight	40' Dolomite, v tl brn to cream, thin bdd in platy crpsl sl calc, bd. tl	
							P 3430		70' Covered interval	
							P 3420			
							P 3360			
							P 3345	Dolomite - gy brn, f xln, v few vugs, when dk gy, bedded, 2"-12"		
							P 3330	Dolomite - tl gy brn, f xln, tl, wkd & tl gy/pel bnts	60' Dolomite, tl gy brn, f slv w/sh chert inclusions, sl arg	
							P 3320	Dolomite - tl brn gy, f xln, v sl calc, sl arg, tl, some good vuggy por, when tl gy	tl, some good vuggy por, in pt rubbly	
							P 3270	Dolomite - m brn gy, when wtd gy, bdd 24 1", rare small vugs, rubbly, w/bring		
							P 3200			
							P 3170	Dolomite - as, bd, dse, some stylolitic ptgn	30' Dolomite, as with occ. blk sh nodule, bdd 1-2" thk.	
							P 3135	Dolomite - as, occ blk chi nodules, bedded at 1'		
							P 3130	Dolomite - m gy, crpsl, v sl calc, tight		
								Note - on the south ridge of this section a 100' rubbly dolo section was present at this strat position. Outflow conditions were present in this zone. This zone may be equivalent to 1800 on this north ridge. See Photo Page 15	140' Covered interval	
					v		P 1835	Dolomite - m dk gy, v f xln, v sl calc, sl arg, rare small vugs, pred tl, brecc, wisc sed dk gy & reddish	35' Dolomite, m dk gy, v f sl sl calc, sl arg, brecc soft, w/dol xlns	
							P 1800	Dolomite - as, w/dol, brx, mucronic, calcite cement, soft, dry.		
							P 1500		45' Covered interval	
							P 1480	Dolomite - tl m gy, v f xln, v sl calc, sl arg, minor chi, w/brn dk gy, bd. tl		
							P 1460	Dolomite - m gy, v f xln, tl, minor chi, w/brn dk gy		
							P 1440	Dolomite - as, when tl gy		
							P 1420			
							P 1400	Dolomite - tl brn gy, f xln, tl, thin bedded (2"-4") comm.	40' Dolomite, tl m gy, f xln, sl arg, tl, in pt silicified coarse, in pt rubbly	
							P 1380	Dolomite - as, bedded 1-2', silicified coral remains		
							P 1360	Dolomite - m dk gy, sl brn, coal, f sln, b arg tl, when tl m gy, thn bdd	30' Covered interval	
							P 1340	Dolomite - m dk gy to blk, f xln, sl arg, fos. bd. tl, when pel gy.	Bellerophontina ? sp	
							P 1320	Dolomite - tl brn, f sln, calc, a few chi inclu, & fos remains, tl, when, pel gy.	Upper Ordovician.	
							P 1300	Dolomite - tl m brn, f sln, sl calc, arg, tl, when dk gy, inclu, dk patches in dol suggest fossil remains, when pel gy, bedded		
							P 1280	Dolomite - as		
							P 1260	Dolomite - tl brn w/rusty stn, v f sln, v sl calc, tight		
							P 1200	Dolomite - dk gy w/sl brn cast, v f xln, vrg, hard, sil, tl, minor tl gy chi, when dk gy, sl brn cast, when tl gy, bdd 4"-18"	230' Dolomite - dk brn gy, f xln, sl arg, sil, tl, in pt pinkish & narrow, v f xln, sl calc, ch incl, gen. silicified zones.	
							P 1160	Dolomite - tl gy brn & m gy, v f xln, bd, sil, few corals		Paleoaplysina lobulosa ?
							P 1120	Dolomite - m gy brn, v f xln, bd, sil, tl, abd inclu wh-tl gy chi, m bdd up to 12"		
							P 1080	Dolomite - as, minor gy chi, corals		
							P 1040	Dolomite - tl m gy-brn, f sln, sl arg, tl, when m gy, thn lyr w bdd, petrosil odor		Paleoaplysina ? sp. Upper Ordovician Richardsonella and/or Geeshinia ?
							P 1040	Dolomite - m brn gy, v f sln, bd, sil, tl, rare p-p vugs, when m gy, rubbly, military cuneln, tr ch nodules, 6" bedding		* Diplotrypa sp.
							P 1000	Dolomite - as, when yel gy, m bdd 12"?	100' Covered interval	
							P 960	Dolomite - m gy brn, f sln, sl calc, brittle, v sl arg, tl, when brn gy, w bdd		
							P 920	Dolomite - v tl gy w/brn cast, rusty stn, v f xln, sl calc, tl, bd, when tl gy & yel gy, bdd at 2"-4"		
							P 880	Dolomite - tl gy & maroon mottled, f sln, sl calc, i/p arg, tl, m bdd		
							P 840	Dolomite - v tl gy w/sl brn cast, v f sln, sl calc, tl, when m dk gy, in beds 1-3'		
							P 820			
							P 780	Dolomite - gy brn, f sln, sl arg, sl calc, tl, bdd 3"-3'		
							P 740		50' Covered interval	
					v		P 710	Dolomite - tl gy w/occ brn cast, v f sln, v bd, sil, a few small dol lined vugs		
							P 680	Dolomite - mottled gn gy &maroon gy, v f sln, sl calc, arg i/p, bd, i/p sil, tl,	20' Dolomite, tl gy mottled, pinkish & maroon, v f sln, sil/coral, bd, in pt arg, thn bdd, when orange brown	
							P 660	Dolomite - buff-pinkish buff, banded, crpsl, tl, bd, sil, when orange brown,		
							P 650	Dolomite - mottled tl gy & pinkish gy & buff-pinkish buff, crpsl, sl calc, sil, tl,		
							P 600		85' Covered interval	
							P 550	Dolomite - tl m gy, f sln, bd, tl, some rusty brn mottling, ferruginous, when buff-orange, poor vugs	10' Dolomite, tl m gy, bd, tl, rusty mott, when buff-orange	
							P 500		35' Covered interval	
							P 480	Dolomite - dk gy w/sl brn cast, crpsl, bd, sil, tl,		
							P 440	Dolomite - as, bedded at 2', when yel gy		
							P 400	Dolomite - as, when orange-gy, bedded at 3'		
							P 380	Dolomite - as,		
							P 360	Dolomite - gy gn w/maroon & rusty orange mottling, crpsl, sl calc, v bd, sil, tl, thn bdd 12"-2', when pel gy.		
							P 240	Dolomite - as, when pel gy		
							P 220	Dolomite - grish pink, bd, sil, crpsl, tl, thn bdd, when gn gy.		
							P 200	Dolomite - v tl gy pink, crpsl, bd, sil, tl, thn bdd		
							P 180	Dolomite - tl med gy, crpsl, bd, sil, tl, bdd at 2'		
							P 160	Dolomite - tl gy w/sl brn cast, v f xln, bd, tl, sil.		
							P 140	Dolomite - as, when pinkish gy & yel gy, bdd at 3'		
							P 120	Dolomite - a dk gy, v f-f xln, bd, sil, tl, when pel gy, bdd at 3'		
							P 100	Dolomite - dk brn gy, v f-f xln, sil, tl, sl arg, bdd at 3'		
							P 80			
							P 60	Dolomite - tl m brn gy, v f xln, bd, tl, sil.		
							P 40	Dolomite - dk gy w/brn cast, f sln, tl, sil, sl arg, when pel gy.		
							P 20			
							P 0			
							P 30	Dolomite - as, w/occ p-p vug		
							P 10	Dolomite - buff, v f sln, calc, sl arg, rare p-p vugs, occ brn chk as plan, thn bdd, when pel gy	20' Dolomite, buff-gy, v f sln, calc, sl arg, brn chk as pln, thn bdd, when pel gy	
							June 19 P 5345	Dolomite - buff-gy, v f sln, sil, bd, tl, when wh-pel gy, thn bdd when inclus ch as blk platy sh, fine, cherty, calc 8" comgl. at base and 31' from base	30' Dolomite, buff-gy, v f sln, sil, bd, tl, in pt brecc, when pel-gy	

FRANKLIN MOUNTAIN FORMATION
ORDOVICIAN
UPPER ORDOVICIAN
RONNING GROUP
SILURIAN
LONE MOUNTAIN FM. (Lower)
LOWER DEVONIAN
BEAR ROCK FORMATION

L.D.C.-7

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-7

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-3-6

Co-Ordinates : 63°43'N. - 123° 33' W.
Geographic Location : 11.2 miles E (090°) of mouth of Johnson River

Geologists : Roessingh, Halkow
Date of measurement: June 14, 1961

FOSSIL SYMBOLS

F	Fossiliferous	m	Stromatopora
B	Brachiopoda		Foraminifera
G	Gastropoda		Crinoid
	Coral		Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
Dolomite	Limestone Breccia	Calcareous Shale	Siltstone
Dolomitic Limestone	Dolomite Breccia	Anhydritic Shale	Ironstone
Argillaceous Limestone	Rugose to Rubbly	Salt Casts	Sandstone
Argillaceous Dolomite	Coarse Crystallization	Pyritic Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION	100	410			F F F B F	p p	HR 421 HR 420 HR 419 HR 418 HR 416 HR 415 HR 411 HR 410 HR 409 HR 408 HR 407 HR 406 HR 405 HR 404	Limestone - dk gy brn, v f xln,tt,frag tex,calc incl,fos frag,wthrs m brn gy,rubbly Limestone - aa. Limestone - brn blk, v f xln,tt,calc incl,thn bdd,wthrs m brn gy. Limestone - dk brn gy, v f xln, tt, wh calc incl,in pt frag tex,thk bdd,wthrs aa. Limestone - dk brn gy, f xln,tt,Cor,Brach,frag tex,wh calc incl,wthrs mod m brn gy. Limestone - dk brn gy,f xln,tt,mot,prom Cor,calc incl,wthrs mod dk yel-gy. Limestone - dk brn gy,mot,v f xln,tt,calc incl,thk bdd,wthrs mod brn gy. Limestone - gy brn,crpxl,tt,fnt mot,some rust brn stn,wthrs mod brn gy. Limestone - m brn gy,crpxl,tt,fnt mot,sl arg,thk bdd,wthrs mod yel-gy. Limestone - v lt gy,crpxl,tt,rthy,mot w/rust red stn,thn bdd,wthrs lt yel-gy. Limestone - m gy brn,crpxl,tt,in pt arg,platy to thn rough bdd,wthrs brn gy. Limestone - lt yel-brn,orng mot,v f xln,tt,arg,platy,irreg bdd,calc incl,wthrs yel-gy. Limestone - lt yel-brn,rust brn st,crpxl,rthy,faint ool tex,platy,overlies thk bdd brn gy mod wthrg ls. Limestone - gy brn,crpxl,mar p.p. por,clr xl calc incl,wthrs brn gy.	410' Limestone-dk brn gy,crpx to f xln,tt,wthrs brn gy into nodulose rubble & has a hi fauna bd of Favosites corals. Lower portion has a prominent sequence of yel-gy, wthrg,arg platy ls not w/orng to rust rd stn (Not covered)	Dechenella sp. Oolitic limestone - micing coralline structure. Middle Devonian (Eifelian) Favosites niteila Winchell Middle Devonian (Eifelian)
LOWER DEVONIAN	BEAR ROCK FORMATION	500	500						Outcrop of limestone breccia - not sampled but same as below	460' + sparse outcrops consist of limestone breccia of dark grey tight limestone fragments in a light grey to brown grey limestone and medium to coarse crystallized calcite matrix. The breccia weathers mottled orange brown,yellow-grey to medium grey with a rough, pitted to cavernous surface.	
		1000					x x	HR 403 HR 402	Limestone Breccia - dk brn gy, v f xln frag in lt gy & brn gy ls mtx, mot,sh & orng calc incl,mar intr frag por,wthrs orng brn w/pitted & cavernous surface. Limestone Breccia - dk gy,f xln frag in gy brn, f xln gran ls mtx, mot, wh calc incl wthrs & gy.		
								HR 401	Limestone Breccia - gy tan, v f xln, frag in tan ls mtx, tt, calc incl, in pt arg, wthrs yel gy w/rust mot.		

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-8

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-I-8-B

Co-Ordinates : 64° 05' N. - 123° 52' W.
Geographic Location: 10 miles due West of Twin Peaks

Geologists : Young, McCord
Date of measurement: June 17, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR FOSSILS	POROSITY: POOR / FAIR / GOOD / VG	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MID. DEV.	ELMWORTH						Y 3450	Limestone - dk brn gy, v f xl, fn pl m & c xl, tt, platy, wthrs lt gy.		
							3180	Limestone - v dk bl gy, v f xl, tt, m bdd, wthrs lt gy.		
							3300	Limestone - pur,gy, f xl w/lt gy m xl lam, c xl calc nests, tt, wthrs lt bl gy.	100' Limestone - dk brn gy & bl gy, v f xln, tt, platy & m bdd, wthrs lt gy.	
							3160	Limestone - v dk brn gy, v f xl, tt, wthrs lt gy, m bdd, rubbly.		
							3140	Limestone - dk brn gy,from f to c xl, microfos? mass, wthrs lt gy.		
							3130	Limestone - m brn gy, crpxl, tt, wh calc vns, mas, wthrs m gy,H2S odor.		
							3120	Limestone - dk brn gy, f xl & m xl, tr p.p. por, wh calc nests, mas, wthrs lt gy.		
							3110	Limestone - m gy, v f xl, arg, tt, wthrs brn gy, thn bdd.		
							3100	Limestone - dk gy, from f xl to v c xl w/lrg clr calc xls, tt, mas, wthrs yel gy mot.		
								See photo graph page 15 Base-Bear Rock formation contact		
LOWER DEVONIAN	BEAR ROCK FORMATION						3050	Limestone - brec, dk gy & brn, ang frag, pbl sz, v f xl, lt gy mtx, m xl-c xl nests, wthrs rubbly, yel gy & m gy mot		
							2800	Limestone - brec, dk gy, v f xl frag in calc mtx, wthrs rubbly, yel gy.		
						f?	2600	Dolomite - yel brn, m xl, sucr, fair intgran & p.p. por, brec, mdy appearance.		
						p	2500	Limestone - brec, dk brn gy, f xl,ang frag, & m brn, m xl mtx w/sbnt c xl clr & yel calc, sl p.p por, wthrs yel & m gy, rubbly, vuggy.		
						P	2400	Limestone - brec, lt gy & m brn gy, f & m xl, sl p.p. por w/c xl wh calc.		Syringopora sp. (generic identification very uncertain)
							2300	Limestone - brec, as above, rubbly wthrg w/solution pitted surface.	830' Limestone Breccia-frag are dk gy & brn, ang, poa size & lrg, v f xln, pitted solution surf in mtx, lt gy, m xln, w/c xln calc nests, wthrs rubbly yel gy & m gy, mot - poor-fair p.p. to vuggy por. (Section 80% exposure)	
						p	2200	Limestone - brec, lt brn, f & m xl, v c xl calc, fair p.p. por.		
						p	2100	Limestone - brec, m gy & lt brn, f xl in m xl mtx, mas, rubbly, wthrg lt & m gy, poor p.p. por.		
						v	2000	Limestone - lt tan (brec?), v f xl, sbnt v c xl calc, vuggy por.		
						P	1900	Limestone - m brn f xl & lt tan,v f xl,brec (?), w/nests of m & c xl ls, tr p.p.por.		
							1800	Limestone - brec, lt tan, v f xl w/c xl nests, tt.		
						P	1700	Limestone - brec, as above, m xl,gran,in pl purp gy, tr p.p. por.		
							1600	Limestone - brec, as above, sl dker.		
						P	1550	Limestone - brec, m brn, m xl,ang frags in lt brn c xl, gran mtx w/chky cmt, fair p.p. por.		
							1500	Limestone - brec, as above, poor por.		
						P	1400	Limestone - brec, crm col, c xl,w/chky cmt,w/bl gy frags, fair p.p. por.		
							1300	Limestone - dk brn gy, v f xl, brec,w/rnd pbls, poor p.p. por.		
						P	1250	Limestone - brec, dk brn & bl crpxl frags, ang from v sm to 1" incls in yel brn mtx		
							1200	Limestone - brec, as above, rubbly, wthrg lt gy.		
						P	1150	Limestone - brec, as above, fair p.p. por.		
							1100	Limestone - m purp gy, m xl, gran, tr intgran por, wh c xl calc, wthrs wh & lt gy.		
							1050	Limestone - dk brn gy, v f xl & tan f xl brec, calc vns, wthrs mas, rubbly, tt.	80' Limestone - brn,purp gy, v f xln, tt-tr intgr por, ? brec, w/wh c xln calc vns, wthrs mas, rubbly.	
							1000	Limestone - as above.		
							950	Limestone - dk brn, v f xl,brec (?), calc vns, hd, conch frac, mas, rubbly.		
						x	900	Limestone - brec, frag, lt tan, v f xl, tt, plty 2"-3" incls,mtx, c xl gran, fair intgran por, wthrs rubbly, vuggy,in pl open boxwork wthrg.	30' Limestone - lt tan, v f xln, tt, brec, intgran por.	
SILURIAN									30' Covered interval	
							950	Limestone - crn, w/pink aot, c xl, sl p.p. por, wthrs mas, rubbly, m gy & yel.		
							700	Limestone - as above.	70' Limestone - crn, w/pink aot, c xln in pl chk, sl p.p. por, wthrs mas, rubbly, m gy & yel.	
						P	650	Limestone - as above, brec, sl chalky		
							600	Limestone - brec, gy wh & lt crn, frags sl dker than mtx, m & c xl, tr p.p. por, wthrs m gy & yel brn, rubbly.	30' Limestone Breccia - gy-wh & lt crn, frags, ang, dk than mtx, m c xln, tr p.p. por,wthrs m gy & yel brn, rubbly	Possible stromatoporoid internal structures not preserved - possible Devonian?
							550	Limestone - brec, as above, some dk brn frags, ang, up to 1" incls.		
						x	520	Limestone - tan, c xl sucr, fair intgran por, wthrs gy brn, 6" bds.		
							500	Dolomite - v lt tan, f xl, tt, hd, wthrs m gy pitted, bds 12"-18"	50' Dolomite & Limestone - intbd, both lt tan, m xln - suc, tr intxln por,styl struc,thn bdd (6"-12"),wthrs brn, pitted.	
							460	Limestone - xl dolo, lt tan, m & c xl, gran, tr int xl por, wthrs brn gy, thn bdd.		
						P	440	Dolomite - lt tan, m xl, sl p.p. por.		
							420	Dolomite - v lt tan gy, crpxl, tt, v hd conch frac, wthrs lt yel gy,in 12" bds.		
							400	Dolomite - lt tan gy, f xl, tt, thk bdd (3' to 5')		
							380	Dolomite - as above, m xl, gran.	30' Dolomite - v lt tan gy, crpxl,tt,hd,concoidal frac, thk bdd,(3-5')wthrs yel gy	
							340	Dolomite - lt tan gy, f xl, v hd, tt, wthrs m gy, lam bdd 4"-12"		
							320	Dolomite - as above, crpxl, rough, irreg, wthr surf.		
							300	Dolomite - wh, v f xl & m xl, tr p.p. por, plty, wthrs yel gy.	60' Dolomite - lt tan gy, v f xln, tt, hd, concoidal frac, s arg,tr vuggy por,thn bdd, platy,wthrs m gy to yel gy, rough, blabby	
						P	280	Dolomite - as above, hd, v ang cavities (salt casts?), bdd 4"-12".		
							260	Dolomite - tan-gy, v f xl, tt, hd, conch frac, wthrs blabby	20' Dolomite-as,bdd,1' thk.	
							220	Dolomite - as above, bds 12" thk.	5'Ls Brec,tangy,f xln, w/wh clear calc mtx.	
							200	Limestone - brn gy, f xl, brec, w/wh & clr calc mtx.	20' Dolomite - tan gy, f xln, hd,tt,platy,w/brech inprints	
							180	Dolomite - brn gy, f xl, hd, tt, plty, wthrs brn-gy.		
							160	Dolomite - as above, brech. inprints		
							140	Dolomite - as above, bds 12"	60' Dolomite - m brn gy & dk gy,mot, c xln-suc,g intgran por,wthrs yel brn	
							120	Dolomite - m brn & dk gy, mot, c xl, gran, & vugs mas, wthrs yel brn.		
						f	100	Dolomite - lt brn gy, m xl & c xl, sucr, gond, int xl por.		
						v	80	Dolomite - as above, also vugs, mas		
							60	Dolomite - as above.		
						f	40	Dolomite - brn gy, m xl to pt, c xl, tt, hd, mas, wthrs lt & dk gy mot.		
							20	Dolomite - lt brn gy, c xl sucr, fair int xl por & vugs, thn bdd, wthrs lt gy	20' Dolomite - lt brn gy, m xln-suc, fr intxln por, w/vugs,thn bdd, wthrs lt gy & m gy, mot.	
								Dolomite - m brn gy, f & m xl, tt, hd, bdd 2'-24', wthrs gy brn & dk gy mot & m gy		

L.D.C.-9

WRIGLEY AREA
STRATIGRAPHIC SECTION L.D.C.-9
Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 38' N. - 123° 19' W.
Geographic Location : 5 miles 73° E. of Table Mountain
Geologists : Roessingh, Halkow
Date of measurement : June 16, 17, 18, 1961

FOSSIL SYMBOLS

F	Fossiliferous	ш	Stromatopora
B	Brachiopoda	ꝏ	Foraminifera
G	Gastropoda	⊙	Crinoid
٩	Coral	⌒	Algae

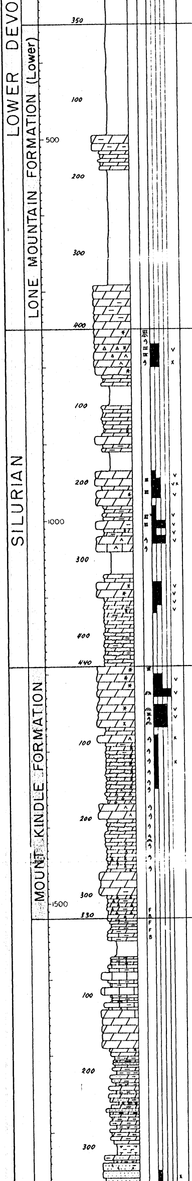
POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

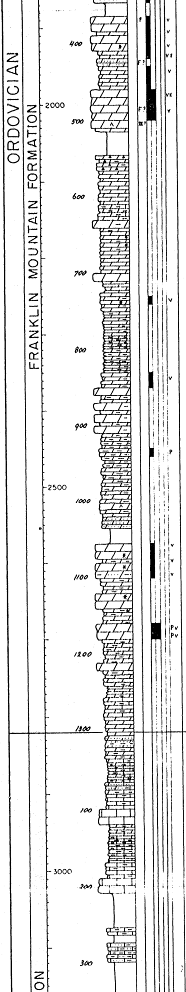
LITHOLOGICAL SYMBOLS

▦	Limestone	▦	Silty Limestone	▤	Shale	Λ Λ	Siliceous
▨	Dolomite	▦	Limestone Breccia	▤	Calcareous Shale	⠿	Siltstone
▨	Dolomitic Limestone	▨	Dolomite Breccia	// //	Anhydritic Shale	▭	Ironstone
▦	Argillaceous Limestone	▦	Rugose to Rubbly	⊞ ⊞	Salt Casts	⠿	Sandstone
▨	Argillaceous Dolomite	*	Coarse Crystallization	P M	Pyritic Micaceous	▲ △	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROS-ITY POOR FAIR GOOD VG	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
NIAN	BEAR ROCK FORMATION		100 200 300	⊙ *				HR501	Limestone - orng yel gy. f to v f xl, frag, c xl brec, calc mtx, good por, wthrs m gy.	350' Covered except for 10' exposure at top. Considered to be Bear Rock formation as at the outcrop. Lower formation boundary based on character of scree and topography.	



