

usual quantum mechanics texts. In fact, Taylor's book not only uses the bra-ket notation of P.A.M. Dirac's *Principles of Quantum Mechanics*, but very much resembles this work in style, rigor, and profundity.

A further feature of the book that stamps it a pedagogical work is the absence of a great deal of applications; instead, it illustrates each step of theoretical development by one simple example. The presentation is deductive rather than historical, starting with time-dependent scattering and S matrix theory (for the single-channel problem) and proceeding to stationary scattering at a later stage; this is then repeated for multichannel problems. The material is divided into short, manageable chapters and contains, besides the standard material, all modern subjects of scattering theory such as Feynman diagrams, analytic properties of scattering amplitudes, dispersion relations and the Mandelstam representation, complex angular momenta, Regge poles and the Watson transformation; and in multichannel reactions, there are sections on the optical potential and final state interactions.

As a side remark, we note that present physics jargon now contains (for good, it seems) the ungrammatical phrase "the Green's function." It is somewhat unfortunate that the author extends this by also introducing "the Green's operator."

J. R. Taylor came from England and is now at the University of Colorado in Boulder. He is not to be confused with his two English namesakes, J. C. Taylor (Oxford) and J. G. Taylor (Southampton); all three work on related subjects in S matrix, field, and elementary-particle theory.

* * *

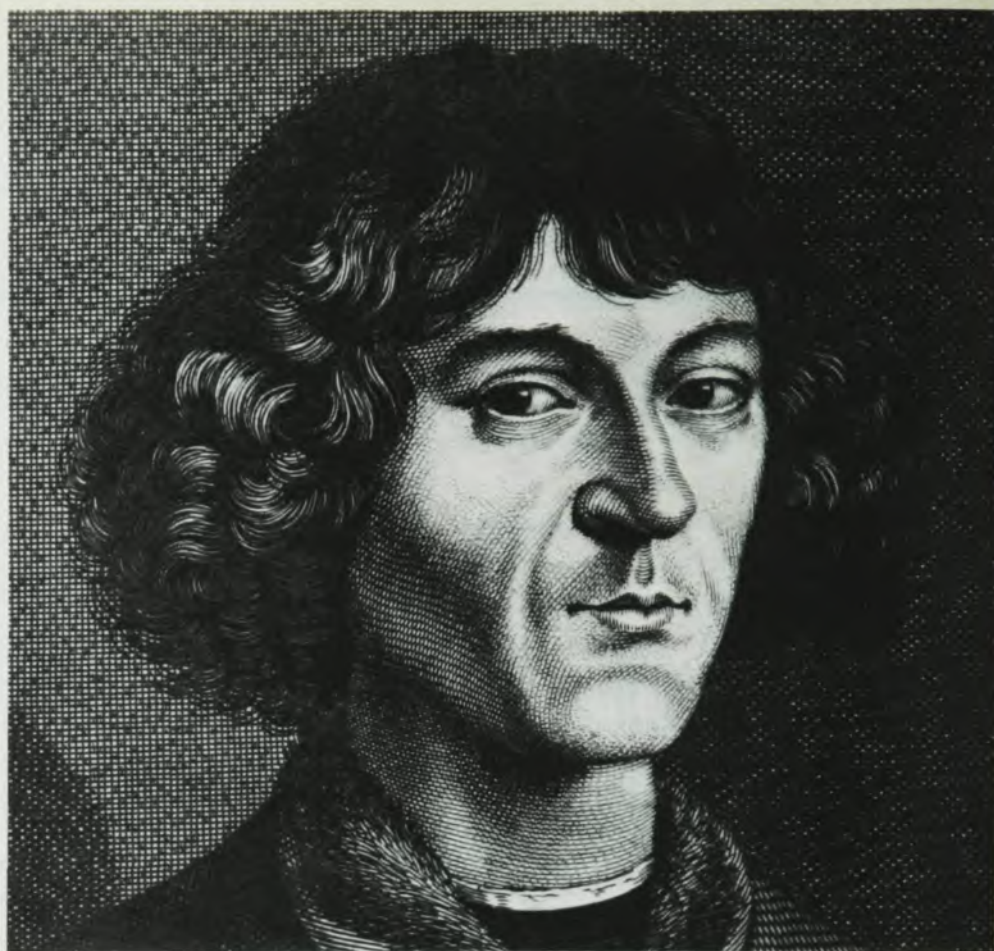
Herbert Uberall is a professor of physics at the Catholic University of America, and a consultant to the Naval Research Laboratory, both in Washington, D. C. He has done some early work on the effective range theory in nucleon scattering, and he is the author of Electron Scattering From Complex Nuclei, Academic, New York, 1971.

Physical Science in the Middle Ages

E. Grant

128 pp. Wiley, New York, 1971. \$7.50

This book is brief in compass, deceptive in its apparent simplicity, and original in its underlying philosophy. The outgrowth of Edward Grant's years of teaching experience and research in medieval science, it performs drastic



COPERNICUS

surgery on the material usually presented under this title to highlight a few basic themes that led ultimately to the Copernican Revolution. The result has a twofold audience and utility: it will serve well as a textbook for a one-semester course in the history of science, and it will quickly acquaint the educated reader with the essential contribution of the Latin West to the rise of modern science.

The heart of the work is a chapter on "the physics of motion," wherein Grant treats expertly of the adumbrations of dynamics and kinematics in the context of medieval discussions of Aristotle's two major physical works, his *Physics* and his *On the Heavens*. This is followed by a substantial chapter on "earth, heavens, and beyond," which details the transition to celestial mechanics and astronomy in the light of Aristotelian physical principles. Both of these chapters represent the distillation of Grant's scholarly book on Nicole Oresme and his many articles on medieval mechanics. Three preparatory chapters set the stage for this exposition, describing the state of science in the so-called Dark Ages from 500 to 1000 AD, the period of translation from 1000 to 1200 AD, and the impact of Aristotelian thought on the medieval universities in the 13th and 14th centuries.

Grant presents his subject well, writing with such clarity that one might be

deceived into thinking that medieval physics was quite simple after all. It is only when the reader consults the lengthy bibliographical essay with which Grant concludes the book that he will appreciate the maze of detail through which the author has waded and the depth of erudition on which his work is based.

The chapter entitled simply "Conclusion" is the vehicle for Grant's own middle-of-the-road view of the bearing of medieval physics on the origins of modern science. Here he focusses attention on Copernicus and his conviction that "science and its hypotheses must treat of realities, not fictions," as an essential characteristic of the changed viewpoint "that came to prevail with Galileo, Kepler, Descartes, and Newton." The thesis is novel and debatable, but basically in accord with my own sentiments.

This book is part of a new Wiley History of Science Series edited by George Basalla and William Coleman. It is cheaply produced, considering its price, with only a few small diagrams dispersed throughout the text. But the content of this work makes up for such defects and speaks well for the future of the series as well as the wisdom of its editors in entrusting to Grant the volume on medieval science.

WILLIAM A. WALLACE
The Catholic University of America
Washington, DC