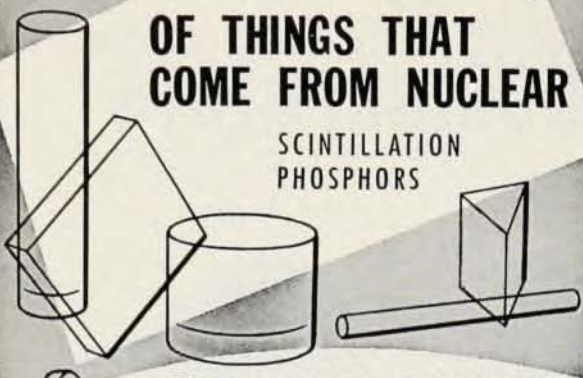


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who are without exception German scientists, summarize current advances in active fields and give major emphasis to those topics not adequately covered in existing standard books and monographs.

Extensive lists of references accompany each volume. In Vol. 2 there is a long list of books and review articles by topic, and a separate list of periodical articles arranged chronologically and extending to 1957. At the end of Vol. 3 there appears a chronological listing of books and papers published up to September 1955.

The topics treated in Vol. 2 include: Ultrasonics; Acoustic Measurement Techniques; Transducers and Analog Systems; Sound Transmission and Storage; Architectural Acoustics; Sound Ranging and Location; Physiological and Psychological Acoustics, Music and Speech; Audiometry and Hearing Aids.

The titles of the papers in Vol. 3 are: Thermal Instrumentation and Measurements; Thermodynamics of Irreversible Processes; Liquid He II. The last of these papers is a clear and valuable résumé of this active and puzzling field. It is some 30 pages in length and carries a list of over 200 literature references.

The American publication that is closest in aim and scope to these *Einzelberichten* is, of course, the *Reviews of Modern Physics*. However, as the above list of topics would indicate, the series under review here is much more strongly slanted toward applied and technical subjects.

The Direction of Research Establishments: Symp. Proceedings (Nat'l Physical Lab, Sept. 1956). 5 sessions; 20 papers. Philosophical Library, Inc., New York, 1957. \$12.00. Reviewed by C. Kittel, University of California.

The Director of Research is a new type in our society. He is not described very satisfactorily in the published literature. He has escaped the novelist's ear and the painter's eye. No analyst has discussed the motivations of the research director. His public addresses on ceremonial occasions are platitudinous and do not tell us how he operates, how he creates in his laboratories an atmosphere, an ambiance, in which discoveries are made. We do not know his response to the criticisms made in two recent books, *The Sources of Invention* and *The Organization Man*. Their authors have suggested that many large laboratories are not prepared to do anything first, and that creative individuals who are capable of significant discovery are not adequately supported by the laboratory direction.

In the present symposium a large number of research directors, mostly British, discuss the problems of their profession. It is useful to list the central papers and speakers; the discussion periods following the talks, however, contain many useful as well as amusing statements: "Fundamental and Applied Aspects of Research Problems", by J. D. Bernal (University of London); "The Research Project: Choice and Termination", by Willis Jackson (Metropolitan-Vickers); "Creativity and

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- (2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;
- (3) The development and operation of vehicles capable of carrying instruments, equipment, supplies and living organisms through space;
- (4) The establishment of long-range studies of the potential benefits to be gained from, the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes;
- (5) The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere;
- (6) The making available to agencies directly concerned with national defense of discoveries that have military value or significance, and the furnishing by such agencies, to the civilian agency established to direct and control nonmilitary aero-

nautical and space activities, of information as to discoveries which have value or significance to that agency;

- (7) Cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof; and
- (8) The most effective utilization of the scientific and engineering resources of the United States, with close cooperation among all interested agencies of the United States in order to avoid unnecessary duplication of effort, facilities, and equipment . . ."

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*Quoted from the National Aeronautics and Space Act of 1958.

(Positions are filled in accordance with Aeronautical Research Scientist Announcement 61B)

NASA National Aeronautics and Space Administration

EXHIBIT

at the Combined Winter Meeting of the
AMERICAN PHYSICAL SOCIETY

and

AMERICAN ASSOCIATION
OF PHYSICS TEACHERS

January 28-31, 1959

Hotel New Yorker, N.Y.C.

The Meeting will feature an exhibit of research instruments, laboratory apparatus, and technical books by the leading manufacturers and publishers. The following companies have reserved space.