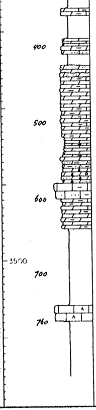
		150' Covered interval, scree material suggested this is continuation of bdd dol exposed below.	
502	Dolomite - brn gy, f xl, gran, few scat vugs,thk bdd,arg, lam,wthrs m gy.	45' Dolomite - brn gy, f xln, arg,tt,thk & thn bdd.	
503	Dolomite - tan gy, v f xl, tt, thn bdd.		
504	Dolomite - brn gy, crpxl, tt, hd, m bdd.		
600		150' Covered interval	
505	Dolomite - lt gy, m xl, gran, tt, thk bdd.	60'Dolomite - lt brn gy, m xln	
506	Dolomite - lt brn gy, m xl, tt, sl arg, thk bdd.		
507			
508	Dolomite - lt brn gy, f xl, tt, thk bdd, wthrs blocky. ?		?
509	Dolomite - dk gy, f xl, tt, strom,wthrs irreg.	50' Dolomite - dk brn gy, f xln, abnt sil corals protrude on wthrd surf w/ch incl.	
510	Dolomite - aa, abnt cor, prom on wthrd surf.		
511	Dolomite - brn gy, m xl,scat vugs, wh dol incl, chrt incl.		
512	Dolomite - aa, wthrs blocky, some p pres. cor (strom).		
513	Dolomite - m gy, v f xl, thk irreg bdd.		
514	Dolomite - m brn gy, v f xl, hd, conch. frac,thn bdd, wthrs tan gy.		
515	Dolomite - bl gy, v f xl, tt, hd, thn bdd, wthrs lt gy.	200' Dolomite - m brn gy, v f xln, hd,gen thn bdd w/some thk bds, conch fracs,wthrs,tan & dk brn gy. fr vuggy & intgran por near base of section	
	(In this interval the slope is covered by thn bdd v lt gy arg lithographic dol).		
517	Dolomite - brn blk,vf xl, thn bdd, wthrs dk brn gy. v f arg lam.		
518	Dolomite - m brn gy. v f xl, hd, thn bdd (poor outcrop)		
519	Dolomite - m brn gy, f xl, gran, few scat vugs, thk bdd, wthrs m gy.		
520	Dolomite - brn blk, f xl, strom, vuggy, wthrs rd,gran.		
522	Dolomite - m brn gy, v f xl, hd, tt, wh c xl vns, wthrs brn gy, m bdd (gran).		
523	Dolomite - dk brn gy, v f xl, irreg wthrd surf, thn bdd, scat vugs.	50' Dol - dk brn-blk, v f xln, abnt sil coral frags,strong sulphur dioxide smell on impact,thk bdd to mass-reefy, scatt vugs,wthrs dk gy.	
524	Dolomite - aa, vuggy, thk bdd,strom.		
525	Dolomite - aa, fewer vugs, calc filled frac, m bdd, wthrs dk gy.		
526	Dolomite - brn blk, f xl, gran, abnt cor,strong sulphur smell, mas,reefy,irreg vugs		
527	Limestone - lt gy, v f xl, dol, abnt sil cor frag.		
528	Dolomite - lt tan gy, v f xl, tt, m bdd, frac. calc	150' Dolomite - m tan gy, v f xln, sl arg, hd, tt, thn & thk intbd,sl frac,tr vugs,wthrs w/irreg surf to rd, lt tan gy.	
529	Dolomite - m gy, v f xl, hd,vug,thk bdd, wthrs lt gy,rd.		
530	Dolomite - aa.		
531	Dolomite - aa, thn bdd.		
532	Dolomite - brn gy, v f xl, sl arg, thn bdd, few scat vugs.		
533	Dolomite - alternating m & lt brn gy, v f xl, tt, thn bdd.		
534	Dolomite - m brn gy, f xl, tt, thn bdd, irreg,wthrs tan gy.		
535	Dolomite - aa, v f xl, sl arg. calc		
536	Dolomite - aa.		
537	Dolomite - dk gy, v f xl, tt, strom, sl arg, mas, wthrs rubbly.		
538	Dolomite - tan gy, f to m xl, vuggy por, wthrs m gy, thk bdd. (i.p. c xl)	150' Dolomite - tan gy to dk brn gy, v f xln, poor to fair vuggy por in most of sec w/tt zones.Abnt corals in pt algal, thn bdd in pt but mostly mass, reefoid,tr brec & coarse xls. wthrs lt gy,rubbly.	
539	Dolomite - tan gy, crpxl, v vuggy,alg,reefoid, mas, wthrs lt gy,rubbly.		
540	Dolomite - aa, no por, v f xl.		
541 542	Dolomite - brn gy, v f xl, i.p. f xl,gran, mas, alg, vuggy, w/calc lining, cor & strom, wthrs dk gy, rubbly.		Palaeophyllum n. sp. Upper Ordovician (Richmondian and/or Gamachian)
	Dolomite - aa.		
543	Dolomite - m gy, v f xl, tt, in pt c xl, thn bdd,fos frag, wthrs m gy.		
544	Dolomite - v dk gy, v f xl, abnt cor, in pt sil, arg, por, irreg wthrd surf.		Palaeophyllum n. sp.
545	Dolomite dk brn gy, v f xl, cor frag, brec,thn irreg bdd.		
546	Dolomite - aa, p. por, abnt cor.		
547	Dolomite - aa.		
548	Dolomite - aa, crpxl, cht conc , tt.		
549	Dolomite - dk gy brn, v f xl, cor thk bdd.		
550	Dolomite - aa, thn irreg bdd,cor.		
551	Dolomite - tan gy, v f xl,alg, few cor, m bdd, wthrs m gy.	200' Dolomite - dk brn gy,v f xln, abnt corals & brach,sil w/ch conc thk bdd to mass w/thn foss bds,wthrs lt gy, rubbly	
552	Dolomite - dk brn gy, f xl, cor ,thn bdd, wthrs rubbly.		
553	Dolomite - m brn gy, f xl, gran cor thn bdd, cht conc		Grewingkia trilobatum Plaesiomys sp. (Whiteaves) Lepidocyclus perlamellosus (Whitfield) Diceromyonia storeya (Okulitch) Upper Ordovician (Richmondian and/or Gamachian)
554	Dolomite - dk brn gy, f xl, cor,mas, wthrs rubbly.		
555	Dolomite - aa.		
556	Dolomite - brn gy, v f xl, abnt cht,thn bdd, wthrs irreg.		
557	Dolomite - dk gy, v f xl, abnt Brac, cht conc.		
558	Dolomite - brn gy, v f xl, sl calc, sl arg, tt, wthrs yel gy, thn len bdg.		
559	Limestone - blk, f xl, dol, arg,thn bdd.		
560	Limestone - gy, mar mot, v f xl, arg, slty, wthrs orng, platy, splintery	100' Limestone - m gy, blk w/maroon mott, v f xln, arg tt, alt thn & thk bdd,w/mar sh lam,wthrs yel-orng,platy.	
561	Limestone - m to lt gy, v f xl, tt, alt thn & thk bdd.		
562	Limestone - m gy, crpxl, sl arg, wthrs yel gy, alt thn & thk bdd.		
563	Limestone - blk, v f xl, platy w/thn mar sh lam, fnt calc vns.		
564	Dolomite - dk gy, v f xl, tt, thk bdd, overlain by 2' thn bdd, blk dol, w/cht concr	50' Dolomite - brn blk,crpxl. hd,thk bdd,wthrs m gy.	
565	Dolomite - brn blk crpxl to xl, hd, conch frac, wthrs m gy, thk bdd.		
566	Dolomite - lt gy, v f xl, gran, sl calc, sl arg,thn bdd, wthrs tan gy,int bd w/dol shy thn bdd & sh mar calc & sltst.	70' Dolomite - lt gy,v f xln. arg,silty,hd thn bdd. w/mar sh lam, wthrs tan gy.	
568	Dolomite - v f xl, lt gy, arg, hd,thn bdd,wthrs grn gy,underlain by & intbd w/sh mar dol & dol shy slty v thn bdd.		
570	Dolomite - lt grn gy, v f xl, gran, arg, slty,thn bdd.		
571	Dolomite - mar brn, arg & sh,dol,bds 1-3" thk, alternating mar sh & grn gy dol as above. underlain by 3" grit bd,ang qtz o/ mtx, dol & slty sh as before		
572	Dolomite - mar gy, v f xl, arg, tt (1') underlain by 8' sh deep red, sl dol, fis. intbd lt gy grn dol sh & shy dol.	100' Dolomite - mar gy arg to shaly, w/grit bds & rd & gy gn sh bds. Ss at base of sec mar & gn,poorly sorted, rd,m gr well cem, thk bdd.	
573	Dolomite - lt grn gy,arg,v f xl,tt,intbd dol mar shy.		
574	Shale - brick red, fis, intbdd dol as above.		
575	Dolomite - mar & orng, slty,dns,hd,thk bds,separated by thn arg strks		
576	Sandstone - lt grn gy & mar mot qtz, p sortes, slty, m.g. well cmt. thk bdd.		
577	Sandstone - wh to orng & mar, p. sorted,qtz,well rd.		



578	Dolomite - lt tan gy, f xl to m xl, scat vugs, mas, wthrs yel gy,(gran).		? *Catenipora* sp. Upper Ordovician?
579	Dolomite - tan, m xl, gran, scat vugs, mas w/thn intbds.		
580	Dolomite - aa, c xl, vuggy.	200' Dolomite - lt tan gy, m c xln, in pt gran, w/poor to fr intgran & vuggy por, gen mas w/some thn bdg tr foss.	
581	Dolomite - yel brn, c xl, gran, intxl por, some vugs, thn bdd.		
582	Dolomite - v lt yel, m to c xl, slty.		
583	Dolomite - lt tan gy, c xl, scat vugs, wthrs yel gy, thn bdd.		
584	Dolomite - tan, c xl, vuggy and intxl por, mas.		
585	Dolomite - lt tan gy, m xl, mas, vuggy reefoid appearance, Bryoz?		
586	Dolomite - gy tan, m xl, tt, strom thk bdd.		
587	Chert - wh (possibly sil dol)	20' Chert & Ch Dolomite - wh - lt brn, m bdd	
588	Dolomite - lt brn, v f xl, hd, sl arg, thn to m bdd. cht bd as before.		
589	Dolomite - tan gy, c xl, gran, thn bdd, well lam.		
590	Dolomite - tan gy, f xl, tt, thn to m bdd.		
591	Dolomite - orng brn, v f xl, gran, arg. thn bdd		
592	Dolomite - dk gy & mar, mot, v f xl, sl arg, hd, mas		
593	Dolomite - mar, v f xl, thn irreg orng lam, thn bdd, flaggy, wthrs orng yel.		
594	Dolomite - mar brn gy, v f xl, thn bdd, flagg, arg, wthrs orng yel		
595	Dolomite - dk brn, f xl, hd, wthrs dk gy, m to thk bdd, underlain by dol, brn blk, thk bdd		
596	Dolomite - mar gy to brn gy, v f xl, bnd yel gy & dk gy, platy		
597	Dolomite - tan gy, f xl, gran, sl arg, wthrs yel gy, thn bdd, few scat vugs.		
598	Dolomite - dk brn gy, v f xl, gran, sl arg, platy, thn bdd, wthrs yel gy.	420' Dolomite - lt brn gy, f xln, sl arg,tt,thn bdd,wthrs yel-orng gy,inppt bnd wthrd surf when intbd w/thk. dk gy wthring dol.	
599	Dolomite - lt gy, v f xl, tt, sl arg, wthrs yel gy, thn bdd, platy.		
601	Dolomite - brn gy, v f xl, arg, thn bdd, platy, wthrs tan gy.		
	Dolomite - as above.		
602	Dolomite - lt tan gy, v f xl, few small vugs, thn bdd, wthrs yel gy.		
603	Dolomite - lt tan gy, arg, tt, thn bdd, wthrs yel gy, alt w/dol thk bdd, f xl.		
604			
605	Dolomite - lt tan gy, f xl, thn bdd, wthrs yel gy,alt w/dol brn gy, f xl, sl arg, tt,thk bdd,wthrs dk gy,pitted		
606	Dolomite - lt tan gy, v f xl, gran, tt, arg, thn bdd, wthrs lt tan gy.		
607	Dolomite - lt gy, v f xl, v arg, m bdd, alt w/dk gy, thn bdd, dol, tr p.p. por.		
608	Dolomite - brn gy, v f xl, arg, thn bdd, wthrs lt gy, bnd lt & dk brn.		
609	Dolomite - dk brn gy, v f xl, arg, thn bdd, tt, bnd as above.		
610	Dolomite - lt gy, v f xl, tt, sl arg, wthrs lt yel gy, thn to m irreg bdd.		
611	Dolomite - as above.	70' Dolomite - lt gy, v f xln tt, sl arg, m bdd, irreg yel gy wthrd surf. (35% exposed)	
612			
613	Dolomite - m brn, f xl, scat s vugs, thk bdd, wthrs gy yel		
614	Dolomite - brn gy, fnt mar orng mot, f xl,scat vugs, w/calc lining,mas,wthrs rd gy mot, alt w/thn bdd arg. dol.		
615	Dolomite - aa, w/rusty arg lam, wthrs dk brn, pitted, mas,intbdd thn bdd dol.		
616	Dolomite - brn blk, v f xl, microgran, sl arg, thn bdd, wthrs orng gy.		
617	Dolomite - lt tan gy, f xl, tt, mas, wthrs yel gy, pitted.		
618	Dolomite - tan gy, v f xl, tt, arg, lam, thn bdd, wthrs tan	250' Dolomite - tan gy, v f xln, sl arg,tt,tr poor p.p. vuggy por,thn bdd,wthrs yel & orng gys.	
619	Dolomite - brn, v f xl, vuggy, thk bdd, wthrs pitted, fair p.p. por.		
620	Dolomite - rusty brn, f xl, arg, lam, thn bdd, wthrs yel gy.		
621	Dolomite - dk brn gy, v f xl, thn bdd, arg, wthrs tan, intbdd, mas dol.		
622	Dolomite - yel brn, v f xl, sl arg, tt, thn irreg bdd.		
623	Dolomite - brn gy, v f xl, microgran, arg, thn bdd, platy.		
624	Dolomite - yel gy, wthrs gy tan, v f xl, gran, sl arg lam, wthrs yel, thn bdd.		
625	Dolomite - m gy, v f xl, tt, hd, wthrs orng, thn bdd.		
626	Dolomite - tan gy, v f xl, hd, thn bdd, few calc lam, wthrs yel orng.		Silicified oolites mixed tabulate corals.
627	Sandstone - yel gy, p. sorted,f to c gr,qtzose,calc,dol incl & cmt,wthrs yel orng.	80' Sandstone & Siliceous Dolomite - mass 20' ss bd at top w/dol incl & dol cement. Dol bds are hd,tt,thn bdd w/ss lam, wthrs yel gy,platy.	
628	Dolomite - blk, v f xl, tt, hd, sl arg, thn bdd.		
629	Dolomite - v calc, yel brn, arg, v thn bdd, thn, platy.		
630	Dolomite - yel, v f xl, arg,strks of qtz ss, thn bdd.		
631	Limestone - yel gy to dk gy, arg,crpxl, thn bdd, wthrs orng gy, platy.		
632	Limestone - v dk gy, tt, dns, hd,conch frac, thk bdd, overlain by thk bdd dol.		
633	Dolomite - yel gy, crpxl, tt, arg, wthrs yel orng, v thn bdd.	220' Limestone - yel gy & blk intbd,v f xln,tt,arg,thn bdd, hd w/conc fracs,wthrs lt gy & yel gy,platy,tr calc sh & sdy ls at base of section.	
634	Limestone - v dk gy, arg, thn bdd, platy, wthrs lt gy (crpxl).		
635	Limestone - blk, arg, v f xl, thn bdd, platy, wthrs yel gy.		
636	Limestone - blk, arg, tt, thn bdd, wthrs gy.		
637	Limestone - brn blk, v f xl, thk bdd, w some f lam, wthrs yel gy.		
638	Limestone - blk, arg, tt, thn bdd, wthrs gy.		
639	Limestone - lt gr gy, v f xl, tt, in pt sdy, v arg, thn bdd,intbdd calc sh,wthrs yel gy.		
640	Limestone - brn gy, f xl, in pt sdy, wthrs orng gy, thn bd'd.		
		50' Covered interval	

CAMBRIAN

SALINE RIVER FORMATI



641 Dolomite - tan gy, calc, v f xl, tt, arg, wthrs yel gy, thn, platy.

642 Dolomite - tan gy, v f xl, tt, thn lam, wthrs yel gy.
643 Dolomite - mar gy, sl calc, f xl, in pt sl sdy, rusty lam, thn bdd, wthrs red gy.

644 Dolomite - mar gy, v f xl, sl slty, microgran, wthrs m gy, irreg, wavy bdg.

645 Dolomite - sl calc, dk mar gy, crpxl, f lam, thn bdd. wthrs yel gy.

646 Dolomite - as above, darker.

647 Dolomite - dk purp gy, sl ly, sl arg, v f xl, wthrs brn gy w/rd brn sh lam.

648 Dolomite - tan gy v f xl, tt, sl arg, thn bdd,wthrs tan gy,alt w/dk gy bds.

649 Dolomite - calc, blk, crpxl, platy, intbdd dol, lt gy lam, wthrs yel.

650 **Dolomite - brn blk, crpxl, tt, arg lam, thn to m bdd, wthrs yel gy.**
651 Dolomite - dk gy, crpxl, arg,platy w/bri rd thn sh lam, thn bdd,wthrs yel gy,thn mar sd lenses.
652 **Dolomite - aa, cht abnt, loc brec.**
653 Dolomite - as above w/sd lenses & cht conc.
654 Limestone - tan, dol, v f xl, sl arg, yel sh lam, thk bdd,wthrs gy tan

655 Dolomite - tan & mar gy bnd, v f xl, arg, thn bdd.

656 Dolomite - blk w/mar & rusty lam, v f xl, sl arg, thn bdd, alt w/m gy dol.
657 **Dolomite - aa.**

658 Limestone - blk, tt, hd, sil, rusty flecks & strs, thk bdd, wthrs splintery dk gy.

130' Dolomite - tan & mar gy, sl calc,v f xln,sl arg,sl sdy tt, thn bdd to lam,wthrs,yel gy & rd gy,platy to irreg. surf.

150' Dolomite - blk & dk mar gy, v f xln,thn bdd w/brn,rd & lt gy sh lam,tr sdy lam,& cht,wthrs yel & tan gy,platy.

100' Covered interval

15' Limestone - blk,tt,hd sil ,thk bdd.

