Geophysical Encyclopedia

International Dictionary of Geophysics. Seismology, Geomagnetism, Aeronomy, Oceanography, Geodesy, Gravity, Marine Geophysics, Meteorology, the Earth as a Planet and Its Evolution. S. K. RUNCORN *et al.*, Eds. Pergamon, New York, 1967. 2 vols., xxiv + 1728 pp., illus.; book of maps. $120.

If I had not been sent a review copy and if a library were not within five minutes' walking time, I would personally buy this dictionary despite its fantastic price. This is the highest compliment I can pay it. Some entries are only one or two sentences long, but most of the topics are dealt with in the manner of concise encyclopedia articles. Although the stalwarts of geophysics are on the editorial board and contribute major articles, the editors have made heavy use of the talent that resides in the young set of geophysicists who have entered the field in the past five or ten years. As with many encyclopedias, the articles are uneven, there is overlap, and many entries bear strange titles. (However, a well-organized index helps here.) The strength of the work is in the large number of beautifully written articles in which concise descriptions of important topics are given. Some of these are classic pieces which will survive for a long time. They contain illustrations, tables, and references in just the right amount.

Many of the articles will no doubt be assigned for classroom reading in connection with university courses. I also predict that many articles will appear in references in scholarly works. This is indeed a tribute. Perhaps the most important function of the work is to serve the specialist who needs a concise review and bibliography of an adjacent field in geophysics which starts impinging on his own. Prior to the appearance of this dictionary, obtaining such material involved at best an inefficient search in the library.

The dictionary is truly international; the contributors are drawn from all over the world, albeit most heavily from the United States, western Europe, the Soviet Union, and Japan. The choice of contributors is excellent, and most of them have taken their assignments seriously.

According to the dust jacket there are more than 700 articles supplemented by over 700 illustrations contributed by some 300 individuals. The contents cover the following general topics: origin of the earth, studies of the ocean floor, physics of the seas and oceans, meteorology of the lower atmosphere, seismology, aeronomy, geodesy, magnetism of the earth's interior, tectonophysics, astronomical data in geophysics. The book of maps is nothing more than a hard-cover folder containing the physiographic diagrams of the South Atlantic Ocean and the Indian Ocean by Heezen and Tharp.

FRANK PRESS
Department of Geology and Geophysics, Massachusetts Institute of Technology, Cambridge

Element No. 8

Oxygen and Oxidation. Theories and Techniques in the 19th Century and the First Part of the 20th. EDUARD FARBER. Washington Academy of Sciences, Washington, D.C., 1967. viii + 111 pp., illus. Paper, $4.25.

This is a book that will have a more immediate appeal to the professional chemist who is interested in research on oxygen and oxidation since 1800 than to the historian of science.

Farber has compiled an enormous amount of information within its hundred pages, citing 217 references in the original literature together with 47 more titles in a bibliography covering the period 1930 through 1966. The book opens with a general introduction on oxygen and the course of oxidation research (pp. 1–33) and then deals with two major topics, oxygen and color (pp. 34–66) and partial combustion (pp. 67–101). It is a vast field, and Farber has selected his material from a wide range of sources—academic and technical journals, and the patent literature.

The professional chemist can pick out subjects akin to his research interests very readily—peroxides and peroxygen, hydration and dehydrogenation, oxidation in a reducing medium, the beginnings of artificial dyestuffs, oxidation state and the color of metal compounds and inorganic nitrogen compounds, oxidation as electron donation, the production of formaldehyde and acetylene, polymerizations connected with dehydrogenations. Farber makes great use of short quotations from original sources, giving the book a lively quality and a sense of close contact with the past.

However, its very fragmentary nature and the frequent juxtaposition of observations and ideas having very different origins in time, place, and circumstance make it difficult to appreciate and understand the factors that have shaped the present state of knowledge in the field. Moreover, from the time of Lavoisier onward there has been a reciprocity between continuing studies on oxidation and the growth of inorganic chemistry, organic chemistry, physical chemistry, and biochemistry to an extent that is probably unique among research topics. The way in which these studies have contributed to the growth of chemistry and the central role that oxidation processes play in biochemistry still remain for critical historical evaluation in both breadth and depth. But documentation of the kind that Farber has so carefully put together is essential, and the book should be most useful in stimulating enquiry in the subject.

PHILIP GEORGE
Department of the History and Philosophy of Science, University of Pennsylvania, Philadelphia

ESSA and Its Components

The Environmental Science Services Administration. Including the Coast and Geodetic Survey, the Weather Bureau, the Institute for Telecommunication Sciences and Aeronomy, and Other Related Services. ROY POPKIN. Praeger, New York, 1967. x + 278 pp., illus. $5.95. Praeger Library of U.S. Government Departments and Agencies.

In recent years the organization of scientific activities within the federal government and the relationships among federal scientific agencies, the universities, and industry in the areas of science and technology have been the subject of repeated investigation and continuing study. The result of one such series of investigations was the reorganization of the scientific activities of the Department of Commerce, in which the Weather Bureau, the Coast and Geodetic Survey, and part of the Bureau of Standards were brought together in 1965 into the Environmental Science Services Administration (ESSA). There were proposals to include agencies from other departments in ESSA, for instance the Geological Survey. However,