of archeologic pathology rather well. It is a collection of papers that cover the past 60 years of research and interpretation in paleopathology. Although most of the chapters are original contributions written for this volume, the editors have included several short classic papers by such authors as Moodie and Ruffer.

The opening chapters provide a much-needed caution against the overdiagnosing of prehistoric specimens. Wells describes some of the postmortem changes that occur under some burial circumstances that might be mistaken for pathologic conditions, while Gray's chapter dealing with "calcinosis intervertebralis" in Egyptian mummies clearly shows the pitfalls of attempting to evaluate some possibly pathologic conditions in mummies by radiographic examination alone, in the absence of gross or microscopic information.

Although most of the text discusses specific diseases and injuries from an anatomic point of view, there is a generous section dealing with parasitology and a fascinating section, well documented with historic references, on mental abnormalities in ancient societies.

The problem of the origin and prehistoric distribution of such widespread diseases as syphilis, yaws, tuberculosis, and leprosy is discussed by several of the authors from slightly different viewpoints. Hackett's hypothesis that venereal syphilis evolved from endemic syphilis, which in turn evolved from the treponeme responsible for yaws, is particularly interesting if somewhat speculative.

For the most part the text is well illustrated, although a very few of the photographs are so badly out of focus as to be virtually uninformative. The quality of the individual chapters by these various authors is generally rather high, imparting to the book an overall value that is commensurate with its cost. Certainly the most comprehensive collection of papers on paleopathology available, this book will be a necessity for anyone seriously involved in this field. It should also provide absorbing reading for anyone interested in the history of medicine or disease. It is the compiled record of man's medical ills over the past several hundred thousand years, from *Homo erectus* well into historic times.

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Rock Phenomenon

Diagenesis in Sediments. GUNNAR LARSEN and GEORGE V. CHILINGAR. Elsevier, New York, 1967. vi + 551 pp., illus. $30. Developments in Sedimentology, vol. 8.

This book comprises 12 chapters written by 13 invited authors from the United States, Germany, France, Australia, and Denmark. Sandstones and silica are treated by Dapples; argillaceous sediments by Müller; carbonate rocks (in the longest chapter, 143 pages) by Chilingar, Bissel, and Wolf; organic matter and coal, respectively by Degens and by M. and R. Teichmüller; mineral deposits by Amstutz and Bubenicek; subsurface waters by Degens and Chilingar; interstitial solutions by von Engelhardt; and phases of diagenesis by Fairbridge. There are in addition introductory and concluding remarks by the editors, Larsen and Chilingar. Chilingar in his contributions has drawn from much of the Russian literature.

Each of the chapters, apart from the introductory and concluding ones, is a comprehensive review, replete with cited references, of the literature on its subject. In general the reviews are of high quality, well written, and easy to read, although the style varies from author to author. Breadth of viewpoint is necessary in treatment of diagenesis because the boundaries of this phenomenon are poorly defined with respect to materials, reactions, and time. Recognizing the problem of definition, the editors write in their introduction that they have "attempted to throw some light upon the uncertainties that exist in defining the term diagenesis. [They] have found it necessary to leave the definition of diagenesis to individual contributors." While such leeway is desirable for freedom and independence of ideas, it has also yielded a profusion of terms which overlap widely in meaning, as can be seen from the glossaries which follow several of the chapters. Some 30 such terms (too many to be listed in a review) were noted to be synonymous in part with, or closely related to, the process of diagenesis.

In their summary of the volume, recognizing both the wide scatter of ideas about diagenesis and the vigor of each one, the editors write that "one of the main impressions gained . . . is that diagenesis is a field of geology in which research is undergoing a phase of very rapid development. . . . Another main impression is that there is not yet a universally accepted definition or delimitation of the term 'diagenesis.' " This reviewer will repeat his opinion, long expressed in college classes, that the basic difficulty in defining diagenesis arises from the practice, original and continued, of keeping the time of change (diagenetic) a major and often diagnostic ingredient of the definition. Of the essential factors in petrogenesis —materials, energies, and time—time is the least amenable to practical quantification, description, preservation in the record, and replication. Diagenesis is basically a geochemical or mineralogical process, or set of processes, ultimately definable with fair chemical-mineralogical precision. The result of the change (diagenetic), not the actual time at which the change occurred within the vague interval from prior to weathering until the rock is collected for study, is that which is worthy of definition.

Hence it is the discussions of the reactions and their results that constitute the major contribution of this book. Every serious student of sedimentary rocks and their processes, and economic geologists studying ore-containing sedimentary rocks, should have the book available. Many of us will use the copies from our institutional libraries because of the high price of the book. With considerable self-restraint, I refrain from repeating expressive comments heard at society meetings about the prices of books that certain publishers and their outlets charge.

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Climate and Landform

The Cycle of Erosion in Different Climates. PIERRE BIROT. Translated from the French edition (Rio de Janeiro, 1960) by C. Ian Jackson and Keith M. Clayton. University of California Press, Berkeley, 1968. 144 pp., illus. $5.50.

Originating as a series of lectures delivered in 1956, this book was first published in French in 1960. It was translated in order to provide the English and American geomorphologist with an account of the effects of climate on landforms, a topic that has been the focus of much European, especially French, research. It is, indeed, the only book in the English language that is concerned primarily with this subject. However, notwithstanding the translators' assertion that Birot has thoroughly revised the original text for