

Preface

THIS special issue stems from the meeting held at ETH in Zürich on 9–11 September 1991, in celebration of John Ramsay's 60th birthday. The meeting was attended by more than 300 people, including many of John Ramsay's former students, and in both participants and content it had a full international flavour. The 3 days of technical sessions were preceded and followed by week-long field trips to the Alps led by John himself. As is typical of Ramsay field trips, these involved a minimum of roadside geology and a lot of off-road geology, requiring much hiking and scrambling. The weather was remarkably kind for both trips.

Over the course of the 3 days in Zürich, a total of 144 papers were presented, 48 orally and 96 as posters. The topics ranged widely over the discipline, but with 'geometry' a recurring theme, reflecting the title of the meeting and, both explicitly and implicitly, recognizing the importance of geometry in the seminal contributions of John Ramsay to structural geology in the past four decades. Conspicuous among the many excellent posters was one by John Ramsay himself entitled 'Geological Mapping', which displayed examples of John's field maps made over the course of his career, from undergraduate mapping in North Wales to recent work in the Alps. Abstracts for the meeting are published in *Mitt. aus dem Geol. Inst. ETH Zürich, Neue Folge*, **239b**, 1991.

There were two highlights of the meeting outside the lecture room. The first, in fact, began in the lecture hall at the end of the first day with birthday tributes from Paul Hancock (on behalf of the Tectonic Studies Group in the U.K.), Robert Shackleton (on behalf of the 'older' generation) and Mike Coward (on behalf of the 'younger' generation), followed by an Open Buffet, prepared and hosted by students in the Geology Department, and held in a congenial, party-like atmosphere among the posters. The second was the Conference Dinner at the end of the second day, held in the more formal surroundings of one of the ancient Guild Halls beside the river Limmat. At the dinner, Rudolf Trümpy gave a warm account of his association with John, and John responded with reminiscences of his career, ending his speech with a recitation of 'Farver', one of his Cockney-slang poems. A collection of John's poems, entitled 'Geolities', was included in the material given to participants at the meeting. A selection of photographs taken at the social events follows this Preface.

The 32 papers contained in this special issue reflect well the breadth of topics presented at the meeting, and the number and length of the articles make it the 'weightiest' special issue so far for the Journal! The papers are grouped somewhat differently than they were at the meeting, with a consolidation and renaming of

the topics in the 11 sessions into eight sections here. As at the meeting, there is only one regional section—Alpine structure and tectonics—which seems highly appropriate given the number of papers on this region, the location of the meeting and the fact that the Alps is the field area on which John Ramsay has focused his attention over the past decade or so. Other regional studies are included in the issue, many of them having a topical focus, and these are included in the most appropriate topical section. Apart from the field studies carried out in the broad Alpine region, there are three studies in the Appalachians, and one each in the Sierra Nevada, the Canadian Rocky Mountains, the Scandinavian Caledonides, and the Precambrian in India and East Africa.

The volume starts with a section on *Folding*, thus starting out on the theme of many of John Ramsay's early papers. The first paper is an extension of Ramsay's fold classification (Zagorčev), and this is followed by papers on numerical models of fold development in non-linear materials (Hudleston & Lan) and polycrystalline aggregates (Zhang *et al.*). Two papers deal with multi-layer folding in numerical (Mazzoli & Carnemolla) and experimental (Grujić) studies. The final paper in the section is an analysis of deformation history in an Indian greenstone belt using folds (Mukhopadhyay & Matin).

The second section, a short one on *Fracture*, contains two papers, one dealing with the origin of echelon fractures (Thomas & Pollard), and the other with subsidiary faults associated with thrusting (Watkinson).

The first paper (Means) in the next section, on *Deformation mechanisms and fabrics*, considers the geometrical characteristics of deformation processes, leading to a classification of these. The next (Burkhard) reviews calcite twinning and its use in estimating physical conditions during deformation, and the third (Heilbronner & Pauli) presents a new automatic method for analysis of quartz *c*-axes. The last paper in the section considers magnetic fabric in relation to strain (Borradaile).

The first two papers in the next section, on *Displacement, strain and progressive deformation* are concerned with techniques of estimating displacement in folded and faulted rocks (Gratier and Guillier) and measuring strain in experiments using analogue materials (Bons *et al.*). The last two treat the theoretical predictions of strain development during simultaneous simple shear, pure shear and volume change (Fossen & Tikoff) and the implications of power-law rheology for strain development in layered rocks (Treagus).

The section on *Deformation in fold and thrust belts* starts with three papers on the Appalachians, the first two (Gray & Mitra, Couzens *et al.*) focusing on deformation history, and its variation in space and time, and

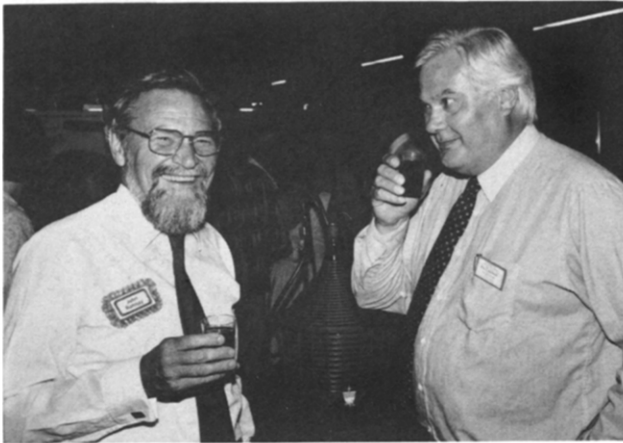
the third examining differences in strain between a roof sequence and the underlying duplexes (Onasch & Dunne). The fourth paper (Lickorish) documents the deformation history to account for the Porcupine Creek anticlinorium in the Canadian Rocky Mountains, and the final paper (Cosgrove) argues that excess fluid pressures are needed to account for the development of thrusting and folding in North Wales.

