Book Reviews

L'Evolution de la Lithosphère: Orogénèse. vol. III (fascicules 1 and 2) of *Traité de Géologie.* Henri Termier and Geneviève Termier. Masson, Paris, 1956; 1957. 498 pp.; 442 pp. Illus. + plates. F. 9800.

This imposing work, contained in two large and well-bound books, constitutes the third major subdivision of a broad geologic treatise undertaken by the authors. The first volume, *Historie Géologique de la Biosphère,* was published in 1952. A second volume, *Petrogénèse,* appeared in 1956 as the first division of a tripartite unit, *L'Evolution de la Lithosphère,* of which the volume reviewed here is the second division. A third part, *Glyptogénèse et Sedimentation,* volume IV of the general treatise, is in preparation. Other volumes, planned and in preparation, will treat the subject *les Temps Fossilifères.* Truly the authors have undertaken a monumental task.

Volume III has the following organization: Part 1, an introduction entitled "Generalities" (135 pages), gives definitions of important terms, outlines what is known about movements now occurring in the earth's crust, and describes the principal kinds of structural features found in deformed belts. Part 2 (23 pages) describes the several ocean basins and the chief topographic features of their floors, outlines the current knowledge on the associated rocks and bottom sediments, and gives some results of seismic explorations at sea. Part 3 (203 pages) discusses "The Laurasian Continents," with allocation of space as follows: North America (48 pages), Greenland (18 pages), Precambrian and Caledonian Europe (67 pages), Asia (70 pages). Part 4 (144 pages) considers "The Gondwanan Continents" in the following subdivisions: Africa (69 pages), The Indian Shield (15 pages), Australasia (36 pages), Antarctica (5 pages), South America (15 pages), conclusions on the Gondwana Lands (4 pages). Part 5, "The Tethyan Orogenes" (310 pages), is the largest major division. It considers the Paleozoic orogenic belts of Europe, the younger mountain zones that extend from lands bordering the Mediterranean across Asia into the Pacific, and units of the same general date in the Caribbean region. The final division, part 6, is a brief "Essay on Megatectonics," which considers some general problems of global scale.

The volume has generally good mechanical organization. A list of source references follows the discussion of each important topic; there are 80 such lists, an average of one for every 12 pages of text. The final pages of the first fascicule give an indexed list of the preceding partial bibliographies and a complete subject-matter index for that fascicule. At the end of the volume is a 45-page alphabetical index, three columns per page, pertaining to subject matter in both fascicules, authors of reference works, and names of places. Following this are a complete table of figures and plates, a list of 49 tables contained in the text, a complete table of partial bibliographies, and a table of subject matter. By using these aids the reader can check, with minimum effort, almost any object of his search in the large volume. There are, however, exceptions; for example, the word *geosynclinal,* used frequently in the text, is not listed separately in the index.

The introductory chapters, written in lucid style and amply illustrated, make good reading. Little of the subject matter is controversial, though readers may take issue on some items, as on the inclusion (page 79) of Willis' classification of thrust faults; in my opinion the division into *stretch-, break-,* and *shear-thrusts* is based on no mechanical principles and is undesirable. The brief treatment of ocean basins, illustrated with helpful charts, is, on the whole, well done. The real meat of the volume is in the treatment of orogenic belts, and a reader's judgment of this treatment will depend in important degree on his location; generally he is best acquainted with his home continent. The first chapter of part 3, "Amerique du Nord," treats, in order, "The Drama of the Canadian Shield," "The Cordilleran Drama," and "The Appalachian Drama." For the Canadian part of the structural map (plate 9), one would suppose an important source must be the *Tectonic Map of Canada* (1950), but no reference is made to it. Representation of the several orogenic belts with dates based on radioactive minerals is of interest, but the oldest date cited, 3500 million years, is now discredited—this figure has been pronounced about 25 percent too high.