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Beckman & Whitley
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Pacific Electro-Nuclear
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W. M. Welch Co.
John Wiley and Sons

In addition to the commercial exhibit, there will be an exhibition of apparatus and instruments made by college physics teachers for use in their laboratories and lecture rooms. The competition is sponsored by the Committee on Apparatus for Educational Institutions of the American Association of Physics Teachers and is supported by a grant from the W. M. Welch Company, Chicago, Illinois. Prizes will be awarded for the best displays.

the Scientist", by Morris Stein (University of Chicago); "Personality and Social Factors Related to Creativity", by D. J. van Lennep (State University of Utrecht); "Budgets and Administrative Controls", by D. R. Willson (Harwell); "Some Factors Affecting Laboratory Administration", by E. S. Hiscocks (NPL); "Selection and Personal Assessment of Staff", by W. S. Bristowe (ICI); "Staff Selection and Assessment", by F. T. Rosser (National Research Council of Canada); "Superiors and Subordinates in Research", by Herbert A. Shepard (MIT); "Staff Groupings and the Flow of Authority", by C. R. Harington (National Institute for Medical Research); and "Incentives", by Stanley Mayne (Institution of Professional Civil Servants). There are in addition three papers concerned with buildings and shops, and five papers concerned with technical information distribution.

The papers in this symposium by research directors are modest and self-effacing, as if the directors did not much influence the research in their laboratories. This is certainly not the case; they influence research enormously by their acceptance of personnel policies on hiring, salary, transfers, rewards, travel, and retirement; capital equipment budgets; publication policies; and, above all, the stability of their attitude towards basic research.

Several of the contributors reveal a rather deep lack of confidence in research and in the research scientist. This is probably not necessarily because they understand both so well, but is rather, I think, an occupational hazard. A research laboratory certainly cannot be run or evaluated by standard business practices; no asset is less tangible than ideas or inventions not yet conceived. It must be difficult for a person to assume personal administrative responsibility for a highly speculative endeavor and to defend the necessary policies and budget before the higher managerial officials in his company, when he has no way of assuring himself that discoveries will consequently be made. It is not surprising then if some research directors become more concerned with protecting a steady reliable flow of standard or derivative work than they are with fostering new advances whose relevance to company interests is not yet patent.

The contributions of psychologists to the symposium are disappointing because they are so superficial. Creativity is an extremely important and interesting subject. The first requirement for a study of creative individuals is reasonably firm assurance that the individuals are in fact outstandingly creative. The Stein study is limited to industrial research chemists "who are regarded as creative by significant others (sic) in their environment". This criterion by itself seems weak and would appear to be much less significant for statistical purposes than the crude and powerful measures introduced in the well-known paper by Shockley. The Shepard study is written entirely in the jargon of psychodynamics and gives no recognizable evidence of contributing to the understanding of the difficult and complex superior-subordinate relationship in research.

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By contrast, the related paper by Sir Charles Harington, Director of the National Institute for Medical Research, is restrained, penetrating, and authoritative; and we infer that research is best directed when a strong scientist inherits a strong organization.

Foundations of Information Theory. By Amiel Feinstein. 137 pp. McGraw-Hill Book Co., Inc., New York, 1958. \$6.50. Reviewed by George Weiss, University of Maryland.

This book contains a complete account of the mathematical foundations of information theory. The author has more or less filled in the missing details in Shannon's original papers and given a fairly precise account of the definitions involved in the theory as well as the main coding theorems. There are no applications given and the book is written in such a manner as to be of interest to mathematicians only.

Nuclear Structure. No. 8 of Investigations in Physics. By Leonard Eisenbud and Eugene P. Wigner. 128 pp. Princeton U. Press, Princeton, N. J., 1958. \$4.00. Reviewed by Kamal K. Seth, Duke University.

Ten years ago there were very few books devoted to nuclear physics and Bethe's articles in *Reviews of Modern Physics* (1936) represented by far the most exhaustive survey of the subject. The wartime and subsequent development of nuclear physics was essentially unavailable to the student in book form. At the beginning of this decade Blatt and Weisskopf's monumental work and some other books, not so precisely defined in their subject matter, were published. Between Blatt and Weisskopf, Sachs (and other specialized texts on chosen aspects of nuclear physics), and these elementary texts, there existed a huge gap—sometimes a little too wide to be spanned in one leap. Surprisingly, while more and more books continued to appear in either category in the following years, not much was published to fill this gap. What was needed was a book on theoretical nuclear physics, which, in a concise manner, presents the major developments in nuclear physics, and can be understood by the first- or second-year graduate student. Furthermore, it would be expected that experimentalists, and other researchers in physics, would also profit by such a book—a book which is authoritative enough to satisfy their needs, yet not too demanding of their mathematical abilities, and most important, not bulky enough to scare. Well, here's the book.

The names of Eisenbud and Wigner have been associated in the past with some of the most formidable and intensely mathematical developments in nuclear physics. Hard as it may be to believe—this book lives up to its promise, it is essentially nonmathematical. Wherever mathematics is necessary, only the results are mentioned and an attempt is made to interpret their derivation and meaning in physical terms. This does occasionally lead to situations; unexplained symbols, and