Amongst the 12 included papers is information on the tectonic setting of the offshore and onshore Santa Maria Basin, the San Simeon/Hosgri fault system, and the distribution and nature of seismicity within the region. You will find offshore seismic data provided by Steritz & Luyendyk and Cummings & Johnson, information about correlating marine terraces by Rockwell *et al.*, so-called stress determinations from fault-slip data by Vittori *et al.*, and an investigation of the seismicity by Dehlinger & Bolt. My personal favourites include a review of the seismotectonic framework by Clark *et al.*, and several excellent papers on using marine terraces and other geomorphic/stratigraphic features as strain gauges (e.g. Hanson *et al.*, Lettis *et al.*, Nitchman & Slemmons, Hanson & Lettis, Hall *et al.*, and another Lettis *et al.*); these papers are accompanied by 5 excellent (and very large) geological maps included in envelopes at the front and back of the volume. The strain gauge data—which tells us about uplift/subsidence rates, fault-slip rates and earthquake recurrence intervals—show that some structures do appear to show deformation rates that agree with predictions of long-term deformation derived from space-based geodesy: others clearly do not and appear to be dead, but not gone.

This is exciting material! Despite the 1987 vintage of the work, and the concentration on geomorphic and Quaternary–Holocene stratigraphic data rather than structural geology, the information was a breath of fresh air to me, and provided insights into the growth of geological structures that many structural geologist may not be accustomed to. Through examination of deformed marine terraces and other geomorphic features, the authors provide real data on the rates of Quaternary–Holocene regional deformation and the growth of faults and folds: marvellous stuff!

Overall, I found most of this book to be gripping and very worthy of a place on the shelf of any structural geologist. I will proudly carry this one into the coffee room to astound my sedimentologist colleagues and those who work on the Quaternary; colleagues who may previously have thought that structural geologists only look at old and undeforming rocks.

Basins of the Rio Grande Rift: Structure, Stratigraphy and Tectonic Setting. Keller, G. R. and Cather, S. M. (editors) 1994. Geol. Soc. Am. Spec. Paper **291**. Price: $72.50 (soft back; ISBN: 0-8137-2291-8).

This volume arose from a series of papers presented at a symposium of the 1991 joint meeting of the Rocky Mountain and South-Central sections of the Geological Society of America. The volume highlights the view that the basins of the Rio Grande Rift are part of a late Cenozoic intra-continental rift which differs from the Kenya, Baikal and Rhine rifts in that (1) it is well-exposed due to incised modern drainage; (2) petroleum exploration has spawned a number of seismic reflection profiles; (3) the geology is constrained by a number of radiometric dates. The volume contains 19 papers and deals with all the basins comprising the rift, with coverage of the geology from Colorado, through New Mexico to Texas; an area of about 400,000 km^2: an extensive and welcome data-base indeed!

Although the volume concentrates on a single geographical area, it contains many sections that will be of interest to readers of this Journal. Chapin & Cather describe the tectonic setting of the whole rift. They suggest that rotation about a Euler Pole to the north of the rift explains both the increase in purported values of extension from north to south and the kinematics of so-called accommodation zones between individual sub-basins that appear to lie on small circles relative to the Euler Pole. A section on the 'accommodation zones' shows that their geometry and kinematics are poorly-constrained, a situation which may tempt structural geologists with an interest in such structures to get their boots on and go and have a look at them! Also, an intriguing section which investigates the rift's uplift history through studies of the palaeoelevations of flora preserved in Eocene Lake Beds should be of interest to geodynamicists with botanical interests. Seismic reflection profiles allowing speculation concerning the deep structure of the rift are provided in papers by Kluth & Schaftenaar, Russel & Snelson and Barrow & Keller. These speculations fuel the long-standing debate concerning the existence of listric normal fault geometries and low-angle detachments in rifts: some people can see them, some cannot! With the clear presentations of the actual seismic lines, the reader can join in and have a go at interpreting the enigmatic seismic data. Schneider & Keller and Adams & Keller use a variety of geophysical data to examine the lithospheric structure of the rift. Lewis & Baldridge use models of flexural deformation for the footwalls of rift-bounding faults to suggest that some contractional structures previously attributed to Laramide compression may have formed during the Cenozoic extension. Harrison examines the orientations of faults and stress axes for one basin within the rift. Beck & Chapin suggest that Proterozoic structural trends have been reactivated during the growth of Phanerozoic structures. Salyards *et al.* present palaeomagnetic data which show that the Rio Grande Rift is not rotating as a whole, as previously thought, but consists of a number of smaller counter-clockwise rotating blocks. Mack *et al.* use magnetostratigraphy to examine the stratigraphic variations across faults in the rift. May *et al.* present apatite fission-track data and show that rapid uplift occurs in the footwall of the rift-bounding faults whilst slower uplift occurs on the hanging-wall dip-slopes. Collins & Raney investigate Quaternary fault movements within the rift. The volume also contains many other sedimentological and stratigraphical data which will interest structural geologists who enjoy brief respites from deformed rocks!

Overall, a nice volume to have on the shelf, with many insights into the development of rift zones. I am sure those working around the Rio Grande, or those studying rifts will wish to own a copy of this volume, but I am sure many may simply wish to order it for their library.

The approach adopted in these two volumes from the Geological Society of America is that of applying old techniques to new rocks. This approach—an approach that is, in my view, not encouraged by funding constraints in my own country—appears to me to have produced some very exciting new results and important insights into fundamental earth processes. I am pleased that the Geological Society of America provides encouragement, in the form of such volumes, to workers engaged in basic data collection.

London, U.K. *Gerald P. Roberts*

Model collection

Modern Developments in Structural Interpretation, Validation and Modelling. Buchanan, P. G. & Nieuwland, D. A. (editors) 1996. Geol. Soc. Spec. Publ. **99**. Price: £70 (£36 for members of the Geological Society).

This Geological Society special publication provides a comprehensive review of the latest developments and techniques available in structural interpretation, cross-section validation and modelling techniques. The volume is of modest size (370 pages in length) containing 23 articles organised into six chapters on the basis of methods and techniques used. After an introduction, the chapters cover, in order: (1) Seismic Interpretation; (2) Palinspastic reconstruction and forward modelling; (3) Fault populations and geometric analyses; (4) Analogue modelling; (5) Mathematical modelling, and finally, (6) Regional analysis and remote sensing. It is inevitable, however, that there is a large degree of overlap between individual chapters and that most authors have combined more than one technique to achieve their goals. Most people, I feel, will dip into this volume (as I did) to concentrate on those chapters and techniques that are relevant to their interests rather than reading the entire volume from cover to cover.

This special publication begins with *Seismic Interpretation* (Chapter 1). In their excellent introduction, the editors point out that the single most important technique that has enabled significant advances in structural interpretation is 3D seismic. Access to 2D and 3D seismic for structural interpretation is becoming widely available in academia. It is appropriate that the first chapter of this Special Publication focuses on some of the pitfalls of using seismic interpretations for validating 3D fault geometries. The first contributor to Chapter 1 outlines the advantages of integrating gravity and magnetic data for validating seismic processing and interpretation. The next paper deals with estimating the density of faults below the limit of seismic resolution by analysing the fractal or power-law scaling of fault displacements. The last contributor in Chapter 1 focuses on quantifying the variety and complexity of ductile strain associated with faults. This paper provides a number of examples in which significant fault-related ductile strain can be demonstrated. These authors show that fault-related ductile strains can occur on all scales and can vary both laterally and vertically.

Chapter 2, *Palinspastic Reconstructions and Forward Modelling*, contains the largest number of contributors to this volume. The chapter