to Consultants Bureau from its previous translating activities. In the opinion of the reviewer, however, barely a quarter of the approximately one hundred papers have a crystallographic connotation. Half of the papers report phase diagram studies, carried out by thermal and related methods. General inorganic chemistry is well represented by reactions in solid state and in solution; even some vapor pressure studies are included. X-ray fluorescence analysis is also discussed in a series of papers.

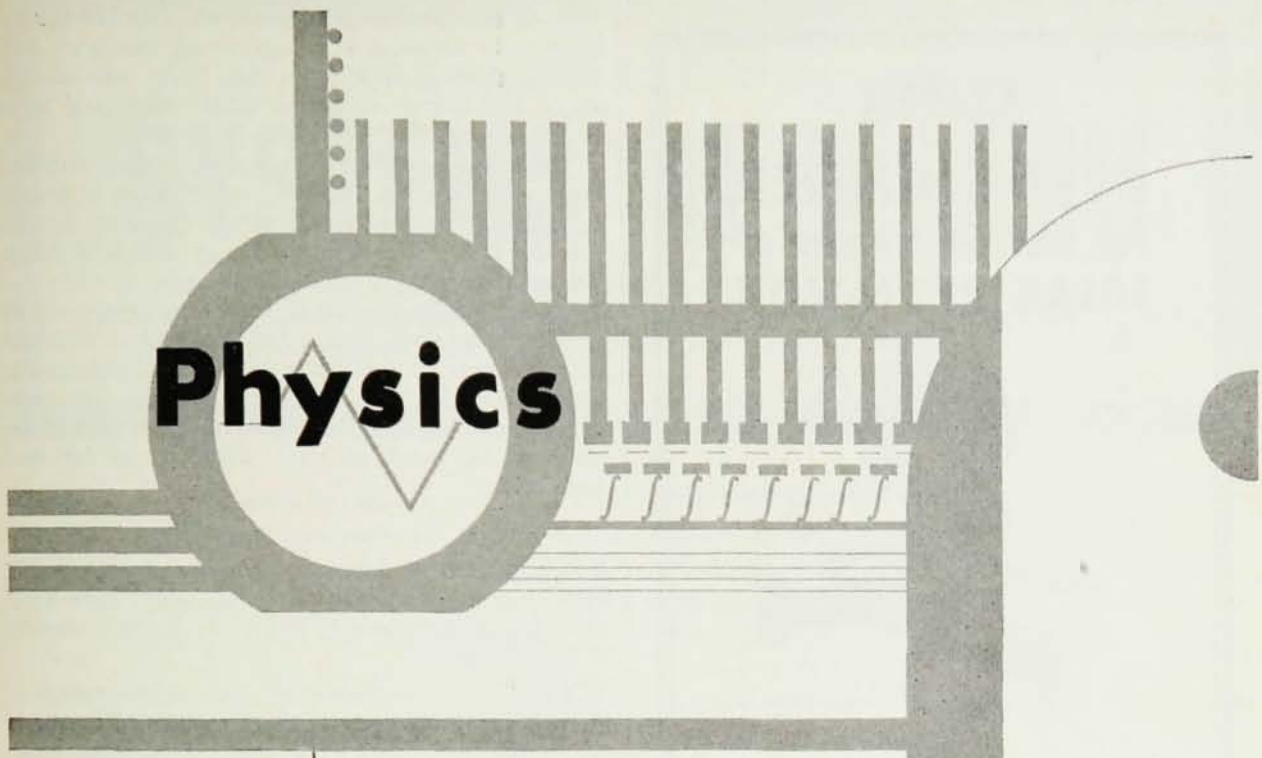
Of the papers which deal with a bona fide crystallographic topic, none constitutes an original contribution to fundamental knowledge. Growth of crystals and crystal optics are discussed in several papers. X-ray crystallography is represented only by some powder diffraction studies; no paper on crystal structure determinations or on experimental and theoretical methods of x-ray crystallography is to be found. A series of theoretical papers on "The Nature of Crystals" by A. V. Kurbatov is not even of historical interest; the author bases his theories on some concepts which he formulated in 1901 and 1909, and he neither refers to nor seems to know of more recent research on the solid state. Undoubtedly, the low level of crystallographic research shown in this collection is not indicative of Soviet crystallography as a whole; this can be easily verified by checking the contents of the Russian journal *Kristallografiya*.

