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■ PEACETIME USES OF OUTER SPACE

Edited by SIMON RAMO, Thompson Ramo-Woolridge, Inc. Available in September, 1961.

This remarkable volume brings together outstanding scientists, educators, politicians, and businessmen for an examination of the coming space age. Emphasizing the peacetime, non-military aspects of space technology, the book seeks to heighten public responsiveness to the full impact of science and technology in shaping our future. Contributors include: Leston Faneuf, J. H. Doolittle, Lloyd V. Berkner, Congressman Overton Brooks, Ralph J. Cordiner, Willard F. Libby, Vice Admiral John T. Hayward, Joseph Kaplan, Morris Neiburger, Brigadier General Don D. Flickinger, Leo Goldberg, Edward Teller, and Frederick R. Kappel.

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as usually practiced, and others in which this method is applied (for example, medical problems and stress analysis). An invited paper by Dr. Gerold on x-ray methods for the study of lattice defects is entirely in the realm of physics, and two contributions by Dr. Wittry, also a physicist, deal in exemplary fashion with the x-ray-emission electron microprobe.

This partial summary of Volume 3 shows that the conference risks hiding its light under a bushel so long as it emphasizes "x-ray analysis" in its name. Isn't "applications of x rays" nearer the mark? Certainly the volumes ought to attract many with little or no interest in analytical chemistry.

The publishing of compiled conference papers often needs to be justified. In the present instance, the following considerations might serve toward this end. Applications of x rays are growing in scope and in importance—there *are* advances to report. Collecting these diverse applications in single volumes will benefit even readers acquainted with x rays. In a period of rapid development, there is often need to publish more experimental detail than the average journal can afford. The reviewer feels these three volumes are worthwhile, and he hopes the future will bring advances rapidly enough to justify the publication of many more.

Open Vistas. Philosophical Perspectives of Modern Science. By Henry Margenau. Vol. 3 of Trends in Science, edited by George A. Baitzell. 256 pp. Yale U. Press, New Haven, 1961. \$5.00. *Reviewed by R. Bruce Lindsay, Brown University.*

HENRY Margenau, who serves as Eugene Higgins Professor of Physics and Natural Philosophy at Yale University, has made many distinguished contributions to various fields of theoretical physics. At the same time, he has not scorned philosophical analysis of the concepts of modern physics and so has helped to clarify the meaning of physical science for many who are in no position to follow the intricacies of the formal mathematical terminology in which it is commonly expressed. In the present volume, Professor Margenau has brought together the substance of a number of articles on the philosophy of physics written over a period of years. To provide the continuity which is apt to be lacking in such a collection, he has provided an introductory chapter summarizing his basic views on the nature of physical science as set forth in his well known book, *The Nature of Physical Reality*.

The papers in the present volume are combined into groups, each of which stresses a broad theme relevant to the nature of science or its significance for modern life. Thus, there is a chapter on "Science and Human Affairs" containing sections (1) on the relation between facts and theory in science with particular application to the political and economic problems of the modern world, (2) on what has been called the cultural lag between the obvious (technological) and obscure (ideological) movements of science, and finally (3) on the scientific roots of some of the notable philosophies of

our day, e.g., logical positivism and existentialism. The style is elegant and the arguments persuasive, though the reader will doubtless find numerous points to question. Thus, the reviewer would take issue with the implied view that thermodynamics might well be dropped from the elementary college physics course on the ground that it is too factual and empirical. On the contrary, it and its fundamental statistical basis constitute for many one of the greatest theoretical structures ever conceived by the mind of man. An elementary physics course based on thermodynamics with all its implications might serve a more useful purpose in general education than most of the courses now current.

In later chapters, the author explores the tentative character of the postulates of scientific theories, the role of esthetics in physical science with particular reference to invariance and the theory of relativity, the decay of materialistic conceptions in contemporary physics, the decline from favor of concrete models in modern atomic structure, and the problems of determinism in contemporary quantum physics. The last topic inevitably raises in the lay mind questions about its relation to human freedom, and the author sets forth his stand on this problem, though his treatment is very brief. The final chapter, from which the volume takes its name, is a composite look at cosmic physics on the one hand and the relation between science and religion on the other. The discussion here well reflects the author's breadth of interest and his concern for human problems which to many transcend the scientific description of experience.

This is a thought-provoking book, which should appeal to scientists and humanists alike.

Optics of Thin Films. By A. Vašíček. Transl. from Czechoslovakian by H. Watney-Kaczér. 403 pp. (North-Holland, Amsterdam) Interscience Publishers, Inc., New York, 1960. \$12.50. Reviewed by Nicholas Chako, Queens College.

THE study of the optical properties of thin films has, in the last two decades, attained such prominence that it has become a new branch of optics. Among its many applications, both in the laboratory and in industrial establishments, one could mention the measurements of refractive indices of dielectric films, their reflective and transmittive power, the optical constants of metals, and the construction and design of optical instruments of high reflectivity or light transmission, such as camera lenses, interferometers, filters, etc.

The present book deals primarily with the theoretical aspects and their applications to interpretations of the experimental observations of the subject. Although the author does not aim at presenting a comprehensive treatment, he nevertheless covers in a substantial manner the recent developments in this field, including his own researches, which are not easily accessible to many people in this country.

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