Examination of Hazell Hill + Mt. Osmund Areas (2 copies)

L.E.S. 22/4/58.

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REPORT ON EXAMINATION OF
HAZELL HILL & MT OSMUND
AREAS

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To: Mr. G.F. Hudspeth. 22nd April, 1958.

REPORT ON EXAMINATION OF HAZELL HILL AND MOUNT OSMUND AREAS

Dates of Examination: 12th to 23rd December, 1957 and 1st to 8th January, 1958.

Geologist: R.G. Elms.

Bushman: R. Martin.

Man days in the Field: 40

Location of Camps: (1) Immediately east of Ordovician-Cambrian contact, on south side of Wanderer River.

(2) At the foot of the eastern side of Mount Osmund.

Means of Transport & Supply: Helicopter.

General Topography of Area

The area north and west of the camp on the Wanderer River is composed of a fairly high plain which is little dissected except on its southern edge where it is drained by small tributaries of the Wanderer River.

The eastern boundary of this plain is the steep and relatively high fault scarp at the Ordovician-Pre Cambrian contact.

To the north and east of the Wanderer River the country is flat, lower in elevation, and more swampy.

The whole area is bounded to the north and east by Tertiary sediments which obscure the underlying rocks which are of interest.

To the south, the area examined is generally relatively flat, with Mount Osmund and Wart Hill forming the only high ground.

Geological Investigation and Findings

1. Dolerite: An occurrence of dolerite (?) was noted in an extensive swampy flat about ½ mile west of Crown Hill. The dolerite (LE 1029) occurred as large boulders at the western limit of the Pre-Cambrian sequence. Its relation to the surrounding rocks is unknown since no outcrops were available for considerable distances east or west.

2. Cambrian: At the western edge of the Osmund Syncline, Cambrian chloritic schist (LE 1028, LE 1038), which displayed dragfolding and other shearing effects was encountered. The shearing effects were due to its proximity to the fault contact between the Cambrian and Ordovician sediments.

The precise relation of the Dundas Group to the younger Ordovician sediments is unknown, since the two are faulted into contact.

Generally, the Dundas sequence is an alternation of lavas and tuffs, both of which show poor lineation, the bedding and foliation being hard to distinguish.

East of Mount Osmund, a reasonably good sequence of approximately 6400 feet of Cambrian pyroclastics was obtained, and is as follows, oldest to youngest:

1. Altered lava (LE 1045) composed largely of laths of felspar in a chloritic matrix with some large quartz phenocrysts.
2. Tuff (LE 1044) with a fine grained grey green matrix containing small rounded quartz and felspar grains.
3. Sheared tuff (LE 1047) with a fine grained matrix containing large clear quartz grains.

4. Lava (LE 1042, LE 1043) consisting of small quartz and felspar phenocrysts set in a fine grained grey-green matrix.
5. Lava (LE 1041) with a fine grained dark grey matrix in which is set occasional clear quartz phenocrysts. Small iron stained cavities are present from which pyrite (?) has been leached.
6. Fine grained light grey lava (LE 1041) which is strongly sheared and iron stained.
7. Sheared lava (LE 1040) with a fine grained light grey matrix in which some small quartz and felspar phenocrysts occur. Some chloritisation is present.
8. Slightly sheared lava (LE 1052) which has large clear quartz phenocrysts set in a fine grained dark grey matrix.
9. Tuff (LE 1053) having subangular clear quart grains and decomposed felspars set in a fine grained grey matrix.
10. Tuff (LE 1039) composed of numerous rounded quartz grains set in a fine grained light brown to grey felspathic matrix.

North of this sequence in the Hazell Hill area, a less complete sequence was obtained, owing to the presence of Tertiary gravels over the eastern limits of the Cambrian succession.

This northern sequence is as follows:

1. Tuff (LE 1033) having a fine grained light grey matric in which occur subangular quartz grains and smaller flakey mafics (biotite or chlorite).
2. Tuff (LE 1034) composed of a fine grained light blue-grey felspathic matrix in which subangular quartz and felspar grains occur.

