TR8-57-63

10. PERMIAN ROCKS OF THE MT. INGLIS AREA

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INTRODUCTION

In conjunction with the regional mapping of the Mackintosh Quadrangle, an investigation was made of that area occupied by Permian rocks to the west of Barn Bluff. Mt Inglis, three miles SW of Barn Bluff, is a well benched, flat-topped peak composed of Permian rocks, which are strongly dissected by deep glacial cirques. It is underlain by a basement of quartzite and quartz-mica schist which has a moderate pre-Permian relief. A mass of Devonian granite outcrops to the west, but nowhere can the Permian rocks be found in contact with the granite. Most of Mt Inglis is covered by a blanket of moraine and periglacial material, but the well defined benches allow some of the more resistant formations to be followed with ease. Outcrop is generally good in the creeks that flow to the south and east.

A new section is described and some new formations are named in this report. The section was measured in the creek that flows SW from the summit of Mt Inglis, the traverse extending from 3857E 8587N to the summit. Altitudes given are based on corrected aneroid barometer readings. Reasonably precise check on altitudes is possible from the 50 feet form lines of the Murchison and Mackintosh contour maps. The section is incomplete, but 1,190 feet of sediment are exposed from the base up to the correlate of the Risdon Sandstone.

MT INGLIS SECTION

Basal Pebbly Siltstone

This unit extends from the unconformity at 3857E 8587N, which is at 3,050 feet, to an altitude of 3,220 feet. It consists mainly of pebbly siltstone and conglomerate with thinner beds of limestone and sandstone. The composition of this unit is given below:—

Altitude ft. a.s.l.	Description of rocks	Thickness ft.
3050	Unconformity	
	Poorly sorted conglomerate with a perceptible but non-persistent stratification. The layering is defined by lenses (2 feet thick and 4-5 feet long) of brown argillaceous and micaceous siltstone, and also by boulder beds of varying boulder size. The boulders occupy upward of 50% of the conglomerate and are mostly of quartzite with occasional schist. The quartzite boulders are subangular, equant and tabular, the last being oriented flat in the bedding. Schist boulders are discus shaped and subrounded. Mean size of the boulders is 2 inches and the maximum size is 12 inches, Although a large mass of granite occurs three miles west, only one boulder of granite, three inches in diameter, well rounded and spherical, was found. The matrix is a quartzose and argillaceous siltstone with subordinate quartz granules and clastic mica flakes up to 2 mm in diameter. Matrix in the conglomerate has the same composition as the siltstone lenses, so that there is no compositional change in matrix between lithologies. The unconformity surface is flat and smooth over the observed distance of eight feet.	10
3060	Brown, micaceous, argillaceous, pebbly siltstone with 10% of pebbles of quartzite which range between ½ inch and 2 feet in diameter, have low sphericity and are sub-rounded. In the middle of this member is a 3 feet thick bed of weekly laminated grey-blue unfossiliferous limestone.	30
3090	Well-bedded conglomerate and conglomeratic siltstone beds, 4-7 feet thick, and regularly interbedded with sandstone and siltstone beds averaging 1 foot thick. The conglomerate itself is fairly well stratified by variations in the size of the boulders. It consists of 40% or more of rounded to subrounded, equant quartzite boulders with subordinate discoid schist boulders. Average size is 2 inches and the range is ½ to 5 inches. Both sandstone and siltstone contain rounded pebbles in proportion up to 40%.	45
3135	Black micaceous pebbly siltstone with about 10% subrounded quartzite boulders ranging from ¼-½ inch.	4

