BOOK REVIEWS

POTTER (P. E.) and PETTIJOHN (F. J.). *Paleocurrents and Basin Analysis.* Berlin (Springer-Verlag), 1963. 296 pp. Price: 74*s*.

The increase in output of geological literature relating to the nature and value of directional structures in sediments during the past decade has resulted in the accumulation of a vast amount of partially digested data. This book represents the first attempt to amalgamate the information thus gathered and to deal comprehensively with the entire spectrum of current-indicators. In addition the authors have endeavoured to relate this aspect to the wider issue of the concept of the sedimentary basin as a model based on integrated study of all the sedimentary attributes. Their efforts have produced a volume that is likely to remain a standard text in this field for many years to come.

The book opens with a general introduction followed by a historical review of paleocurrent investigations. The next four chapters deal with oriented fabric properties and with the various primary directional structures. In this section the same general plan is followed for each structure and consists of a description and classification followed by a discussion of the interpretation with respect to current orientation, environmental significance, and practical value in basinal studies. In most cases the genesis of the structure is briefly discussed. A welcome feature of this section is the manner in which the structures are interpreted in terms of hydraulic mechanism rather than specific environment.

The following three chapters are concerned with the concept of the sedimentary basin and deal respectively with the relationship between internal directional structures and the form and orientation of sedimentary bodies; with the more general problem of assessing the significance of dispersal patterns; and with analytical aspects of the basin model. In this last chapter a fresh view of the basin model is developed, employing the close relationship that exists between the arrangement of directional structures and of other elements of sedimentation (lithofacies, isopachs, cycles of filling, etc.). Using these criteria three principal types of clastic basin (molasse, fluvio-deltaic, and turbidite) are defined and examples drawn mainly from North America are illustrated.

The final chapter is to be commended in that it provides a lucid outline of the basic statistical techniques appropriated to the sampling, interpretation, and expression of current-data and scalar properties in regional studies.

The text is liberally illustrated by nearly 130 diagrams and line-drawings together with some 30 plates of excellent quality. The list of references at the end of each chapter is extensive and there are five tables listing published accounts of specific structures. Indeed the outstanding features of this book might be summarized as illustration and documentation. It is all the more surprising, therefore, to find some familiar papers missing from this plethora of quotation. Two that are noticeable by their absence are Knill's contribution (Journ. Sed. Petrology, 1959) to the concept of the filling of turbidite basins and Crowell's account of the Kimmeridgian boulder-beds of Helmsdale, Sutherlandshire (Trans. Edin. Geol. Soc., 1961), a vignette of the integrated application of linear structures and fabric elements of localized subaqueous sliding. The rather frequent typographical errors are a source of minor irritation as are other errors that can hardly be typographical, such as ascribing the crossbedding of Shotton's classic study to the *Old* Red Sandstone (p. 86). To compensate, the index is reasonably comprehensive and is divided into three sections, dealing with authors, formations, and subjects.

While the appeal of this book is clearly greatest for the specialist sedimentologist it is fair to say that perusal of the volume, used either as a text or as a reference tool, would be of value to all who have to deal with sediments and sedimentary bodies. G. KELLING

BUERGER (M. J.). *The precession method in X-ray crystallography.* London (Wiley), 1964. xvi+276 pp. Price 102*s*.

The precession method was devised and developed in Professor Buerger's laboratory and so it is appropriate that he should write the most complete account of its use that has yet appeared. The book, which is clearly written and well-produced, includes many excellent drawings and photographs, useful tables, and a comprehensive coverage of the literature. The text deals in detail with the theory of the method, the practical handling of the apparatus, and the interpretation of the photographs. There are also chapters on cone-axis photographs, errors, intensity determinations, the Lorentz factor and absorption, and an appendix on heating and cooling techniques. There is no doubt that any user or prospective user of the precession technique will find this book invaluable. J. ZUSSMAN

MARSHALL (C. E.). *The physical chemistry and mineralogy of soils. Vol. I, soil materials.* London (Wiley), 1964. vii+388 pp. Price: 90*s*.

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