THE PERMIAN GEOLOGY, PHYSIOGRAPHY AND LANDSCAPE EVOLUTION OF NORTHEASTERN VICTORIA

by

Michael Anthony Craig

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ABSTRACT

Northeast Victorian diamictites (tillites) and interstratified traction deposits (fluvioglacials), now mapped in detail and interpreted as glacial, contain: uni- and multidirectionally striated clasts; striated clasts with environmentally diagnostic shapes (wedges and bullets); and occasionally striated fossiliferous (Siluro-Devonian faunal assemblages) and non-fossiliferous erratics. The sequences represent proximal sedimentation associated with a wasting ice-front, south of the Wangaratta area.

Associated with these sediments are seven pavement surfaces, recognised as glacial (one - a miniature roche moutonnee) and indicating ice-movement from south to north. Petrographic data show derivation of non-fossiliferous erratics from local and distant source terrains south of the study area. Palaeontological data show derivation of the exotic fossiliferous erratics from beyond the present southern margin of the Australian craton.

Local preservation and general distribution of glacial deposits reflects original Permian topography rather than subsequent graben tectonics. There is no geological evidence for an Ovens Graben. The present landscape reflects tilt-block tectonics similar in structural pattern to that developed across the north of the state, and is in part at least a preserved Permian feature.

The radiometric age of basalt in Glenrowan Gap (on the western side of the Ovens tilt-block) demonstrates the Gap's existence before 36 Ma. Glacials suggest a relict Permian ice-spill path to the NW.

CERTIFICATE

I certify that the substance of this thesis has not already been submitted for any degree and is not being currently submitted for any degree.

I further certify that any assistance received in preparing this thesis, and all sources used have been fully acknowledged in the body of the thesis.

Michael Anthony Craig

signed: 

PREFACE AND ACKNOWLEDGEMENT

This thesis is conceived as a contribution toward a wider understanding of the Permian glacial deposits of northeastern Victoria, and the landscape evolution since Permian time. The first objective is to establish the nature and distribution of Permian sediments in the northeastern district, to then examine the physiography and tectonic character and the nature and antiquity of landscape evolution.

Throughout the course of this study, I have received invaluable encouragement from a large number of people and in particular I wish to express thanks to the following:

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My wife Yvonne and our three children who went without much for the sake of this thesis.

CONVENTIONS

The following is a list of conventions adopted for the preparation of this thesis:

1. Where possible, all measurements are in S.I. units. In some cases, imperial units are shown in brackets.

2. The attitude of planar surfaces or the plunge of their intersection is expressed in the form : dip/dip direction.

3. All bearings are converted to readings from true north.

4. Choice of spelling is decided according to the form listed by The Concise Oxford Dictionary 5th edition, 1969.

5. Bibliographic style is based on the guidelines to authors issued by the Geological Society of Australia; the titles of periodicals are abbreviated as in the World List of Scientific Periodicals

6. Besides the provision of detailed geological maps in the pocket at the rear of the thesis, six figure grid references are supplied for each significant outcrop discussed within the text.

7. Cardinal and ordinal point of the compass are written as the capitalized letter of the word only e.g., N - North.

3. The term altitude is used instead of the phrase "height above sea level".

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