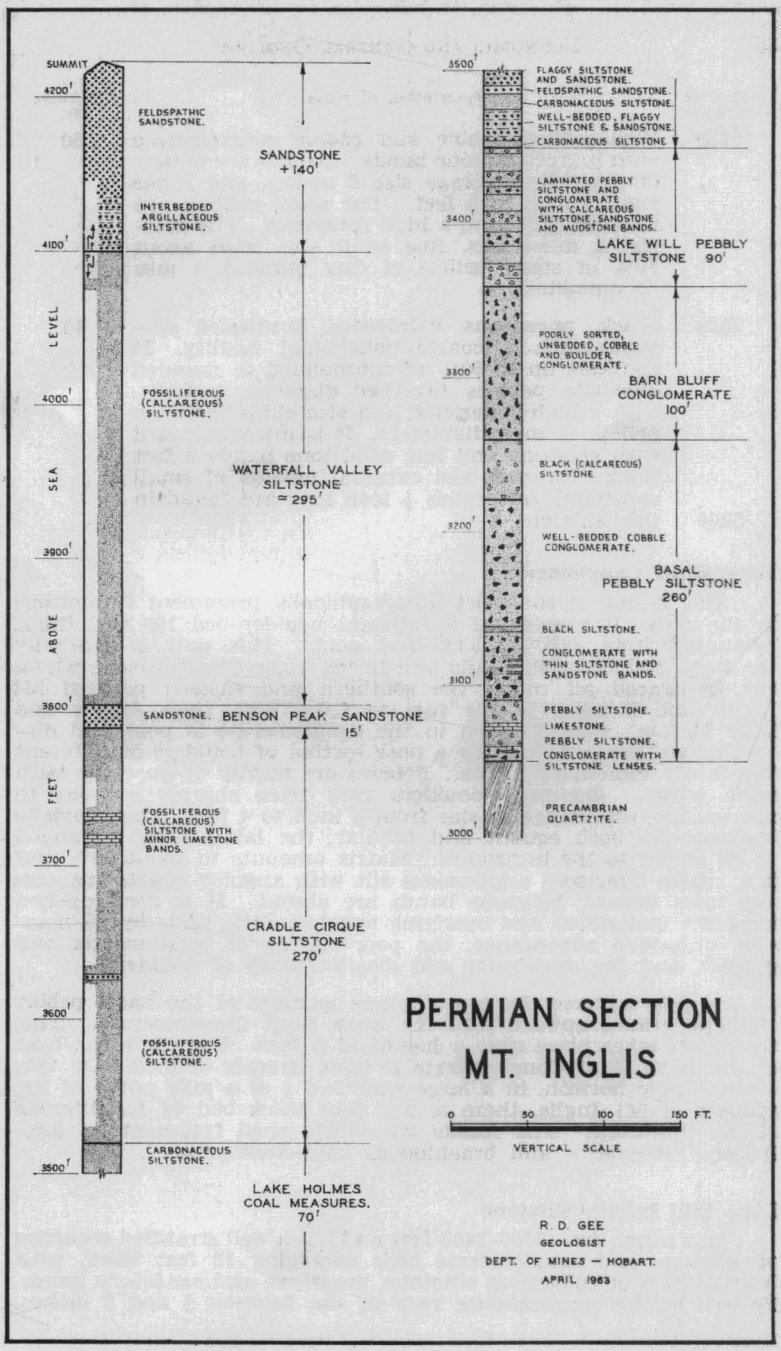

FIGURE 18.

Altitude ft. a.s.l.	Description of rocks	Thickness ft.
3139	Well-bedded pebble and cobble conglomerate with scarce siltstone bands. Pebbles are mostly of quartzite, average size 6 inches, and range from ¼ inch to 3 feet. The small pebbles are rounded and have a high sphericity. The matrix is micaceous, fine sand size, with about 20% of small pellets of clay mineral, 1 mm in diameter.	80
3220	Black, micaceous, calcareous, laminated siltstone with a coarse conchoidal fissility. It contains up to 50% of subrounded to rounded quartzite pebbles (average diameter 1 inch), with a high sphericity, and also ellipsoidal clay pellets (½ inch diameter). It is interlaminated with siltstone and fine sandstone bands 2 feet thick. Internal and external moulds of small conispiral gastropods ½ inch long are found in this siltstone.	40
3260		

