

understanding the development of science.

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The reviewer is with Case Western Reserve University, where he is Ambrose Swasey Professor of Physics.

Emphasis on hard facts

PHYSICS OF PLANETS. (NASA-TT-F-515). By V. I. Moroz. 412 pp. NASA, Washington, DC, 1968. \$3.00

by ROMAN SMOLUCHOWSKI

There are few, if any, sciences that stir the imagination more than astrophysics. Even the length of articles in the *New York Times*, which actually is acquiring an enviable reputation as a "science journal," shows that the only peers of astrophysics in this respect are genetics and other biosciences. For the last ten years or so we have been bombarded with spectacular discoveries concerning either remote parts of the universe, which are populated by such mysterious objects as quasars, pulsars and John Wheeler's "black holes," or concerning our own familiar and much more easily identifiable solar system and its planets.

Unfortunately there are no recent books in English written on a reasonably advanced level dealing with physics of all planets. Some do exist on the popular side, such as the otherwise excellent series published by the National Aeronautics and Space Administration and edited by C. M. Michaux. Others encompass several volumes each written by many authors, which precludes continuity and uniformity of level, and there are also books that deal only with a few planets, like the recent (1968) and very good *Introduction to Planetary Physics* by W. M. Kaula.

The author of *Physics of Planets*, V. I. Moroz from the P. K. Sternberg Astronomical Institute in Moscow, has contributed widely to spectroscopic observations of nearly all planets. His present book is an excellent and compact introduction to the whole field of planetary physics. It starts with a good summary of basic concepts, tools and pertinent measurements, followed by chapters dealing with Mars, Venus, Mercury and the giant planets. There are a large number of illustrations, diagrams and over 600 references.

MT WILSON AND PALOMAR OBSERVATORIES



JUPITER with red spot and shadow of the satellite Ganymede above.

The tone of the book would appeal to a skeptical observer; that is, the primary effort is placed on facts and on their evaluation, and only the most acceptable theories are expounded in some detail. This is a very welcome feature in a field where the ratio of hard facts to theories and hypotheses is probably even lower than in biosciences.

The main drawback is that the references do not go beyond 1965, and thus the book does not cover such exciting observations as F. J. Low's measurements of the thermal emission of Jupiter, newer data on the nature of the polar caps of Mars and of its surface composition and the recent controversy concerning the surface tem-

A partisan view

QUANTUM THEORY OF MATTER. (2nd edition) By John C. Slater. 763 pp. McGraw-Hill, New York, 1968. \$15.00

by PHILIP L. TAYLOR

It is probably true to say that the quantum theory of matter is a subject that has broadened rather than deepened in the 18 years since the first edition of this text was published. Our current view of a crystal as a bestiary of elementary excitations has led to an understanding of many previously puzzling phenomena. On the other hand, our present knowledge of atoms and molecules, as well as of energy bands in solids, owes more to large digital computers that helped us develop concepts formulated in the early days of quantum mechanics.

In this new edition of his book, John

Slater has chosen not to follow the path of diversification, but has instead concentrated on enlarging his treatment of the topics covered in the first edition. Thus the first half of the book represents an introduction to quantum mechanics in the wave-mechanical-cum-historical tradition, and the second half discusses the application of the one- and two-electron Schrödinger equation to a large variety of molecules and solids. The discussion of molecular orbitals is particularly clear and extensive and includes descriptions of the ammonia, ethylene and benzene molecules. There are ample instructive problems at the end of each chapter.

Some readers may fault this text for its failure to mention any aspect of collective behavior or of those most ex-

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R. Smoluchowski is professor of solid state sciences at Princeton University and has been active in the part of astrophysics that deals with properties of condensed matter, especially the surfaces and the interior of the moon, Mars and Jupiter.

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