

BOOK REVIEWS

Man and His Physical Environment. Garry D. McKenzie and Russell O. Utgard, Editors. Burgess Publishing Company, Minneapolis, Minnesota. xi+338 p. \$4.95.

Ever since Earth Day, 1970, environment has been a magic word, and courses in environmental geology have been materializing in every college and university across the country. With only one hard-bound text available in this field (by Flawn), a good text but one not recognized as satisfactory by all instructors of such courses, several books of environmental "readings" have appeared. One of the more successful, because of its wide coverage, its well-known authors, and its price, though still not the solution to everybody's desires, is this one, drawn together and edited by McKenzie and Utgard.

In this book, these two Ohio State University professors draw on a wide range of authors and sources to put together a total of 62 different readings of different lengths (the shortest is less than half a page long; the longest is 14 pages in length), different emphases, and different orientations. These are arranged under seven main headings.

The first part is entitled *Introduction and Viewpoints*, and contains five papers describing environmental geology and emphasizing the need for education in this field. The best of these papers is probably John Frye's fine survey of the field, originally published as one of his own Illinois State Geological Survey's outstanding *Environmental Geology Notes*. Second come 12 papers under the heading of *Geologic Hazards*, and arranged under the subheadings of Earthquakes, Floods, Mass Movement, and Subsidence. Part 3 deals with the topic of *Environmental Health: Geologic Aspects*, under which there are four different papers dealing with the relationships of human health and mineral elements in the water and soil. Part 4, entitled *Waste Disposal*, deals first with general problems of solid- and liquid-waste disposal, the paper on the first of these two subjects seeming to be adequate but a little disappointing in its emphasis to this reviewer, and the second being John R. Sheaffer's outstanding *Saturday Review* presentation of how the unique pollution-free Muskegon (Michigan) waste-water treatment system was conceived and developed. The rest of Part 4, in addition to these two papers, is concerned with the disposal of nuclear wastes (six papers, most of them short), disposal wells (three papers), and ground-water contamination (only two papers on this important subject). Part 5 deals with *Resources and Conservation*, including discussions of resource utilization, in 18 papers; Part 6 deals with *Geology and Regional Planning* in five papers (but with no reference to Ian McHarg's classic work); and Part 7 covers *Environmental Programs*, not individual examples, but general aspects of education and responsibility in regard to environmental geology, in five papers. There are also three appendices, one giving the geologic time scale in brief, one giving measure units and conversion factors, and one containing a fairly good (though not complete) glossary of environmental and geologic terms. There is no index, though this is no problem with the carefully planned organization of the book and the detailed table of contents.

This book contains a tremendous amount of material; at this price, all this is a real bargain. It contains an impressively large selection of papers in a wide range of fields, so that no teacher of environmental geology can fail to find papers of significance for his course. For this environmental geology instructor, though, the book does contain too many papers of a general, almost editorial nature, and too few papers that are more specific, and too few that contain case histories, which can help, more than any number of generalizations, to convey adequately an understanding and appreciation of certain critical environmental problems.

Despite this lack, there are many fine articles in this book, and with the large number of papers included and at this unusually low price, this book should provide an important source of environmental material for students and instructors alike. Many instructors of environmental geology courses will want to use this book for their text.

JANE L. FORSYTH

High-Calcium Limestone Facies of the Devonian Dundee Limestone, Northwestern Ohio. David A. Smith. Ohio Division of Geological Survey, Report of Investigations No. 86, 1207 Grandview Ave., Columbus, Ohio 43212. 1972. iii+14 p. 50 cents, plus 2 cents tax in Ohio, and 5 cents mailing charge.

This report discusses a high-calcium phase of the Dundee Limestone, which is exposed in two quarries and is traced underground in Defiance, Williams, Fulton, Henry, and Paulding Counties in northwestern Ohio. X-ray and chemical analyses of the limestone are given. This report will provide a useful guide to those looking for pure limestone reserves in northwestern Ohio, and will contribute to the problems of stratigraphic correlation in this area of carbonate bedrock.

OHIO DIVISION OF GEOLOGICAL SURVEY

THE OHIO JOURNAL OF SCIENCE 72(3): 174, May, 1972.

Bibliography of Congressional Geology. Harold R. Pestana. Hafner Publishing Co., New York. 1972. 285 p. \$17.50.

