floors by silt-laden floods. In recent centuries these "post-Classical alluvia" have once again been subject to dissection. A similar cycle is identified for the late Pleistocene, with aggradation of somewhat coarser, less sorted and less stratified "older fill" from the stream headwaters to the coast. Whereas the "older fill" is attributed to a greater incidence of frost-weathering as well as to a seasonal incidence of more intensive rains, the "post-Classical fill" is thought to reflect vague and ill-defined climatic factors affecting the whole Mediterranean Basin simultaneously. Changes of land use, gradual or repeated devegetation, and other human influences are discounted or relegated to secondary and local significance.

Examined in detail, the field evidence is seldom adequate to support the bold generalizations and hypotheses put forward. Only a few examples can be cited here. The "older fill" is not universally contemporary, nor do these alluvia represent the total time-span of the Last Glacial anywhere in the Mediterranean Basin: all models of aggradation and downcutting aside, the actual events recorded in Provence (E. Bonifay), Mallorca (K. W. Butzer and J. Cuerda), eastern Algeria (J. Hilly), Latium and Tuscany (A. C. Blanc and others), the coastal plain of Israel (M. Pfannenstiel and others), Egypt (Butzer and C. L. Hansen), and elsewhere are incredibly complex. The Last Interglacial beaches of the Mediterranean, now partly dated by thorium-uranium (C. E. Stearns and D. L. Thurber), seldom include *Strombus bubonius* but rather have an impoverished, thermophile fauna (Bonifay and P. Mars, Butzer and Cuerda). Increased frost-weathering is not synonymous with periglacial weathering. Isolated stone artifacts can almost never be linked with specific lithic industries and therefore cannot be used to date alluvia. These comments serve to show why this reviewer is disappointed by the treatment of the older fills. Vita-Finzi's treatment of post-Classical alluvia stands up rather better: the data were all gathered personally, and the author's familiarity with classical archeology stands him in good stead. But valley alluvia are considered with little attention to colluvial deposits and the complex of slope processes; interactions of vegetation mat, soil properties, and denudational forces are neglected at the specific level; and interpretations are not based on sedimentological studies. The value of Vita-Finzi's monograph lies in the wealth of field data it brings together, and the fascinating problems it poses: the real answers must await many more local studies of the depth and detail of Vita-Finzi's own Tripolitanian work.

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The Science of Landforms

The Encyclopedia of Geomorphology. RHODES W. FAIRBRIDGE, Ed. Reinhold, New York, 1968. xvi + 1296 pp., illus. $38.50. Encyclopedia of Earth Sciences Series, vol. 3.

Geomorphology is a subject that links with many others while covering a wide field itself. Landscape, the raw material of geomorphology, is ubiquitous and the study of it is worldwide. It is therefore of particular interest and value to have assembled inside one cover the views of about 150 geomorphologists, who together discuss a very wide range of topics and represent a great variety of views, based on the study of landforms all over the world. Fairbridge has himself undertaken a major part of the work, contributing nearly 100 of the 410 articles. He is to be congratulated on assembling in this reference work so much information of interest to geomorphologists. The cross-reference system is very necessary and helpful in connecting articles on similar topics that are widely scattered throughout the book. There is also a detailed index.

In order to assess the balance of coverage of several major geomorphological topics, this reviewer followed these topics through the entries in which they arise throughout the volume. The result provided a great variety of viewpoints and of emphasis. There are some inconsistencies and several repetitions, but these are more than counterbalanced by the interest of different approaches and the range of examples cited. Nearly all of the articles are illustrated by clear line diagrams and maps, although some of these are printed too small. Again there is some repetition. There are also many photographs, most of which are of a high standard and add substantially to the value of the book. Each article is followed by a list of up-to-date references.

All fields of geomorphology are covered, and there is a very interesting set of articles on the philosophy and nature of geomorphology, including articles on general systems theory in geomorphology, geomorphological maps, and principles of geomorphology. The articles are not restricted to analysis of morphology but also include the stratigraphic or chronological approach to geomorphology. The article on the Quaternary period, by the editor, is particularly noteworthy in this respect. It is balanced by one on glacial geology and many others that deal with the development of glacial landforms.

One will have to go, however, to *The Encyclopedia of Applied Geology and Sedimentology*, which will be volume 6 in the series, to find articles on glaciology, glaciers, and glacier geophysics. This subdivision of the material in the different volumes is unfortunate, but inevitable in view of the great range of studies relevant to geomorphology. The earth sciences will eventually be covered in eight volumes, of which the present one—the latest published so far—is the third. Thus geomorphology takes its place here alongside geology, geophysics, and oceanography. The only concession in the volume to its links with geography, which are much stronger in Europe than in the United States, is an article entitled "Geography: concept, growth, and status." That geomorphology can stand as a science in its own right, however, is amply demonstrated by the vast amount of work which has been devoted to it and which is so ably displayed in all its variety by the geomorphologists who have contributed to this very useful encyclopedia.

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Pathogens

Viruses in Plant Hosts. Form, Distribution, and Pathologic Effects. KATHERINE ESAU. University of Wisconsin Press, Madison, 1968. xii + 228 pp., illus. $10. The 1968 John Charles Walker Lectures.

This book represents the substance of a series of three lectures its author presented at the University of Wisconsin in 1968. With the aid of a great many elegant electron micrographs of sectioned plant tissues infected either with beet yellows virus (which is confined largely to phloem) or with tobacco mosaic virus (which is found in nearly all cell types of the plant), she provides