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-10

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-B

Co-Ordinates : 64° 08' N. - 123° 42' W.
Geographic Location : 6 miles N.W. (300°) of N. peak of Twin Peaks

Geologists : Halkow, Young
Date of measurement : June 19, 1961

L.D.C.-10

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic
Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION							HY1090	Limestone - brn blk,v f xln,tt,fos frag,mnr calc incl,thn bdd,wthrs m gy.	480' Limestone - dk brn gy to blk,crpxl,mnr wh calc vns & incl,foss,wthrs m gy to yel gy or brn gy into nod type rubble.In the area it is a series of cliff type exposures w/intervening scree covered slopes (65% covered)	Favosites nitella Winchell poorly preserved Middle Devonian (Eifelian)
								HY1075	Limestone - brn blk,crpxl,Cor,calc vns,thk bdd,wthrs m gy.		
								HY1060	Limestone - dk brn gy,crpxl,fos frag,frac,mnr calc vns,thk bdd,wthrs m gy.		
								HY1040	Limestone - dk brn gy,v f xln,microgran,tt,thn calc vns,wthrs m gy.		
								HY1020	Limestone - aa.		
								HY1005	Limestone - brn blk,crpxl,thn calc vns,sl arg,thn bdd,wthrs m yel gy.		
							v	HY 975	Limestone - brn blk,crpxl,mas,wh calc incl,wthrs gy brn nodulose.		
				100				HY 930	Limestone - brn blk,crpxl,mas,tt,wthrs aa.		
								HY 900	Limestone - aa.		
								HY 830	Limestone - dk brn gy,crpxl,tt,thk bdd,wthrs gy brn.		
								HY 815	Limestone - dk brn gy, v f xln, mnr calc incl, wthrs aa.		
				200				HY 800	Limestone - dk brn gy, v f xln, tt, wthrs dk gy nodulose.		
								HY 745	Limestone - dk brn gy, f xln, tt, orng calc incl, thk bdd, wthrs gy yel.		Favosites nitella Winchell Billingsastraea trichomitra Crickmay? ? Schuchertella adocela (Crickmay) (scree fossil) Middle Devonian (Eifelian)
								HY 730	Limestone - dk brn gy, v f xln, tt, abnt Cor,calc incl,thk bdd,wthrs aa nodulose.		
				300				HY 530	Limestone - blk,crpxl,tt,calc incl,fnl lam (arg?),thn bdd,wthrs m yel gy.		
								HY 520	Limestone - brn blk,crpxl,in pt microgran,tt,arg? ptgs,plty,wthrs yel brn gy.		
								HY 510	Limestone - dk tan gy, crpxl,tt,calc incl,thk bdd,wthrs lt yel gy, rubbly.		
				400				HY 500	Limestone - dk brn gy,crpxl,calc vns,thk bdd,wthrs m yel gy, rubbly.		
LOWER DEVONIAN	BEAR ROCK FORMATION						x	HY 290	Limestone Breccia - m gy, mot tan, v f xln, in pt gran, abnt calc vns & incl,wthrs yel gy.	192' Limestone Breccia - dk brn gy to tan gy,crpxl to m xln,mott, frag, in pt arg, calc vns & incl,mnr remnants of bdg,wthrs dk yel-gy or dk brn gy.	
								HY 275	Limestone Breccia - aa.		
				500			x	HY 240	Limestone Breccia - m tan gy, f xln,gran,mot to frag,mnr arg is frag,calc incl,wthrs aa.		
								HY 220	Limestone Breccia - aa, dk brn gy,abnt calc vns,stylolite type lam,wthrs aa.		
							v	HY 200	Limestone Breccia - bl gy to brn gy,gran,mot & frag,some arg is frag,calc vns,wthrs dk yel gy.		
							v	HY 180	Limestone Breccia - aa, brn gy.		
								HY 160	Limestone Breccia - dk brn gy, v f xln,tt,frac,calc vns,some bdg nomb,wthrs dk yel gy.		
				100				HY 140	Limestone Breccia - blk, v f xln, tt, sl arg, calc incl,some bdg nomb,wthrs gy brn.		
								HY 120	Limestone Breccia - mot dk brn gy,f xln,gran,calc incl,wthrs aa.		
								HY 100	Limestone Breccia - dk brn gy,crpxl,calc incl,wthrs dk brn gy.		
								HY 80	Limestone Breccia - m tan gy, v f xln,microgran,mot,calc incl,wthrs aa.		
								HY 60	Limestone Breccia - dk brn gy, f xln, mot, frag, rthy, calc incl, wthrs m brn gy.		
								HY 40	Limestone Breccia - aa, underlain by dk gy brn, limy ind sh.		
								HY 20	Limestone Breccia - gy brn, microgran, mot, calc vns & incl, wthrs m dk gy.		
				200			p	HY 0	Limestone Breccia - gy brn, f to m xln, mot, frag, in pt arg, calc incl, wthrs dk gy.		

WRIGLEY AREA
STRATIGRAPHIC SECTION L.D.C.- 11
Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

L.D.C.- 11

28-1-5-8

Co-Ordinates : 64° 00' N. - 123° 20' W.
Geographic Location : 7 miles N.W.(330°AZ) of Woodman Head

Geologists : Mc Cord, Roessingh, Perry
Date of measurement : June 24, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
● oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION MEASURED FROM BASE OF FORMATION	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY TYPE	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
ORDOVICIAN	FRANKLIN MOUNTAIN FORMATION							Knolle - Franklin formational contact - see photo page 19	1046' Upper Franklin Formation: Dolomite, light grey, massive. Visible to angular, multicolor crusts and dark grey coloured, fine grained. Top of Franklin and of the Formation is described in Sec. 8.	Actinoceratid cephalopod and Receptaculites oehlerti Knolle Sect. 8 (age to Lower Ordovician) has identification.
CAMBRIAN	SALINE RIVER FORMATION						Wr1680 Wr1685 Wr1700 Wr1715 Wr1800 Wr1820 Wr1840 Wr1870 Wr1900 Wr1960 Wr2035 Wr2080 Wr2310 Wr2320 Wr2380 Wr2390 Wr2400 Wr2430 Wr2440	Dolomite - at calc, dk gy crypt, tt, hd, arg laminae, 10° beds where x-sr. Dolomite - banded tan & blue gy, m silc, vuggy, lithonitic, w/red ah lam, 3° bdd. Dolomite Breccia - v silc dol wkst, frags dk gy, v f silc, mag, platy, fr p.p. vugs, shell lam calcite strng. Dolomite Breccia - as, pos stem frags, w/bro tan gy, rubbly. Dolomite - purplish brown, f silc, tt, occ thn 8" bd, w/bro black w/bro vin. Dolomite - m tt gy, v f silc, blcks eye vugs, bro strng. Dolomite - tt gy, v f silc, tan-mdd 2-3", poor p.p. porosity. Dolomite - as, mass, occ mag w/limonite filling, w/bro wisps, pitted surface. Dolomite - as, color banded tt & dk gy, mass bmsr randomly oriented, stalctp frags. Dolomite - ore & gy lse, crypt, wit, hd, platy to base of outcrop 4-5" bdd. Dolomite - w dk bro gy, v f silc, tt, lse, w/bro zns, mass evidence of quiescent algal bdg struct. Proposed location of contact - Franklin Knolle Formation & Saline River Formation Dolomite - tt ore gy, crypt, tt, hd, in pt limey. Dolomite - dk bro gy, v f silc, tt, arg, thn bdd, w/bro tan gy, tattal w/lx. Dolomite - m gy, v f silc, v arg, platy, 4-6" bdd, w/bro zns, lse. Limestone Breccia - lt stn, w/algrose por; frags pos stimd, dk gy dol, calc vuq. Dolomite - tan gy, crypt, bd w/conc fnes, w/bro yel gy, lse, bdd 1" & thkr. Dolomite - blk, crypt, hd, arg, 6" bdd w/bro lse, platy. Dolomite - yel gy, v f silc, arg, hd, thn bdd, w/bro yel strng. Dolomite - v dk gy, arg, thn bdd, w/bro yel, tattal w/dol above.	70' Dolomite, at calc, arg, banding & laminations, & silc to crypt, thn & thk bdd. 70' Dolomite Breccia, v silc, dol wkst, pos stem mg frag; fr p.p vugs, w/bro calcite shell lam, vuggy, lithonitic, tan gy. 50% Exposed 200' Dolomite, tt gy, color banded, lse gy & v f silc, w/t bands, mass bmsr randomly oriented, w/bro vug lined & filled, & w/g lse lam thn-bed base. No sluiceway interval. Type section of Franklin Formation type of area. 690' Total measured thickness of Saline River Formation. Lithologically characterized by a mix of v arg dolomites and limestones as top with abundant algal bdg structures. Dolomite under the base of the formation.	
	CAP MOUNTAIN FORMATION						Wr 3120 Wr 3150 Wr 3200 Wr 3240 Wr 3400 Wr 3480	Shale - waterfall - inaccessible Mudstone - ms w/rust iron wks, rr gr sits, sd, well cem, wavy lower interface w sh. Shale - dk tel gy, fis, wxfl, rubbly 3" bds. Shale - tan blk, blocky w/arg, w/wkst sits mod gr, r, sd, w/sc f, p ss, rust iron oxides, locally w/dolo 1-3" bds Dolomite - v dk gy, v f sits, tt, pyrite nodules, 3" bdd, mass, calc. Shale - v gy, v fis, slc-calc, w/bro tan, fewer dolo bds. Shale - v gy, slc-calc, wavy laxite, sr laticable frags. Mudstone - f gy, sitsme, sd, calc, fair intgrnl por remelting from oxidation of w/ iron mat'l, shell mat laxicite. Shale - v gy, fis, slc-calc, w/bro mic gn gy w/dol bds.	See photo page 19 locally weathering dolo outcrop. 1080' Mt. Cap Formation Outcrop consists of a cliff forming cuesta ridge with high percent of fine gy to wh lse. Beds are thick to massive, but generally must be very resistive as exposures to the west are poor. Contact is placed at the base of the lowest resistant lse.	Prismatic fragment in crushed matrix
	MT. CLARK FM.						Wr 4	Quartzite, wh qtz, indurated, w/bro-reddish.	Mt. Clark Formation - quartzite dis. 20° west on dune like strata in all of the formation. Only the lower part of the thickness recommended here are true thicknesses.	

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-12

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-62B

Co-Ordinates : 64° 15' N. - 123° 56' W.
Geographic Location : 18 miles N.W.(315°AZ) of Twin Peaks

Geologists : Halkow, Perry
Date of measurement: June 25, 1961

L.D.C.-12

FOSSIL SYMBOLS

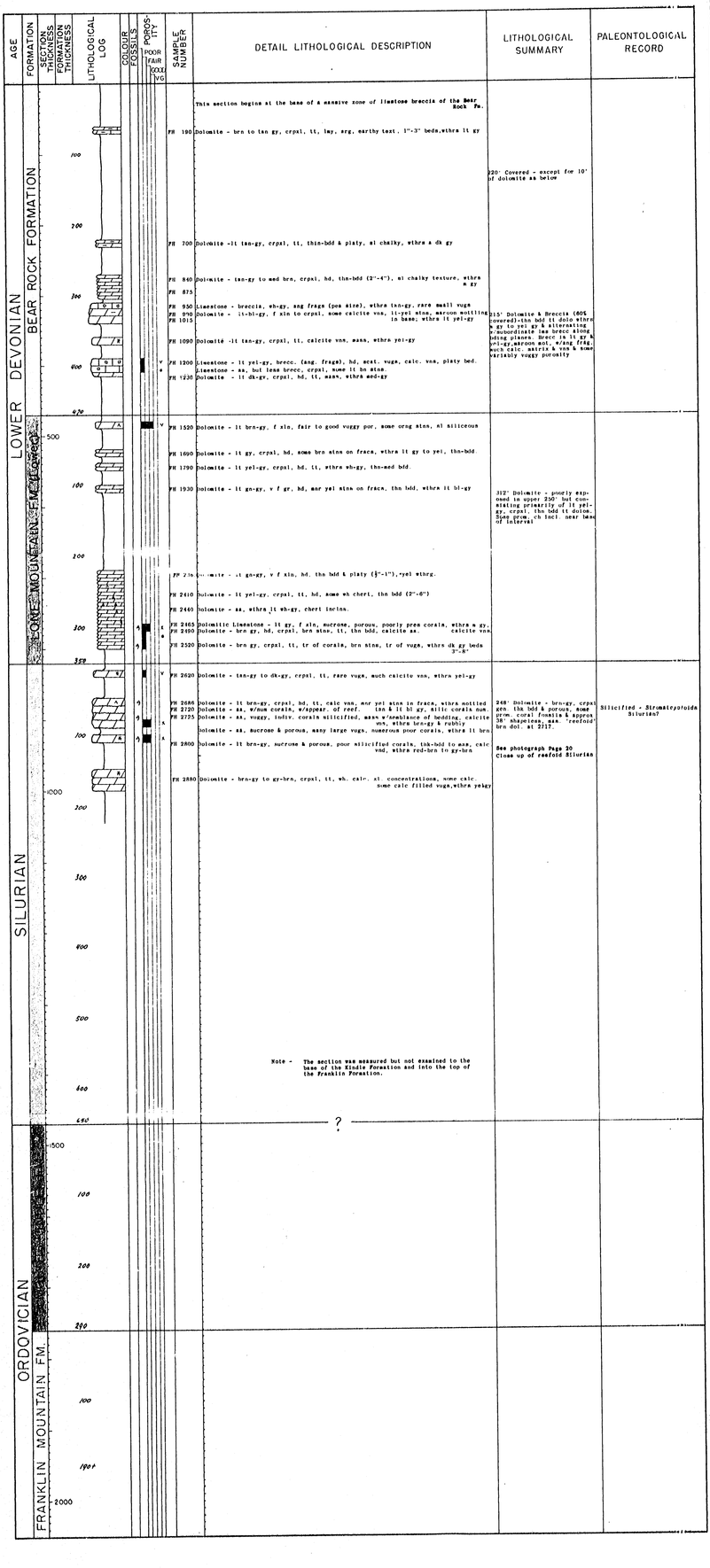
F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic
Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark



WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-12 BR

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-B

Co-Ordinates : 64° 18' N. - 123° 44' W.
Geographic Location : 15.6 miles N.W.(337°AZ) of N. peak of Twin Peaks

Geologists : Roessingh, Halkow
Date of measurement : June 30, 1961

FOSSIL SYMBOLS

F	Fossiliferous	m	Stromatopora
B	Brachiopoda		Foraminifera
G	Gastropoda	⊙	Crinoid
	Coral		Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
Dolomite	Limestone Breccia	Calcareous Shale	Siltstone
Dolomitic Limestone	Dolomite Breccia	Anhydritic Shale	Ironstone
Argillaceous Limestone	Rugose to Rubbly	Salt Casts	Sandstone
Argillaceous Dolomite	Coarse Crystallization	Pyritic / Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY: POOR / FAIR / GOOD / VG	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
LOWER DEVONIAN	BEAR ROCK FORMATION	100					v	HR 716	Limestone Breccia - gy, any frag f xln ls in v f xln brn gy ls mtx, calc incl, tr iron oxide xls, ang vugs & cav, wthrs lt brn gy.		
							v	HR 715	Limestone Breccia - dk gy,crpxl,ang,arg & lt tan gy, v f xln,rthy,ls frag in v f xln,lt,ls mtx,calc vns & calc ind vugs,iron oxide xl incl, wthrs m gy.		
		200					v	HR 714	Limestone Breccia - olv brn v f xln ang ls frag & lt gy tan soft lmy clay in brn olv f xln ls mtx, calc vns & incl, ang to rd cav, mas, in pt thn bdd, wthrs lt to m brn gy.	190' Limestone Breccia - brn to gy f xln ang ls frag & tan gy rthy ls frag in lt ls mtx, mar rd brn iron oxide xl incl calc incl, & prim vugs & ang cav due to leached out frag.	
		300						HR 713	Dolomite - dk brn gy,v f xln,hd,tt,thn rust lam,thn bdd,wthrs dk brn gy.	100' Covered	
									Dolomite - dk brn, fran, f xln, tt, sil.		
							v	HR 712	Dolomite - m brn gy, v f xln, thn rust lam, thk bdd,wthrs lt gy tan.		
								HR 711	Dolomite - rd brn gy, v f xln, hd,tt,thin rust lam,sil Cor,wthrs rd brn gy.		
		400					vx	HR 710	Dolomite - dk br, m xln, gran, lrg vugs, calc incls & vns, sil Cor, anr cht, wthrs	240' Dolomite - dk brn & brn gy,f xln,gran,some thin rust lam,locally foss, in pt sil, thn to thk bdd & brecc at base. 25% Covered	Halysites sp., nr. H. nexus Davis Halysites sp.(immature specimen) Silurian
							x	HR 709	Dolomite - m brn gy, f xln, microgran, thn bdd,wthrs lt gy. dk brn gy.		
								HR 708	Dolomite - lt brn gy, v f xln, tt, well bdd,wthrs yel brn gy.		
		500	500					HR 707	Dolomite - rd brn, v f xln,gran, irreg thn rust lam,thn bdd,wthrs dk brn gy.		
							v	HR 706	Limestone Breccia - brn suc ang dol frag in calc mtx,few calc ind vugs,wthrs brn gy.		
							v	HR 705	Limestone Breccia - lt brn,suc dol frag in mot yel tan to mar gy v f xln ls mtx, few calc ind vugs, wthrs lt brn.		
		600								300' Covered	
		700									
		800						HR 704	Dolomite - dk gy brn, lmy, v f xln, arg, thn bdd, wthrs tan gy.		
							v	HR 703	Limestone Breccia - lt gy tan soft clayey ls frag in dk brn, v f xln ls mtx, some recn bdg memb, g vug & cav por,calc incl & vug lng,wthrs lt brn gy.	130' Limestone Breccia - lt gy tan clayey in pt powdery ls frag in dk brn to brn gy v f xln ls mtx, & some recn of bdg memb.Frag leach out into vugs & ang cav usually calc lnd.	
		900					v	HR 702	Limestone Breccia - aa, including dk rd brn arg ls frag, tr gn stn.		
		960				F	v	HR 701	Limestone Breccia - ang frag of lt gy tan powdery clayey ls in brn gy v f xln ls mtx. Frag leached out to ang calc lnd cav, poor pres fos.		
		1000									

L.D.C.-13

WRIGLEY AREA
STRATIGRAPHIC SECTION L.D.C.-13
Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 64° 29' N. - 124° 17' W.
Geographic Location: 5 miles N.W.(330°AZ) of Mount Clark

Geologists : McCord, Halkow, Young, Perry
Date of measurement: June 30, 1961

FOSSIL SYMBOLS

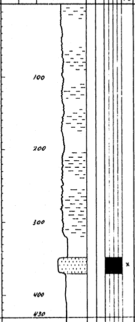
F	Fossiliferous	ɪɪɪ	Stromatopora
B	Brachiopoda	୪	Foraminifera
G	Gastropoda	⊙	Crinoid
ㄅ	Coral	෴	Algae

POROSITY SYMBOLS

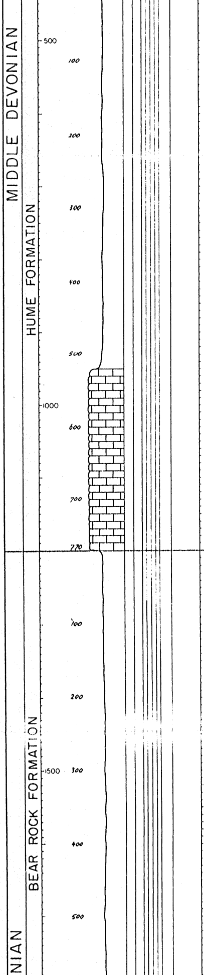
x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

▦	Limestone	▦	Silty Limestone	▤	Shale	∧ ∧	Siliceous
▨	Dolomite	▦	Limestone Breccia	▤	Calcareous Shale	⁚⁚	Siltstone
▨	Dolomitic Limestone	▨	Dolomite Breccia	// //	Anhydritic Shale	▭	Ironstone
▦	Argillaceous Limestone	▦	Rugose to Rubbly	⊞ ⊞	Salt Casts	⁘	Sandstone
▨	Argillaceous Dolomite	⁎	Coarse Crystallization	P M	Pyritic Micaceous	▲	Chert, light or dark



AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY POOR FAIR GOOD VG	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
	HARE INDIAN FORMATION								Restricted outcrops of Hare Indian Formation - exposed by small stream erosion across east flank of mountain.		
								July 2 McCord	Shale - blk,friable,soft at much wthrd outcrop,w/rust ferric oxide stng along lams, no fossils found, no concretionary material.	300' Hare Indian Formation estimated from cursory examination of outcrop and measurements off aerial photos: Shale - black, friable,rusty wthrg,unfoss.	
									Shale - aa.		
									Shale - aa.		
									Shale - aa.		
									Shale - aa.		
									Shale - aa.		
									Shale - aa.		
							x		Sandstone - quartzose - c grnd,friable,subang,clean,tr only of silic mtx. Excellent intgran por, wthrs mas, wh to tan.	20' Sandstone - qtzose,clean, subang,excellent intgran por.	



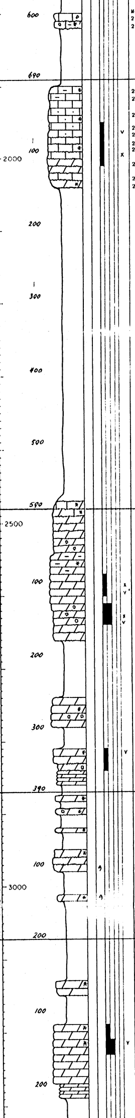
600' Covered Interval

The Upper Devonian Formations above dip at 63° to the southwest. The formations below dip at steeper angles of 75° southwest and even steeper, 85° southwest, in rocks of Ordovician age. Possibly this whole section in the overturned east flank of a faulted asymmetrical anticline resulting from a thrust from the west.

