meaning to his. In an interesting addendum to the early modern material, Westman suggests that Pauli's work on these pictorial archetypes may have been stimulated in part by the visualization crisis in modern physics.

Fludd thought Kepler was a numerologist, albeit a mistaken one, and since Fludd was one himself he attempted to straighten Kepler out on the matter. Judith Field finds in her essay, however that Kepler knew he was not in that tradition. Kepler had opted for *numeri numerati* (counted numbers) over *numeri numerantes* (counting numbers), thus for geometry over arithmetic in music, astrology, and astronomy. He saw himself as heir to Plato, Euclid, Ptolemy, and Proclus rather than Pythagoras, Boethius, Iamblicus, and Porphyry. Since many historians have also seen Kepler as something of a numerologist in his search for "the music of the spheres," Field's work is a significant clarification.

A number of the essays mention epistemology, and, although no author quite makes the point explicit, as a whole the collection presents considerable evidence for an epistemological crisis during the 16th and 17th centuries. What can one know, and how can one know it? Through what human faculties is knowledge to be obtained? Or, since both the senses and the intellect are subject to error, should one rely solely on divine illumination? Mulligan in " 'Reason,' 'right reason,' and 'revelation' in mid-seventeenth-century England" has found that these questions cut across all fields—religion and politics as well as the study of nature. Almost everyone called for the use of "right reason," by which each one meant his own idiosyncratic mix of "reason" and "revelation," with none to decide which "right reason" was really "right." No one knew, and one must be very sensitive to that point in any search for "occult and scientific mentalities" in the Renaissance and early modern period. As Richard Westfall notes in his essay on Newton's alchemy, "A different standard of rationality in the seventeenth century may have encouraged Newton to open himself to the influence of a tradition that appears to us almost as the antithesis of reason" (p. 332). No single factor seems to divide the principal actors in the drama as we would wish, and it may be that we have not yet asked quite the right questions on any of these issues regarding the origins of modern science.

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Fluvial Sedimentology

Modern and Ancient Fluvial Systems. J. D. COLLINSON AND J. LEWIN, Eds. Blackwell Scientific, Palo Alto, Calif., 1983. viii, 575 pp., illus. Paper, $56. International Association of Sedimentologists Special Publication no. 6. From a conference, Keele, England, Sept. 1981.

This book incorporates 44 of the papers presented at the second international conference on fluvial sedimentology. The editors have endeavored to select papers representative of the overall balance of the meeting and have organized them into four sections that reflect the interdisciplinary range of topics discussed—hydrodynamics and bedforms, present-day channel processes, facies models, and economic aspects.

In the first group, M. R. Leeder and J. R. L. Allen present two thoughtful syntheses of flow dynamics, lag and bedform genesis. Two additional papers summarize new experimental data. Papers concerning modern channels provide numerous largely descriptive views of erosional and depositional processes and products. The focus of study has shifted from the well-known meandering channel to examples of very coarse-grained and very fine grained fluvial systems. Channel segments located in proglacial or glacially influenced terranes receive the most attention. However, the sedimentary dynamics of large, humid-climate, and tropical streams remain little described. Perhaps of greatest general interest is a paper by D. G. Smith on anastomosed fluvial deposits. Anastomosed systems have been popularized by sedimentologists only in the past few years, though their basic features were discussed nearly 20 years ago by S. A. Schumm. The greatest number of papers focuses on the analysis of ancient alluvial sequences. Most of these papers are primarily descriptive but do illustrate the ways in which paleoflow and bedform dynamics can be inferred from preserved sedimentary structures and other features. A few papers, notably that of P. F. Friend, discuss broader concepts of the stratigraphy of fluvial deposits. The remaining papers provide good examples of the way interpretation and mapping of ancient fluvial deposits aid the understanding and prediction of mineral resources, including gold, uranium, coal, and petroleum.

Modern and Ancient Fluvial Systems is an overview of current research directions for the nonspecialist and contains many papers that will be of interest to the specialist in terrestrial depositional environments. However, in comparing this book with its predecessor (Canadian Society of Petroleum Geologists Memoir 5, 1977), which resulted from the first fluvial conference, I find myself somewhat let down. Whereas the first volume teemed with thought-provoking concepts and attempts at synthesis and generalization, this volume seems to reflect a period of retrenchment and of return to the relatively safe task of description, preferably at a highly localized and detailed level, with little attempt to integrate the observations into the larger context of the fluvial system or basin studied. Thus assessment of the significance of the models and concepts presented is left to the reader. It may well be that, as Collinson and Lewin propose in their introduction, "many case histories will be a better basis for interpretation of new examples." However, my expectation is that the third volume, when it is published, will contain citations of more papers in the first volume than in this one.

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The Erosion of Shorelines

CRC Handbook of Coastal Processes and Erosion. PAUL D. KOMAR, Ed. CRC Press, Boca Raton, Fla., 1983. xii, 305 pp., illus. $70. CRC Series in Marine Science.

The objective of this book is "to provide a state-of-the-art presentation of the science of coastal erosion processes," apparently for an audience of coastal geologists and geomorphologists. Judged against this stated objective the book is a success.

There are 14 chapters, including four by Komar. The 14 authors include a representative cross-section of American coastal geologists and geomorphologists, as well as a coastal engineer, a meteorologist, and two overseas authors with American experience. The introductory chapter, by Komar, qualitatively summarizes what has been described mathematically about coastal processes. Following chapters cover topics that range from edge waves (Holman) to barrier islands (Nummedal) to erosion statistics (Dolan, Hayden, and May). For the reader desiring to follow up a topic, there are bibliographies, many of them excellent, at the ends of the chapters.

Sea level rises so slowly on ocean beaches that a research career is not long