from it primarily in a somewhat greater emphasis on the theoretical as opposed to the experimental side of the problem of thermal conductivity.

The three remaining articles, "Wave Packets and Transport of Electrons in Metals" by H. W. Lewis, "Study of Surfaces by Using New Tools" by J. A. Becker, and "The Structures of Crystals" by A. F. Wells, can also be regarded as possessing a common feature, that of novelty. In the case of the article by Becker this is exemplified by a presentation of new results regarding the nature of surfaces and of surface processes obtained through the use of two new tools, the fast-responding ion gauge and the field emission microscope. The remaining reviews take problems which have been extensively studied in the past and re-examine them from a new viewpoint. Thus Lewis through an application of degenerate perturbation theory and the mean value theorem offers a new resolution of the problem of reconciling the usual treatments of transport properties in metals which are dominated by impurity scattering with the fact that the assumption regarding the magnitude of the collision time in terms of the absolute temperature is usually not satisfied. Similarly, in a fascinating article Wells discusses the problem of crystal structures from a topological point of view in which it is attempted to determine and explain the structures from the bonding arrangements of the atoms or other structural units rather than by starting from the symmetry of the crystal.

The usefulness, and hence success, of such a series of review articles depends critically on the choice of topics and reviewers. The success of the editors with the preceding volumes is repeated in the present volume. The only criticism that this reviewer can make with respect to the series as a whole concerns the relatively high cost per volume which coupled with the rapid rate at which successive volumes are turned out means that the purchase of these books eats rather deeply into one's yearly book budget.

Corpuscules et Champs en Théorie fonctionnelle. By Jean-Louis Destouches. 163 pp. Gauthier-Villars, Paris, France, 1958. Paperbound 4000 fr. *Reviewed by R. Bruce Lindsay, Brown University.*

UNDOUBTEDLY one of the great methodological problems in modern physical theory is the appropriate relation of the particle and field schemes of description. The author of this book has long been interested in this matter and in 1956 published a book *La Quantification en Théorie fonctionnelle des Corpuscules* in which he developed the view that a physical particle should not be represented by a point as in classical physics or the ordinary wave mechanics but by a function of space and time obeying a nonlinear equation. He applied this theory to the nonrelativistic case of particles without spin. In the present treatise he extends the theory to particles of various spins and treats the relativistic case. He also discusses the photon and obtains a nonlinear theory of electromagnetism. Finally he develops a unitary nonlinear theory of gravitation and electromagnetism.

The idea in essence appears to be that since the point particle represents a purely artificial attempt to abstract a single physical system from the universe as a whole, a much more adequate picture will result if one represents such a particle by a function or perhaps more appropriately even by a set of functions constituting a point in function space. Only in this way, the author feels, can one expect to give a sufficiently detailed representation of the proper characteristics of the particle or system. The function in general is taken to be complex. For mathematical convenience, with the function there is associated a continuous fluid with density, velocity potential, etc. defined in terms of the function. In the simplest case the fluid is assumed to obey the principles of classical mechanics. One then establishes that the fundamental function satisfies a nonlinear equation in space and time coordinates. For more complicated particles the fluid equation is modified accordingly, with appropriate extra terms.

The analysis is complicated and the reviewer is not in a position to judge the success of the program. However, in view of the present unhappy state of theoretical particle physics, any program of this kind should be viewed with hospitable interest.

Internal Conversion Coefficients. By M. E. Rose. 194 pp. (North-Holland, Holland) Interscience Publishers, Inc., New York, 1958. $6.25. *Reviewed by W. H. Kelly, Michigan State University.*

THE process of internal conversion has played and is continuing to play an important role in the study of nuclear structure. As the role of internal conversion in nuclear decay became better understood the physical model on which the calculations are based was modified a number of times. The theory has progressed to such a point that the present internal conversion coefficients have been calculated to an accuracy better than that obtained experimentally. A real disagreement between certain experimental and theoretical coefficients may be due to effects of nuclear structure. For this reason, as Rose points out, the next step in the calculations will have to bring in details of nuclear structure. The present tables include, in a way, a first step in this direction in that the K, L_{I}, and L_{II} coefficients have been calculated to include static effects of a finite size nucleus by using electron wave functions modified to include the finite spread of the nuclear charge distribution. (These effects have been taken into account in a slightly different manner than that done by Sliv although the results obtained are not too different from Sliv's.)

The internal conversion coefficients in these tables contain many of those circulated privately by Rose and many not available before. These tables include coefficients for the K shell and for the L and M shell with their subshells for all atomic numbers from 25 to 95 and for a wide range of energies. In addition to the