

in the expansions of the angular and radial prolate and oblate spheroidal wave functions in terms of the Legendre and Spherical Bessel functions. The values are given for the indices $m = 0(1)8$, $l = m(1)8$, and the parameter $h = 0(.1)1(.2)8$ to seven significant figures. The tables represent a significant contribution in cataloguing spheroidal functions in the file of known higher mathematical functions.

Solid State Physics: Advances in Research and Applications. Vol. 1. Edited by Frederick Seitz and David Turnbull. 469 pp. Academic Press Inc., New York, 1955. \$10.00. *Reviewed by N. H. Nachtrieb, The University of Chicago.*

This is the first in a projected series of approximately twelve volumes designed to review the theoretical and experimental advances in solid-state physics and related areas which have taken place in the last 15 years. Largely theoretical in its scope, Volume I is concerned principally with quantum mechanical descriptions of the crystalline state. Three of its six uniformly well-written chapters are devoted to general and special methods of obtaining electronic wave functions for crystals, including the LCAO, Heitler-London, Wigner-Seitz methods, and the relatively more recent orthogonalized plane wave and augmented plane wave approaches. Separate chapters are devoted to the quantum defect method and to the plasma oscillation description of the collective behavior of electrons in solids. An analysis of the origin of the cohesive energy in metals is given, and the relative importance of contributions from the boundary correction, the Fermi energy, and holes in the electron density distribution is discussed with particular reference to the alkali metals; band overlap, with a resulting decrease in the Fermi energy, is given in qualitative explanation of the increased cohesion of the alkaline earth metals. No less well-written, but more definitive in scope, are two chapters dealing with semiconduction in valence crystals (silicon and germanium) and theories of order-disorder transitions in alloys.

Some duplication of subject matter is inevitable in a treatise of multiple authorship; far from objectionable, this is especially welcome in chapters which emphasize different methods of obtaining crystal wave functions from one-electron Hamiltonian operators. Throughout the entire book the style is critical, and limitations and approximations are carefully stated. An excellent beginning has been made for a series which promises to be of great value to solid-state physicists, chemists, and metallurgists.

Meteors: Proceedings of a Symposium on Meteor Physics. Edited by T. R. Kaiser. 204 pp. Pergamon Press Ltd., London & New York, 1955. \$8.50. *Reviewed by S. F. Singer, University of Maryland.*

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