Energy from the Sun

A comprehensive account of the sun's radiation, from the ultraviolet to the infrared, as emitted from the sun's surface and as received at the earth's surface, is provided by **Solar Radiation** (Elsevier, New York, 1966. 359 pp., illus. $24.50), edited by the late N. Robinson.

The book can be considered as a handbook of the fundamentals of the subject. In chapters 1 and 2, the sun is treated from the astronomical viewpoint, and description of solar features and phenomena is given as a background for the explanation of the non-black-body radiation emitted from the sun. The second chapter defines the geometrical factors of distance, motion along the ecliptic, solar rotation, coordinate systems, and calculations of insolation on different planes at the earth's surface. Chapters 3 and 4, comprising one-third of the book, are detailed accounts of the effects of the earth's atmosphere in modifying the solar constant. These sections include discussions of scattering, absorption, atmospheric turbidity, ozone layer, and the effect of clouds.

Chapters 5 and 6 consider the spectral energy distribution of the radiation reaching the earth, both from the sun and as skylight, for various times of the day and season. The albedo of earth, clouds, and atmosphere is discussed in relation to the radiation balance of the system of earth-surface and atmosphere. Chapter 7 is an excellent account, from the viewpoint of the user, of instruments and experimental methods. Pyrheliometers of all types, their principal merits, calibration, and use are treated along with pyranometers, sunshine recorders, and albedometers, specialized instruments, and filters for measurement of radiation in limited spectral regions. The last chapter very briefly considers the collection and utilization of solar energy for heating and generation of electricity.

The book is printed on glossy paper and has many illustrations, with a good balance between figures, graphs, tables, and text. The reader will appreciate the extensive set of references at the end of each chapter—from five in number for chapter 2 to 149 for chapter 7—taken from English, German, and Russian literature. It is a well-written and well-edited work with few errors, of interest to the engineer, atmospheric physicist, and agriculturalist, all of whom will find it a convenient source of information on all phases of solar radiation.

Essential parts of chapters 2 through 4 were contributed by distinguished meteorologists and physicists from Germany, Israel, Japan, Switzerland, and the United States. Editor Robinson was president of the Committee on Solar Radiation of the International Society of Bioclimatology and Biometeorology when he died in 1964. The book was brought to completion by the cooperation of friends and colleagues.

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Books on Photography

The first edition of **The Focal Encyclopedia of Photography** (Focal Press, London and New York, ed. 2, 1966, 2 vols. 1755 pp., illus. $39), published in a single volume in 1956, has been generally regarded as the best general reference work in photography. It gives broad coverage to photographic technique, art, science, and business, including photomechanical processes. The new edition is expanded to two volumes, each of which is nearly the size of the old edition. It contains 2400 articles contributed by 281 authorities from 28 countries. It is illustrated, as it should be, with 1750 diagrams and 450 fine photographs, including 16 in color. This is essentially a British publication but there is ample attention to American materials, processes, and activities. Such new topics as electrophotography, lasers, and vesicular images are now included. Holography didn't make it. Although the photographic scientist will find some technical inconsistencies and misuse of terminology, it is still the best general reference work in photography.

A book called **Photography on Expeditions** could be anything from a Boy Scout merit badge handbook to the reminiscences of an accomplice of William Beebe. D. H. O. John's book by that title (Focal Press, London and New York, 1966. 176 pp., illus. $12.50) is neither. It is a thoroughly professional study of adverse environmental conditions and how to cope with them photographically, by the well-known editor of *Photographic Abstracts*. John treats photography under cold conditions, hot conditions, underground, and underwater. His emphasis is on the photography, but he deals also with the very real problem of how to get *you* there and back again. He even treats the administrative aspects of expeditions and gives many references, including the citations of a number of our U.S. research reports by Publication Board number. But the striking thing to me is that he does all of this with such fun. For example, the structure of the book is partly dictated by the analysis of Aristotle (fl. 350 B. C.), who selected as "elements" the four fundamental properties of matter—hotness, coldness, moistness, and dryness. By taking these attributes singly and in combination John comes up with just about every kind of trouble conceivable. This book is loaded with clever tricks and sage advice from those who have "been there." The low-keyed humor is nicely set against a backdrop of a meticulously explicit, typically British style.

Spectral Studies of the Photographic Process (Grace E. Lockie, Transl. Focal Press, London and New York, 1966. 357 pp., illus. $27.50) is the English translation of a book by Yu. N. Gorokhovskii published in Moscow in 1960. Having spent a quarter of a century conducting research in the spectrosensitometry and spectrophotometry of photographic materials, Gorokhovskii is well qualified to write on this subject. Quite naturally this is a Soviet approach to the use of Soviet instruments to study Soviet photographic materials. It is a well-organized and well-written book. The first half deals with spectrosensitometry in general, the natural sensitivities of photographic layers, and induced sensitivity. The remainder treats the color photographic process in multi-layer materials. Although one will find these topics covered in *The Theory of the Photographic Process* by Mees and *Principles of Color Photography* by Evans, Hanson, and Brewer, this book complements those since it emphasizes those aspects, instruments, and materials most neglected in Western literature. It is copiously illustrated with graphs and includes about 400 references to the literature, including pertinent national standards. The detailed discussions of the instrumentation are particularly notable. Its fresh approach and emphasis make it a very valuable contribution.

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