Book Reviews

Pioneer Professor of Geology

John Walker (1731–1803) taught the first formal courses in geology at the University of Edinburgh; and during his tenure of 24 years as professor of natural history, beginning in 1779, he made substantial contributions to geology, botany, and agronomy. His own accomplishments, however, have been overshadowed by the fame of his students. John Playfair, author of the classic *Illustrations of the Huttonian Theory,* Sir James Hall, sometimes called the father of experimental geology, and Robert Jameson, who was a prominent figure in the debate between the Neptunists and Plutonists, all studied with Walker at Edinburgh. The course of study pursued by these men and others less distinguished is now available in Walker's **Lectures on Geology** (University of Chicago Press, Chicago, 1966. 326 pp., illus. $8.50), edited with notes and an introduction by Harold W. Scott.

This handsome book reproduces all of Walker's surviving lectures on natural history except those on botany and zoology. The major topics cover meteorology, hydrography, geology, and mineralogy. A sketch of Walker's life and a careful appraisal of his scientific works are given in Scott's introduction. At the end of the volume are included translations of correspondence between Walker and Charles Linnaeus, a collection of terms comprising Walker's scientific vocabulary, a bibliography of works cited by Walker, a list of works containing references to him, and a concise index.

By "natural history" Walker meant "the arrangement, description and history of the works of creation contained in the terraqueous globe." His lectures show that he was indeed concerned more with the systematics of natural phenomena than with broad explanatory theories. A Baconian by temper, Walker thought that scientific truth should be sought through painstaking observation and experiment. "Nature," he said, "consults no philosophers. They too seldom indeed consult her. . . ." His disinclination to go far beyond the facts may have worked against his reputation as a scientist, especially at a time when debates over comprehensive theories of the earth were at their noisiest. At the same time, Walker's respect for evidence prompted him to point up what was *not* known about the earth, so that his lectures posed an array of interesting problems. That this skeptical approach to natural history was successful pedagogically seems well established. For the modern historian of science, Walker's lectures constitute a valuable document, one which shows the shape of systematic geology as it was understood at an important center of scientific investigation toward the end of the 18th century.

Scott's annotations identify most of the persons mentioned in the lectures and explain a number of passages which require translation into modern terminology. The editor has made a good case for his acclaim of Walker as the "father of Scottish mineralogy." It might be more difficult to establish the author of these lectures as the "father of geologic teaching," and perhaps it would be impossible to gain consensus on the proposition that "Walker must be regarded as the first man who can be properly called a geologist." With or without these titles, however, John Walker must now be accorded a position of respect among the founders of modern geology.

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The Sun

Between 1951 and 1962, the dates of the first and second Russian editions of I. S. Shklovskii's book on the solar corona, the subject matured. In 1951 the million-degree temperature of the corona had been known for only about 10 years, and the corona was still a mysterious region. By 1962, the physical processes of the corona were much better understood, but not until now, with the translation of Shklovskii's **Physics of the Solar Corona** (Pergamon, Oxford, 1965; Addison-Wesley, Reading, Mass., 1966. 485 pp., illus. $16.75), has this knowledge been available in a comprehensive text in English. Because of the lack of interest prior to Sputnik the first edition of the book was never translated, and hence this belated translation of the second edition is most welcome.

Shklovskii is one of the great astronomers of our time, and his book is a real achievement. It is not the usual textbook, with interminable précis of published papers, but a real explanation of the physical problems of the corona. The student may read and learn about not only observations but theory; he may learn about transition probabilities, generation of radio waves, and ionization equilibrium, always as real physical processes rather than empty equations.

Unfortunately, because Shklovskii has not been active in the field since 1958 and because the book is now 4 years old, recent discoveries about the corona, such as dielectronic recombination and the solar wind, are not discussed. Some of the identifications of extreme-ultraviolet lines (p. 260) are wrong, and there are some dubious identifications of coronal lines. Shklovskii's ideas on the chromosphere are fairly naive. But the book is remarkably comprehensive —there is nothing else like it.

The translation, by L. A. Fenn, is adequate and on the whole accurate, but I cannot understand why it took the publishers so long to produce it. There are typographic errors and minor mistranslations on almost every page. Most annoying is the copying of Table 2 with two misprinted lines. But most of the errors are obvious and should cause no trouble. The illustrations are copies of the originals, which are the usual poor Soviet halftones. It is a pity that no attempt was made to add new Western halftones and some results from the last 5 years.

Despite its faults, however, Shklovskii's book is to be applauded and recommended; it is a model of what scientific texts should be.

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