250' Hume Formation
considerable fracturing

600' Covered interval

LOWER DEVO



MC 2390	Limestone - breccia, yel-gy-buff, v f xln, num vugs stnd orng. some yel-brn stns, wthrs yel gy.	30' Limestone Breccia - buff, soft, f xln mtx w/ang arg Ls & Dolo incls,calc nests comm, lrg fracs oriented oblique to gen strike of poorly exposed outcrop.Wthrs yel gy,rubbly w/numerous ang small vugs. (salt casts?) 70' Covered interval	
2380	Limestone - Breccia aa,ang, arg Ls & Dolo incls, hi frac, abnt calc, wthrs, rubbly, rd,mas.		

LONE MOUNTAIN FORMATION (Lower)

2300	Limestone - lt gy (gn tinge),crpxl, calc vnd, tt, some yel,brn & orng stns.		
2280		100' Limestone - dk gy, v f xln, tt,abnt calc vns,wthrs mas,lt gy w/grn & yel stn.	
2260	Limestone - dk gy, v f xln, calc vns, some lt grn & yel stns,sl silty appearance.		
2240	Limestone - gy & as above.		
2225	Limestone - brn-gy, crpxl to v f xln, strongly calc vnd, stns aa.tr scat small vugs		
2215			
2200	Limestone - dk gy, crpxl,calc aa, mas, wthrs gy, no bdg,some interxln por on the calcite.		
2180	Dolomite - dk gy bl aa, wthrs in mas rd manner, no bdg.	40' Dolomite - dk gy,crpxl, calc vns aa, semb of bdd,wthrs dk gy w/stns aa.	
2160	Limestone - dk brn gy, crpxl.calc aa, wthrs dk gy,semb of bdg,some stns aa.		
2150	Dolomite - dk gy brn, crpxl, strongly calc vnd, mas, some lt brn stns,tt, mas.		
		440' Covered interval	
1580	Limestone - Dolomitic,gn-gy,crpxl,calc vnd,bdd 6-8",wthrs gy-buff,tr carb fibres.		

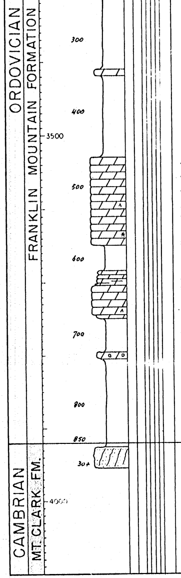
SILURIAN

1560	Dolomite - lmy, brn-gy, crpxl,calc vnd,frac,semb of bdg,sl por,vuggy,wthrs buff gy, tr red, lt brn & pale gn stn		
1540	Dolomite - aa, bdd in 3' bds,tt.		
1520	Dolomite - aa,hi frac & brec,wthrs brn-gy,mas.	140' Dolomite - brn gy,crpxl, tt,frac & brecc in pt. calc vns,thk bdd,wthrs,brn gy w/yel brn stn.	
1500	Dolomite - brn gy w/mar tinge,crpxl,tt,wthrs brn gy,calc vnd,much yel-brn stn,frac. Bdd 2-6"		
1480	Dolomite - aa.		
1460	Dolomite - aa, some sol cavities, stns aa, wthrs mott brn gy, scat small vugs,thk bdd(1½'-10')		
1440	Dolomite - aa.		
1415	Dolomite - dk brn,crpxl,hi frac & brecc,much calc as vns,mas.wthrs brn-gy.tr yel stns.fair intxl por @ 1390' & some s vugs.	50' Dolomite Breccia - dk brn, crpxl,abnt calc in vns,mas, arg?,tt,wthrs brn gy w/yel stn,rubbly.	
1400	Dolomite - aa.		
1390	Dolomite - aa.		
1380	Dolomite - aa, wthrs lt brn gy, in mas rd knobs.		
1370	Dolomite - aa, wthrs rubbly, no bdg discernible.		
		60' Covered interval	
1285			
1275	Dolomite - dk brn gy,hi frac & calc vnd,crpxl,thk bdd,wthrs blue gy,some lt bn, orng & yel stns(also pale gn		
1260	Dolomite-aa, frac to pt of brecc.		
1250	Dolomite - aa,mas,some lt orng stns.		
1215	Dolomite - dk brn gy,crpxl,hi frac & calc vnd,some s vugs,some bn stn,wthrs bl gy, mas,some lt brn stn & tr pale gn stn.	320' Dolomite - dk gy,crpxl, tt,hd,thk bdd.hi frac.abnt calc vns,tr carb lam,wthrs dk bl gy,mas,sli rubbly,abnt Coralline fossils in lower 50' (Section 40% exposed)	
1200	Dolomite - aa.		
1190	Dolomite - aa, wthrs lt gy w/brecc appearance.		
1170	Dolomite - aa,wthrs m gy,finely bdd,tr carb mat on lam, hi frac w/calc vns.		?

MOUNT KINDLE FM

1145	Dolomite - dk gy w/brn tnge,hd,tt,crpxl,hi frac & vnd w/calc.bdd @ 2'		
1125	Dolomite - brecc,much calc as vns,wthrs m gy,wthrs dk gy,some lt brn & orng-yel stn rubbly.		
1100	Dolomite - dk gy,crpxl,frac & calc vnd,wthrs bl gy;tt, bdd but poorly exposed.		
1070	Dolomite - dk gy,crpxl,hi frac & calc vnd,wthrs m & dk gy.		
1060	Dolomite - lt gy w/sli brn cast, hi frac, wthrs rubbly.		
1050	Dolomite - dk gy aa, badly wthrd, abnt Halysites and Solitary Corals,wthrs lt bn gy		
1000	Dolomite - dk gy,crpxl,frac & calc vnd.wthrs med dk gy. yel stn on frac.mas.		
	Halysites and Syringapora Corals in scree	110' Covered interval V shaped small Valley. Slope on west covered w/pnkish grey Franklin Slope on east covered w/dk gy Kindle Formation scree.	

870	Dolomite - lt pink-gy,crpxl,hd,tt,mas,wthrs yel-gy,frac & calc vnd,rusty rd stn on frac.		
855	Dolomite - aa, wthrs yel-gy & buff.		
800	Dolomite - yel-gy,crpxl,frac & calc vnd,brn stn,some vugs,wthrs lt gy-buff,bds 2-5'		
790	Dolomite - aa.		
780	Dolomite - lt pink gy,crpxl,some vugs up to 1½"d,calc vnd,tt,wthrs m gy.		
770	Dolomite - aa, 12" bdd wthrs m tan gy.		
760	Dolomite - aa,6"-2' bds, some rusty stns.		
750	Dolomite - lt gy,crpxl,tt,hd,wthrs tan-gy. 6" bds.		
730	Dolomite - aa, 3' bds, wthrs mot gy & buff.		No fossils collected
720	Dolomite - aa, bdd at 12"-18"		
705	Dolomite - gy,crpxl,hd bds 2"-3",wthrs mot tan & yel gy, rubbly.		



570	Dolomite - pinkish gy,crpxl,tt,hd,wthrs mott lt bl gy & yel gy 2-3' bds,manganese dendrites.	510' Dolomite - lt pnk gy, crpxl,tt,hd (sil?),thn bdd, in pt thk bdd w/mar lams toward base,frac w/calc vns in upper 160',wthrs buff to yel gy in pt, red & orng stn. platy mott rubble,manganese dendrites. (Section 40% exposed)
450	Dolomite - lt pink gy,crpxl to f, hd,tt,wthrs gy-buff to yel-buff,tr brn & yel stn occ manganese dendrites.	
430	Dolomite - aa.	
400	Dolomite - m tan gy,sl mar tnge,crpxltt,mas,wthrs orng & gy,tr lt brn & yel stn.	
385	Dolomite - aa, siliceous w/occ yel & mar lam, mas bdd.	
375	Dolomite - mar-gy,3'-4' bds,mas,wthrs gy w/sol cavities,tr yel stn on frac.	
345	Dolomite - lt gy & pink,crpxl,tt.some irreg vugs calc lined,wthrs orng-gy,bds 1-2' thk,tr orng & yel stn.	
330	Dolomite - aa.	
300	Dolomite - blk w/olive tinge,crpxl,tt,hd,platy to thn bdd,wthrs dk rd brn,some orng & yel stn.	90' Dolomite - dk gy to blk in part w/ol tinge,crpxl,tt, hd,thn bdd,sil,arg lams,wthrs yel gy & red brn w/orng stns, platy to splintery rubble. (60% exposed)
285	Dolomite - dk gy to blk,prom mar lams,tt,crpxl,arg(?),wthrs splintery rubble,stns aa.	
270	Dolomite - aa.	
250	Dolomite - lt ol gy,crpxl,tt,prom rusty & orng stns,wthrs yel gy some orng,yel & rd stn on frac.	
230	Dolomite - aa, wthrs yel blocky angular, siliceous, laminated on surface.	
		50' Covered interval
160	Dolomite - dk gy to blk,brn tnge on lams,scat vugs w/rusty stns,crpxl,calc vnd,tt, wthrs rusty orng & tan gy,brec in pt up to 2" frag frag ang to rd.	10' Dolomite - dk gy to blk w/brn arg lams,frac,w/calc vns abnt tt tr scat vugs, wthrs tan gy w/rusty stain, rubbly.
		120' Covered interval
	FAULT CONTACT	
0	Quartzite - wh, f-m gr,rd,hd,well cemented	Cambrian Quartzite, wh, f-m gr,rd,hd,indurated.Mass outcrop to west forms core of mountain.

L.D.C. - 14

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C. - 14

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 64° 29' N. - 124° 26' W.
Geographic Location: 9 miles N.W. (305°AZ) of Mt. Clark
Geologists : McCord, Perry, Roessingh
Date of measurement: July 1, 1961

FOSSIL SYMBOLS

F	Fossiliferous	III	Stromatopora
B	Brachiopoda		Foraminifera
G	Gastropoda	⊙	Crinoid
	Coral		Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
Dolomite	Limestone Breccia	Calcareous Shale	Siltstone
Dolomitic Limestone	Dolomite Breccia	Anhydritic Shale	Ironstone
Argillaceous Limestone	Rugose to Rubbly	Salt Casts	Sandstone
Argillaceous Dolomite	Coarse Crystallization	Pyritic Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
CAMBRIAN	SALINE RIVER FORMATION	500	100					HR 0-20	Dolomite - lt bl to crm, lam w/mar paper thn sh, v f xl, tt, one local lam sh bd, irreg spheroidal struc sugg wave action, sm (¼") blk spher. incl (Marcasite?) platy.	20' Dolomite - crm, v f xln, tt, platy w/sh lam; caps top of flat topped mountain.	
								HR 190	Limestone- dk gy, crpxl, sil, tt, intbdd dol, platy, wthrs lt gy & rusty brn, cliff-forming.	Covered interval of several hundred yards represents 30' of section thickness. The section described below outcrops on the precipitous west scarp of this mesa type mountain.	
								HR 200	Limestone- mar gy, v f xl, tt, thn calc vns & gn gy sh lam.		
								HR 270	Limestone- m gy, v f xl, tt, calc vns, sl arg, wthrs lt gy & rusty, thn bdd.		
								HR 355	Limestone- as above.		
								HR 380	Limestone - sl dol, bl gy & mar gy, crpxl, thn bdd, thn lam gy & yel gy, calc vns,		
								HR 410	Dolomite - lt yel gy & v dk gy, f xl, f lam wthrs platy, bl gy-purp-tan.		
								HR 440	Limestone- v dk gy, crpxl, tt, wthrs tan, platy		
								HR 470	Limestone- band dk gy & tan gy, v f xl, tt, platy, wthrs lt yel gy.		
								HR 500	Limestone- v dk gy, v f xl, tt, hd, lam & conc dk gy cht, wthrs lt bl gy & tan.		
								HR 500A	Limestone- dol, bnd dk gy & tan gy crpxl, tt, platy, wthrs lt gy.		
								HR 530	Limestone- v dk gy, crpxl, tt, tr frac w/calc, lt brn stn, wthrs bl gy & tan.		
								HR 560	Limestone Brecc ? frag random oriented 1-2" plates, some on end, cmt is m brn, f xl ls; mtx wthrs to form vugs, some w/c xl lining, int bdd, mas, blk ls.		
			200					HR 590	Limestone- blk crpxl, tt, hd.		
								HR 620	Limestone- brn & dk gy, v f lam, v f xl, earthy, tt, intbdd blk ls, mas, wthrs blk.		
								HR 660	Limestone- dk gy, crpxl, tt, thn lam (1"), sl arg, brn stn, wthrs dk gy.		
								HR 690	Dolomite - calc, dk bl gy, crpxl, tt, earthy lustrous, wthrs dk gy to rusty.	450' Limestone - dk gy to blk w/bands tan gy & lt yel gy. v f xln to crpxl, tt, arg to earthy, unfoss, thn bdd. in pt all - platy w/tr ch nod & lam. Abnt sh lam, w/sh bdg toward base. Wthrs lt yel gy. dk gy & olive gy & is cliff forming.	
								HR 720	Limestone- blk, v f xl, frac w/calc vns & gy c xl nests, thk bdd 2'-3' w/3"-4" platy bds.		
								HR 750	Limestone- dk gy-blk, v f xl arg, tt, bd, frac w/calc b' 2-6", wthrs tan		unfossiliferous
			300					HR 780	Limestone- dk brn gy as above, not arg. to ol grn.	The outstanding lithological feature of the section is the recurrence of thin penecontemporaneous sharpstone cong. (Shrock). These beds & beds containing irreg shaped dk arg patches & undulating sh lam occur more frequently near base of section. The conglomerate suggest freq of this zone by unusually strong tides or storm waves on a shelf area.	
								HR 840	Limestone- m gy & lt tan gy, lam, v f xl, sl arg, platy, tt, wthrs tan & gy.		See photograph page 21 close up of argillaceous limestone & slabby breccia
								HR 870	Dolomite - v dk gy, v f xl, tt, hd, platy, intbdd 1' mas bds, in pt slabby brec.		
								HR 900	Dolomite - as above, slabby.		
								HR 930	Limestone- dk gy to blk, v f xl, tt, arg, frac w/calc, f lam to platy, alt w/6" bdg, wthrs lt gr gy to rusty brn.		
			400					HR 960	Shale - blk, ly, platy.		
								HR 990	Limestone- brec, slabby, intbdd slabby & platy ls, as before.		
								HR 1020	Limestone- blk, mar mot, crpxl, plty, lam, sl undul w/rd ends.		
								HR 1050	Limestone- dk bl gy & brn. Bl-gy ls is in discontinuous 1/8" thk lenses & laminae in a brn, tan wthrg mtx.		
								HR 1080	Limestone- dk brn gy, v f xl, dol, tt, platy to 6" bdg, wthrs bl gy to ol gy.		
								HR 1120	Limestone- v dk brn gy, crpxl, tt, ½" bnds, wavy bdg.		
		500	500					HR 1160	Limestone- blk, v f xl w/undulating v thn sh ptgs, conc appearance in elliptical		
								HR 1180	Limestone- blk, v f xl, earthy lustre, mas, vague lam, wthrs bl gy patches av ½" to rusty, int bdd w/platy ls.	Covered interval 0 - 100' strat thkness; sh below located along contour of mtn.	
								HR 1220	Shale - m brn gy, lam to thn platy, these 2 outcrops could not be tied in to the rest of the section, but are strat. lower.		
								HR 1240	Shale - as above, sl darker.	30' Shale & Limestone intbdd. Shale - lt m gy, soft, limey, lam, wthrs w/hint of gn. Limestone - aa, dk gy, wthrs rusty.	
			600						These shales are interbedded w/blk rusty wthrg ls in 3'-4' alternations.	This section could very probably be present immediately below limestone at 1180, but is recessive and covered by abuntand slabby debris from cliff outcrop above.	

L.D.C.-15

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-15

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 64° 40' N. - 124° 29' W.
Geographic Location : On Big Smith Cr. 12 miles E. (095°) of Old Ft. Point
Geologists : Young, Halkow
Date of measurement : July 1, 1961

FOSSIL SYMBOLS

F	Fossiliferous	Ⅲ	Stromatopora
B	Brachiopoda	♈	Foraminifera
G	Gastropoda	⊙	Crinoid
♄	Coral	◠	Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
Dolomite	Limestone Breccia	Calcareous Shale	Siltstone
Dolomitic Limestone	Dolomite Breccia	Anhydritic Shale	Ironstone
Argillaceous Limestone	Rugose to Rubbly	Salt Casts	Sandstone
Argillaceous Dolomite	Coarse Crystallization	Pyritic Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION
MIDDLE DEVONIAN	HUME FORMATION	500	370					YH 445	Limestone - brn blk,v f xln,tt,calc incl,thk bdg scomb,wthrs lt gy,splintery.
								YH 435	Limestone - brn blk,crpxl,tt,fnt frac,calc incl,bdd & wthrs aa.
						F		YH 425	Limestone - aa, mnr fos frag.
								YH 400	Limestone - brn blk,crpxl,tt,hd,calc filled frac,poor bdg comb,wthrs m gy. rubbly.
						F		YH 390	Limestone - dk brn gy,f xln, fos frag,calc incl,rthy tex,bdg comb wthrs mot lt yel gy.
						F		YH 380	Limestone - brn blk,crpxl,tt,hd,calc,fos,wthrs m yel gy.
						F		YH 370	Limestone - brn blk,crpxl,fos,thn nod bdd,wthrs brn gy.
						B		YH 360	Limestone - v dk gy,crpxl,tt,mnr calc vns,mas,Brach,wthrs m gy brn,nodulose.
								YH 350	Limestone - v dk gy,crpxl,tt,hd,thn calc vns,mas,wthrs dk brn gy, nodulose.
								YH 340	Limestone - brn blk,crpxl,tt,sh lam along nod bdg planes,wthrs gy brn to rd brn.
								YH 330	Limestone - aa,sh lam,less com,comb of thk bdg,wthrs aa.
						B		YH 320	Limestone - aa, wthrs brn gy.
								YH 310	Limestone - blk,crpxl,tt,hd,mnr calc vns,Brach,sh lam along nod bdg,wthrs aa.
								YH 266	Limestone - brn blk,crpxl,tt,hd,mnr calc incl,arg lam along bdg,thk bdd,wthrs gy brn.
								YH 253	Limestone - blk,crpxl,tt,fos frag,thn nodulose bdd,wthrs gy brn.
								YH 170	Limestone - brn blk,crpxl,tt,hd,thk bdd,wthrs m yel brn.
								YH 120	Limestone - brn gy,v f xln,tt,hly fos,well defined thn bdg,wthrs rust brn to brn gy
								YH 110	Limestone - aa, thn nodulose bdd,w/sh lam as intbds,wthrs yel brn.
								YH 100	Limestone - blk,crpxl,tt,calc incl,bdd aa, wthrs gy brn.
								YH 90	Limestone - aa, calc sparse, mas.
						A		YH 80	Limestone - aa,abnt Brach,Cor,Gast.
						B		YH 70	Limestone - dk brn gy,crpxl,tt,hd,fos aa,sh interlam,nod bdd,wthrs yel brn.
						B		YH 60	Limestone - blk,crpxl,tt,hd,nodulose bdd,sh interlam,wthrs brn gy.
						B		YH 50	Limestone - dk brn gy,crpxl,tt,hd,nod bdd,sh interlam, wthrs aa.
						B		YH 40	Limestone - aa, some bdg comb,Brach com,overlain by 2' brn sh bd,wthrs aa.
						A		YH 30	Limestone - blk,crpxl,tt,platy & intbdd w/brn blk sh,wthrs yel brn.
						B		YH 20	Limestone - dk brn gy,v f xln,tt,abnt Brach,Gast,Cor,thk bdd,wthrs dk yel gy.
						B		YH 10	Limestone - blk,crpxl,tt,irreg lam w/sh,Brach,wthrs dk yel gy.
								YH 0	Limestone - blk,crpxl,tt,platy w/thn sh intbd,wthrs yel gy.

NOTE:- A helicopter reconnaissance upstream on Big Smith Creek revealed a series of black to brown black, fissile, micromicaceous, marine shales conformably overlying the Hume Formation. Although no fossils were found to positively identify them they are thought to be Hare Indian Formation and are estimated to be approximately 300' ± thick. Unconformably overlying Hare Indian is an undetermined thickness of medium grey, in part carbonaceous, shale interlaminated and disseminated with light grey very fine grained shaly siltstone and with some prominent ironstone beds. Fossil verification is lacking here too as only minute plant fragments, chitinous remains and ? worm burrows were found, but these shales are thought to be Cretaceous in age.

LITHOLOGICAL SUMMARY

368' Limestone - dk brn gy to blk,crpxl,tt,hi foss,usually nod bdd w/brn blk thn sh lam along bdg planes,mnr thn platy arg lms intbdg near base,wthrs yel gy to gy brn,locally rd brn.

