

Book Review

International Dictionary of Geophysics. S. K. RUNCORN (Editor-in-Chief). Pergamon, Oxford, 1967, 2 volumes, 1,728 pp., 730 fig., £ 45.0.0.

The title of this work leads to the fundamental question of what a dictionary is. The Oxford Dictionary defines it as a “book dealing, usually in alphabetical order, with the words of a language or of some special subject”. The Webster’s New Collegiate Dictionary gives the following definition of a dictionary: “A work of reference in which the words of a language or of any system or province of knowledge are entered alphabetically and defined”. According to these definitions, the work under review is no real dictionary. It has more the nature of an encyclopedia, which is, according to Webster’s “A work in which the various branches or fields of learning are treated in separate articles” or, according to the Oxford Dictionary, a “book giving information on all branches of knowledge or of one subject, usually arranged alphabetically”.

The manner in which the reviewer approached this work was, thus, to determine whether the work under review is really an international dictionary or whether it is an encyclopedia of geophysics.

The opinion which the reviewer in so doing reached is that the *International Dictionary of Geophysics* is not truly international, is neither a dictionary nor an encyclopedia, and encompasses in some respects more and in other respects less than the field of geophysics when broadly defined. It is an unusually large collection of review articles, many of which are very useful, but there is a rather random selection and a thoughtless ordering of material.

By means of explanation, it must first be pointed out that the field of geophysics is ripe for its own specialized encyclopedia. The explosive development of science in the last few decades has led to an enormous accumulation of knowledge. The connections between geophysics and other disciplines of the earth sciences have increased synchronously. Often one needs quick and brief information about various geophysical subjects. A work in which it is possible to find a large proportion of the required data between two covers has become increasingly necessary. The reasons which led to the compilation of the work under review are, thus, evident.

Not less than 280 authors contributed to the *International Dictionary of Geophysics*. Of these 75% came from the English-speaking parts of the world (35% U.S.A., 32% Great Britain, 5% Canada, 3% Australasia), 21% from continental Europe (6% from the Nordic countries, close to 4.5% from the U.S.S.R., 4.5% from German-speaking countries, 3% from France, and 3% from other countries) and not even a full 4% from Asia (Japan, India, China). The continents of Central and South America and Africa are not represented in this work by a single author. Thus, if we realise how strongly language barriers still affect international scientific communication, particularly the penetration of information available in other languages into

the English-speaking countries, it must be taken into consideration that the work under review is, to a certain extent, one-sided.

A further point can be made with the observation that the page size, two-column printing and number of words per page are almost identical to those of *The Encyclopedia of Oceanography* (R. W. Fairbridge, editor). Whereas the latter work contains 1,021 pages for the subject of oceanography alone, the work which Runcorn edited encompasses in 1,728 pages a much larger field, including (according to the title page) seismology, geomagnetism, aeronomy, oceanography, geodesy, gravity, marine geophysics, meteorology, the earth as a planet and its evolution.

It is intriguing to compare these two books within the realm of oceanography. The following examples of subjects treated in the Fairbridge encyclopedia but not discussed in the two Runcorn volumes can then be found: "Benthonic zonation" (4 pp.), "Continental slope" (2 pp.), "East Australian current" (1 p.), "Greenland Sea" (3 pp.), "Submarine springs (6½ pp.). Many other similar examples could be added. When a subject is dealt with in both, the treatment in the Fairbridge encyclopedia often is relatively more balanced. Thus, the latter treats in an article of over 9 pp. on the "Southern Ocean", its bathymetry, geology, bottom deposits, nutrients, oceanic circulation and ice. The Geophysics dictionary only contains a 4½ pp. article "Structure of the floor of the Southern Ocean". For the oceanographer, the Fairbridge encyclopedia thus contains more information than the two Runcorn volumes, and at a much lower price (U.S. \$ 25.— against £ 45.—).

