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

this translation, the approach and the information presented are perhaps more representative of 1956 than of 1968.

The author's stated intention was to consider the evolution of slopes and the cycle of erosion under the following climates: normal, tropical, arid, semiarid, savanna, and periglacial. Nevertheless, the first third of the book is a general review of the processes of rock weathering, hillslope erosion, and river mechanics. Considerably more complete reviews of this material are presently available in English, and little is gained from this first part of the book. The remaining two-thirds of the book is a discussion of erosional processes and landform evolution under the different climatic environments. Much of this material is very interesting. However, many statements are made in a dogmatic fashion without supporting references, and it is difficult to separate fact from hypothesis. In view of the increasing amount of quantitative information on erosion rates and the hydrology of humid, subhumid, and semiarid regions, one would expect that in a truly up-to-date volume an attempt to summarize this information and to bring it to bear on the problems of landform evolution would be made.

A relatively serious criticism is that the author frequently refers to what is presumably relatively recent detailed research without providing a reference to it. There are six pages of references at the end of the book, but many of these are not cited in the text, and some of the most interesting work cited in the text has not been included among the references. For example, on page 85 the "notable work of Lamego (1938)" is mentioned, but Lamego's name doesn't appear among the references. Such a casual approach toward referencing seriously detracts from the purpose of the translation, which was to bring to an English-speaking audience a review and summary of the results of European climatic-geomorphic research.

For these reasons, the book is a disappointment. This is unfortunate for the French geomorphologists, and Birot himself has much more to offer than is presented here. Nevertheless, the author does raise many interesting questions in this book, and it is clear that here is a subject that deserves further investigation. In addition, Birot's description of his field observations in Brazil and his evidence that sugarloaf mountains are definitely related to fracture patterns are a welcome revelation. The application of this conclusion to the origin of other isolated erosional remnants (inselberg) relieves geomorphologists of the burden of attempting to explain their origin without structural controls.

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Contributions to Biology

Investigations into Generation, 1651–1828. ELIZABETH B. GASKING. Hutchinson, London, 1967, 30 s.; Johns Hopkins Press, Baltimore, 1967, $6. 192 pp., illus.

This book is a selective review, exposition, and critique of the history of theories of generation during the 17th and 18th centuries. "Generation" is taken to refer to the origin of new living organisms, chiefly by sexual reproduction, and to include a characterization of the nature of development of the new individual. Besides chapters dealing with the concepts of preformation, animalculism, ovism, epigenesis, and their modifications in the course of progressive investigations, whole chapters are devoted to Harvey, Maupertuis, Wolff, Haller, Bonnet, Spallanzani, Prévost and Dumas, and von Baer. Bibliography and index are appended, and there is also a time chart of significant dates in the development of the concepts discussed.

The work receives high marks for bringing its subject up to date for the general scientific reader interested in intelligent historical reconstruction and interpretation. The present reviewer cannot help feeling—perhaps fancifully—that we have here a model for a series of scholarly and thoughtful lectures on a topic that has been parroted and vulgarized beyond rational comprehension in generations of textbooks. One sees the author selecting, with critical rigor, a limited number of sequential contributions to the subject, and embodying each one in a brief, economical chapter. Each chapter in turn bears the marks of careful selection, doing justice to individual contributions, emphasizing their interrelations and their intrinsic logic and development without burying the whole in detail or irrelevant commentary. The approach is that of understanding scientific thinking in the context of a man's own work and of the scientific milieu.

A reviewer, even if not an expert, is permitted to record some personal reactions. I found some chapters more successful than others. Those on Harvey and Spallanzani seemed particularly clear and concise; that on Bonnet was perhaps most stimulating in impelling one to go back to the original writings. The brief extracts from von Baer's thought were less well chosen and cogent than I had hoped. One might also question the omission of some important landmarks (for example, Kölliker) from the time chart. Note to the publisher: might one ask why it is possible nowadays to print a well-designed, comfortably-reading book—all that is desirable, in fact, complete with Library of Congress catalog card number—without anywhere visibly recording the date of its publication?

Investigations into Generation is highly recommended as a pleasantly composed, selective but well-balanced account of its subject, based on patently sympathetic understanding of the original and secondary literature. Particularly for students of developmental biology immersed in laboratory investigations, many of whom are perforce very deficient in historical comprehension and insight, it should make excellent supplementary reading, not at all hard to take.

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Biochemistry Meeting

Peptides. Proceedings of the 8th European Peptide Symposium, Noordwijk, the Netherlands, Sept. 1966. H. C. BEYERMAN, A. VAN DE LINDE, and W. MAASSEN VAN DEN BRINK, Eds. North-Holland, Amsterdam; Interscience (Wiley), New York, 1967. xii + 292 pp., illus. $14.50.

The European Peptide Symposia have become established as a fine example of international cooperation in promoting research in a specialized but important field. Since attendance at the symposia is limited, the published proceedings are particularly important to other workers in the field. The report of the 1966 symposium is especially well done and should be worth the cost to peptide chemists. The scope of the papers is indicated by the section headings: Coupling Methods, Protecting Groups, Racemization, Synthesis of Peptides with the Aid of a Polymeric