

- (1) *Introduction à la théorie des groupes et à ses applications à la physique quantique.* Par Prof. Edmond Bauer. Pp. ii+170. (Paris : Les Presses universitaires de France, 1933.) 40 francs.
- (2) *Microénergétique.* Par Dr. Pierre Bricout. Tome 1 : *Introduction.* Pp. vii+303. Tome 2 : *Les théories et les faits.* Pp. iv+429. (Paris : Gauthier-Villars et Cie, 1933.) 100 francs each.
- (3) *Statistische Mechanik auf quantentheoretischer Grundlage.* Von Prof. Dr. Pascual Jordan. (Die Wissenschaft, herausgegeben von Prof. Dr. Wilhelm Westphal, Band 87.) Pp. xi+112. (Braunschweig : Friedr. Vieweg und Sohn A.-G., 1933.) 6.80 gold marks.

THE three books under review are complementary to one another in so far as they cover the whole range of quantum mechanics between them.

(1) M. Bauer's volume deals with group theory and its applications to quantum mechanics according to the methods of J. v. Neumann, H. Weyl and E. Wigner. The arrangement of the material is on much the same lines as in Weyl's well-known book, but the treatment is easier to follow and probably more suitable for students, the arguments being set out with the clarity so frequent in French books.

(2) Dr. Bricout proposes to give a complete summary, adapted to the needs of students, of the researches, both experimental and theoretical, which are the basis of the quantum theory, but group theory and its applications are excluded. When we consider the difficulty of collecting together in a volume of 300 pages all the mathematics and physics required by a student as a preparation for the study of modern quantum theory, we cannot help admiring the skill with which the author has carried out his difficult task. The second volume of Dr. Bricout's book is devoted partly to a detailed study of the principles and methods of the various forms of the modern quantum theory and a critical comparison of them, partly to a full account of the various hypotheses put forward and the experimental facts to be explained by them.

(3) The small book by Dr. P. Jordan is on a different plane, its object being to provide a purely quantum basis for statistical mechanics. The book constitutes an original and valuable contribution to the literature of quantum statistics; no one interested in this branch of quantum theory can afford to ignore it.

*Moderne Physik : Sieben Vorträge über Materie und Strahlung.* Von Prof. Dr. Max Born. Ausgearbeitet von Dr. Fritz Sauter. Pp. vii+272. (Berlin : Julius Springer, 1933.) 19.50 gold marks.

PROF. BORN has made a very successful attempt to give a clear statement of the outstanding advances in modern physics in a form which should be intelligible even to those of modest mathematical attainments. The book contains the substance of seven lectures given to various associations of electrical engineers in Berlin. The essential foundations for the later chapters are set out in chapters i and ii, which give brief but sufficient accounts of the kinetic theory

of gases, discharge of electricity through gases and radioactivity (including isotopes). The historical order is disregarded in the next two chapters in that the idea of wave-particles is introduced before the Bohr atom is discussed. The last three lectures deal with electron spin and Pauli's principle, quantum statistics and electron theory of metals, molecular structure and chemical bonds. These subjects are treated with admirable clearness. The illustrations and tables are particularly useful, and the book is well produced. It closes with some remarks on the problems that at present confront the physicist, problems the solutions of which depend largely on successful investigations of nuclear phenomena.

H. L. B.

*A Key to the Stars.* By R. van der Riet Woolley. Pp. viii+143+8 plates. (London, Glasgow and Bombay : Blackie and Son, Ltd., 1934.) 5s. net.

THIS elementary sketch of the more fundamental aspects of astronomy is specially designed by the author to describe "certain knowledge" or "demonstrable results . . . which partake of the character of laws of Nature". The latest developments of astronomy in which "speculation is still rife" are deliberately excluded, though there are occasional lapses when controversial points are discussed. On the whole, the author has succeeded in his object of giving the lay reader a clear outline of the methods used in astronomical research and of the more definitely ascertained facts which have been disclosed. He has been more particularly successful in describing some of the fundamental conceptions on which modern astrophysics is based, in two chapters on the temperatures and composition of the stars. There might, however, have been more extensive treatment of several points without violating the expressed rule against introducing speculative matter—especially as he devotes a certain amount of attention to such subjects as stellar evolution and the rotation and expansion of the universe.

*Dreams in Old Norse Literature and their Affinities in Folklore.* With an Appendix containing the Icelandic Texts and Translations by Dr. Georgia Dunham Kelchner. Pp. viii+154. (Cambridge : At the University Press, 1935.) 10s. 6d. net.

THE material with which the author here deals is in its special field unique. Not only do the dreams which she has extracted from Old Norse literature constitute the only record of its kind from among the old Teutonic peoples; but also they belong to both pagan and Christian times. It is thus possible to mark the change in thought implicated by the transition from one system to another. In this respect this material is probably a safer guide than the folk-lore with which the author has instituted a comparison. The sources from which the material is drawn are the Elder and Younger Eddas, the prose Saga and Skaldic poetry. The original Icelandic text, with translation, of a selection of the dreams is given in an appendix, and introductory chapters add a background in a brief account of early Icelandic history and culture.