Geologists in the United States will be primarily interested in sections that deal with the Appalachian and Cordilleran belts. Maps speak more eloquently than words, and readers who turn first to Fig. 41 (plate 13A), a structural outline of the Appalachian chain, may well react with astonishment. One of the few names on the map, Connecticut, is printed in prominent letters altogether *west* of the Hudson River, on an area ordinarily ascribed to New York, New Jersey, and Pennsylvania. A suggestion of tectonic transport is, of course, an unkind jest, but the authors should realize that a map of France involving a comparable error might show Paris and its environs directly south of Le Havre. And Fig. 41 is open to more serious criticism; it represents the Paleozoic rocks of New England as being *nonmetamorphic,* and a narrow belt extending far up the Hudson Valley as a northward extension of the Piedmont province, with metamorphic rocks. Figure 42 (plate 13B), directly following, shows the relationships exactly reversed insofar as the same areas are represented. Surely, two of the patterns in Fig. 42 are interchanged in the explanation, but correction of this error will not make Fig. 41 less defective, in the judgment of geologists familiar with the schistose Paleozoic section of New England and the nonmetamorphic formations in the upper Hudson-Champlain valley. Moreover, the figure has a heavy line, extending from New Jersey hundreds of miles southward, which unwary readers will assume is a great fault, but an identical line on Fig. 36 (plate 11) is labeled "fall line," a feature that has no place in a structural assemblage. Truly, Figs. 41 and 42 in their present form may convey much misinformation to anyone unfamiliar with Appalachian geology. Careful reading of the text makes amends, in part, but cannot undo the graphic misrepresentation.

Plate 12, which purports to present a structural outline of the Cordilleran region, also has serious defects. Geographic relationships are incorrectly shown: the north end of the Laramie Range is placed directly south of Yellowstone Park; an area that should hold the western edge of the Colorado Plateau is labeled "Rocky Mountains," and the only other appearance of this name is well east of the Lewis thrust trace, in a wide area shown with Precambrian bedrock; the Garlock fault and the southern part of the San Andreas fault are out of place and wrongly oriented. An area covering western Utah, much of Nevada, and parts of eastern California is labeled "zone poorly known"; yet some

of the most definite information on the Cordilleran geosyncline—a major feature of the map—has been found in that part of the Basin-Range country. On evidence much less secure, the authors have not hesitated to represent the "Beltian zone" as a continuous unit from northern Mexico to a high latitude in Canada. Even the Front and Laramie ranges are represented as "Beltian." And the map gives no place to the zone of deformation commonly known as "Laramide," though inclusion of Tertiary lava fields implies an aim to present a complete structural picture. The significance of the large areas indicated as being Precambrian is not clear. Figure 36 (plate 11), though drawn to smaller scale, presents the general tectonic features of the Cordilleran region more satisfactorily than does plate 12.

The brief list of source references cited for "The Cordilleran Drama" suggests that the authors may be unfamiliar with much of the published information. Another weakness of this section, and of the entire volume, is the lack of reference in the text to pertinent illustrations. Careful search through the pages dealing with North America has failed to locate one such reference, and in the entire volume the textual citation of figures is extremely rare, though some references are made to illustrations in the earlier volumes, on *Biosphère* and *Petrogénèse*. Captions of plates 12 and 13 in the present volume are skeletal, and readers must look to the text for explanation of many details. Text and illustrations should be mutually complementary, and the reader would be helped, with respect both to economy of time and total return from his study, by a more systematic welding of the two forms of exposition than is evident in the Termier volume.

I do not feel competent to analyze critically much of the treatment related to other continents, but another unfavorable comment on the drawn illustrations seems in order. Most of the many maps have neither scale nor latitude-longitude coordinates. Lack of scale is unfortunate, especially for foreign readers, in such diagrams as plates 47 (Armorican massif), 50 (the Vosges), 51 (Black Forest), and many others. Anyone who is not familiar with these areas can comprehend the diagrams only by reference to an atlas, whereas a scale printed with each figure would give proper perspective at a glance. Plates 46 (Harz Mountains), 59 (part of Spain), and a few others have scales. Why are these so favored? Maps showing areas of continental dimensions should have both scale and latitude-longitude markers. Plate 28 (East Siberia) has these; why not plates 23 (Asia), 33 (Africa), 43 (South America), and others? The general viewpoint of geographers and geologists was once expressed by Isaiah Bowman in the form of a riddle: "When is a map not a map? When it has neither scale nor coordinates." It seems axiomatic that a structure-section too must have a scale, but this primal rule is not strictly observed by the Termiers, as witness their figures 116 (Fallot's Beltic Cordillera) and 119 (Argand's western Alps), both major cross sections reproduced without indication of their horizontal extent.

