

THE UNIVERSITY OF ADELAIDE
DEPARTMENT OF GEOLOGY AND MINERALOGY

GEOLOGY OF THE MT. CHAMBERS GORGE REGION,
FLINDERS RANGES, SOUTH AUSTRALIA

Report on Geological Investigations
Submitted in Partial Fulfilment of the
Course Requirements of
Honours Geology

by

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T.J.M.*

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APPENDIX I : Description of Measured Stratigraphic Sections with a List of Relevant Rock Specimens and including some Palaeontological Data and Photographic Plates (A to E)

APPENDIX IIa : Descriptions and List of Rock Specimens not included in Appendix I, but presented in the same tray

APPENDIX IIb : Brief Descriptions of Thin Sections of Important Rocks from Appendix I and Appendix IIa. Sections are presented with Rock Specimens

NOTE: FOLDER, 22 by 30 inches, is presented separately to the thesis and contains:

1. Geological Map, Mt. Chambers Gorge Region (1,2)
2. Geological Map, Mt. John Syncline (3)
3. Overlay 1, showing
 - a) Mineralization
 - b) Dolerites
 - c) Diapirs
 - d) Faults, including Fault Rose
 - e) Main Folds
4. Overlay 2, with
 - a) Stratigraphic section Lines
 - b) Key Trilobite Localities
 - c) Reference Stations
 - d) Suggested Place Names
5. Combined fence diagram and stratigraphic column giving an interpretation of vertical and lateral variation in Cambrian sediments as inferred from measured stratigraphic sections. Includes suggested stratigraphic nomenclature and gives average thicknesses of all Cambrian units
- 6,7,8 Graphic stratigraphic columns compiled from measured sections (A to Z) and coloured to approximate fresh rock. 10,000 feet represented, plotted at 100' to inch vertical scale.
9. PLATE 6: Panoramic photographs, retouched, to show nature and extent of Cambrian outcrop in Map Areas 1 & 2 (Mt. Chambers Gorge) presented in accompanying folder under 'Cambrian outcrop'.

ABSTRACT

Mapping and section measuring South of Mt. Chambers Gorge has detailed 2,900 feet of Lower Cambrian carbonates, ranging from the massive carbonates of the Wilkawillina Limestone to the purple shales of the Billy Creek Formation. Carbonates include thinly laminated, oolitic and pelletal limestones and previously unreported mega-breccias. An autochthonous sedimentary pattern, typical of deposition in epeiric seas has been imprinted on the vertical sequence by a marine regression. This tends to be masked by allochthonous sediments, dominantly silts, clay and a coarse quartz sand, possibly eroded from diapirs. Brecciolas (slumps) with archaeocyathid limestone megaclasts (to 70ft.) occur locally in the upper beds of the Parara Formation and may help to date diapiric movements. Late phase dolerites intrude diapirs and cut related faults; mineralization is also diapir associated and includes copper and lead sulphides.