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treatises, a finished product; it is rather a study of the peculiar ways in which scientists go about making discoveries and creating theories. Unfortunately, too few scientists have ever taken the trouble to make clear in detail precisely how they came upon their clever ideas and why they proceeded as they did; by the time their material gets digested in the standard texts, all traces of its psychological origin have vanished. No one can doubt that this state of affairs is a decided handicap to the young student of science. We have here a realm with very practical significance both in education and in the research laboratory.

The author begins with an introductory summary of the relation between modern science and philosophy from the standpoint of such developments as the trend from determinism toward indeterminism in scientific theories. He then embarks on his psychological analysis proper, beginning by stressing the great difference just mentioned between science as a finished structure and science in process of creation. The next few chapters are devoted to a study of what may be called heuristic methods in scientific discovery; such as, for example, the use of curiosity and free imagination, and the use of diagrams as well as the dogmatic introduction of hypotheses not suggested by anything in experience, followed by the search for something in nature with which they may be identified (the philosophy of *Why not?*).

Everyone knows that processes not strictly within the confines of formal Aristotelian logic have often proved useful in scientific creation. So the author pays considerable attention to what he calls "infralogical" modes of thought, of which the free use of analogy is a good example. The effect of the researcher's own philosophy of life and the influence of his social environment on his methods are also examined in the final chapters. All points are amply illustrated, mainly from mathematics and the physical sciences.

At a time when physicists are debating the relative merits of individual and team research in the advancement of their subject, a careful reading of M. Moles' book is heartily to be recommended for its suggestive and stimulating treatment of the whole problem of the creation of physical science.

Nuclear Power Reactors. Edited by James K. Pickard. 388 pp. D. Van Nostrand Co., Inc., Princeton, N. J., 1957. \$8.50. Reviewed by E. Richard Cohen, *Atomics International*.

The Geneva Conference on the Peaceful Uses of Atomic Energy held in August 1955 compressed into twelve days the distilled experience of more than twelve years. It is therefore not surprising that the proceedings of the conference consist of 16 large volumes. These proceedings contain not only the formal papers submitted to the conference, but also the oral presentations and the discussions which followed. (Only a third of the papers could be presented orally in the sixty odd sessions.)

The need for editing of this material is obvious. Under the general editorship of J. G. Beckerley, the Van Nostrand Geneva series condenses into six volumes those papers which may be logically combined. *Nuclear Power Reactors* edits thirty-eight of the Geneva papers into two chapters on the economics of conventional and nuclear power and seven chapters which cover the major power reactor types (pressurized water, boiling water, homogeneous, circulating fuel, liquid and gas cooling graphite moderated, and liquid metal cooled unmoderated). As for the material presented, there is no originality in this volume; its utility lies in its editing of existing material into more convenient form. In this it has succeeded quite well and the volume should prove useful to those who deal with power reactors and who wish the more important Geneva papers on the subject in a more convenient form.

Neutron Cross Sections. Vol. 1, Div. 2 of Internat'l Series of Monographs on Nuclear Energy. By Donald J. Hughes. 182 pp. Pergamon Press, London & New York, 1957. \$5.00. Reviewed by Lyle B. Borst, New York University.

If the purpose of this small book is, as the author states, to serve as a supplement and handbook to the extensive compilation of neutron cross sections known as BNL-325, many readers will feel that it has missed the mark.

However in a rapidly expanding field characterized by extensive empirical data and no simple fundamental theory, it has a unique place. It is by far the best epitome of theory illustrated by empirical examples presently in print, and as such will find extensive use particularly among experimentalists.

The book is organized primarily around the optical model of the nucleus, and chapters are devoted to processes involving: fast neutrons; neutron resonances; and thermal neutrons. A separate chapter is reserved for the extensive studies on neutron fission. Techniques are generally illustrative and are largely selected from the author's experience. Chapter references are made primarily to the more specialized technical review articles and no attempt is made to give a research bibliography. In Appendix 3 key references are given to work from the various laboratories. Unfortunately in many cases these are unpublished documents.

The Detection and Measurement of Infrared Radiation. By R. A. Smith, F. E. Jones, R. P. Chasmar. 458 pp. Oxford U. Press, New York, 1957. \$11.20. Reviewed by S. F. Singer, University of Maryland.

In many fields progress depends on the development of techniques. The infrared field is a case in point. The region extends in wavelength from 0.75 micron to 1000 microns and thus covers an enormous range of the electromagnetic spectrum. Its different portions require different approaches both for detection and for produc-

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