3. Lava (LE 1034) composed of a fine grained light grey felspathic matrix with small clear quartz grains. Slightly iron stained.

4. Tuff (LE 1037, L% 1031) having in a fine grained matrix subangular felspar and clear quartz grains with some smaller mafics which are indicated by iron staining.

5. Tuffs (LE 1022, LE 1035) with a fine grained reddish-brown to grey felspathic matrix in which occur numerous rounded quartz grains and small quartz veins.

The above two sequences do not match up very well except for the youngest members of each, LE 1039 with LE 1022, LE 1035. This is scarcely surprising as considerable areas were encountered in which no outcrop was found, particularly in the eastern part of the northern traverse.

Iron staining was encountered in a creek near the locality in which LE 1046 was found, but it is believed to have its origin in the pyrite and/or other mafics disseminated in the pyroclastics.

3. Ordovician: Four moderately detailed traverses were made across the Ordovician (Owen) sedimentary sequence.

The most complete of these was the northern , or Hazell Hill traverse. Here an estimated thickness of 5900 feet of Owen sediments was found. In this area, on the east side of the Cambrian pyroclastic series, there is a small occurrence of Owen sediments before Tertiary gravels are encountered. This exposure of Owen sediments represents part of the remnant of the eastern limb of the anticline which was continuous with the Osmund Syncline.

A description of the Hazell Hill section, oldest to youngest, follows:

1. Thick bedded conglomerate, with quartzose pebbles - quartzite, chert, quartz sandstone. Bulk of pebbles were less than 1½ inches in diameter, though some did range up to 6 inches. 900 feet.
2. Thin bedded fine grained light grey quartz sandstone. Thick bedded white quartzose conglomerate. 900 feet.
3. Light grey-green shale (LE 1026). 50 feet.
4. Light brown-grey micaceous quartz sandstone. This bedded fine grained greyish white quartz sandstone. 950 feet.
5. Thin bedded white to pink quartzose pebble (maximum 1") conglomerate. 50 feet.
6. Cream to pink micaceous quartz sandstone. 250 feet.
7. Thick bedded white quartzose conglomerate. 800 feet.
8. Alternating beds of coarse grained quartz sandstone and white quartzose conglomerate. 300 feet.
9. White quartzose conglomerate (maximum 1"). 250 feet.
10. Thick bedded greyish-yellow quartz sandstone. 250 feet.
11. Thick bedded pebble conglomerate (maximum 1½"). 700 feet.
12. Pink quartzose conglomerate with occasional hematitic quartzose pebbles (maximum ½"). 500 feet.

This sequence has been tentatively correlated with the other three to the south, on the accompanying plate.

The Mainwaring River sequence is incomplete, with possibly 1600 feet of sediments missing from the base of the column due to faulting.

It would also seem likely that the floor of the depositional basin was slightly higher in the Mainwaring River section area than elsewhere when the Owen sediments were deposited, for the following reasons.

A consideration of the 4 sections will reveal an increase in thickness of the stratigraphic column as you go north, the Mainwaring River section excepted. As previously stated some 1600 feet of sediments appear to be missing from the base of this section. If the missing 1600 feet of sediments are added to the 3250 feet found in this section, the total thickness still falls short of what would be expected, which is, say, 5150 feet. Therefore the above suggestion is made.

Conclusions

1. The Osmund Syncline is a north (20°) pitching asymmetrical structure, the thicker (5900') eastern limb dipping at an average of 40°, while the thinner (2800') steeper western limb dips at 75° to the east. Thicknesses stated are maxima.

2. Unlike the Owen sediments in the Queenstown area, Owen sediments in the area investigated do not exhibit any grain size diminution as the stratigraphic column is ascended, nor is any other pattern of sedimentation apparent.

3. In the Queenstown area, the Jukes Breccia at the base of the Owen Conglomerate is a feature. No satisfactory explanation is evident for the absence, in this area, of Jukes Breccia or anything with which it could be correlated.