Volume 2 of the *International Dictionary of Geophysics* contains a 40 pp. index. This is a very useful section of the work. Who otherwise would look for information about the Caspian Sea under the letter T in the 5½ pp. article "Topography and modern tectonic structure of the bottom of the southern Caspian" or under the letter G in the 3 pp. article "Geomorphological map of the bottom of the Caspian Sea—scale 1/3,000,000". This latter paper is followed by 6½ pp. "Geomorphology and structural setting of the Gulf of Mexico and Caribbean Sea" and similar articles on the Black Sea (6 pp.), and the Pacific Ocean (almost 12 pp.). The names and positioning of such entrees in an alphabetical encyclopedia are unusual and confusing. Even more so since the Mediterranean is treated in the article "Investigation of the Mediterranean floor" (3 pp.), but the Behring Sea is in its expected place under the letter B (in connection with the Sea of Okhotsk and the Sea of Japan, 3½ pp.). There is no article on the Atlantic Ocean, but the reader is referred in the index to "Ocean water masses, Arctic, Antarctic" and to "Water masses in the oceans and adjacent seas". The Indian Ocean is mentioned in the latter contribution as well, but in addition has an article under the letter F, entitled "Floor of the Indian Ocean" (8 pp.). There are no articles on the Baltic Sea, the North Sea, the South China Sea, the Coral Sea or the Tasman Sea, to mention a few examples. Not only the succession of the contributions and their length, but also—and this is important—the selection of subjects treated appear to be quite random.

Highly amazing is that there is not even an article "Meteorology". Users of the Dictionary of Geophysics are referred in the index to seven specialized articles

on various aspects of the subject. However an introductory article on meteorology, containing general information and piecing the more specialized articles together, would have been no luxury. The same holds for other scientific disciplines. Under "Oceanography" a number of specialized papers can be found, but again no introductory and general article. One looks in vain for the subject "Aeronomy", even in the index (!).

Whereas, thus, the fields which the work pretends to cover are treated incompletely, one also finds articles which one would not so much expect to find discussed in a work with the described scope. Examples are papers on "Absolute time data from palaeontology" (4 pp.), "Geochronology (stratigraphic)" (6 pp.), "Geologic periods and systems" (5 pp.), "Granitization" (almost 2 pp.), "Life, origin of" (6 pp.) and "Life on other planets" (4 pp.), "Palaeontology of deep-sea deposits" (not less than 13 $\frac{1}{2}$ pp.), "Rocks" (4 $\frac{1}{2}$ pp.), "Sedimentation, rate of" (3 pp.), or "Tectonite fabrics" (4 $\frac{1}{2}$ pp.).

The titles of some entries are largely misleading. The article "Age determination by radioactivity" only consists of less than a page on the radiocarbon method and less than half a page with some very general remarks on the correlation of geological and radioactive ages. The article fails to refer readers who want more detailed information about the principles, methods and results of radioactive dating to the much larger (almost 9 pp.) article "Geochronology, radioactive". The first named article could safely have been restricted to radiocarbon dating and then have been made a section of the latter article. The contribution "Ages other than C 14" (3 $\frac{1}{2}$ pp.) only reviews 11 age measurements of rocks from oceanic environments. The length and degree of detail with which these are discussed is in a strange proportion to the 1 $\frac{1}{2}$ pp. on the radioactive time scale as such in the article "Geochronology, radioactive".

It would do great injustice to the many authors of the two volumes if it were not stated that a great many of the contributions are very useful and instructive. The reader is informed about a large number of subjects in a generally brief, elucidating manner. No single source contains such a large number of short review articles. That the general framework in which the contributions are contained is weak, is no reflection on the authors, but the editor-in-chief and, to a lesser degree, the associate editors. Differences in the level at which the subjects are treated, strange ratios between the lengths of more general and more specialized articles, lack of reference from one article to other related contributions, are also mainly to be held against the coordinators.

The almost classical physiographic diagrams of the South Atlantic Ocean and the Indian Ocean, by B. C. Heezen and M. Tharp, are added to the set in a separate portfolio.

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