PALEONTOLOGICAL RECORD

Favosites limitaris Rominger
Favosites nitella Winchell
Billingsastraea trichomisca Crickmay
Atrypa sp.
Atrypa arctica Warren
cf. A. andersonensis Warren
Utaratuia stevenci (Chapman)
Schuchertella adocets Crickmay
Spinulicosta stainbrooki Crickmay
Martiniopsis sp.
Tentaculites gracilistriatus Nail
Middle Devonian (Eifelian)

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-15BR

Mc CONNELL RANGE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-6

Co-Ordinates : 64° 38' N. - 124° 29' W.
Geographic Location : 12.8 miles S.E.(107°AZ) of Old Fort Point

Geologists : Perry, Roessingh
Date of measurement : July 2, 1961

L.D.C.-15BR

FOSSIL SYMBOLS

F	Fossiliferous	ш	Stromatopora
B	Brachiopoda	♈	Foraminifera
G	Gastropoda	⊙	Crinoid
ϟ	Coral	⩇	Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
Dolomite	Limestone Breccia	Calcareous Shale	Siltstone
Dolomitic Limestone	Dolomite Breccia	Anhydritic Shale	Ironstone
Argillaceous Limestone	Rugose to Rubbly	Salt Casts	Sandstone
Argillaceous Dolomite	Coarse Crystallization	Pyritic / Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / G / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
LOWER DEVONIAN	BEAR ROCK FORMATION	100					x		Limestone Breccia - dk brn gy,ang frag range from grit size to 18",calc filled frac com. mas, slope face appears fault striated.		
									Limestone Breccia - lt to dk gy,sub-ang to rd frag of var size,in gy ls mtx,mnr brn stn, sl inter por,wthrs dk brn gy.		
							x v	575	Limestone Breccia - brn gy,rthy ls frag & ang to sub-ang lt brn gy dol frag in brn gy rthy to v f xln ls mtx,Frag vary from grit-size to 2", in pt leached out to calc lnd cav,wthrs lt gy to brn gy.		
								500 180	Limestone Breccia - dk brn gy ang dol frag in lt tan gy ls mtx,tt,some bdg semb,tr brn stn	450' Breccia - tan to brn gy sub-ang to ang, v f xl dol frag & brn gy rthy ls frag in gy,brn gy or tan gy rthy or v f xln ls mtx.Frags range from grit-size to several feet across and in pt wthr out into vugs or ang cavities.Present near base of section are tan gy,crpxl,dolomites fractured and locally brecciated along bedding planes. (20% Covered)	
		200						400	Limestone Breccia - dk gy ang v f xln dol frag in lt gy ls mtx,tt,no vugs or cav noted, some bdg semb,wthrs m to dk gy.		
								300	Limestone Breccia - aa, mas.		
							v PR	280	Limestone Breccia - tan gy v f xln dol frag in dk brn gy rthy ls mtx,few vugs.		
		300							Dolomite - lt gy. f xln,tt,hd,brec & hly frac,mas,wthrs lt to m gy,few intbds lt gy v f xln dol. wthrs dk brn gy.		
							PR	240	Breccia - tan to yel gy lmy.		
							PR	230	Dolomite - aa, brecciated.		
		400						180	Dolomite - tan gy,crpxl,hly frac,in pt brec & calc filled,thn bdd,wthrs lt brn gy.		
								155			
		450					PR	120	Limestone Breccia - tan to orng gy ls w ang gy dol frag,abnt calc filled frac		
	LONE MOUNTAIN (Lower)	500					PR	80	Dolomitic Limestone - tan gy to v lt gy,crpxl,hd thn irreg lam.	108' Dolomite - tan gy,v f xln,tt,calc filled frac thn & thk bdd,wthrs yel-gy to brn gy.	
							PR	60	Dolomite - tan gy,v f xln,tt,few calc filled frac,mnr lt brn stn,wthrs m brn gy.		
							PR	40	Dolomite - tan gy, v f xln,tt,calc incl & vns,thn bdd,wthrs m gy.		
							PR	20	Dolomite - aa.		
		110					PR	0	Dolomite - lt gy, f xln,tt,hd,thk bdd,wthrs yel gy.		

WRIGLEY AREA
STRATIGRAPHIC SECTION L.D.C.-16
CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-B

Co-Ordinates : 64° 19' N. - 126° 02' W.
Geographic Location : 9 miles N.W. (315°AZ) of mouth of Summit Cr.
Geologists : Roessingh, McCord
Date of measurement: July 6, 1961

FOSSIL SYMBOLS

F	Fossiliferous	ⅢⅢ	Stromatopora
B	Brachiopoda		Foraminifera
G	Gastropoda	⊙	Crinoid
	Coral		Algae

POROSITY SYMBOLS

- x intergranular, intercrystalline, interfragmental
- v vuggular (greater than 1/16 mm.)
- f fractured
- p pinpoint
- • oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone; Silty Limestone; Shale; Siliceous
Dolomite; Limestone Breccia; Calcareous Shale; Siltstone
Dolomitic Limestone; Dolomite Breccia; Anhydritic Shale; Ironstone
Argillaceous Limestone; Rugose to Rubbly; Salt Casts; Sandstone
Argillaceous Dolomite; Coarse Crystallization; Pyritic Micaceous; Chert, light or dark

AGE: LOWER DEVONIAN
FORMATION: BEAR ROCK FORMATION; HUME FM.; MID. DEV.; LONE MT. FM. (Lower)
SECTION THICKNESS / FORMATION THICKNESS
LITHOLOGICAL LOG
COLOUR
FOSSILS
POROSITY: POOR / FAIR / GOOD

SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
Mc2670	Limestone - gy-blk & mar, crpxl, tt, hd, thn bdd.	See photograph page 28 oblique view of this section	Spinulicostata sp. very tentatively suggest: Hume correlation Middle Devonian?
Mc2640	Limestone - brn-blk, v f xl, tt, hd, in pt breccc, tr p.p. por, wthrs lt yel.		
Mc2590	Limestone - as above in pt m xl, vague fos casts, thk bdd (12"-24")wthrs w/pitted surf, lt brn gy.	170' Limestone - brn & mar, blk, v f xln, hd, tt, thn & thk bdd,poorly preserved sparse fossils. Calc incl & vns & coarse recrl near Bear Rock contact, fair p.p. por in coarse xtln zones. Wthrs lt brn gy in pt orng gy - often w/pitted surfaces.	Fossil collected from higher stratigraphic position on dip slope of ridge. Section was measured on scarp slope of ridge.
Mc2500	Limestone - bl gy & blk crpxl, m xl in pt, w/tr p.p. por.		
Mc2430	Limestone - brn blk, crpxl, w/c xl vns & nests, some vugs in c xl pts,conch frac.		
Mc2400	Limestone - brn blk, ranging from f xl to v c xl (10mm),fair p.p. por in c pts, apparently recrystallized	See photos Page 27 - Outcrop of thick bdd Lower Hume & rubbly, fossiliferous Upper Hume.	
Mc2370	Limestone - blk, crpxl, calc vns, some m xl in w/p.p. por, bdd 3"-4ft.wthrs orng.		
Mc2350	Limestone - brec, bl & brn gy, f & m xl w/walnut size dolo frag,subang,little or no mtx, frag uniform in size, v mas, appear for outcrop, good int brec por, occas bl gy Ls incl 1" in diam.		
Mc2270	Limestone - brec as above.		
Mc2230	Limestone - brec, tan & lt brn gy. m & c xl, sdy appear., loosely cmt w/calc good int xl por.	300' Limestone Breccia - massive cliff forming, good inter-frag por, occ bl gy Ls in incl, up to 1' diam. Mtx is ls brn gy, f-m xln volume is very minor compared to mass of frags. In pt cemt is wh calc, frags are dol sub-ang, uniform walnut size.	
Mc2117	Limestone - brec, frag of brn gy bdd ls, v f xl, frag are randomly oriented w/some v arg, mat, standing on end, wthrs gy & rusty brn. Brn c xl mtx lt p.p. por.		
	Positive cliff forming Ls brec on strike as at Mc2117		
Mc1960	No sample - outcrop on strike rust wthring soft brec as at Mc1800, overlain by cliff forming Ls breccia		
	Limestone Brec - b'd choc brn, incl w/abnt p.p. vugs.		
Mc 1800	Limestone Brec - m gy v f xl w/nests & indiv xln of c & v c xl ls & wh calc vug filling, tr p.p. por, soft, crumbly, wthrs dk gy & rusty.		
Mc1650	Limestone Brec - dk brn bdd, frag w/good p.p. & intlx por, m & c xl.	480' Limestone Breccia, dk gy to rust wthrg, recessive. Mtx is dk brn & lt crm- ls gran fair intgran por,leached out to display mm sng cavities (salt casts?). Frags range from pea size to 2' diam bdd ls incls. Gen c xtl to sucr w/fair intgran por, arg to earthy,crumbly,choc brn color.	
Mc 1600	Limestone Brec - num bdd choc brn incl, abnt p.p. vugs, soft.		
Mc 1500	Limestone Brec - orng brn, f xl, gran ls mtx w/fair intxl por,w/lrg incl 2", drab col, earthy, ls, some vugs.		
Mc 1420	Limestone Brec - lt gy ls frag, ranging from f xl to c xl, gran, fair intxl & p.p. por, dk brn ls mtx, m xl frag leached out on eroded surf, leaving ang cavities, size of frag. pea size to 10"		
Mc 1300	Limestone Brec - dk brn lam incl in lt crm gy ls mtx, m & c xl gran, v good intxl por, clr xls in crm col cmt.		
Mc 940	Dolomite Brec - lay brn frag, f & m xl w/c xl nests in pt, loosely cmt & gran w/fair intxl por.		
Mc 780	Limestone - dolo lt gy, brn & yel, f & m xl w/c xl nests & thn calc vns, poor intxl & p.p. por, in pt sucr rudimentary bdd.		
Mc 660	Limestone - lt brn gy, dolo, m & c xl gran cmt, fair intxl por, 2' bdd.	90' Covered interval w/10' Ls outcrop, lt brn gy, m xln, fair intxln por.	
Mc 570	Limestone Brec - incl of brn ls slabs, 1" x 1" & a few large slabs, thnly lam, v f xl, tt, in mtx of lt crm gy, c xl, gran ls w/fair intxl por.		
Mc 490	Breccia - as above, the frag are dol, m & c xl, well cmt, cavernous w/boxworks, w/fair intxl	230' Limestone Breccia - mas, cavernous, crusty, rd, rubbly, wthrs yel tan. Mtx is crm gy m xln to gran ls, w/f intxln por. Frags are prod bdd & lam incls 1" thk but ranging up to 6" subrd, v f xln, tt, dol in pt, wthrs into boxwork patterns.	
Mc 380	Limestone Brec - 0" frag, sub-rd bdd, f & m xl mtx, lt brn gy, c xl gran w/fair intxl por, bdd incl wthr into boxwork vugs.		
Mc 285	Limestone Brec - tan gy, crpxl, frag in c xl mtx w/tr p.p. por & vugs, wthrs rusty, rd, rubbly, cavernous, yel-tan.		
Mc 210	Limestone Brec - m gy, v f frag in coarse xln calc mtx, wthrs v rubbly, crm colored.		
Mc 185	Limestone - lt & m brn gy, tr cxl Ls.		
Mc 160	Limestone - dolo, lt gy, m & c xl, arg, semi-powdery texture on surf, few p.p. vugs mas, wthrs lt gy	40' Limestone - dolomitic, lt brn gy, m to c xln, arg, powdery texture on fresh surf, fair p.p. por, mas 10-15' bds, wthrs lt gy to tan.	
Mc 140	Limestone - as above, fair p.p. por, wthrs tan, bdd 10-15'		
Mc 120	Dolomite - buff gy, f xl, poor p.p. por, calc vns & nests, mas, w/ang birds eye vugs	90' Dolomite - buff, brn gy, m xln, gen thk bdd w/some thn bds, tr breccia w/Ls mtx in dkr gy ass dol bds at base, wthrs tan & yel gy, in pt earthy w/org birds-eye vugs (salt casts?)	
Mc 100	Dolomite - lt tan gy, f & m xl, gran in pt, earthy, wthrs yel gy, vuggy like a brec.		
Mc 80	Dolomite - as above, mas, wthrs tan & blk, w/few vugs, calc xln, 5' bdd.		
Mc 50	Dolomite - as above, dk gy-mar tinge, limy.		
Mc 30	Limestone Brec - lt bl gy, Ls mtx, tt, scat ang 1" dol. frag,wthrs crm col thn bd w/mas dolo bds.		
Mc 0	Dolomite - m brn gy, f & m xl, int bdd mas & platy, wthrs tan.		

1500

L.D.C.-17

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-17

CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 48' N. - 126° 02' W.
Geographic Location : 5 miles S.E.(135°AZ) of Foran L. observation mon.
Geologists : Halkow, Young, Perry
Date of measurement : July 5, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic
Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
LOWER DEVONIAN	LONE MT. FM. (Upper)	60					x	HYP2560 2540	Dolomite - med to dk gy,f xln,tt,mas,hd,some calc,wthrs med to dk gy. Dolomite - lt gy f to m gr tt, occ calc on fracs,wthrs yel gy,fair int xln por. & 43' w/some vugs.	70' Dolomite - med gy,f xln, mas,hd,gen tt,w/tr intxl por wthrs yel gy to dk gy.	
										20' Covered interval	
							x	2460 2440 2420 2390	Ls Brecc - lt to dk gy, f xln, much calc inveins & vugs, wthrs yel & crumbly, some solution cavities, mas,f int xln por. Dolomite - lmy, lt gy, crpxl, tt, sm scat vugs, tr yel stn. Dolomite - lt gy as above, calc vns & nests, tt, yel stn. Dolomite - lt brn, f xln, calc vns com, some vugs calc filled, mas, some int gran por.	50' Dolomite Breccia - lmy,lt gy,crpxl,f intxl por,calc vns & nests,mas,wthrs yel,crumbly w/sol cavities.	
							x	2350 2330	Dolomite - aa, m gy, gran & porous, lattice type struc on surf. Dolomite - aa, wthrs in shapeless mounds.	90' Dolomite - lt brn & blk, f xln,some vugs & poor intgran por,calc vns abnt,mas,wtars dk gy,shapeless masses,in pl w/lattice struc. (45% exposed)	
								2290 2270 2250	Dolomite - blk, f xln, w/irreg rusty ptgs, tt, fracs w/calc,mas, wthrs dk gy & brn gy.		See photograph Page 30 Banded Dolomite of Lone Mountain Formation at Sec. 17.
							x	2220	Limestone- blk, v f xln, gran, int gran por, arg in pt, orng calc vns,some yel stn.		
								2180 2140	Dolomite - m gy, f xln, w/calc in vns & occ vugs. some int xln por, mas, wthrs brn gy to dk brn.	30' Limestone & Dolomite - intbd dk gy to blk,f to m xln, arg in pt,calc vns,mas,brecc in pt w/good vuggy por,wthrs, m brn gy w/yel & orng stng.	
							v	2100 2090	Limestone Breccia - lt to dk gy, f to m xln, good vuggy por, some calc vns, some rusty stn. Limestone - reddish brn, f xln, tt, rusty & yel stns com, occ vugs, mas, wthrs brn gy.		
							v	2030 2000	Dolomite - m xln, dk gy, much calc on fracs, mas, wthrs m gy. Limestone - lt brn gy, m xln, much calc & vuggy por, mas, wthrs lt yel gy.	60' Limestone - m brn gy,blk, m xln,abnt calc,poor vuggy por mas,wthrs lt yel gy & m gy.	
								1960 1890	Limestone - dk gy to blk, m xln, much calc on fracs, occ vugs, yel brn stns on frac wthrs m to dk gy, mas.		
	BEAR ROCK FORMATION							1860	Limestone Breccia - dk gy, m xln, much calc vng. some rusty lams, frags yel brn ls, all por, wthrs red brn, mas.	40' Limestone Breccia - dk gy, m xln,calc vns,ary?-rusty lam: frags ang,yel-tan ls,wthrs rd brn,rubbly,mass.	
								1800 1770 1740 1715 1680 1650 1620	Limestone Breccia - aa, ang frags, wthrs rubbly Limestone Breccia - aa, tan-brn, arg (?) Limestone Breccia - aa, good por, wthrs red brn to brn gy. Limestone - purple gy, f xln, w/occ rusty sh (?) ptg, calc lined vugs,wthrs pinkish gy, mas. Limestone Breccia - f xln, lt brn gy, ang frags, occ vugs, mas, hd, wthrs rd-brn gy Limestone Breccia - aa, m gy.	5' Fault zone 30' Limestone Breccia - f xln, lt brn gy,frags ang,lt gy, earthy Ls: mas,occ good vuggy por,w/bdd purp gy ls,rusty sh ptgs:wthrs rd brn to brn gy.	
		500					p	1320 1250	Limestone Breccia - lt gy to wh, f xln, sm ang frags of lt gy earthy ls, some p.p. por, rusty stn, wthrs m to lt brn gy,mas.		
										260' Covered interval	
	LONE MT. FM. (Lower)	1000				B	x	380 335 310 280 260 250 220 190 160 130	Limestone - lt m gy, xln, some int xln por, brecc in pt, some scat vugs, thn bdd, wthrs rubbly. Limestone - brecciа, lt gy, f xln, poor f por, ang incls, wthrs brn gy,& mas occ vugs ptly filled w/calc. Limestone - lt yel to tan, v f xln, calc vnd, wthrs crumbly, dns, one poor brach, mas. Limestone - aa, earthy. Limestone - aa, m gy, sl arg, tt. Limestone Breccia - some sm vugs, lt tan gy, v f xln, incls of earthy lst (arg)?, mas, some frags ang, wthrs yel gy to m gy. Dolomite - gr to tan & bl, crpxl, tt . sl arg, hd, wthrs to splintery rubble, some sm vugs, tt	90' Limestone - lt tan gy, f xln,sl arg-earthy,some poor intxl & vuggy por, calc abnt, tr foss, 50% breec w/ang incls, wthrs yel gy rubbly. 60' Dolomite - lt tan gy,crpxl tt,sl arg, hd,t. & vugs & f xln calc,wthrs gy rubbly w/yel stn.	Extremely poorly preserved ostracod or brachiopod fragments
							v	110 1	Dolomite - lt gy as above. Dolomite - as above, tr c xln calc, tr yel stn.		

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-18

CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 51' N. - 126° 30' W.
Geographic Location : 11 miles due West of Foran L. observation mon.
Geologists : Halkow, Young, Perry
Date of measurement : July 6, 1961

L.D.C.-18

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
Coral
Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic
Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
LOWER DEVONIAN	LONE MT. (Upper)							P-IH 5	Limestone - med gy, crpxl, tt, platy, some calcite vns.		
								20	Dolomite - brn gy, v f xln, lisy, some vugs, massive		
								40	Limestone - brn to brn gy, v f xln, micro gran text, dns, hd calc incls, thn bdd.		
								85	Limestone - m to dk brn, f xln, tt, hd, wthrs lt gn, vnd w/calc.	160' Limestone - m brn gy, v f xln, tt, calc vns & incls poorly defined thn bdg in pt rubbly. (45% exposed)	
								170	Limestone - brn gy, v f xln, dns, sl calc, frac w/calc, wthrs brn gy w/poorly def. bd.		
		100					v	220	Limestone - dk brn gy, crpxl, some vugs w/calc, rubbly.		
		150						260	Limestone - dk brn, crpxl, dns, hd, intbd w/lt gy ls, highly frac & rubbly, wthrs dl gy & yel brn, bdd4"		
							v	280	Limestone Breccia - ang frag, mas, dk brn, calc vns ang sol cavities.		
								290			
							v	350	Limestone Breccia - dk brn gy, ang-sub ang frag, frac, mas, some lam in ls fragm.		
							v	386	Limestone - pink, crpxl, tt, scat vugs, yel stn.		
								420	Limestone - dk brn, v f xln, dns but some ss vugs w/calc, semblance bdg, ptgs com.		
		100						440			
								450	Limestone Breccia - gy brn, dns, crpxl, some cavities w/calcite, runsted lam, mas, arg		
								460	Limestone Breccia - aa, wthrs lt gy, mas, some vugs in pt, frags up to 1' diam.		
							v	480	lined w/calc.		
								500	Limestone Breccia - aa, ang vugs w/rusty stns.		
		200									
		300								930' Limestone Breccia- massive lt gy to yel gy wthrg outcrop, frac, w/calc vns sbnt, generally tt unit, p to fr intgran & scat vuggy por. Subaerial solution develops small ang cavities. Ang cavities and earthy to powdery ang incls are probably remnant from salt crystals. Ntx is dk brn gy ls, arg in pt fragments are ang, dk brn ls, lam in pt, mine gen 1-2" but ranges up to 1' in pt, earthy, crumbly. Rare thn bdd pink ls within Breccia outcrop is crpxl, tt, w/scat vugs, wthrs w/yel stn. (Section 30% exposed)	
								770	Limestone - dk gy to blk, crpxl, dns, calc on fracs, brecc, vugs ptly filled w/calc.		
								740	Limestone Breccia - aa, w/rusty red stns, leached mas, wthrs lt yel gy.		
		500					v	800	cavities, calc vng.		
								810			
		400									
								1020	Limestone Breccia - dk gy to blk, crpxl, frag 1½", scat vugs, mas, rusty stns, wthrs		
							v	1050	Limestone Breccia - aa, brn gy, ls frags. lt to yel gy.		
		500						1070	Limestone Breccia - aa, frags up to 1½" diam.		
		600									
							Ps	1300	Limestone Breccia - lt gy, micro gran, frags earthy & crumbly, olv gy to olv brn,		
								1310	runty stns, p.p. por, mas, wthrs lt gy to yel gy.		
		700						1500	Limestone Breccia - dk brn gy, crpxl, ang ls frags (4"-5") scat vugs, mas, leached		
							v	1530	Limestone Breccia - aa, calc lined vugs. cavities, wthrs yel gy.		
								1560			
								1590	Limestone Breccia - aa, tan colored earthy frags, rare vugs, mas, wthrs brn gy.		
								1620	Limestone - dk gy brn, dns, rare scat vugs, mas, runty lam, wthrs dk gy brn.		
								1650	Limestone Breccia - dk gy, v f crpxl, arg, frags dk gy ls, runty stns, mas, semb- lance of bdg, wthrs dk gy.		
								1680			
								1710	Limestone Breccia - aa above w/calc veins.		
		800						1740	Limestone Breccia - aa, ang frags of arg, ls up to 1" in diam.		
								1770	Limestone Breccia - aa, wthrs rubbly, wthrg.		
							v	1800	Limestone Breccia - leached out cavities & vugs com, runty stn, covered mas but w/semb of contorted bddg.		
								1850	Limestone - lt gy, f xln, arg, salt, vns calc, good p.p. por, mas, rubbly.	50' Limestone - lt gy, v f xln microgran, arg, soft, in pt brec, mass w/fine lam, poor expression of thk bdg, ang solution cavities, (salt casts?) calc vns & good p.p. por in pt.	
		1000	840				p	1875	Limestone Breccia - bn gy, micro gran, ang. frag up to 1½' diam.		
	LONE MT.FM. (Lower)							1900	Limestone - lt gy, dns, brn gy, calc vnd, mas but some bdg indicated, f lam in pt.		
								1922			
							V	1955	Limestone - rd brn, crpxl, prom rusty stns, some vugs w/calc, mas, leached ang cavities, wthrs rusty red brn.		
										60' Covered interval	
		100					f	2135	Dolomite - lt brn gy, crpxl, w/wh calc incls, hd, occ foss frag, bdd at 2"-3", not in place but close to it. One poorly preserved brach. Platy & splintery wthrg, wthrs dk brn gy.	40' Dolomite - lt brn gy, crpxl hd, occ foss frag thn bdd, wthrs dk brn gy, platy.	Fragmental brachiopods and bryozoans not identifiable.
		130						2175			
										See photo p. 24 of wthrd Lone Mountain Formation	

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-19

CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 54' N. - 126° 06' W.
Geographic Location : 4 miles N.E. (025°) of Foran L. observation mon.