R. G. Elms.

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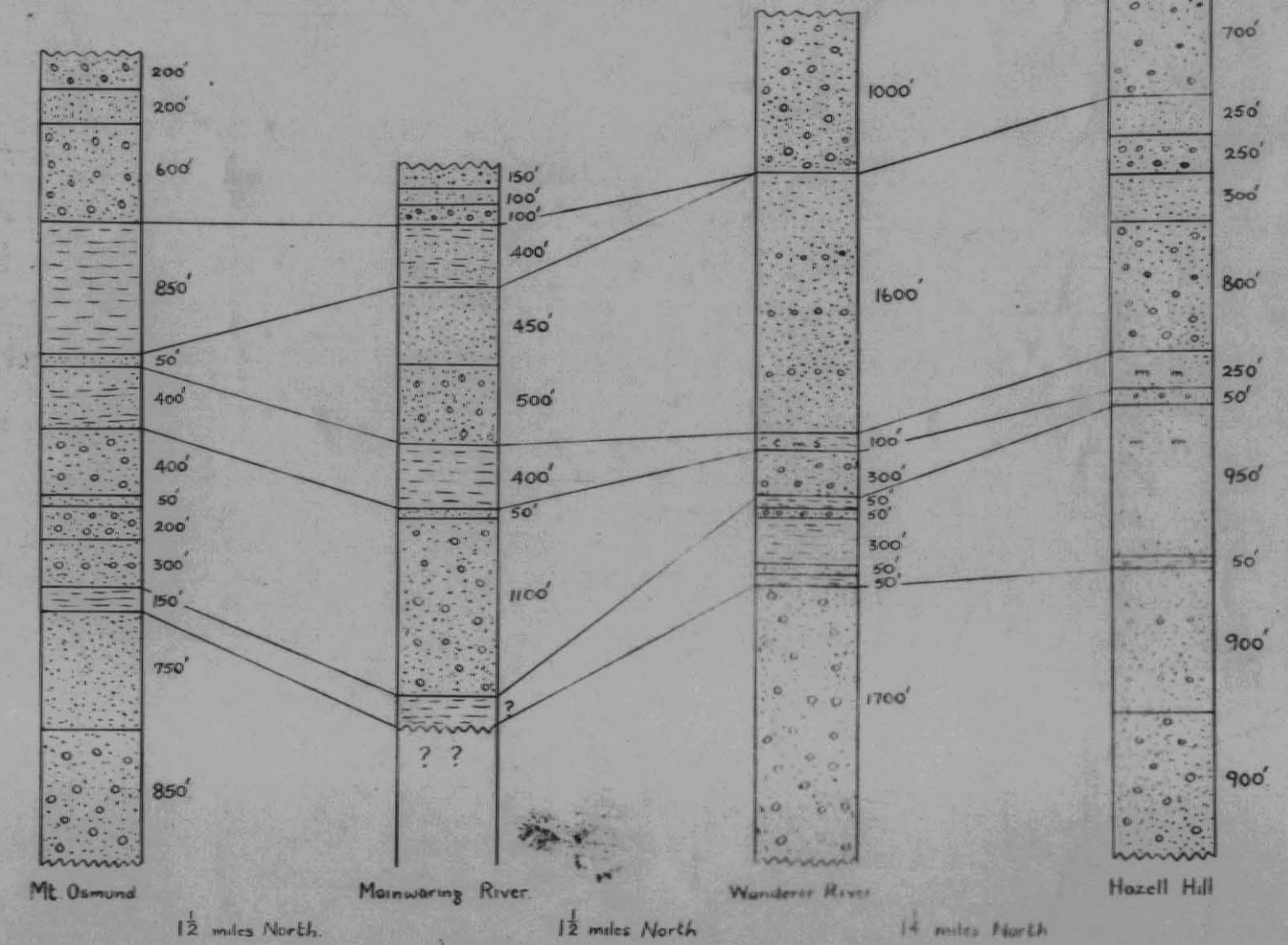
SECTION OF OWEN CONGLOMERATE
HAZELL HILL – MT. OSMUND AREA

KEY

- Conglomerate
- Fine pebble conglomerate
- Quartz sandstone. m = micaceous. (m m)
- Shale.
- Chlorite mica schist. (c m s)



Vertical Scale : 1 inch = 1000 feet.

5 cm

900

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