The numerous tables that summarize orogenic history are an admirable feature of the Termier volume. These tables are generally well executed and serve the reader not only as a useful guide in his reading but also as a ready source for reference in a search for specific information.

No doubt other readers of the volume will find weaknesses not listed here. It is a work that required stupendous labor—the digesting of geologic literature in several languages, involving countless manhours spent in analysis and compilation. In the nature of human things, the result cannot be perfect. An over-all appraisal must recognize the high merit of this work as an attempt to integrate the results of geologic study into a global picture. Perhaps the result demonstrates that the task is too great for a small team in one country. Surely the most glaring weaknesses in the treatment of North American materials might have been eliminated through the aid of a well-informed structural student on this side of the Atlantic. In addition to the language difficulties, the size of the fast-growing mass of literature makes judicious summarizing and accurate graphic representation ever more difficult. The next major step may be a project similar to that represented by the volume *Orogénèse* but carried out by a competent international team. Meanwhile, the Termiers merit our gratitude for their devoted labors. Their volume is a highly useful reference work, and should be a stimulus to further cooperative studies in megatectonics.

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Virus in the Cell. J. Gordon Cook. Dial Press, New York, 1957. 208 pp. Illus. $3.

This book is part of a *Science for Everyman* series and is written in very simple language. The first eight chapters deal with the principal virus diseases of man, and the emphasis is on epidemiology as well as on the history of the development of vaccines, from smallpox to poliomyelitis. The four chapters that follow deal with the viruses of animals, insects, bacteria, and plants. The title *Virus in the Cell* best fits the last six chapters, which are devoted to basic research in virology. A fair number of illustrations, mainly from authoritative sources, is included.

It is a pleasant, exciting, and informative book to read. The degree of accuracy is adequate for a book of this type, though there are a few oversimplifications. For example, the typhus rickettsia is called a virus, and the distinction between virulent and temperate phages is not made. But, in general, the author does not shun complicated problems or recent advances.

This book is most appropriate for laymen and young readers. Perhaps some will be inspired to take up the study of virology.

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The Quicksilver Doctor. The Life and Times of Thomas Dover, Physician and Adventurer. Kenneth Dewhurst. Wright, Bristol, England, 1957. ix + 192 pp. Plates. 21s.

The advent of the antibiotics—biologic and chemotherapeutic agents—has reduced the compound powder of ipecacuanha and opium to a very lowly place in the physician's therapeutic armentarium. Yet for the past two hundred years, almost every physician has employed this useful diaphoretic and sedative, familiarly known as "Dover's powder," in the minor respiratory infections, and almost every teacher of pharmacology has passed on to his students the romantic, if not quite historically accurate, comment that its inventor was the pirate physician, Thomas Dover. But the fascinating story of this 18th-century physician needs no embroidering.

The younger son of a Royalist captain of horse, Thomas Dover became a pupil of the great Thomas Sydenham, from whom he acquired something of the true Hippocratic approach to clinical medicine and common-sense approach to therapy at a period when the practice of physic had been reduced, by theoretical systematists, to the imbecilities satirized by Molière. From successful medical practitioner at Bristol, he turned aside to become one of the leaders in the most successful privateering expedition of naval history, in which he rescued Alexander Selkirk, the prototype of Daniel Defoe's Robinson Crusoe, from the island of Juan Fernandez, stormed the city of Guayaquil, and circumnavigated the globe. Thence, he continued his travels to Asia Minor, to return and lose all, a virtual bankrupt, in the South Sea "bubble." Finally, as an epilogue to this romantic and checquered career, in his 70th year he engaged in one of the great