

maintained throughout the book. Traditional topics such as the behavior of charged particles in electromagnetic fields, radiation, and geometrical and physical optics are discussed. However, little feeling is conveyed for the physical significance of these phenomena. For a student to benefit from such an abstract approach as presented here, he must already be well acquainted with the material. Consequently, the book is not primarily useful as a textbook in electromagnetism although much of the book consists of applying Maxwell's equations to specific problems. Furthermore, there appears to be little attempt to exhibit explicitly the general features of a field theory or to discuss the virtues and defects of such a theory. The chief utility of this book is as a reference to convenient ways of obtaining solutions to traditional problems of classical electromagnetism.

Tensors are used freely throughout the book, and it is claimed that the necessary knowledge of tensors is adequately developed in the text itself. This claim is formally true, but little attempt is made to give the student a feeling for when and where and why tensors are used. A student with no previous acquaintance with tensors will not be satisfied with what he learns from this book.

In addition to the high price, the typography is poor. There appears to be approximately one typographical error per five pages. Both the high price and poor typography are features this reviewer has come to associate with the Pergamon Press.

**Problems in Quantum Mechanics.** By I. I. Gold'man, V. D. Krivchenkov, V. I. Kogan, V. M. Galitskii. Transl. from Russian and edited by D. ter Haar. 394 pp. Academic Press Inc., New York, 1961. \$12.00. Reviewed by Nandor L. Balazs, *State University of New York, Stony Brook.*

**PROBLEM** solving is one of the innocent pleasures of a physicist. Everything is so attractive! The problem has already been formulated and posed; one knows that a solution exists and cannot be too difficult; at the end one can bask in a self-satisfied glow of accomplishment.

If you want to indulge vicariously in this manner, read the present collection. There are 333 problems in the book. (Of these, according to my count, only 28 have already appeared in Landau and Lifshitz's *Quantum Mechanics*.) The listing of the problems takes up 49 pages, the answers 331 pages. It is quite evident that you get a lot of instruction with the solutions. The questions are grouped in nine sections: one-dimensional motion, energy spectrum and wave functions; tunnel effect; commutation relations, Heisenberg relations, spreading of wave packets, operators; angular momentum, spin; central field of force; motion of particles in a magnetic field; atoms; molecules; scattering.

The problems are of varying complexity, starting with simple ones and ending with rather more serious in-

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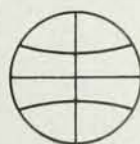
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quiries. Each section is valuable and every reader will find little gems particularly to his liking. For teaching purposes, the section on angular momentum and spin is especially helpful. A section heading is provided on the top of each page but not the number of the section; this makes the answers hard to find.

As a parting blow, a remark is included about appearance versus costs. The book has been photo-reproduced in Great Britain from a typewritten manuscript with the formulae and figures taken from the Russian original. Because of this, the margin on each page is unattractive, and a small dictionary of notation had to be provided. These things would not matter if the book were less expensive. To ask \$12 for 394 pages, when the original is in Russian (royalties?) and the printing is done in Britain with no typesetting costs involved, seems to be the height of greed. (Compare this price, e.g., with *Orthogonal Functions* by G. Sansone. Interscience; 1959; 423 pp.; \$11.75; printed beautifully, in the USA, with lots and lots of typeset formulae.)

**Problems in Quantum Mechanics.** By I. I. Gol'dman and V. D. Krivchenkov. Edited by B. T. Geilikman. Revised and transl. from Russian by E. Marquit and E. Lepa. 275 pp. (Pergamon, London) Addison-Wesley Publishing Co., Inc., Reading, Mass., 1961. \$8.50. Reviewed by Wendell G. Holladay, Vanderbilt University.

**T**HE first forty-five pages of this book list 283 problems in the area of nonrelativistic quantum mechanics. The remainder of the book presents the solutions to these problems in varying amounts of detail. It is stated in the preface that these problems were solved at seminars or given as home assignments to fourth-year students at Moscow State University, where the book of Landau and Lifshitz, *Quantum Mechanics*, is the basic textbook. Since practically all of the problems are stated and solved in quite standard quantum-mechanical notation, this book could equally well be used in conjunction with any of the other widely used textbooks on quantum mechanics.

The problems are presented under nine different headings. The first two concern the energy spectrum and barrier penetration, respectively, for one-dimensional motion. For the latter topic, emphasis is placed on the quasi-classical (or JWKB) approximation, with a short appendix also being devoted to a discussion of this approximation. The next section presents problems involving uncertainty relations and dynamical aspects of the theory, followed by a lengthy section of fifty-three problems on the quantum theory of angular momentum. Three-dimensional problems with central symmetry are discussed in Section 5. Before the last section on scattering theory and its applications, there are three sections on specific types of physical systems, namely, the motion of a particle in a magnetic field, atoms, and molecules. A number of problems involving perturbation theory are presented under the latter two headings. The book closes with another short appendix