

not verify all the integrations or study all the possible designs for a statistically planned experiment. He would like to know what assumptions go into the theory, what conclusions come out, and what use can be made of the results.

This book was not written especially for physicists, or even for chemists or engineers. Judged nevertheless as a book for physicists, it compares favorably with other books, in the following respects.

First, many of the fields covered are useful in physical applications. After three chapters on basic theory, there are three on simple applications such as significance tests and straight-line fits; four on more complicated applications such as nonlinear fits and correlation; four on experimental designs; and five on special topics such as quality control. Of particular interest to physicists is the fitting of data with nonlinear functions; when a polynomial approximation is adequate, tabulated orthogonal polynomials are very useful. This book devotes over ten pages to them; Hald's 783-page *Statistical Theory with Engineering Applications* gives them one sentence.

Second, the discussions are concrete. The methods discussed are usually introduced by specific problems and are always illustrated by numerical examples. Definitions also are concrete; for instance: "We make an error of the first kind when a good coin is classified as bad, and an error of the second kind when a bad coin is classified as good". Compare the traditional statement: "An error of the first kind consists in rejecting the test hypothesis when it is true, an error of the second kind in accepting it when it is false".

Third, the logical relations and motivations are kept clear. They are emphasized in the discussion of each topic, and the numerical examples are often followed by a critical discussion of the uses and limitations of the method exemplified. The author, in his own words (p. 328), is "concerned with understanding the principles of the methods . . . rather than with the mere elaboration of appropriate techniques." For such elaboration, references are given with each chapter.

The few lapses from clarity stand out because they are exceptional. The equating of equations on p. 9 is confusing as well as unconventional. The important terms "unequal weight" on p. 177 and "maximum likelihood" on p. 399 are used without explanation and are not in the index. The discussion on p. 355 leaves this reader more confused than it found him. There are a few slips in grammar and spelling, e.g. "efficiency . . . are" on p. 427 and "principle method" on p. 194.

What statistics book is most suitable for a particular physicist depends on his previous knowledge and on his problems. I do not recommend purchase of this book without previous inspection, but I do recommend investigation of its possible usefulness. That its author is a cereal agronomist does not preclude its use, with profit, by a physicist.

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Books Received

IONIC PROCESSES IN SOLUTION. By Ronald W. Gurney. 275 pp. McGraw-Hill Book Co., New York, 1953. \$6.50.

ELEMENTS OF ELECTRICITY (Fourth Edition). By William H. Timbie, assisted by Alexander Kusko. 631 pp. John Wiley and Sons, Inc., New York, 1953. \$5.50.

PHYSICAL FORMULAE. By T. S. E. Thomas. 118 pp. Methuen and Co. Ltd., London, England; John Wiley and Sons, Inc., New York, 1953. \$2.00.

MR. TOMPKINS LEARNS THE FACTS OF LIFE. By G. Gamow. 88 pp. Cambridge University Press, New York, 1953. \$2.75.

REFRACTORY HARD METALS. BORIDES, CARBIDES, NITRIDES, AND SILICIDES. By Paul Schwarzkopf and Richard Kieffer in collaboration with Werner Leszynski and Fritz Benesovsky. 447 pp. The Macmillan Company, New York, 1953. \$10.00.

THE REVOLUTION IN PHYSICS. A NON-MATHEMATICAL SURVEY OF QUANTA. By Louis de Broglie, translated by Ralph W. Niemeyer. 310 pp. The Noonday Press, New York, 1953. \$4.50.

PHYSICS. By N. C. Little. 656 pp. D. C. Heath and Company, Boston, Massachusetts, 1953. \$6.00.

THE STABILITY OF ROTATING LIQUID MASSES. By R. A. Lyttleton. 150 pp. Cambridge University Press, New York, 1953. \$6.50.

MICROWAVE SPECTROSCOPY. By Walter Gordy, William V. Smith, and Ralph F. Trambarulo. 446 pp. John Wiley and Sons, Inc., New York, 1953. \$8.00.

JENAER JAHRBUCH, 1952. 266 pp. Published by Veb Optik Carl Zeiss. Kommissionsverlag Gustav Fischer, Jena, Germany, 1952. DM 18.00.

READINGS IN PHILOSOPHY OF SCIENCE. INTRODUCTION TO THE FOUNDATIONS AND CULTURAL ASPECTS OF THE SCIENCES. Edited by Philip P. Wiener. 645 pp. Charles Scribner's Sons, New York, 1953. \$5.50.

QUANTUM CHEMISTRY. By Kenneth S. Pitzer. 529 pp. Prentice-Hall, Inc., New York, 1953. \$10.00.

FESTSCHRIFT ZUM 50 JÄHRIGEN JUBILÄUM DER TELEFUNKEN. By Technisch-Wissenschaftliche Mitteilungen der Telefunken Gesellschaft für drahtlose Telegraphie m. b. H. 264 pp. H. Heenemann KG, Berlin, Germany, 1953.

BIDRAG TIL TEORIEN FOR ANTENNESYSTEMER MED HEL ELLER DELVIS ROTATIONSSYMMETRI. By H. Lottrup Knudsen. 228 pp., 72 graphs. I Kommission Hos Teknisk Forlag, Copenhagen, Denmark, 1953. Paperbound.

LA SPECTROSCOPIE D'ÉMISSION ET SES APPLICATIONS. By Pierre Michel. 224 pp. Librairie Armand Colin, Paris, France, 1953. 260 fr.

INTRODUCTION TO SOLID STATE PHYSICS. By Charles Kittel. 396 pp. John Wiley and Sons, Inc., New York, 1953. \$7.00.

PRINCIPLES OF COLOR PHOTOGRAPHY. By Ralph M. Evans, W. T. Hanson, Jr., and W. Lyle Brewer. 709 pp. John Wiley and Sons, Inc., New York, 1953. \$11.00.

COLLEGE PHYSICS (Fourth Edition). By Frederick A. Saunders and Paul Kirkpatrick. 603 pp. Henry Holt and Company, New York, 1953. \$6.25.

TELEVISION AND RADIO REPAIRING. By John Markus. 556 pp. McGraw-Hill Book Co., Inc., New York, 1953. \$7.95.

PROGRESS IN BIOPHYSICS AND BIOPHYSICAL CHEMISTRY. Vol. III. Edited by J. A. V. Butler and J. T. Randall. 386 pp. Academic Press Inc., New York, 1953. \$9.50.