

just a "zeroth approximation" they do have a ring of truth. In particular, they should have an impact right now during our soul-searching efforts to learn how to improve our educational curricula and ideals. Since it may be too late to wait for the new generation to bridge the cultural gap, Sir Charles' booklet is eminently suitable to appeal to those who have completed their formal education.

Abhandlungen aus dem Fritz-Haber-Institut, Vol. 36 (1959). 590 pp. Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, 1960. Paperbound. *Reviewed by L. Marton, National Bureau of Standards.*

THE Fritz Haber Institute of the Max-Planck-Gesellschaft is an institute of physical chemistry. Every year the Institute issues a bound volume of its reprints of the previous year. Last year's compilation, as compared with preceding ones, is rather voluminous.

Forty-nine papers comprise this 1959 volume, ranging all the way from almost pure chemistry to applied mathematics. Crystallography, in its pure and applied forms, takes a prominent place in the reprints. In fact, judging by the present volume alone, the uninitiated reader might assume that the activities of the Institute are mainly crystallographic and never be aware of the fact that the Institute has a strong electron-microscopy group and is also active in field-emission microscopy. The only paper which comes close to the latter activities is a review by Ruska. There are absolutely no original contributions in this volume. Its usefulness is likely to be confined to theoretical and applied crystallographers.

Techniques of Non-Destructive Testing. C. A. Hogarth and J. Blitz, eds. 216 pp. Butterworth, Inc., Washington, D. C., 1960. \$7.50. *Reviewed by Walter G. Mayer, Michigan State University.*

NONDESTRUCTIVE testing is of great interest to a large number of engineers and manufacturers. Therefore it is highly desirable to have a technically accurate and useful source of information on the subject. This book contributes little in this respect.

The volume contains eleven chapters written by twelve authors. The technical sections deal with the application of radiology and ultrasonics, and with magnetic, eddy-current, and penetrant techniques. There is also a well-written chapter by R. W. Powell and R. P. Tye on thermal comparators pointing out some new possibilities in the field of nondestructive testing. Some remarks on the use of the various techniques in an inspection organization, together with observations concerning the training and competence of staff and the setting of standards, form the concluding chapter.

Only the sections on radiology and ultrasonics are preceded by chapters on the scientific backgrounds of these two techniques. There is, however, a regrettable lack of balance between these related chapters; it seems that the authors of the two chapters on techniques do



"PROBLEMS IN QUANTUM MECHANICS"

by I. I. Goldman
and V. D. Krivchenkov

Translated from the Russian by
E. Marquit and E. Lepa

A comprehensive collection of problems in non-relativistic quantum mechanics, with answers and completely worked-out solutions to each problem. It may be used as a supplement to any textbook in quantum mechanics; it is also suitable for use in conjunction with courses in atomic and nuclear physics, mathematical methods in physics, quantum statistics, or applied differential equations.

The book brings together problems which have been solved at seminars or given as homework assignments for students at the Moscow State University. The basic textbook for these students was Landau-Lifshitz' *Quantum Mechanics—Nonrelativistic Theory*. However, this book may readily be used with any quantum mechanics text.

Perhaps the most difficult aspect of quantum mechanics to master is the matrix form. Therefore, in the preparation of this book, a great deal of attention was paid to the construction of perturbation matrices and their diagonalization. A relatively large amount of space has been devoted to auxiliary problems on angular momentum and spin, since a serious study of quantum mechanics is not possible without an understanding of these basic notions. Problems of various degrees of difficulty are included in the book, some of which require comparatively lengthy calculations.

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not assume that the reader has seen the introductory chapters on background. This results in numerous repetitions in the text and figures, and one asks whether it was really necessary to include the background chapters.

The book is made up primarily of lectures given during evening courses. It is unfortunate that most of the lectures were not sufficiently revised to contain more scientific information and less prolixity. An example: one paragraph (p. 28) is devoted to a description of fatigue of the technician doing fluoroscopic inspections. This situation "induces carelessness and inattention which results in inspectional inaccuracies. A satisfactory method of working that overcomes this difficulty is to employ a team of two operators who interchange duties. . . ." The other operator, in case the reader should wonder, may do something less fatiguing "such as sorting specimens".

Some puzzling statements are found in the book, e.g., we read about "mechanical vibration at frequencies beyond the speed of sound" (p. 190). At another point (p. 90) the reader might get the impression that light is a longitudinal wave. In summary, a great deal of editorial work might have made this book into a short but acceptable review of the subject.

An Introduction to Linear Programming and the Theory of Games. By S. Vajda. 76 pp. (Methuen, London) John Wiley & Sons, Inc., New York, 1960. \$2.25. *Reviewed by George W. Evans, II, Stanford Research Institute.*

THE following two statements are found in the preface: (1) "No mathematics beyond secondary level is required and very little of that. All that is needed is the ability to concentrate on the matter read, and the will to correlate it with the experience from the reader's own field." (2) "The purpose of this book will be fully achieved if it leads to an understanding of the place of Linear Programming and of the Theory of Games in modern Operational Research, and if it stimulates further reading." These statements have a contradictory ring since a deeper grasp of mathematics is necessary both for an understanding of the place of linear programming and theory of games in modern operational research (where most analytic techniques are mathematical) and for the stimulated reader to proceed to the further readings suggested in the preface or by the footnotes. Thus, the self-imposed mathematical restriction more accurately represents an interesting literary exercise than a useful definition of the educational qualifications demanded of readers.

The organization of the book is interesting. In Part 1, it exhibits a simple Hitchcock-Koopmans transportation problem and discusses its solution. The simplex method of Dantzig is introduced for solving programming problems. Examples are given of the solution of problems restated as transportation problems. The dual problem for a given problem and the use of this concept is presented. In Part 2, one is introduced to some of the fundamental concepts of the theory of games. This is