structural geology course for years. I was, therefore, quite intrigued by Stephen Rowlands' laboratory manual that takes this strategy a step further by progressively analyzing a single geologic terrain. Most of the exercises include analyses of various aspects of the structural geology of the mythical Bree Creek Quadrangle, which is included on six separate sheets in the back of the book. This approach is intended to approximate the procedure used by the field structural geologist in the study of a new area.

The book contains 14 chapters that are organized into an orderly sequence of map-related exercises and several exercises that supplement topics which are typically discussed in the lecture portion of a course. The chapter titles are: (1) Attitudes of Lines and Planes, (2) Outcrop Patterns and Structural Contours, (3) Interpretation of Geologic Maps, (4) Geologic Structure Sections, (5) Stereographic Projections, (6) Folds, (7) Stereographic Analysis of Folded Rocks, (8) Parasitic and Superimposed Folds, (9) Faults, (10) Orientation of the Stress Ellipsoid, (11) A Structural Synthesis, (12) Rheological Models, (13) Brittle Failure and (14) Strain Measurement. Five Appendices contain information on: the use of a Brunton compass; trigonometric functions; Greek letter symbols used in the book; determining vertically exaggerated dips; and conversion factors. I cover the topics considered in the last three chapters fairly early in my lectures, but I had no problem moving these exercises in the sequence to coincide with my lectures.

The individual chapters are generally well organized, clearly illustrated and clearly written. A bold-print section at the beginning of each chapter states the objectives of the exercise. Recommendations by the author at various points help the student approach the exercises in an organized manner. The laboratory manual pages are perforated and three-hole punched so they can be taken out and put in a binder along with the exercise answers for easy future reference. Each chapter ends with a brief annotated list of "Further Reading". Typically these references are from other laboratory manuals, structural geology texts, or the *U.S. Journal of Geological Education*. A complete list of references cited is included at the end of the text.

Although most of the book's chapters are fairly standard for laboratory manuals on structural geology, two of the chapters are relatively unique. Chapter 11, A Structural Synthesis, instructs the student in the preparation of an organized report on the structural history of the Bree Creek Quadrangle. The chapter provides organized topic headings and instructions for the presentation of results obtained by the student during the completion of 15 previous problems on the geology of the Bree Creek Quadrangle. The instructions are clear and to the point and even include a brief discussion on how to cite references. Two short sections on Writing Style and Common Errors in Geology Reports help the student through some of the common problems encountered in report writing.

The second unique chapter includes a series of experiments illustrating rheological models using rubber bands, a plastic syringe, a block of wood and Silly Putty. Although the rheological experiments are conceptually useful, even as thought experiments, the geological applications considered in the problems are not equally good illustrations of the application of these processes.

The level of presentation in the text is clearly a compromise between books devoted entirely to map exercises and laboratory manuals that include a more comprehensive and rigorous approach to the techniques of structural analysis. For instance, in the discussion of brittle failure, equations for normal stress and shear stress in terms of the principle stresses and theta are converted to double angle form; however, the author makes no effort to show that these equations are the parametric equations for a circle and form the basis for the Mohr diagram. This same chapter discusses brittle failure in terms of the Mohr envelope and the angle of internal friction (Coulomb coefficient) but makes no mention of the Coulomb criterion or the graphical representation of cohesion on the Mohr diagram. Such criticism could reasonably be dismissed were it not for the erroneous suggestion (pp. 167–168) that cohesionless materials have a Coulomb coefficient of zero and therefore fail at an angle of 45°. I was also disappointed that the author decided that Ramsay's type 1A and 1C folds were not worth mentioning, leaving the student with the impression that all type 1 folds are parallel folds. Through a similar omission, the author implies that all folds with gently dipping axial planes are reclined folds.

Other instructors may find their own pet criticisms of the depth and rigor of the presentation, but the rigor of the presentation can be supplemented as the instructor sees fit. I, nonetheless, appreciate the manual's clearly organized and balanced presentation of topics and its exercises that involve the progressive analysis and written synthesis of a single map area. The text has been popular with my students. I would recommend it to any instructor who emphasizes the interpretation of geologic maps in their introductory structural geology course.

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The Nepal Himalaya

Colchen, M., Le Fort, P. and Pêcher, A. 1986. *Geological Research in the Nepal Himalaya. Annapurna, Manaslu, Ganesh Himal.* Editions du Centre National de la Recherche Scientifique, Paris.

This memoir, by three of the foremost Himalayan workers, covers the central Nepal sector of the mountain range and summarizes over 10 years of field research by the French team. The book is bilingual, the first half in French, the second in English separated by a central section of plates. Thus it appears 'meatier' than it actually is. The English version also suffers from poor translation and the reader is continually puzzling over the meaning of concretized, chemism and other Franglais words.

The text is an updated explanatory paper to accompany the excellent fold-out 1:200,000-scale coloured geological map that was compiled in 1978 and first published in 1980. The map covers the eastern part of the Dhaulagiri Massif, the Kali Gandeki Valley, the Annapurna Massif, the Marsyandi Valley, the Manaslu Massif and the Burhi Gandaki Valley to the western edge of the Ganesh Himal. The lithological-structural map has metamorphic isograds superimposed, and in interpretative cross-section. It is a compilation of many years field studies by the three authors as well as previous mapping by G. Fuchs, P. Bordet and J. Stocklin, and is invaluable to all Himalayan researchers. It seems a pity therefore that the text is only a superficial coverage. The High Himalayan metamorphic rocks and the classic Manaslu granite are described in only 4 pages each and the stratigraphy and tectonic sections are likewise superficial.

There are over 70 black and white photographs some of which, although interesting, are only of limited geological value. The book is well produced by CNRS and has a superb colour photograph of the west face of Machapuchare (6993 m) on the front cover. The area covered is one of the most extensively studied regions of the Himalaya, and this volume can be recommended for all Himalayan researchers.

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Terrane tectonics

Evan C. Leitch & Erwin Scheibner (Editors) 1987. *Terrane Accretion and Orogenic Belts*. American Geophysical Union, Geodynamics Series, Vol. 19. Price $38.

This volume presents a selection of up-dated papers from the Third Circum-Pacific Terrane Conference held in Sydney, Australia, in August 1985. Most of the papers deal with terranes in the Western Pacific margins and there is particular emphasis on Australia and the SW Pacific (220 pages of the 343 page volume). Thus many of the papers deal with pre-Mesozoic terranes in the hinterland of the active Pacific rim. Two earlier volumes dealt mainly with the NW and NE Pacific margins, respectively, while Vol. 18 of the Geodynamics Series also deals with Circum-Pacific orogenic belts and the evolution of the Pacific Basin.

During the last two decades work in the north-east quadrant of the Pacific Rim has demonstrated great complexity of evolution of these accretionary belts which have developed through the interaction of continental and oceanic plates. Palaeontological and paleomagnetic evidence have been used to argue for very large displacements (of the order of hundreds or thousands of kilometres) of individual terranes relative to adjacent terranes and to the continental craton. Thus terrane tectonics has brought concepts, previously largely restricted to the study of continent–continent collision belts, to the study of the anatomy of Circum-Pacific accretionary belts.