Barn Bluff Conglomerate

This is one of the most topographically prominent formations in the area. It consists of a resistant boulder bed 100 feet thick, extending from 3260 to 3360 feet a.s.l. This unit is generally the locus of large water falls and forms a conspicuous ledge which can be traced all round the southern and eastern part of Mt Inglis, and 6 miles to the east to Lake Will, Lake Agnew and Lake McRae. Stratification in the conglomerate is poor and discontinuous, being defined by a poor sorting of boulders of different size into rudimentary layers. Pebbles are mostly of quartzite with some schist. Quartzite boulders vary from sharply angular to subrounded, and range in size from ½ inch to 4 feet. The quartzite boulders are both equant and tabular, the latter being arranged at all angles to the horizontal. Matrix amounts to about 20% and is a coarse quartzose argillaceous silt with angular quartz granules and mica flakes. Siltstone bands are absent. It is distinguished from the underlying and overlying conglomeratic units by its massive, unbedded appearance, the poor sorting of both matrix and pebbles, and the angularity and disorientation of boulders.

In this traverse the top siltstone member of the basal pebbly siltstone grades upward into the Barn Bluff Conglomerate. This transition takes place over a height of 6 feet. Elsewhere the base of the Barn Bluff Conglomerate is quite sharply defined. On this stratigraphic horizon, in a large waterfall ¾ of a mile north of the summit of Mt Inglis, there is a 1 foot thick bed of fossiliferous pebbly limestone. The fossils are calcite shell fragments of gastropods (*Keenia?*), and brachiopods, and *Stenopora.*

Lake Will Pebbly Siltstone

This formation (3360-3450 feet a.s.l.) is a well stratified sequence of siltstone and conglomerate beds averaging 12 feet thick, with thinner beds of calcareous siltstone, mudstone and sandstone bands. Pebbles in the conglomerate vary in size between ½ and 6 inches,

rounded to subrounded, and elliptical in shape. All the siltstone beds are fossiliferous, and the basal siltstone at 3360 feet is exceedingly rich in gastropods, brachiopods, fenestellids, pectenids and stenoporids.

The siltstone bands in the upper portion contain worm tubules, arranged parallel to the bedding, and infrequent structures of uncertain origin. These appear like plant or bark fragments, are up to 18 inches long and 2 inches wide, and striated with symmetrical, evenly spaced round top ridges, 2 mm high and 5 mm apart. They are terminated by structures which appear like nodes.

Lake Holmes Coal Measures

This unit (70 feet thick) consists of black carbonaceous siltstone, quartzose siltstone and quartzo-feldspathic sandstone. It is a topographically prominent unit. It is pyritic and may be a fresh-water deposit. It is made up as follows:—

Altitude ft. a.s.l.	Description of rocks	Thickness ft.
3450	Black carbonaceous fissile siltstone with small films of pyrite on bedding surfaces. It contains about 1% pebbles.	5
3455	Alternations of coarse fissile siltstone and medium-grained flaggy sandstone. Bedding surfaces (surfaces of lithological change) are undulating places of parting coated with large flakes of muscovite (0.5-3 mm in dia.). The sandstone is very hard, light buff in colour, fairly well sorted and dominantly quartzose containing 20% clay mineral and 10% mica. There are occasional rounded pebbles and cobbles of quartzite. The siltstone has a similar composition. Cross bedding and slump structures are common in the siltstone. Profiles of these slump folds are clearly visible on NW-SE vertical faces. They are confined to certain beds and each bed retains its uniform thickness. A structure resembling a plant stem was found near the top of this member. It was 9 inches long, 1 inch in diameter, ellipsoidal in cross section and completely replaced by pyrite.	20
3475	Well bedded, black, micaceous, fissile siltstone. A coal seam occurs in this unit in the Barn Bluff area but it was not found in the Mt Inglis area.	10
3485	Hard, buff-coloured massive, quartzo-feldspathic, micaceous, medium-grained, well-sorted sandstone. This is characteristic of the Lake Holmes Coal Measures, and is easily recognizable in the field. It retains its thickness in all parts of the area. In the northern sector of the area it is coarsely cross-bedded and the bottom six inches is quite gritty, containing angular granules of clear quartz.	