When I first saw this book, there were two things about it that I did not know at first glance: what the title meant, and the location of Colby College (the author's institution in Waterville, Maine). "Congressional Geology" refers to geologic documents published in the *Congressional Documents Set (CDS)* for my convenience). I had never heard of the *CDS*, so I looked up a paper referred to by the author, written by him and B. D. Bonta and published in the *Geological Society of America Bulletin* (1970, v. 81, p. 899-904), in which they describe the various documents that compose the *CDS*. It consists of House and Senate committee reports on legislation and other documents of legislative or executive origin. This bibliography lists the geologic content of the *CDS*.

The time period covered is 1818 to 1907, that is, the 1st Session of the 15th Congress through the 2nd Session of the 59th Congress. Apparently, starting with the 60th Congress, publication and distribution of scientific materials as Congressional documents were curtailed. (I do not know why, and the author gives no explanation.)

For students of the history of geology and geologic exploration (not restricted to the U.S. or North America), these documents are a significant discovery. Here, then, is the value of the bibliography, because the inclusions represent a generally unrecognized source of geologic literature. Some items have been included in other works, but only in part, according to the author, who seems to have done his research well.

All of the *CDS* (1818 to the present day) is available on microfilm, and a list of depository libraries is given in one of Pestana's references, so no one should have difficulty in locating a document of interest.

The breadth of coverage is given in the Introduction and includes geologic aspects of oceanography, geophysics, exploration, hydraulic engineering, road or railroad construction, and mining. U. S. Geological Survey publications are not given here in full citation, because they are listed in the usual bibliographies. Early Survey documents were also in the *CDS*, though, and for completeness, they are listed here by type of publication (Annual Reports, Bulletins, etc.) and *CDS* location (House Executive Document, etc.). The Introduction is Part 1, the U.S.G.S. list is Part 2, the Bibliography (116 pages) is Part 3, and the Index (155 pages) is Part 4. However, there is no contents page to convey this division.

All bibliographic entries are alphabetical by author, and I was surprised to see no mention of how many entries are listed. I counted them, 1,114 of them, all the way from Abercrombie to Younghusband, and that was when I noticed the first of several errors in the book—the first name listed should be Abbot, which now follows Abert. Because many entries are by more than one author, I thought the junior authors might be listed and cross-referenced to the senior author entry, but such is not the case.

Brief annotations are given when the document title is not sufficiently descriptive. A typical entry includes the author(s) in boldface type, date, document title, *CDS* reference, and annotation, which may include an additional source for the document such as Annual Report of the Smithsonian Institution. I presume that original document titles are given exactly, because of some peculiarities in spelling, but the author does not confirm that, nor does he use *sic* to indicate the unusual spellings. In Pestana and Bonta (1970), however, *sic* is used to indicate such a spelling, but the same entry in this book does not include it, and there is one additional difference.

I scanned carefully the *A* and *B* names to get a sampling of the whole list and an unusually large number of typographical errors were apparent in the annotations, if not in the document titles.

I also have a minor criticism about the typesetting. You do not know that Frank Soule is actually Soulé until you track him down in the Index. Document titles, however, do include accent marks where needed, but in Gautier, 1905, there is no cedilla in *Français* (in the title). E. D. Rudolph also noticed that Farlow, 1890, appears to have an incorrect annotation, by stating that Asa Gray was a paleobotanist.

Although one may wonder, therefore, about the accuracy of some inclusions, the fact remains that the bibliography is what it is supposed to be—a compilation of references to virtually unknown geologic documents in obscure sources. Although the book seems overpriced, all geology libraries should consider it for a reference book. Others, mainly historians, will also find it useful.

JOHN F. SPLETTSTOESSER

The High-Temperature Phase of Calcium Sulfate in Relation to SO₂ Removal by the Dry-Limestone Injection Method. G. William Kalb. Ohio Division of Geological Survey, Report of Investigations No. 85, 1207 Grandview Ave., Columbus, Ohio 43212. 1972. iii+4 p. 50 cents, plus 2 cents tax in Ohio, and 5 cents mailing charge.

This is a report on an X-ray diffraction study which investigated the existence of a high-temperature phase of calcium sulfate that may be a factor in incomplete SO₂ removal from stack gases by the dry-limestone injection technique. It is pertinent to problems of SO₂ pollution of the air.

