

Preface

AN International Conference on the theme of "Australasian Tectonics" was held at Kingscote (population 1600) on Kangaroo Island, about 100 km south of Adelaide, South Australia, between 6th and 10th February 1989. The conference was held under the auspices of the Specialist Group in Tectonics and Structural Geology (SGTSG) of the Geological Society of Australia (GSA) Inc., and followed the practice of this group of holding regular meetings in remote and exotic locations close to spectacular field areas. Previous conferences were held in Mt Buffalo, Victoria (1987), Bermagui, New South Wales (1984, see *JSG* Vol. 7, No. 3/4), Glen Helen, near Alice Springs (1981), and Mission Beach, Queensland (1978). The field emphasis of this conference was encouraged by two single day excursions on Kangaroo Island during the conference, and by longer pre- and post-conference excursions around South Australia.

The aim of this meeting was to bring together tectonists and structural geologists from around Australasia, from government surveys, industry and tertiary institutions to discuss current knowledge of the detailed and regional aspects of the tectonic evolution of their continent, with a number of international participants and invitees. One aim was to use the theme and forum as an aid to discuss a possible revision of the nearly 20 year old *Tectonic Map of Australasia*.

More than 160 people attended the very successful event including about 40 students who were given free registration. Invited and overseas speakers included Roy Rutland (Bureau of Mineral Resources), Alan Gibbs (U.K.), John Platt (U.K.), Peter Coney (U.S.A.), Simon Temperley (U.K.), Scott Patterson (U.S.A.), Neil Mancktelow (Switzerland) and Anne-marie Mieke (U.S.A.). All of these invitees added significant contributions to the overall healthy geological debate which ensued.

After arriving by land, sea and air the group of 160 were immediately thrust onto the precipitous cliffs of the north coast of Kangaroo Island to trek, bottom-slide, climb and in a few cases swim across a section of the intensely deformed and metamorphosed Cambrian and Late Proterozoic sediments of the Kanmantoo Trough, whose tectonic development is currently the subject of intense investigation.

After this warm introduction to the island, formal technical sessions continued for 3 days in the local (Kingscote) Town Hall, where 103 papers were presented, 46 as talks and the remaining 57 as posters. These poster displays, most appropriately and adequately attached to shearing shed partitions supplied by local farmers, were on view in the same hall as the lectures throughout the conference, and were the cause

of much intense discussion, especially during the time given over to the formal poster sessions. Abstracts from all of the papers presented at the conference were published as the special Abstract Series of the Geological Society of Australia, No. 24, 1989. These are obtainable through the Head Office of the GSA, Room 101, Challis House, 10 Martin Place, Sydney 2000, NSW, Australia.

Oral presentations were divided into four themes. The principal theme No. 1, *Regional Studies of Australasian Tectonic Provinces*, included 20 presentations, ranging geographically from the Papuan Fold Belt and Banda Arc of eastern Indonesia on the northern collisional margin of the Australasian continent, through all States (and Geologic Provinces) of Australia, to the South Island of New Zealand and Antarctica. One paper (Temperley) even attempted a correlation of the local Adelaide Fold Belt with the Grampian Highlands of Scotland as an 'orogenic analogue'. The other themes included theme No. 2, *Tectonics and Mineralization*; theme No. 3, *Extensional Tectonics*; and theme No. 4, *Microstructural and Model Studies in Tectonics*, with most studies firmly based on local (Australasian) geological areas. Special evening sessions were also held on computer software applications.

After the 3 days of formal sessions the last day of the conference included a full day's tour of Kangaroo Island's geological highlights, which included the spectacularly folded (zebra striped) Kanmantoo schists of Harveys Return on the north coast, the outstandingly exposed migmatite front at Vivonne Bay, and a geomorphological delight of coastal weathering of Late Cambrian granites at the appropriately named tourist locality "Remarkable Rocks". The adjacent Flinders Chase sanctuary also afforded the international visitors a chance to fondle some of the native fauna of wallabies, emus, koalas, etc.