Altitude ft. a.s.l.	Description of rocks	Thickness ft.
3488	Well bedded, coarse, fissile siltstone and medium-grained flaggy sandstone.	12
3500	Hard, black, micaceous siltstone. It is non-fissile and has a conchoidal fracture. It contains abundant small black plant fragments.	20
3520		

Cradle Cirque Siltstone

A black, calcareous, well-bedded siltstone, containing brachiopod shell fragments at 3520 feet a.s.l., marks the end of the fresh-water deposit. This formation extends from 3520 to 3790 feet a.s.l. The exposure of the lower portion is not good as it occurs on the ledge created by the Lake Holmes Coal Measures. The lower portion appears to be a well-bedded micaceous siltstone with 5-10% pebbles. Spiriferids, strophomenids and fenestellids are abundant. The upper portion is better exposed. It is mainly a well bedded, brown coloured argillaceous siltstone with bedding units 6 inches to 1 foot thick. The pebbles are well rounded and vary in size from ¼-4 inches. Beds of fine quartzose siltstone, calcareous siltstone and limestone, averaging 1 foot in thickness, are found within the top 30 feet. Brachiopod fragments are common, and some bands of siltstone have a pseudo-stratification due to the profusion of bryozoa.

Benson Peak Sandstone

The Benson Peak Sandstone (3790-3805 feet a.s.l.) is a greywacke sandstone 15 feet thick, which forms a prominent bench at this altitude around the greater part of Mt Inglis. It is a green greywacke sandstone composed of quartz (varying in size from 2 mm down to silt size), disoriented muscovite flakes and small clay pellets (1 mm in dia.), It contains about 15% of fragments of calcite, angular quartzite, siltstone and quartz-mica schist. In addition to these rock fragments, in the matrix there is about 20% of subrounded quartzite granules of medium sphericity and average size ¼ inch. Thin roundstone conglomeratic bands (2-3 inches thick) also occur. It is massive and thickly bedded in 3 feet units. Some are rich in bryzoal fragments.

Waterfall Valley Siltstone

This formation is also not well exposed, being covered by a thin blanket of moraine. Immediately above the Benson Peak Sandstone, at 3805 feet a.s.l. is 7 feet of an argillaceous thickly bedded siltstone containing 2% of quartzite pebbles. This is interbedded with a band of pebbly siltstone (up to 30% pebbles), one foot thick. The pebbles are well rounded, ellipsoidal and mostly of quartzite. One well-rounded, elongate cobble of (Cambrian) quartz-porphyry was found.

Commencing at an altitude of 4000 feet is about 20 feet of poorly sorted grey-blue calcareous fissile siltstone with abundant sub-angular to sub-rounded quartz granules and large clastic mica flakes, 2 mm in diameter. At 4089 is a 3 feet thick exposure of brown well-bedded siltstone with 5% quartzite pebbles. The base of the next formation is not exposed here but occurs at an altitude of about 4100 feet. The Waterfall Valley Siltstone therefore extends from 3805 feet to about 4100 feet and is about 295 feet thick.

Sandstone on the Summit of Mt Inglis

This unit consists of feldspathic siltstone passing upward into sandstone. The altitude of the base is not known precisely but it occurs at approximately 4100 feet. The lower half consists of regularly-bedded greenish-grey siltstone (2-3 feet thick units) with thinner sandstone bands. The sandstone has a weak colour lamination parallel to the bedding. It contains small globular and discoid clay pellets 0.5 mm to 2 mm in diameter. It is unfossiliferous, but contains abundant small black carbonaceous plant fragments. Pebbles are very rare.

The upper half is a well-bedded, otherwise massive, quartzo-feldspathic sandstone, inter-bedded with thin siltstone bands. The individual sandstone beds average 3 feet in thickness. The sandstone is a creamy-brown colour with a green tinge. It is well sorted and contains small amounts of fine mica.