

**CLASTIC DEPOSITIONAL SEQUENCES: Processes of Evolution and Principles of Interpretation.** By Gordon S. Fraser (1989). Prentice Hall, Englewood Cliffs, New Jersey, U.S.A. 456 p. \$ 65.95.

The book is based on the principle, that the mother science of geology 'stratigraphy' can be operationally defined as the 'study of the manner in which rock sequences accumulate'. This calls for an understanding of processes of sedimentology and geomorphology and their interacting roles.

A depositional system for the purpose of the book is defined as 'the collection of all those depositional components that can be expected to interact in a mutually dependent manner and can be expected to succeed one another in a predictable series during the evolution of a rock sequence in a given setting'.

The back-bone for the development of the method of analysis of rock sequences is Jhonnes Walther's principle of correlation of facies which states that 'only those facies can be superimposed which can be observed beside each other at the present time'. The inverse of this principle that vertical sequences always reproduce horizontal facies distribution is untrue. It is unfortunate, however, as the author points out that 'the literature contains many synthetic stratigraphic sequences produced by assuming the inverse of Walther's principle. Walther's principle entails two other supporting sub-principles (1) making an actualistic approach to genetic interpretation of stratigraphic sequences mandatory and (2) building up of rock sequences by migration of facies through time.

There are six parts and sixteen chapters in the book with an introduction in the beginning and a concluding chapter at the end. The distribution of chapters over the parts is as follows:

*Part I: Foundations:* Chapter 1: Physical controls on sediment accumulation; Chapter 2: Principles of sequence analysis; Chapter 3: Classification of environments. *Part II: Continental environments:* Chapter 4: Arid system; Chapter 5: Humid system. *Part III: Coastal transition zone:* Chapter 6: Tide dominated coastlines; Chapter 7: Muddy coastlines; Chapter 8: Wave dominated coastlines; Chapter 9: Deltaic coastlines; and Chapter 10: Estuarine coasts. *Part IV: Shallow marine environment:* Chapter 11: Continental shelves; Chapter 12: Epicontinental seas. *Part V: Continental slope transition zone:* Chapter 13: Morphology and sedimentology of continental slopes; Chapter 14: Evolution of slope sequences. *Part VI: Deep marine environment:* Chapter 15: Components; Chapter 16: Deep marine systems.

The approach of presentation from Chapter 4 to 16 is to describe each depositional system in terms of interplay of geomorphological and sedimentological processes and the vertical stratigraphic sequence as a reflection of the interplay. The vertical sequence as presented would serve as a process-response model for the interpretation of rock sequences both in outcrop and subsurface. The models are amply illustrated by line drawings, cross-sections, plan outlay of environments and projected stratigraphic sequences.

The introductory chapter deals with the philosophy and the methodological approach to the analysis of clastic depositional sequences and the concluding chapter deals with the new concepts of 'Event Stratigraphy' in clastic depositional sequences. Event Stratigraphy is supposed to mean 'how events in one part of a

system influence events in other parts and how sediments respond to these events in various parts of the system'. Correlation by 'Event Stratigraphy' is the call of modern stratigraphic analysis and is gradually replacing the classical approach of correlation by petrographic character and fossil content. Hence, the dictum of Jhonnes Walther that 'only sedimentology could save us from stratigraphy'.

The present day facies analysis follows the inverse of Walther's principle and attempts to pigeon hole specific lithologies (facies) with specific depositional environment and at the end of the paper presents a block model to show the horizontal disposition of the environments. May be the approach should be to keep the space deposition model as a guide and interpret the observed stratigraphic sequence as a response to various geomorphological and sedimentological process inputs through time to keep abreast of Walther's principle.

The book is highly readable. Complex ideas are explained in simple straightforward, specific and clear terms. List of references is extensive. The book serves as a model for precise scientific writing also. The book, despite its cost, is recommended to academics involved in teaching facies analysis courses, students and research workers in sedimentology, professionals engaged in the exploration of natural resource materials, especially strata-bound deposits, and fossil fuels.

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**BIBLIOGRAPHY ON HIMALAYAN GEOLOGY 1975-1985.** Wadia Institute of Himalayan Geology, Dehra Dun. 1987. 295 p.

Bibliographies of literature in particular fields of specialisation have an important role to play in dissemination of knowledge. The Wadia Institute of Himalayan Geology is to be congratulated in bringing out a Bibliography on Himalayan Geology for the period 1975-1985. Among the 22 sections under which literature has been classified, we notice the following two important omissions—Geochemistry and Environmental Geology. These are two important subdivisions of knowledge and must specifically find a place in the Bibliography. Another important omission is the section on aerial geology including maps and charts. Most students interested in Himalayan geology are interested in knowing where maps of particular regions of Himalaya can be found. A compilation under this head is essential. We suggest these be included. One section should be devoted to books on Himalayan geology. Readers should know what books have appeared on Himalayan geology during the period. A list of journals which have been covered in the preparation of the index would add to the usefulness of the book.

More important than the author index is the subject index. A person interested in knowing references to Siwaliks or Krols or Blaini Boulder Bed should be able to readily find out the required reference. Although this involves certain amount of additional work on the part of compilers it is worth attempting in order to make the Bibliography more useful.

These criticisms are offered not with a view to finding fault, but to suggest improvements and make the publication more useful to earth scientists.

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