Translation of the articles is as a whole adequate, though more thorough scientific editing would have been desirable. Expressions such as x-ray chamber, reverse space, mole portion are awkward and distracting. The typewritten text is reproduced clearly and is easily readable. Some of the figures, however, are so blurred as to be valueless.

The collection *Soviet Research in Crystallography* cannot be recommended for the crystallographer. It might be of some value to the inorganic chemist.

Quantum Particle Dynamics. By J. McConnell. 252 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1958. $6.00. *Reviewed by J. C. Polkinghorne, University of Cambridge.*

WE are assured by the publishers that this book will take us from a state in which we only have a working knowledge of calculus and elementary algebra to one in which we are acquainted with the main features of the theory of elementary particles. The journey is a long one, occupying several years of most students' lives, and it is not surprising that despite valiant efforts by Professor McConnell the book is like nothing so much as the legendary American tourist's attempts to "do" Europe in seven days. Often there is no time to stop and fully explain or even give references to where fuller explanation can be found. Too frequently we find passages such as this: "The idea of multiple production is also part of Fermi's theory of high-energy nuclear events. The theory is developed on the lines of statistical mechanics and claims to pro-



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vide an estimate of the number of pions and nucleon pairs to be expected in a high-energy collision." After reading this all we know is that Fermi once thought about high-energy collisions. What, when, and where is not recorded.

The early chapters give an account of nonrelativistic quantum mechanics. A good deal of space is devoted to giving all manipulations in full. The later chapters describe relativistic quantum theory and field theory. The point of view is old-fashioned and it is a pity that Feynman graphs are never mentioned, even if they could only be given as a recipe in a book of this kind. The treatment of invariance principles is slight and no satisfactory discussion of parity is given. The references at the ends of chapters seem as curious to this reviewer for some of their inclusions as for their omissions.

Fundamentals of Advanced Missiles. By Richard B. Dow. 567 pp. John Wiley and Sons, Inc., New York, 1958. $11.75. *Reviewed by Robert E. Street, University of Washington.*

HERE is a comprehensive and concise survey of the multitudinous topics of concern to anyone in the missile field. In order to cover all of these, which include the kinematics and dynamics of flight paths, the mechanics of flow (supersonic flow with shock waves mostly), principles of propulsion (rockets and ramjets), probability and statistics, microwaves, infrared radiation, radar, guidance systems, and various ramifications of each of these topics, the author has been forced to keep the amount of discussion to a minimum. In the normal academic curriculum at least eight courses at an upper division or graduate level would normally be needed to include the same material. No one topic is carried far enough to attain the advanced and really complicated aspects which a specialist would desire. However, it may be considered a book for students who have the necessary technical background in mathematics, dynamics, thermodynamics, and electricity and magnetism.

As an example consider the section on aerodynamic forces. In about thirty pages almost all of the simple basic relations which the aerodynamicist uses for determining the forces and moments on a missile in its flight through the atmosphere are presented. Their derivation is implied rather than explicitly given but the results seem to be clear and convincing. Maybe that is because they are familiar to this reviewer, so turning to a less familiar subject, let us look at the chapter on microwaves. Here are Maxwell's equations, propagation of electromagnetic waves, retarded potentials, etc., which are again familiar, but the discussion of microwave circuitry, the types of tubes and propagation of beams is not. Yet the presentation is clear and although sketchy and somewhat oversimplified, it does succeed in putting across a feeling for the physical significance of microwaves.

Dr. Dow has certainly succeeded in compressing an