Geologists : Roessingh, Perry, Young, Halkow
Date of measurement: July 7, 10, 1961

L.D.C.-19

FOSSIL SYMBOLS

- F Fossiliferous
- B Brachiopoda
- G Gastropoda
- Coral
- Stromatopora
- Foraminifera
- Crinoid
- Algae

POROSITY SYMBOLS

- x intergranular, intercrystalline, interfragmental
- v vuggular (greater than 1/16 mm.)
- f fractured
- p pinpoint
- • oil stained or petroliferous

LITHOLOGICAL SYMBOLS

- Limestone
- Dolomite
- Dolomitic Limestone
- Argillaceous Limestone
- Argillaceous Dolomite
- Silty Limestone
- Limestone Breccia
- Dolomite Breccia
- Rugose to Rubbly
- Coarse Crystallization
- Shale
- Calcareous Shale
- Anhydritic Shale
- Salt Casts
- Pyritic Micaceous
- Siliceous
- Siltstone
- Ironstone
- Sandstone
- Chert, light or dark

AGE	FORMATION	PROGRESS THICKNESS	LITHOLOGICAL LOG	COLOUR CHANGES	POROSITY	SAMPLE & CORE NUMBERS	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
SILURIAN	BEAR ROCK	81'			F P F	WR 6326 WR 6327 WR 6328 WR 6329 WR 6330 WR 6331	Limestone Breccia - red & sag ch ay. v f sl to...fore to lt gy & wh, v f sl to...ly sl to...ed, in ss matrix lt gy to yel gy. Limestone Breccia - as, gy ay mix. Limestone Breccia - as, lt gy mix & wht bro mix. Limestone Breccia - red & sag ch ay, v f sl to...fore, frag in lt gy to wh matrix as. Breccia - ch ay dol lt fore in ay, f sl to...ly, calc, ton, fine matrix ch ay.	BR? Limestone Breccia - red & sag ch ay, v f sl to...fore, frag in red ay dol lt matrix as above lt gy to yel gy.	
						WR 6332	Dolomite - v gy, sl bey, v f sltc, lt, thn bdd,mture yel gy.	F? Dolomite - v gy, v f slc, bdd, mture yel gy	
	LONE MOUNTAIN FORMATION (Lower)	100'				WR 6333 WR 6334 WR 6335 WR 6336 WR 6337 WR 6338 WR 6339 WR 6340 WR 6341 WR 6342 WR 6343 WR 6344 WR 6345 WR 6346 WR 6347 WR 6348 WR 6349 WR 6350 WR 6351 WR 6352 WR 6353 WR 6354 WR 6355 WR 6356 WR 6357 WR 6358 WR 6359 WR 6360 WR 6361 WR 6362 WR 6363 WR 6364 WR 6365 WR 6366 WR 6367 WR 6368 WR 6369 WR 6370 WR 6371 WR 6372 WR

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-20

CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 57' N. - 126° 13' W.
Geographic Location : 7 miles N.W.(345°AZ) of Foran L. observation mon.

Geologists : Roessingh, Perry
Date of measurement: July 10, 11, 12, 13, 1961

FOSSIL SYMBOLS

F Fossiliferous
B Brachiopoda
G Gastropoda
C Corat
m Stromatopora
Foraminifera
Crinoid
Algae

POROSITY SYMBOLS

x intergranular, intercrystalline, interfragmental
v vuggular (greater than 1/16 mm.)
f fractured
p pinpoint
• oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone
Dolomite
Dolomitic Limestone
Argillaceous Limestone
Argillaceous Dolomite
Silty Limestone
Limestone Breccia
Dolomite Breccia
Rugose to Rubbly
Coarse Crystallization
Shale
Calcareous Shale
Anhydritic Shale
Salt Casts
Pyritic Micaceous
Siliceous
Siltstone
Ironstone
Sandstone
Chert, light or dark

AGE	FORMATION, MEMBER, SECTION, FORMATION (Lower), (Repeated)	LITHOLOGICAL LOG	POROSITY & FOSSILS	FOOTAGE	SAMPLES & CORE TYPE	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION			100	88 1	Limestone - blk., f. xl., lt., bd. few calc vein & vugs, frac., tho bdd.where x-ay.		
					88 20	Limestone - blk as above, bdg 5'-6" thk & tho bdd. siliceous in thin interval		
					88 30		80'- Limestone - blk., v. f. xl., lt., bd., tho & tho bdd. frac., calc silts, where x-ay.	
					88 40	Limestone - as above, many fos frags.		
					88 50	Limestone - blk., v. f. xl., bd., lt., frac., calc vns & vugs, tho bdd. where it bd gy.		
					88 100	Limestone - as above.		
					88 110	Limestone - v. dk brn gy., f. xl. lt., bd., frac., calc vns & vugs, tho bdd 2-3'where it gy		
					88 120	Limestone - as above.		
					88 130	Limestone - vy. dk brn gy., v. f. xl., lt., frac.calc vns & vugs, bdd 6"-24", where lt gy. frac.	100'- Limestone - v. dk brn gy. v. f. xl., lt., bd., frac., calc vns & vugs, tho bdd. few calc vns & vugs, tho bdd. frac.	
					88 135	Limestone - as above.		
					88 140	Limestone - dk brn gy., v. f. xl., lt., calc vns & vugs, some bro stn. tho bdd. where lt gy. frac.		
					88 175	Limestone - as above, v. thk bdd.		
					88 190	Limestone - blk as above, thn bdd. fos frags.		Algae sp. Amphipora ? sp. subconcentric ? Wch.Sp. Upper Hume
				200	88 240	Limestone - blk, f. xl. in pl x xl., few p.p vugs, bd. calc vns and vugs, foc. tho bdg bdd. where part gy.		Algae section Kr.-Ast
					88 300	Limestone - dk gy., f. xl.also rare wh. c. xl., w/poor intsl por. fos frags.		Actinostromoid sp. Amphipora sp. Middle Devonian Stikhalo-Ki
				300				
					88 335	Limestone - blk, v. f. xl., in pl or xl, bro, wlc xl calc vns, frac., lt., bd, tho bdd. where part gy.	340'- Limestone - v. dk brn gy to blk., v. f. xl., lt., bd., tho & tho bdd. in pl x xl calc vn vugs & vns, tho bdd.where lt& bd.where part gy. Pinnacle zone 5 ft. per gp. Pinnacle zone thickness 40 ft average shown	Stachyodes communis (Rauff) Amphipora ramosa (Phillips) s.l. Algae section ..... Mar.-ex Hydnophyllum crassicostatum Dana Middle Devonian Stikhalo-Ki
				400	88 395	Limestone - as above.		
					88 410	Coral, Brachiopoda & Fetrabeta bed approx 2' thk between thn bdd Limestone Limestone - as above, v. thn bed 11'5,overlain by thner bdd fo.		
					88 430	Limestone - dk brn gy., f. xl., lt., calc vns & vugs, tho bdd 6"-2', in ti bro xl. where		
					88 465	Limestone - dk gy., f. xl., lt., bd., tho bdd 6"-2' calc vns, where x-ay.		
					88 480	Limestone - dk gy., f. xl., lt., calc vns & vugs, bdd 6"- to 24', where lt gy		
				500	88 495	Limestone, - dk gy as above, bds 1'- to 18'		
				600				
				700				
					88 700	Limestone - dk brn gy., f. xl., lt., bd., bds 6"-18", when calc vns, when pet gy		
				800				
						FAULTING PROBABLE		
					88 820	Limestone - dk gy & lt gy, f. xl., frag., ore xins to 1/8", bd., lt., when rubbly, lt gy & pet gy		
					88 835			
				900				
					88 870	Limestone - as above	290'- Limestone Breccia - v. gy f. xl. frag ore., to wh fos gy, wh/blk where p.p. vugs, wh lt., bd.,tho bdd.where pre.gap to 2'- to stained in pl bd. to bdd lt., bro. where part gy. Pinnacle zone 70 % Cored	
				1000				
					88 1030	Limestone - brec as before, tr p.p por.		
				1100				
					88 1170	Limestone - m. gy., f. xl., grain. & fos foc gy., v. f. xl., lt., frac., calc vns, wav., when lt to pet gy		
						Limestone - as above		
					88 1210	Limestone - brn-gy & m.gy, earthy, breccr, lore gy frags bdd to to m.gy. f. xl., wx., some vugs, wav., when rubbly		
				1200				
					1240	Limestone - brec. as abv. fre vcut vugs		
						FAULTING PROBABLE		
					1260	Limestone - brec. as abv. frag. to 11 gy gy, lt., v. f. xl., when vugular, bdd.		
					1310	Dolomite - lt bro gy., v. xl., laminae, vuggy, v.pore por. thn bdd. when dk gy		
					1330	Limestone - lt bro gy, fine-f fol to v. xl., in pl gram, w-x gy por, bd. tho bdd. where	170'- Dolomite - as bdd wlts	
					1360	Dolomite - lt gy, wxl vugs, some fitted w/calc. calc vns, bdd 6"-12", where part gy	as bdd wlts, some fitted w/calc. calc vns, bdd 6"-12", where part gy.	
					1390	Dolomite - lt gy, f xl, wxl vugs, some fitted w/calc, calc vns, bdd 6"-12", where pet gy		
						Limestone - a bro gy, f xl, lt., calc vns, tho bdd.		
					1420	Dolomite - bro gy, f xl, lt, bd, few calc vns, bds 8"-18" fos casts,where pale pet.		
					1450	Dolomite - lt gy, f xl, lt, bd, few calc vns, bdd 2'-10" where pale pet.		
					1480	Dolomite - as bdd, at bdy, f xl, grey, fair intsl. por, mdt. ver.thly, where ols bro,		
						Dolomite - as bdy gy, f xl, grey, v.dl, vugs calc vns & fossils, thn bdd. where pet gy		
						stain, where ols gy & pet gy mot.		
					1621	Limestone - gy & bro gy, f xl, bro, wl p.p por. wav. where ols gy	100'- Limestone - as & bro gy, v. f. xl., lt., wav. calc vns, bdd 6"-2', where pet gy, tr wh calc vugs, tho bdd. where lt & bd.	
					1660	Limestone - as above, fre vcut vugs		
					1690	Limestone - lt gy, v.f xl, lt, calc vns, thn bdd. where lt gy bl.		
					1721	Limestone - bay, dk brn, f xl gran, lt., calc vns, thn bdd.	70'- Dolomite - dk gy, f.xl. bd., lt., few calc vns, pinnty pore, wav. where ols gy	Amphipora sp. Stromatopora sp. Favosites sp. Amphipora sp. Favosites
					1750	Dolomite - dk gy, f xl, lt, bd., some vugs, thn bdd. calc vns, pinnty pore, wav.		
					1770	Dolomite - dk gy, f xl, sl silty, wl intsl por, thn bdd, where dk gy.		
					1800	Dolomite - dk brn gy, f xl, bd, lt., few calc lined vugs, calc vns, thn bdd. where	50'- Dolomite - as bdd wlts	
					1830	Dolomite - buff gy & m.gy, few, calc. wl. poy, v.f xl., lt., bd., where thn bdd pet.where	to pl xl calc vn vugs, tho bdd. where lt & bd.	
					1849	Limestone - lt pet gy, dol., f xl.wl sdy,fair intsl por, f. bd.	vugs, tho bdd.where lt & bd.	
					1860	Limestone - where v.gy & pet gy, v.f xl., lt., bd., tho bdd. where lt gy		
					1890	Limestone - lt gy, v.f xl., lt., bd., where fitting & wlts, fi bro wlts, tho bdd. where lt gy		
					1940	Dolomite - as gy f xl, bd, calc vns, where lt gy & ols gy.mod. ok gy mot.		
					1990	Limestone - as above.		
					2000	Dolomite - lt gy, where ols vis no fror, v. f xl., lt., bd., in-.25" bds, where w & ol	120'- Dolomite - dk bl gy, v.f xl., lt., bd., calc vns, thn bdd. where lt & w gy.	
					2040	Dolomite - v gy, v. f xl., lt., calc vns, thn bdd. where buff gy.		
					2080	Dolomite - v. gy, v. f xl., lt., calc vns, where lt to m gy.		
							430' Covered interval	
						Possible Fault Zone, with Lower Lone Mountain Formation repeated above and below.		
						Probably Top of LONE MOUNTAIN FORMATION as of Sec. 19		
					2090	Dolomite - lt bd gy, f xl, lt., bd, tho bdd., where lt gy.	90'-Dolomite - lt bd gy, v.f xl., lt., bd., tho bdd. where lt gy to ols wlts, where ols gy to pet gy.	
					2120	Dolomite - lt gy, v. f xl., lt., bd, w/scatt. large xl.w/frosted surf,where pet or		
					2150	Dolomite - lt bro gy, v. f xl., lt., bd, pet wlx, calc vns, where lt bd gy, more		
					2180	Dolomite - lt bd gy, v. f xl., lt., bd, calc vns, where lt bd gy, more		
					2210	Dolomite - lt bd gy, f xl, few w/xl vugs, tr calc vns, where lt bd gy	20'- Covered interval	
					2230	Dolomite - as above		
					2250	Dolomite - lt bd gy, f & v xl, gran, fract, w/calc vns, pow p.p por,bd,where lt gy	80'- Dolomite - lt gry gy & pet gy, v.f xl., gran, calc vns, where lt gy & pet gy	
					2280	Dolomite - lt gy, f xl, few wxl vugs, tr calc vns, where lt bd gy		
					2310	Dolomite - tan to cart gy, m.xl, grain, vuggy, intsl. por, soft, tho bdd.where lt gy	30'- Dolomite - as bdd wlts, some vugs, tho bdd. where lt gy.	
					2340	Dolomite - lt pet gy, f xl, pinpt p.p por, vt earthy, cal vns, thn bdd. where m gy		
					2370	Dolomite - as above, fre frac. expos bd, lt., calc vns, where pet gy	30'- Covered interval	
					2400	Dolomite - as above		
					2420	Limestone - v lt gy, f & m xln, in pl v xln, few wx vugs, vaguely bdd,where rubbly		
					2450	Limestone - as above, lt tan gy, brec.	60'- Limestone Breccia- lt bl gy, m xln, v. brn, calc to dol.,v.f xl., lt., bd., tho bdd. in pl xl calc vn vugs, tho bdd.where lt & bd. where rubbly m gy & pet gy.	
					2480	Limestone - Limestone, w/ brec. larger fragments		
					2510	Limestone - lt gy, f xl, bd, brec, calc vns, frag, ch gy, vuggy		
					2540	Limestone - vdg, brec, where lt gy		
					2570	Limestone - as above, v. thn bdd. brec., wh vugs, vaguely bdd 20±in	30'- Covered interval	
					2600	Limestone - as above, dk gy, brec, where lt gy to pet gy		
					2630	Limestone - lt gy, v. xl, grys wh vugs, thn bdd, where m gy & pet gy		
					2660	Dolomite - v lt gy, wlwt vcu, f xl., poor p.p por, bds up to 18", where pet gy	20'- Dolomite - v lt gy, f xl, sme p.p por, pet stn, thn bdd. 18", where v gy- pet gy.	
					2690	Dolomite - as above, dk gy, w xl., vuggy por, calc vns, thn bdd		
					2720	Limestone - lt gy, f xl, sm vugs, irreg bdd. where v gy	70'- Limestone - lt gy, f xls, sm vugs, irreg bdd. where v gy	
					2780	Dolomite - lt gy, f xl, few vugs, calc vns, thn bdd. where lt bl gy		
					2810	Limestone - dol, a gy, a xl.grain, sm vugs, bd,calc vns, thn bdd, where gy	20'- Dolomite - lt gy, f xls to narrow, sometimi xls inst por, thn bdd.	
					2840	Limestone - dol, a gy, a xl.grain, sm vugs, bd,calc vns, thn bdd, where gy		
					2870	Dolomite - gy & tan, vaguely fine, f xln., narrow, very good por, wax, where dk gy-		
					2900	Dolomite - lt gy,a nitrogen, well vcu, fair p.p. por	30'- Dolomite - lt gy, f xls, ext calc vein& vcu, tan & gy, v.f xl., lt., bd., where lt gy to pet gy, tho bdd. where lt gy mot.	
					2930	Dolomite - lt gy, f xln, mot vugs, calc vns, where lt gy & blk, tho bdd.		
					2960	Dolomite - lt gy, f xln,mot, p.p por, tho bdd, where m gy		
					3000	Dolomite - lt gy, m xln, v f xln, lt, bd, thn bdd, where dk gy & lt gy, mot		
							170' Covered	
					7900	Dolomite - m gy, v xl, fr p.p por, bd,tho bdd, where dk gy		
					7940	Dolomite - dk gy, f xl, few wx vugs w/calc lining, thn bdd, where dk gy to blk		
					8000	Dolomite - lt tan gy, v f xln, lt, platy, where pet gy		
					8073	Dolomite - v dk gy, m xl, gran, lt, bd, calc vns, thn bdd, where lt gy	230'- Dolomite - lt bd gy, lt bd gy, v.f xl., lt., bd., few vugs, occ lt., thn bdd to platy, poorly pres fos. Bottom in 50% exposed.	
					8105	Dolomite - as above, thn bdd		
					8130	Dolomite - blk, v f xln, lt, bd, w/wh inclu, pore fos frags, thn irreg bdd.		Orthoceras cephalopod alpha-ta Favosites sp. Favosites sp. most likely Devonian or Silurian
					8170	Dolomite - lt bd gy, f xln, lt, bd, calc vns,thn bdd, where tan gy, orthoceras coral		
					8240	Dolomite - v gy, v xln, tr calcite por, bd, platy, where m gy		
					8280	Dolomite - lt bd wh inclu of p. pore fos, f xln, thn irreg bdd		
					8320	Dolomite - blk f xln, some inclu& por, calc vns thn bdd, vaguely lam.		
					8360			
					8400	Dolomite - lt gy, f xln, platy thn bdd, where tan gy		

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-21a

CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 24' 30" N. - 125° 31' W.
Geographic Location : 12 miles S.E.(124°) of mouth of Martin Cr.

