

part of the book that anyone in search of examples or counterexamples will be rewarded. It can also be recommended to professors in search of dissertation problems, for the physical significance of much of this work remains yet to be tapped. In fairness, it should be pointed out that the original edition contained calculational errors, but I hope these have now been eliminated.

Other topics discussed are conformal, geodesic and projective mappings of Riemannian spaces, the Cauchy problem for the Einstein field equations and special types of gravitational fields. In addition, there is an interesting bibliography of over 500 items. It may safely be predicted that this book will be an indispensable part of any relativity library for many years to come.

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Magnetodynamique Des Fluides

By Henri Cabannes

(2nd edition) 289 pp. Centre de Documentation Universitaire, Paris, 1969.

[Translated as *Theoretical Magnetofluid-dynamics* by M. Holt. Academic, New York, 1970. \$12.50]

In 1832 shortly after his epoch-making discovery of electromagnetic induction, Michael Faraday conceived the idea that an electrically conducting fluid flowing across the lines of force of the earth's magnetic field should have an electric current induced in it. He tried out his idea in the River Thames at London, though without success. Nevertheless, this was the origin of the subject now known as "fluid magnetodynamics" or more familiarly, in the case of flowing liquids, as "magnetohydrodynamics." This discipline has recently achieved much attention both from the standpoint of its engineering possibilities as well as its basic interest for astrophysics and for the flow of highly ionized fluids through magnetic fields.

In the volume under review the well known professor in the Faculty of Sciences in Paris (Sorbonne) has provided a thorough introduction to the theoretical basis of fluid magnetodynamics. He develops the general equations for a conducting fluid moving through a magnetic field and discusses the conditions under which they are exactly soluble. The author considers not only the case of the propagation of small disturbances through such a fluid but also shock waves. Diffraction around obstacles and propagation through tubes are also considered.

The treatment is theoretical throughout, and there is no discussion of ex-

perimental results. The presentation is clear, and the book should be useful to all who are interested in the basic principles of fluid magnetodynamics and have the appropriate mathematical competence in dealing with the partial differential equations of fluid dynamics and electromagnetism.

R. BRUCE LINDSAY
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Electrons de Conduction et Surface de Fermi des Métaux

By Cl. Boulesteix, M. Bruneaux

124 pp. Dunod, Paris, 1969. 24 F

The purpose of this book is to introduce the reader to the Fermi surface, the experimental methods for determining it and its relation to magnetic properties of solids.

The first part is a review of the electron theory of solids. It is extremely compressed and, in particular, the description of the Fermi surface is so brief that it leaves one with many names and little understanding.

The second part discusses transport problems and the Fermi surface, but again the presentation is far too condensed.

The last and longest part is concerned with the relation of the Fermi surface to magnetic properties. There are very brief descriptions of cyclotron resonance, galvanomagnetic effects, deHaas-Van Alphen effect, deHaas-Shubnikov effect and others. Again I found many of these described much too briefly.

I feel that the monograph would have been much more effective if it had assumed previous reading of one of the standard texts and had devoted its limited space to the discussion of magnetic effects, which are the center of interest at the present time.

MORTON HAMERMESH
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Ultrasonic Methods in Solid State Physics

By Rohn Truell, Charles Elbaum,
Bruce B. Chick

463 pp. Academic, New York, 1969.
\$19.75

This book will be of great value to experimentalists beginning research work in this field. It starts off with a rather elementary classical treatment of wave propagation in solids and then presents an excellent description of the experimental methods and techniques involved in pulse-echo measurements in the megahertz range. The experi-

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