As well as the field trips on Kangaroo Island associated with the conference and attended by most participants, there were also well attended pre- and post-conference excursions across some of the other scenic and geologically interesting highlights of South Australia. A 4-day pre-conference tour of the Adelaide Fold Belt in the southern and central Flinders Ranges, led by Leigh Rankin and Wolfgang Preiss, examined the structure and tectonics of 'syndepositional diapirs' at Worumba, Oraparinna and Blinman, followed by an introduction to the Archaean to Middle Proterozoic metasediments, mylonites and granitoids of the Gawler Craton, southern Eyre Peninsula. A 3-day post-conference excursion led by Pat James and Neil Mancktelow studied the currently controversial geology of the southern Adelaide Fold Belt on the Fleurieu Peninsula.

The tour looked at the equivocal Kanmantoo Group and its possibly conformable/allochthonous relationship to the underlying Late Precambrian (Adelaidean) and Early Cambrian sequence, and the relationship of metamorphism as indicated by porphyroblasts to multiple deformation and thrusting on the many excellent coastal exposures.

All of the field guides associated with the excursions are available through either the GSA or the relevant authors and include: James P. R. (1989), *Field Excursion Guide for Kangaroo Island*; James P. R. (1989), *Field Excursion Guide: Structural Geology of the Fleurieu Peninsula*; Parker A. J. *et al.*, *Archaean–Early Proterozoic Granitoids, Metasediments and Mylonites of the Southern Eyre Peninsula, South Australia*, SGTSG Field Guide No. 2 (1988); Preiss W. V., *Excursion Guide to Diapirs of the Flinders Ranges*, SADME Rept 89/2 (1989).

Papers in this Special Issue were either presented at the conference or were derived from material presented at the conference. Twenty papers are included and are arranged into four broad divisions. In the first division, the large number of papers grouped around the topic of the tectonic evolution of the Tasman Orogenic Belt attest to the scale of this belt, the number of geoscientists working on it and the controversies thus generated. This section (as was the conference) is highlighted by the overview from Peter Coney, which is followed by papers emphasizing thematic aspects such as tectonic regimes (Veevers & Powell) and terrane analysis (Powell *et al.*), palaeomagnetism and tectonics (Li *et al.* and Powell *et al.*), thrust tectonics (Fergusson & VandenBerg), mélangé formation (Fergusson *et al.*), extensional tectonics (Glen) and the emplacement of serpentinite (Stuart-Smith) and granitoid batholiths (Paterson). The

second group of papers include detailed studies of structural, tectonic and thermo-barometric evolution from the remote Early–Middle Proterozoic regions of central Australia (Dirks & Wilson and Norman & Clarke) and the far north of Western Australia (Tyler & Griffin and Tyler & Thorne). The third group of papers from New Zealand include studies of the tectonics of accretionary prisms (George), a controversial reinterpretation of the tectonic history of the Otago Schist Belt (Johnson) and a synthesis of the tectonics of the Alpine Fault Zone (Norris *et al.*). The final group of papers (Gibbs, McCue, Mieke and Stüwe & Wilson) does not fit into a single theme but provides a reasonable representation of the other active contributions from the broad spectrum presented at the conference.

The editors would like to thank all contributors and attendees for their support and enthusiasm. We also sincerely thank the residents of Kingscote and district for their ready help in providing facilities at the conference, particularly the Lady Mayor of Kingscote and to David Hayes, Officer of the Kingscote Development Committee. Thanks go to helpers and organizers both at and before the conference and also in the field including Jim Jago, Richard Jenkins, Jan Grady, Pru MacDonald, Neil Mancktelow, Wolfgang Preiss and especially to Leigh Rankin. We wish finally to thank all of the reviewers who gave their valuable time to attend to manuscripts promptly. We hope that this resulting volume adequately records the current scope and interest in "Australasian Tectonics".

Alex Grady
Pat James
John Parker
John Platt

Preface



Conference participants examining Kanmantoo metasediments at Cuttlefish Bay.



Harvey's Return, with conference organizers Pat James (centre) and John Parker (left).



Remarkable Rocks. Leigh Rankin (left). Pat James (centre) and Alex Grady (right) wearing their organizational hats.