Geologists : F. Halkow, H.R. Young
Date of measurement : July 11, 1961

L.D.C.-21a

FOSSIL SYMBOLS

F	Fossiliferous	ш	Stromatopora
B	Brachiopoda	♈	Foraminifera
G	Gastropoda	⊙	Crinoid
ϟ	Coral	⌒	Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
Dolomite	Limestone Breccia	Calcareous Shale	Siltstone
Dolomitic Limestone	Dolomite Breccia	Anhydritic Shale	Ironstone
Argillaceous Limestone	Rugose to Rubbly	Salt Casts	Sandstone
Argillaceous Dolomite	Coarse Crystallization	Pyritic Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION	0	0					Hy 1760	Limestone - dk brn to blk, crpxl, tt, hd, calcite vns & incl wthrs lt. gy	120' Limestone - brn-blk,crpxl tt,foss,thin irregly bdd,wthrs into lt. yel-gy nodulose rubble - poor exposures - covered intervals common	
						F		Hy 1715	Limestone - some very crs calcite incl		
								Hy 1690	Limestone - some fossil fragments		
								Hy 1635	Limestone - dk brn to blk, crpxl to f xl,tt,-such calc filled fract,Brachs & Crinoids		
						BF		Hy 1620	Limestone - aa,prom wh calc vns,some th rust lam onfract,mot med bn-gy/ wthrs lt gy		
								Hy 1595	Limestone - lt brn-gy,v f xl,tt,mnr calc vns cor fos,mas to irreg th bdd,wthrs lt gy		
			100					Hy 1570	Limestone - dk brn-blk,crpxl,tt,wh calc incl & fract wthrd orange, th irreg bbd, wthrs lt gy		
						B		Hy 1545	Limestone - brn-blk crpxl,tt, wh calc. incl.,in pt orange spec.irreg bdd,wthrs lt yel gy		
										130' Covered	
			200								
						B		Hy 1240	Limestone - brn-blk,crpxl,tt, Brachiopod fossils, wthrs yel-gy into nod. rubble	30' Limestone - brn-blk, tt. wthrs yel-gy into nodulose rubble	Gastropod fragment ? Dechenella sp.
								Hy 1228	Limestone - wh calc. vns & inclus prom		
						B		Hy 1215			Middle Devonian
								Hy 1206	Limestone - brn-blk crpxl tt clr to wh calc incl & vns much Brach bdd 6"wthrs yelgy		
			300							110' Covered	
						F		Hy 1020	Limestone - brn-blk-crpixl, tt, crs calc incl,thin bdd,arg ptgs,wthrs yelgy nodulose	30' Limestone-brn-blk,crpxl, tt,foss,&wthrg yelgy w/a nod semblance of rubble	
			400			BF		Hy 1006	Limestone - brn-blk,calc vns, thin-thick irreg bdd,wthrs yelgy & yelbrn nodulose		
								Hy 990	Limestone - dk brn-blk, crpxl, tt, fos,thick irreg bedded,wthrs yel-gy nodulose	150' Covered	
		500	500								
								Hy 700	Limestone - brn-blk,crpxl,tt,arg,thn col lam,much calc filled fract,thn bdd,wthrs	220' Limestone-dk brn gy,crpxl tt, rarely foss, well defined beds, wthrg lt to m gy	
								Hy 600	Limestone - dk brn-gy crpxl, tt, clr calc incl & wh calc vns,bdd 6-12"wthrs (brn-gy		
						P		Hy 550	Limestone - dk brn-gy crpxl, calc vns & incl rare vugs, tr dism.pyr,well (lt gy (bdd,wthrs lt gy		
			600					Hy 510	Limestone - aa, wthrs, med brn gy		
								Hy 490	Limestone - aa, thicker bdd, clr calc vns & incl, some prom infilled vert frac wthrs		
								Hy 470	Limestone - dk gy w/brn tinge, crpxl, prom calc filled vert frac, well bdd, (m gy		
						F		Hy 450	Limestone - aa, thn calc vns, tr pyr, Oat & Tent,well bdd thn bds,wthrs as (wthrs m gy		
						B		Hy 430	Limestone - dk brn gy,crpxl,tt,poor Brach fos, alt thk&thn bdd, wthrs dk gy		
								Hy 405	Limestone - aa,non-fos, calc vns & incl, mnr rust brn stns on f frac,bdd,wthrs m gy		
								Hy 385	Limestone - m gy,crpxl,tt,yel-rust stns & lam on much f frac,calc vns,bdd, " olive gy		
						P		Hy 350	Limestone - dk brn gy,crpxl,tt,thn calc vns,yel-rust stn aa ab,well bdd,wthrs m gy		
							P	Hy 330	Limestone - aa, mnr diss pyr, tr pp vugs, thk bdd wthrs m gy sl yel-gy		
								Hy 300	Limestone - dk brn gy, crpxl, tt, mnr calc incl, med bdd, wthrs med gy		
			700					Hy 275	Limestone - aa, v f x, thn bdd		
								Hy 255	Limestone - dk brn gy, crpxl, tt, calc vns, some rust brn stns,m bdd & wthrs dk gy		
								Hy 235	Limestone - dk gy to blk,crpxl tt, calc vns, bdd, wthrs v dk gy		
								Hy 200	Limestone - aa, some beds show rippling		
								Hy 185	Limestone - dk brn gy, crpxl, tt, prom cx, wh calc vns, thk bdd, wthrs dk gy		
								Hy 165	Limestone - aa.		
								Hy 150	Limestone - dk brn gy, crpxl, tt, abnt wh calc & dol vns,mnr thn mar sprg,irreg lam, well bdd, wthrs med brn gy		
								Hy 135	Limestone - aa.		
								Hy 120	Limestone - aa.		
			800			P V V V		Hy 100	Calcite - yel-wh,cx,mnr p.p. vugs,lensing w/cx blk & wh dol,wthrs bright orange	45' Dolomite - wh & blk banded c to v c xtl, no seab. of bdd,in sharp contact w/dol below but diagonally crosses, bdd lam above.Appears secondary cxl	See Photo Page 32
						P		Hy 85	Dolomite - wh,v cx,lensed & banded w/blk cx dol,mnr cx calc,mas,wthrs mot wh & dk gy & yel		Favosites limitarus Rominger Middle Devonian (Eifelian)
								Hy 44	Dolomite - aa.		
								Hy 26	Dolomite - aa, w/prom lens pkish gy m x dol having inter x por.		
		835	835			F		Hy 8	Dolomite - dk gy,sl brn tinge, f x, tt, wh dol vns, coral fos, mas, wthrs dk gy	135' + Dolomite - f xtl,mass, w/thin interbeds, much wh.dol & calc vns. Some prom. coral foss near top identified as similar in age to Hume.Interval however arbitrarily retained in Lone Mtn. Fm.	
			15						Dolomite - dk gy,sl brn tinge, f x,tt, gran, wh dol vns, th bdd, wthrs dk gy		
LOWER DEV.	LONE MT. (Upper)	1000									

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-21b

CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-3-8

Co-Ordinates : 63° 24' 30" N. - 125° 30' 50" W.
Geographic Location : 12 miles S.E.(124°) of mouth of Martin Cr.

Geologists : F. Halkow, H.R. Young
Date of measurement : July 12, 1961

FOSSIL SYMBOLS

F	Fossiliferous	ш	Stromatopora
B	Brachiopoda	♈	Foraminifera
G	Gastropoda	⊙	Crinoid
♄	Coral	⌒	Algae

POROSITY SYMBOLS

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v	vuggular (greater than 1/16 mm)
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p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

Limestone	Silty Limestone	Shale	Siliceous
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Argillaceous Dolomite	Coarse Crystallization	Pyritic / Micaceous	Chert, light or dark

AGE	FORMATION	SECTION THICKNESS	FORMATION THICKNESS	LITHOLOGICAL LOG	COLOUR	FOSSILS	POROSITY (POOR / FAIR / GOOD / VG)	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION	LITHOLOGICAL SUMMARY	PALEONTOLOGICAL RECORD
MIDDLE DEVONIAN	HUME FORMATION	100						Hy 915	Limestone-brn blk, v f xln, in pt crpxl, tt, thn irreg bdd, wthrs lt gy, nodulose	290' Limestone - dk brn to brn blk,crpxl,tt,varying amts wh calc vns, incl,& frac filling, poorly preserved fossils brn to rusty argillaceous laminae, irreg, thn to thk bdd & wthrd lt yel gy to mot yel-brn into semblance of nodular rubble	
								Hy 880	Limestone-brn blk,crpxl,tt,wh calc vns,manr yel &rd-brn stn on frac,tr arg lam,wthrs (aa		
								Hy 860	Limestone-aa, wthrs lt gy w/yel-brn mottling		
								Hy 840	Limestone-dk brn, crpxl,tt,wh calc vns,wthrs m gy, nodulose rubble		
								Hy 815	Limestone-aa.		
								Hy 800	Limestone-dk brn, v f xl,tt, c xln wh calc incl & vns, wthrs lt yel gy		
						F		Hy 770	Limestone-dk brn, crpxl,manr yel to rd-brn stn, mas,wthrs lt yel gy nodulose		
								Hy 760	Limestone-brn blk, crpxl,tt,bd,thn wh calc vns, manr fos frag,wthrs lt gy mottled		
								Hy 750	Limestone-dk brn, v f xln, abnt wh calc vns,in pt brec thk bdd,manr rd-brn arg pigs, wthrs lt gy		
								Hy 720	Limestone-brnblk,crpxl,tt,wh calc vns,mas,wthrs mot yel-brn to yel-gy		
								Hy 710	Limestone-dk brn,crpxl,tt,much wh calc vns,manr brn arg lam,wthrs aa.		
								Hy 700	Limestone - aa.		
								Hy 690	Limestone-aa, mas, wthrs lt gy & yel gy		
								Hy 680	Limestone-aa.		
								Hy 670	Limestone-aa. yel-brn & pink to red arg lam & pigs comm, vert jointing common		
								Hy 660	Limestone-aa.		
								Hy 650	Limestone-aa. bedding planes & frac infilled w/wh calc,Brach & Coral fos, orange & mar arg lam		
								Hy 640	Limestone-aa.		
								Hy 610	Limestone-brn blk,crpxl,tt,hd,abnt wh calc vns,brn arg lam,irreg bdd,wthrs mot tan& yel-gy		
								Hy 600	Limestone-aa,prom dep rd thn arg.lam on irreg surf,poorly pres Corals		
								Hy 590	Limestone-brn blk, v f xln,tt,calc vns & orange-yel lam,mas,wthrs brn-gy, mot rd-bn & red		
										70' Covered	
								Hy 475	Limestone- brn blk, v f xln, tt, fos frag, calc incl, tr brn arg lam, wthrs mot brn		
								Hy 465	Limestone-brn blk, crpxl,tt, calc incl,num jtm calc filled, wthrs med yel gy (gy	60' Limestone-as above,num. calc.filled jts & fracs	
								Hy 455	Limestone-aa, rust & orange thn lam (calc wthring),wthrs mot yel-gy		
								Hy 445	Limestone-aa, brn gy, arg lam		
								Hy 435	Limestone-aa, calc lined frac		
								Hy 425	Limestone-aa, wthrs lt yel-gy		
										40' Covered	
						F		Hy 370	Limestone-brn blk,crpxl,tt, wh calc incl & infil frac,wthrs yel-brn & brn-gy nodul.	20' Limestone-as above, prom. fossil bed	?Billingsastraea sp. Atrypa arctica Crickmay ? Martiniopsis sp. ?Dechenella sp.
								Hy 360	Limestone-blk, crpxl, irreg arg brn lam, calc filled frac,Brach&Pelecypods,thn irreg. bdd		
										20' Covered	
		500	500			F		Hy 326	Limestone-brn blk, crpxl,wh calc vns & incl,Ost & other fos, manr, arg lam,wthrs mot brn-gy	20' Limestone - as above	
								Hy 305	Limestone-aa.		
										110' Covered	Fossils poorly preserved but indicate a Hume correlation. The Atrypa arctica? is indicative of upper Hume Middle Devonian (Rifle.)
								Hy 172	Limestone-dk brn gy, v f xln, tt, hd,irreg arg lam,Brach&Ost,thn slabby bd, wthrs gy brn	4' Limestone - as above, slabby beddod	
										26' Covered	
								Hy 140	Limestone-dk brn gy, crpxl, tt, calc vns & incl, wthrs med yel-gy into nodulose rubble	40' Limestone - as above	
								Hy 130	Limestone-aa.		
								Hy 120	Limestone-m brn gy, v f xln, thn wh calc vns, tr fos frag, wthrs aa.		
								Hy 110	Limestone-blk, v f xln, wh calc vns com, th irreg bdd,wthrs yel-gy nodulose rubble		
		700	700					Hy 100	Limestone-aa, in pt thk bdd, some brn irreg arg lam.		
										50'Covered	
						F		Hy 30	Limestone-brn blk, crpxl,tt,frac filled w/calc, fos(?),mas,irreg bdd,wthrs yel-gy (into nodulose	30' Limestone-as above, generally massive w/some thn interbeds & wthring into yel. to brn gy rubble w/nodulose semblance	
								Hy 10	Limestone-aa, thk crs calc vns, some rust thn arg lam (rubble		
		790						Hy 0	Limestone-aa, thk wh calc vns, arg lam, & wthrs yel-gy to brn-gy nodulose rubble		

L.D.C.-22

WRIGLEY AREA

STRATIGRAPHIC SECTION L.D.C.-22
CANYON RANGES

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.

28-1-5-8

Co-Ordinates : 63° 13' 20" N. to 63° 15' 45" N. and 125° 24' 15" W. to 125° 19' 30" W.
Geographic Location: 23.6 miles S.E.(145°) of mouth of Martin Creek
Geologists :Halkow, Young,
Date of measurement: July 17, 19, 20, 23, 26, 1961

FOSSIL SYMBOLS

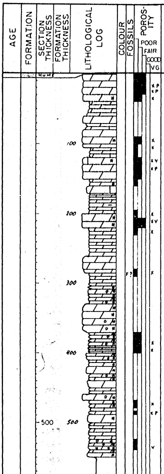
F	Fossiliferous
B	Brachiopoda
G	Gastropoda
ϑ	Coral
ш	Stromatopora
♈	Foraminifera
⊙	Crinoid
⌓	Algae

POROSITY SYMBOLS

x	intergranular, intercrystalline, interfragmental
v	vuggular (greater than 1/16 mm.)
f	fractured
p	pinpoint
•	oil stained or petroliferous

LITHOLOGICAL SYMBOLS

▦	Limestone	▦	Silty Limestone	▤	Shale	∧ ∧	Siliceous
▨	Dolomite	▦	Limestone Breccia	▤	Calcareous Shale	⁖	Siltstone
▨	Dolomitic Limestone	▨	Dolomite Breccia	// //	Anhydritic Shale	▭	Ironstone
▦	Argillaceous Limestone	▦	Rugose to Rubbly	⊡	Salt Casts	⁖	Sandstone
▨	Argillaceous Dolomite	*	Coarse Crystallization	P M	Pyritic Micaceous	▵	Chert, light or dark



POROS-ITY	SAMPLE NUMBER	DETAIL LITHOLOGICAL DESCRIPTION
	HY 0	Overlain by well bdd lt gy wthrg Hume limestone.
x p	35	Dolomite - v lt gy, m xln, sug tex, indst thk bdd, wthrs v lt gy.
x p	76	Dolomite - m brn gy, m xln, gran, mas or w/indst bdd, wthrs lt gy.
x	95	Dolomite - wh, c xln, lam w/f xln dol,gran,mnr calc xls, indst bdd,mnr orng stn, wthrs v lt gy
	110	Dolomite - dk brn gy, f xln, gran,tt, faint color lam,semb thn bdg, wthrs lt gy,underlain by wh dol.
	138	
	155	Dolomite - dk brn gy,band w/lt gy,v f xln,tt,few calc xl incl,wthrs dk brn gy &lt gy
	175	Dolomite - dk brn gy,v f xln,microgran,tt,in pt lmy,wthrs m brn gy.
	195	Dolomite - dk brn,v f xln,microgran,thn wh calc vns,wthrs dk brn gy.
x	215	Dolomite - wh,c xln,lam w/lt gy m xln dol,c xln wh calc vns & lam,mas, wthrs lt gy.
x	235	Dolomite - brn blk,f xln,gran,sug tex,in pt lmy,thn calc vns,wthrs dk brn gy,fria & soft fmg.
x v	275	Dolomite - v lt gy,m xln,gran,mot w/m gy f xln dol,sl lmy,calc lined vugs, mas,wthrs mot gy.
x p	295	Dolomite - aa, but lam not mot.wthrs in pt yel-brn.
	320	Dolomite - lt gy mot & irreg lam w/dk gy dol,m xln,gran,mnr c xln calc vns,thn irreg bdd,wthrs lt gy.
	340	Dolomite - dk gy, v f xln, tt, sllmy, wthrs dk brn gy.
	360	Dolomite - dk brn gy,v f xln,microgran,tt,thn wh calc vns,in pt v thn platy bdd.
	380	Dolomite - m gy v f xln,microgran mot w/lt gy,m xln dol,mnr thn arg lam,wthrs mot gy
x	400	Dolomite - m gy,v f xln,lmy,mot w/lt gy f xln lms,thn bdd,wthrs aa.
x v	418	Dolomite - wh,c xln,gran,lam w/m gy f xln dol,mnr c xln calc lam,wthrs v lt gy.
x	440	Dolomite - dk gy,f xln,gran, mnr wh calc vns & incl,wthrs lt gy w/color lam.
	460	Dolomite - aa, sl brn tinge, tt.
	485	Dolomite - aa, blk, v f xln.
	505	Dolomite - dk brn gy, v f xln, tt, prom irreg wh calc vns, mas, wthrs dk gy.
x	530	Dolomite - dk brn gy, c xln,much v lt gy c xln dol as irreg lam & incl(fos?)tr mar stn.
	550	Dolomite - dk brn gy,f xln,gran,tt,wthrs w/lt & dk gy col lam.
	570	Dolomite - m brn gy,f xln,gran,tt, wh calc vns & incl,indst thn bdg,wthrs aa.
	590	Dolomite - dk brn gy,microgran,much wh calc vns in pt brec,wthrs dk gy mot v lt gy.
	610	Dolomite - aa, thk bdd.
	630	Dolomite - brn gy, f xln, microgran,tt, wthrs mot gy.
	653	Dolomite - dk brn gy,v f xln,in pt brec w/much c xln wh dol vns & incl,wthrs dk gy.
x	670	Dolomite - v dk brn gy,f xln,gran,fri,calc vns & brec,wh dol incl & lam,wthrs dk gy
x	690	Dolomite - dk brn gy,f xln,gran,calc vns,wthrs lt & dk gy banded into plty bds.
	730	Dolomite - v lt gy,v f xln,tt,c wh dol vns & incl,wthrs lt gy.
		Dolomite - banded lt & dk gy dol w/much wh dol & calc vns.
	846	Dolomite - v dk brn gy, f xln,tt, much wh c xln dol & calc vns in pt brec,wthrs dk gy.
	880	Dolomite - dk gy, crpxl,tt, wh dol & calc vns less com,wthrs dk gy.
	940	Dolomite - dk gy, f xln,tt,crs wh dol & thn calc vns in pt brec,wthrs dk gy.
x	1007	Dolomite - blk,f xln,gran,much wh calc vns,wthrs dk gy,in pt lt & dk gy col lam.
	1100	
x p	1500	Dolomite - dk brn gy, f xln,gran,in pt fri & por,wh dol vns,indst bdg,wthrs dk gy.
	1600	Dolomite - dk grn gy,v f xln,tt,thn wh calc & dol vns,indst bdg,wthrs dk gy.
	1700	Dolomite - aa, wthrs m gy.
	1800	
v		Dolomite Breccia - ang dk brn v f xln dol frag in wh m xln dol mtx,few vugs,wthrs lt gy.
	1900	Dolomite - dk brn gy,v f xln,tt, prom wh dol & thn calc vns,wthrs dk gy.

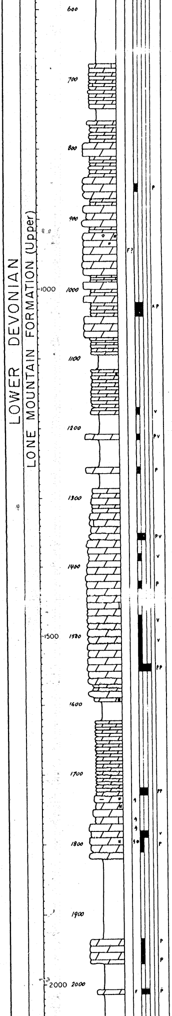
LITHOLOGICAL SUMMARY

220' Dolomite - dk brn gy, mic-gran, indst bdd, prom. wh c xtl dolo & calc vns,exhibits fair intxl por,intbdd & intlensed w/sec repl por c xtl wh dol.

PALEONTOLOGICAL RECORD

LOWER DEVONIAN

LONE MOUNTAIN FORMATION (Upper)



2230 Dolomite - m gy,f xln,in pt gran,sl lmy,tr p p.vugs,wthrs lt & dk gy banded.

2280 Dolomite - dk brn gy,f xln,gran,tt,wh dol & calc vns,few vugs along bdg,wthrs dk gy
2300 Dolomite - lt brn gy,crpxl,sl lmy,tt,few lrg wh calc & dol incl,wthrs lt gy.
2330 Dolomite - lt brn gy, v f xln,tt, wthrs brn gy.
2360 Dolomite - dk brn gy,f xln,tt,thn wh calc vns,wthrs dk gy.
2390 Dolomite - aa, wthrs color laminated.

2450 Dolomite - lt brn gy,v f xln,microgran,thn wh calc vns,wthrs lt gy.
2500 Dolomite - dk brn gy,v f xln,tt,wthrs dk gy w/rough uneven surface.
2525

2580 Dolomite - lt brn gy,crpxl,tt, mnr wh dol incl,wthrs lt gy.
2600 Dolomite - dk brn gy,f xln,tt, wthrs dk gy, color laminated.
2630 Dolomite - lt brn gy, v f xln, calc vns, wthrs aa.
2655 Dolomite - lt brn gy,crpxl,thn wh calc vns,indst bdd,wthrs lt gy.

2690 Dolomite - dk gy,f xln,gran,rare p.p. vugs,thk bdd,wthrs dk gy.

Dolomite - banded lt & dk gy.

2740 Dolomite - dk brn gy,v f xln,thn wh dol & calc vns,indst bdd,wthrs dk gy.

2770 Dolomite - aa, some local wh dol & calc brec along bdg planes,wthrs dk gy.

2800 Dolomite - aa, f xln, in pt mot (fos frag?)

Dolomite - v lt gy.

1920' Dolomite - dk brn-gy, wthrg dk gy & alt. banded w/lt gy dol,crpxl to f crystalline, gen gran & w/wh dolo & calc vns. Vns are pred. in upper portion & locally developed into brec. Fossils are poorly pres & rare.Por is restricted to streaks usually found in gran texture.

2840 Dolomite - dk gy,f xln,sl lmy,mnr wh dol vns & incl,well bdd,wthrs dk gy.
2855 Dolomite - m gy brn,f xln,tt, thn wh dol vns,wthrs m gy.

2875 Dolomite - dk brn gy,v f xln,prom thn wh dol & calc vns,wthrs dk gy.
2882 Dolomite - lt gy,f xln,gran,sug tex,wh c xln dol incl,wthrs lam lt gy.

2910 Dolomite - dk gy,v f xln,tt,thn wh dol vns,thk bdd,wthrs lam dk gy.

2935 Dolomite - dk brn gy,v f xln,tt,wh calc on bdg planes,well bdd,wthrs dk gy.
2950 Dolomite - m gy,v f xln,microgran,tt,thn calc vns,irreg bdd,wthrs aa.

