BOOK REVIEW

Elementary Electromagnetic Theory, Volume 1

B. H. Chirgwin, C. Plumpton and C. W. Kilmister, Pergamon Press Ltd., Pp. 196, £ 2.25 for hard cover and £ 1.75 for flexicover.

Volume 1 of the above book bears the caption Steady Electric Fields and Currents and discusses the elements of electromagnetic and potential theories meant for an undergraduate course in Physics. The macroscopic concept has been used for the building up of the theory. Microscopic systems having discontinuous properties can be considered by a suitable modification of the above theory. In the beginning the author has chosen to discuss a few experiments including those of Hertz, Champion and others to bring home to the readers the inadequacy of the ordinary Newtonian space time concepts. The interchangeability of the object and source in a field is assumed in order to remove the objection of the object reacting on the source placed in a field. The field need not be imbued with the property of elasticity as the mechanical model has limited usefulness.

The scheme of development in the book consists in describing first the electrostatic field in which the charges are in equilibrium. The restriction of stationary charges are then removed to enable the study of the situation where the charges are in steady motion constituting the flow of steady currents in closed circuits. Under this scheme the steady state fields are considered in some details and the topics of electrostatics consisting of dielectrics, energy theorems, uniqueness theorems etc., have been dealt with in a straightforward manner in chapters 2 to 4. The book ends with a chapter on the steady flow of electric currents and their distribution in conductors. Although it can hardly aspire to replace the existing standard text books in the subject, it, however, eminently succeeds in considering steady fields and steady flow of electric currents under the same scheme by the development of suitable generalizations and is likely to provide a sense of unity and purpose in apparently unrelated concepts.

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