OHIO DIVISION OF GEOLOGICAL SURVEY

Synopsis of the Herpetofauna of Mexico, Volume I: Analysis of the Literature on the Mexican Axolotl. *Hobart M. Smith and Rozella B. Smith.* Eric Lundberg, publ., Augusta, West Virginia. 1971. xxvii+245 p. \$10.00.

The curious axolotl, the Mexican salamander that is capable of reproduction while in its morphological larval form, has been the subject of an extraordinarily large literature. Beginning with the successful shipment of 34 live specimens to Paris in 1863, another lot in 1866, and the production of tens of thousands of descendants, the axolotl quickly became the most frequently used and perhaps the most celebrated of all laboratory animals. It is still widely utilized today, as is indicated by the 3311 books and papers listed in this publication, a large number of which have appeared during the past few decades.

To anyone interested in the axolotl, this book is an indispensable tool. Aside from the main alphabetical listing of published titles, there is an exhaustive subject index to such diverse topics as anatomy, biochemistry, cultivation of the animal in captivity, embryology, endocrinology, growth, metamorphosis, neurology, physiology, regeneration, and taxonomy. There is also an index to co-authors and a very useful list of abbreviations of journals in a score of languages. Graphs delineate the chronological history of the general axolotl literature and several of the subtopics that have attracted the attention of the greatest number of investigators. The introduction includes an essay on the axolotl and the development of the world-wide interest in it as an experimental animal.

The book is reproduced from type script with an uncompensated margin. It is well printed and bound.

This husband-and-wife team has given us a highly useful compendium, but the promise of more to come is especially intriguing. Work is currently under way on a series of volumes (nine are planned) that will cover the literature on all other Mexican amphibians and reptiles, as well as presenting detailed synopses of all the several groups ranging from the anurans to the snakes. Included will be keys, check lists, distribution maps, and synonymies of all the very many species and subspecies known from Mexico, which has one of the richest herpetofaunas of the entire world.

ROGER CONANT

Chemistry: A Cultural Approach. *William F. Kieffer.* Harper and Row, New York, N. Y. 1971. xi+461 p. \$10.95.

What to teach of all of chemistry to those college students who are not planning to enter scientific careers has always been a problem. Several decades ago, attempts were made to cope with what appeared to be a mildly difficult situation; now, the number of students increasingly dissatisfied with the world they see has led to a deeper questioning of values and of activities which their predecessors had at least partly accepted. Teaching these students successfully is more rewarding than teaching their more passive earlier counterparts, but it is also harder. There is so much we want them to know: what do chemists do? do chemists think differently than, for instance, historians do? what do chemists know of the world and its workings? what terms do they choose for their descriptions of it? Kieffer's excellent text has been written to meet the challenge those students pose. Reading it makes one regret that books of comparable insight and clarity were not available, say, a quarter of a century ago.

It might be desirable to say also what is not here: there are no exercises which require repeated calculations, or "plugging" into formulae; there are no references in the suggested supplemental readings to the learned chemical journals; there are no colored plates of blast furnaces in operation, or of the spectra of sodium and helium, for all of these features are of little use in a text of this sort. Instead, working the exercises requires thought and, often, the writing of an essay, or at least several paragraphs. (The Smart Little Old Grandmother, S.L.O.G., makes her appearance on about page 154; she should be destined for some kind of text-book immortality.) Recommended readings are often to Louise B. Young's *Mystery of Matter*, or to works similar in tone. The physical structure of the book is attractive, with many line drawings and easily grasped diagrams.

The first part of the text, with its restatement of nineteenth-century discoveries in chemistry, is perhaps the weakest part of the text, relying as it does on a now out-moded "internalist" historical interpretation, but that, fortunately, endures only for about 100 pages. The sections on light, electrons, nuclear reactions, crystal structure, organic molecules, thermodynamics, and chemical, ecological problems are splendidly presented. Students should be refreshed by reading a text where the author has *opinions* on controversial questions.

For many years Kieffer edited the *Journal of Chemical Education*, giving it an éclat it had not previously had. Reading this book makes it apparent why he was able to transform the journal. The journal became a very good one; this text book is a good one, too.

J. Z. FULLMER