2995 Dolomite - dk gy,v f xln,prom wh dol incl & thn calc bdg layers,well bdd,wthrs lam gy.
3005 Dolomite - lt gy,v f xln,tt,mnr wh dol incl,well bdd,wthrs lt brn gy.

3025 Dolomite - aa, wthrs lt gy.

3050 Dolomite - dk brn gy,v f xln, few lrg vugs,wh dol incl,wthrs dk gy.

3100 Dolomite - dk brn gy,v f xln,indst col lam & poorly def bds,wthrs m gy w/pitted vuggy surface.

3158 Dolomite - lt gy,v f xln,tr, p.p. vugs,thk bdd,wthrs lt gy.

3200 Dolomite - dk gy,v f xln,tt,indst bdg,wthrs dk gy col laminated.

Dolomite - alternately banded lt & dk gy.

3260 Dolomite - v lt gy,crpxl,sl lmy,tr rust stn on frac,wthrs v lt yel gy.

3300 Dolomite - m brn gy,f xln,gran,rubbly bdd,wthrs brn gy w/pit vug surface.

Dolomite - alternately light & dark grey banded.
3340 Dolomite - aa, dk gy, some wh dol & calc incl.

3370 Dolomite - aa, brn gy,tt.

3390 Dolomite - aa, dk brn, tr p.p. vugs, mas.

Dolomite - alternately light & dark grey banded
3435 Dolomite - lt gy,crpxl,tt,sl lmy,color lam,wthrs lt gy.

3470 Dolomite - v lt gy,crpxl,cal & dol lnd vugs,wthrs v lt gy & banded w/dk gy dol.

3510 Dolomite - dk brn gy, f xln, microgran, mnr vug por, wthrs dk gy.

3565 Dolomite - m brn gy, f xln, microgran, good p.p. por, wthrs dk gy.

3600 Dolomite - m gy, v f xln,tt, mnr wh dol vns & incl,indst bdg, wthrs dk gy.

3630 Dolomite - dk brn gy,crpxl,tt, wh calc vns & incl hly frac, wthrs dk gy.

3690 Dolomite - brn blk,v f xln,tt,wh calc & dol vns & incl,thn bdg semb,wthrs dk gy.

3775 Dolomite - aa.

3878 Dolomite - m gy,crpxl,tt,p.p. vugs,lined w/wh dol,wthrs dk gy rubbly.

3908 Dolomite - lt gy & dk brn gy,v f xln,arg lam,crs wh dol incl,wthrs patchy gy.

3965 Dolomite - v lt gy, crpxl, sl lmy, irreg wh dol incl, wthrs lt & dk gy banded.

Prominent resistive knob

Remnants of coralline fuc- ture related to *Favosi s limitaris* Rominger
Romin
Lower or Middle Devoni i, likely the latter

Amphipora sp. (poorly es)
Lower or Middle Devoni likely the latter

4028 Dolomite - aa, vuggy por.
4072 Dolomite - dk brn gy,v f xln,c wh dol & calc incl,thn calc vns,mas, banded lt & dk gy.

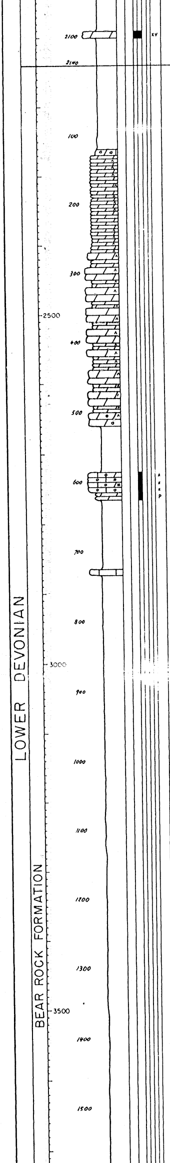
4095 Dolomite - dk brn gy, v f xln,tt,mnr wh dol & calc vns,wthrs dk gy.

4255 Dolomite - dk brn gy,lam w/mnr lt gy dol,m xln,gran,thk bdd,wthrs m brn gy.

Dolomite - aa.

4350 Dolomite - v dk brn gy, f xln,gran,wh dol incl,poorly pres fos,wthrs dk brn gy, w/pitted surface.

some lt & dk gy banding in scree



4442 Dolomite - dk brn gy,f xln,gran,wh dol & calc lined vugs,thk bdd,wthrs dk gy w/ pitted surface.

Lower portion of Upper Lone Mtn. Formation is mostly covered & contact with underlying Bear Rock was projected from exposure in gully approx. 300 yds. around north face of mtn.

130' Covered

4660 Limestone Breccia (Scree sample)-brn gy dol frag in lt gy lms & wh calc mtx,mot brn

4670 Dolomite - m brn gy, crpxl, tt, sil, thn bdd, color lam, wthrs m brn gy.

4682 Dolomite - tan,rust mot,v f xln,tt, thn bdd,intbdd w/ab dol,wthrs yel brn.

4710 Dolomite - lt yel-gy,rust brn mot & stn,crpxl,sil,hd,thn bdd,wthrs tan.

spotty exposures

4750 Dolomite - aa.

4780 Dolomite - m brn gy,crpxl,tt,rust brn stn on bdg,thn bdd,wthrs yel gy.

4810 Dolomite - m brn, crpxl,tt,sil,thn bdd,wthrs m gy.

Dolomite - m gy, thk bdd dol intbdd with thn bdd yel, yel-brn & yel-gy, aa.

610' Dolomite - thn bdd,yel, yel-brn & yel-gy wthrg crpxl, tt,in pt mot rust brn,sil,& mostly intbdd repetitiously w/m gy thk bdd dol. Brec is restricted to mnr devel along bdg planes in lower portion.

5020 Dolomite - brn gy,crpxl,tt,sl sil,indst bdg,wthrs m tan gy.

5110 Dolomite - dk brn gy & lt tan gy,crpxl,tt,sil,mot,brec,rust brn irreg stn,mas,prom calc vns, wthrs yel-gy.

5180 Breccia - dk brn gy,crpxl,tt,dol frag in lt gy lms & calc mtx,some c clr calc xls mas,wthrs m brn gy.

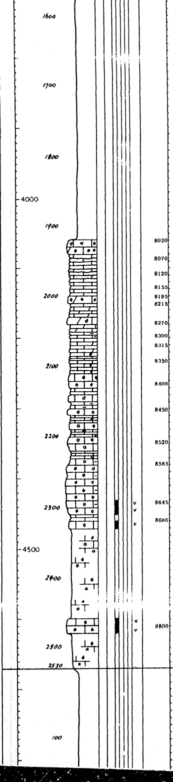
5222 Dolomite - lt tan gy w/prom rust & yel stn & spec,crpxl,mnr calc vns,thn bdd,wthrs lt yel gy.

5340 Limestone - v lt brn gy, crpxl,tt,prom patchy orng stn & irreg ptgs,mas, indst bdd, wthrs lt yel gy

1180' Covered-interval consists of scree covered east slope of mountain, wooded valley and wooded west part of spur.

Air observation of parallelling north and south spurs revealed Bear Rock type exposures in stratigraphic position with portions of this covered interval.

All of covered interval is considered to be Bear Rock in stratigraphic sequence with overlying and underlying beds.



8020	Breccia - dk gy brn,crpxl ang dol frag in c xln wh calc mtx,orng stns,wthrs dk gy	620' Limestone Breccia -gy & brn gy to yel & orng yel.developed primarily along bdg planes & intbd with thn lt gy, dk gy & yel-gy ls in banded sequence
8070	Limestone - lt gy,crpxl,tt, irreg semblance of lam, wthrs lt gy.	
8120	Limestone - lt gy, mot lt brn, crpxl,tt. bdd 8" thk, wthrs lt gy.	
8155	Limestone - lt gy, v f xln,tt, mnr rust ptgs, wthrs lt gy.	
8195	Breccia - m gy, crpxl,lmy ang dol frag in yel-gy ls mtx,rust stn,wthrs gy.	
8215	Limestone - m gy, crpxl, dolomitic, tt, wthrs yel gy.	
8270	Dolomite - lt gy,lmy,crpxl,spec tex sugg in pt of brec,wthrs m gy.	
8300	Limestone - lt brn gy,crpxl,tt,calc vns,prom rust & red lam & stn,wthrs yel gy.	
8315	Limestone - lt gy,v f xln,sl dol,wthrs m gy w/color lam on surface.	
8350	Limestone - lt & m gy,v f xln,platy, in pt f brec tex,wthrs m gy.	
8400	Limestone Breccia - brn gy patches & frag in lt tan ground mass,crpxl, wthrs tan	Breccia predominant and primarily yellow weathering and soil forming.
8450	Limestone - yel orng, crpxl,wh calc vns,in pt brec,in pt thn bdd, wthrs orng yel.	
8520	Limestone Breccia - aa, in pt brec in pt thn bdd.	
8565	Limestone Breccia - mot lt gy,yel-gy & yel-orng w/rust stn,crpxl,wh & cl calc incl, wthrs buff & soil forming yel.	
8645	Limestone Breccia - mot brn gy to yel-orng, crpxl,calc vns & mtx, boxwork sol cav, wthrs tan gy mot.	
8680	Limestone Breccia - aa, pred tan & w/some thn bdg semblance.	
	Predominantly covered with scree of Bear Rock breccia type	
8800	Limestone Breccia - aa, lt yel & yel gy.	
	Predominantly covered with scree of Bear Rock breccia type	
		320' Covered - except for 10' of poor exposure of platy argillaceous dolomite weathered yellow-grey, rubbly.

LOWER DEVONIAN

LONE MOUNTAIN FORMATION (Lower)

SILURIAN

ORDOVICIAN

MOUNT KINDLE FORMATION

FRANKLIN MT FM

12 miles | 32 miles | 7miles | 3mi. | 2mi. | 3mi. | 12 miles | 6 miles

S.E. — N.W.

23 — REDSTONE RIVER CANYON — Photo P.31 — MOOSE PRAIRIE — Photo P.26 — Photos P.29 — SUMMIT LAKE

21a — 21b — 22 — 25 — 20 — FORAN LAKE — KEELE RIVER — 16

IMPERIAL FORMATION

HARE INDIAN FORMATION

HUME FORMATION

INTER-STRATA COARSE CRYSTALLIZATION

AIR RECONNAISSANCE

FAULTED BLOCK ?

INTRAFORMATIONAL ADJUSTMENT

17 — 18 — 19

LONE MOUNTAIN FORMATION (Upper)

BEAR ROCK FORMATION

LONE MOUNTAIN FORMATION (Lower)

MOUNT KINDLE FORMATION

FRANKLIN MOUNTAINS FORMATION

24 — Photo P.20

Photo P.34

SILURIAN REEF

Photos P.33,35

Photo P.34

Photo P.35

UPPER DEVONIAN | MIDDLE DEVONIAN | LOWER DEVONIAN | SILURIAN | ORDOVICIAN

WRIGLEY AREA

DIAGRAMATIC LONGITUDINAL SECTION

CANYON RANGES

(VIEW FROM MACKENZIE PLAIN)

HORIZONTAL SCALE 1" = 4 miles (21,120')
VERTICAL SCALE 2" = 1000 feet

VERTICAL EXAGGERATION 42x.

28-1-S-8

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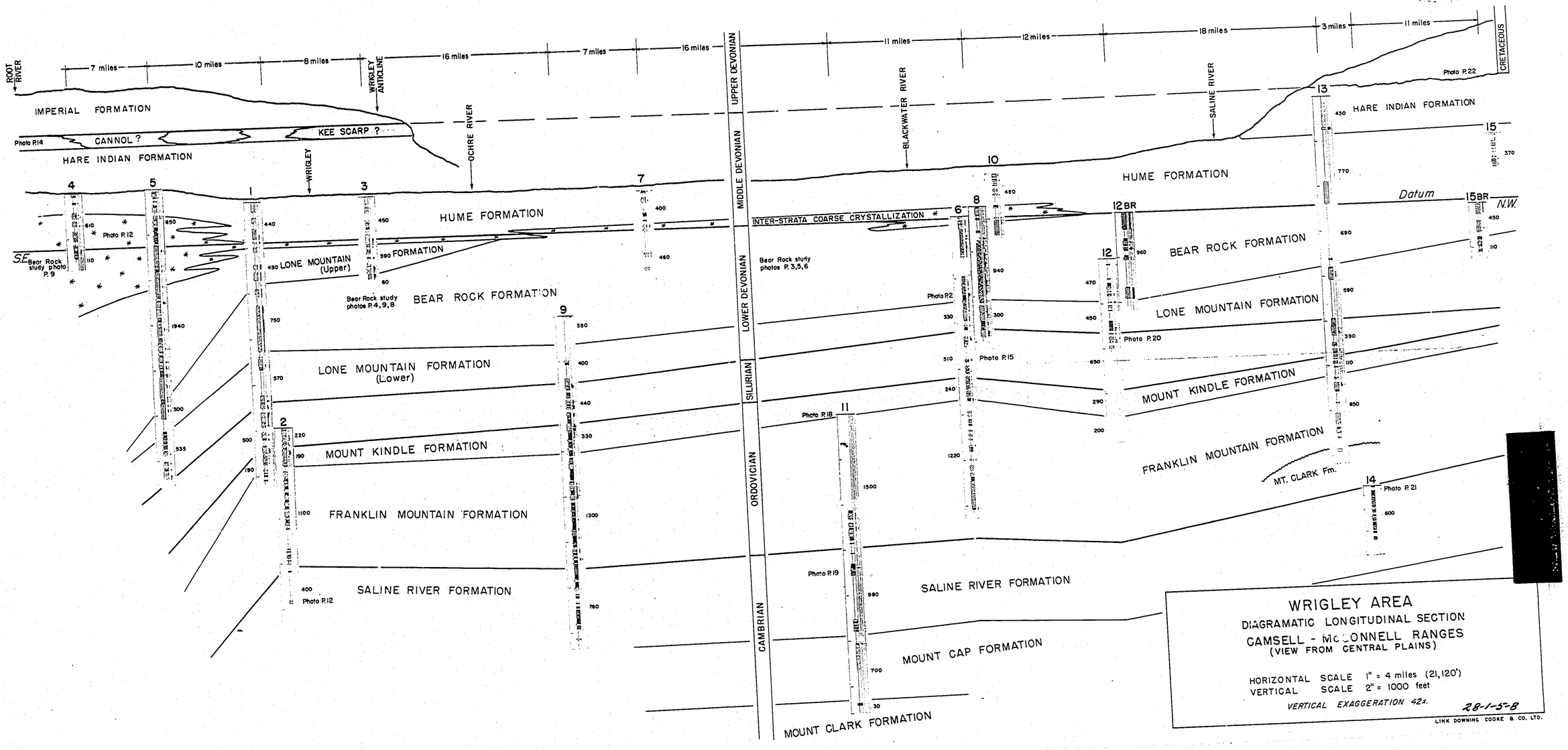


WRIGLEY AREA

DIAGRAMATIC LONGITUDINAL SECTION

CAMSELL - McCONNELL RANGES

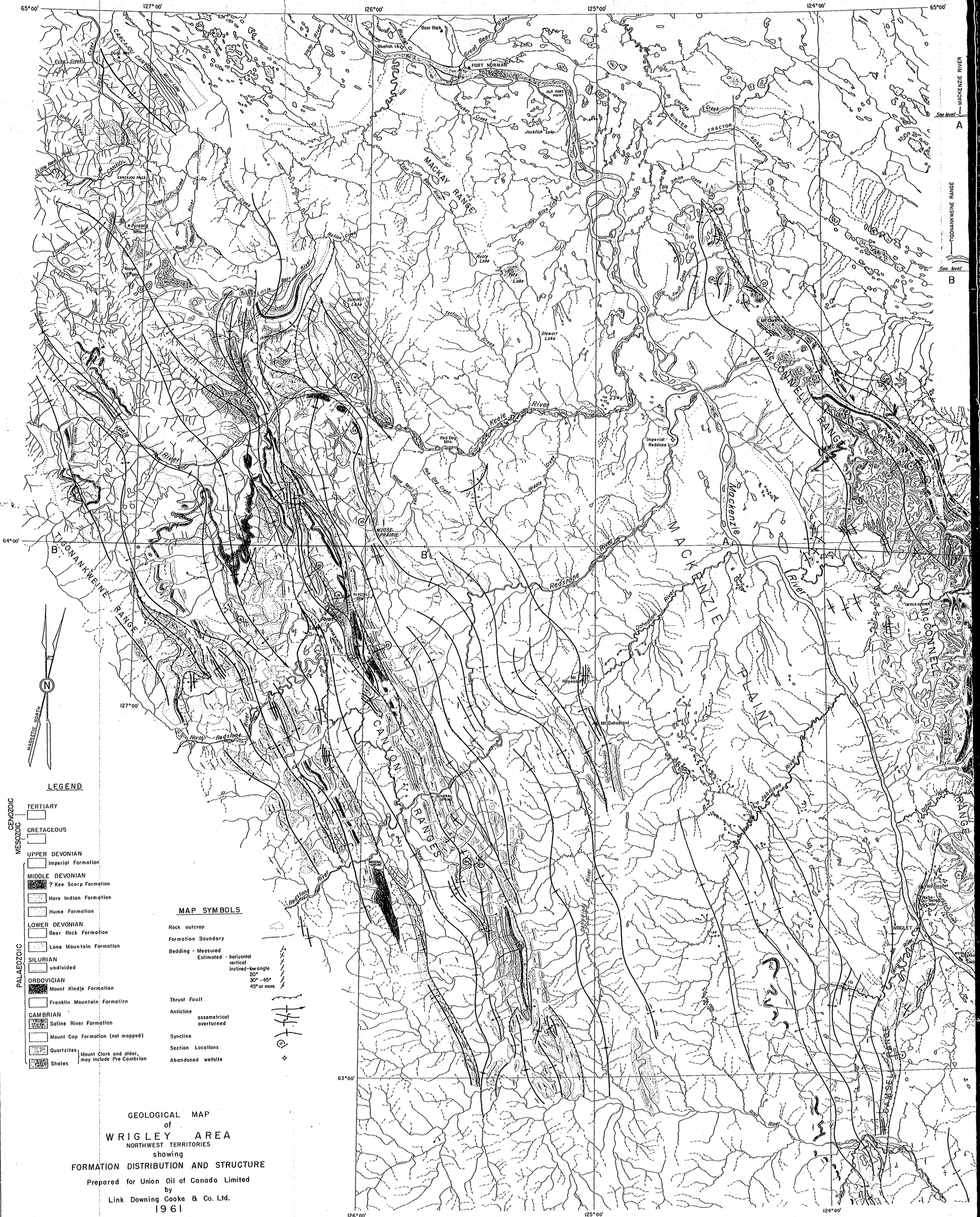
(VIEW FROM CENTRAL PLAINS)

HORIZONTAL SCALE 1" = 4 miles (21,120')
VERTICAL SCALE 2" = 1000 feet

VERTICAL EXAGGERATION 42x.

28-1-5-8

LINK DOWNING COOKE & CO. LTD.



MAGNETIC NORTH

LEGEND

CENOZOIC
- TERTIARY

MESOZOIC
- CRETACEOUS

PALAEOZOIC
- UPPER DEVONIAN
  - Imperial Formation
- MIDDLE DEVONIAN
  - ? Kee Scarp Formation
  - Hare Indian Formation
  - Hume Formation
- LOWER DEVONIAN
  - Bear Rock Formation
  - Lone Mountain Formation
- SILURIAN
  - undivided
- ORDOVICIAN
  - Mount Kindle Formation
  - Franklin Mountain Formation
- CAMBRIAN
  - Saline River Formation
  - Mount Cap Formation (not mapped)
  - Quartzites, Shales — Mount Clark and older, may include Pre Cambrian

MAP SYMBOLS

- Rock outcrop
- Formation Boundary
- Bedding - Measured / Estimated - horizontal, vertical, inclined - low angle, 20°, 30° - 45°, 45° or more
- Thrust Fault
- Anticline — assemetrical, overturned
- Syncline
- Section Locations
- Abandoned wellsite

GEOLOGICAL MAP of WRIGLEY AREA
NORTHWEST TERRITORIES
showing
FORMATION DISTRIBUTION AND STRUCTURE

Prepared for Union Oil of Canada Limited
by
Link Downing Cooke & Co. Ltd.
1961

SCALE 1" = 4 MILES

28-I-5-8

5 0 5 10 20

STRUCTURAL CROSS SECTIONS ALONG THE 64th PARALLEL

122°00'
63°00'
64°00'
123°00'
124°00'
65°00'
KELLER LAKE PERMITS
INTERIOR PLAINS
McCONNELL RANGE
MACKENZIE PLAIN
Mackenzie River
Grosdy Lake
Blackwater River
Winter Lake
Tractor Road
Fraction Road
Imperial Redstone
Mirgley River
Hare Indian River
Dahadinni River
Keele River
Ramparts River
Willowlake River
Horseshoe Canyon
Bluefish Canyon
Nahlin Brook
Gayna River
Root River
Sans Sault Rapids
Fort Norman
Norman Wells
Canol Road
Camsell Range
Wrigley
Fort Simpson
Fort Liard
Jean Marie River
Wrigley Harbour
Simpson Islands
Trout Lake
Kakisa Lake
Kakisa River
Tathlina Lake
Hay River
Great Slave Lake
Yellowknife
Pine Point
Fort Resolution
Fort Smith
Slave River
Peace River
Athabasca
Lake Athabasca
Wollaston Lake
Reindeer Lake
Cree Lake
Lake Athabasca
Lake Claire
Lake Athabasca
Lake Athabasca
Lake Athabasca