The section on *Alpine structure and tectonics* contains four papers on nappe and thrust geometry in the Alps *sensu stricto*, starting with a review of the nappe geometry of the western Swiss Alps (Escher *et al.*), and followed by a review of the geometry of the Helvetic nappes (Pfiffner), and a model to explain the curvature of the Subalpine chain in France (Ferrill & Groshong). The fourth paper deals with the geometry and kinematics of the Pennine nappes (Baudin *et al.*). The other two papers in the section consider Alpine tectonics in a broader sense, one extensional structures in the Betic cordillera (Jabaloy *et al.*) and the other an Alpine tectonic cycle of shortening and extension in Greece (Schermer).

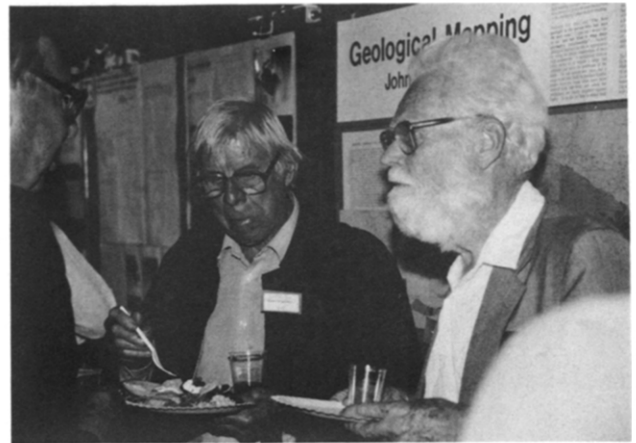
A section on *Pluton emplacement* contains two papers, one a numerical study of strains developed as a result of pluton emplacement by ballooning during synchronous regional deformation (Guglielmo), and the second on the nature and timing of deformation associated with pluton emplacement in the Sierra Nevada (Tobisch *et al.*). The final section brings us to the *Structure of the middle and lower crust*, with studies of deformation partitioning in the Scandinavian Caledonides (Gilotti & Hull), and of a record of (pre-Alpine) magmatic underplating during crustal extension in the Ivrea zone (Rutter *et al.*) and of intense shear in the lower crust of Precambrian age in Tanzania (Shackleton).

Peter Hudleston
Martin Casey
Dorothee Dietrich
Mary Ford
John Watkinson

Photographs taken at the Open Buffet and the Conference Dinner, courtesy of John Ramsay



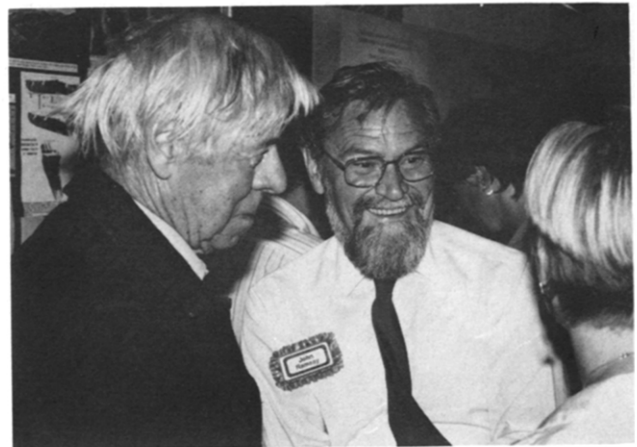
John Ramsay and Paul Hancock



Robert Shackleton and John Rodgers in front of John Ramsay's poster



Rudolf Trümpy speaking at the Conference Dinner; Peigi Shackleton and John Ramsay listening



Robert Shackleton and John Ramsay



John Watkinson playing his penny whistle



Different generations: John Dewey, Phil Gans and Egan Gans



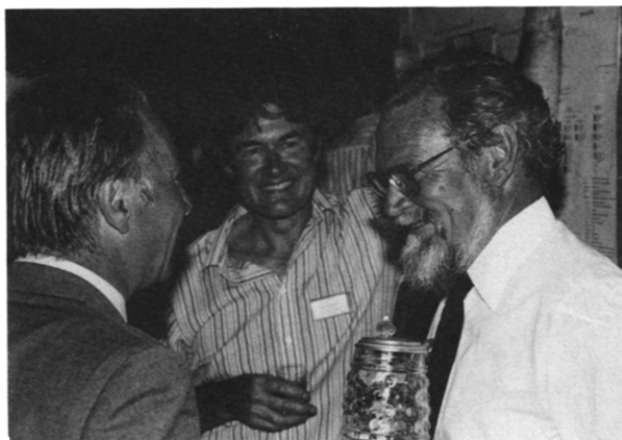
The geologically correct approach to tapping a beer keg:
Herman Lebit and Franz Goenner



The Open Buffet in the Geology Department



Robert Shackleton and Dorothee Dietrich



Ivan Zagorčev, Tim Harper and John Ramsay



The Conference Dinner at the Guild Hall



Peter Hudleston and Susan Treagus