a striking statement. The preface states that the material of the third volume "may be regarded as essential to any student who professes to have received a mathematical education." We are inclined to take exception to this statement as regards chapter IV. We await the appearance of the remainder of this series with much interest.

B. H. BROWN

Théorie Mathématique de l'Electricité, First Part. By Th. de Donder. Paris, Gauthier-Villars, 1925. 198 pp.

The first part of Professor de Donder's treatise is divided into three sections entitled respectively "The Electrostatic Field," "The Stationary Magnetic Field," and "The Variable Electromagnetic Field." The first section takes up the greater portion of the volume, while the third section is compressed into a short chapter on Maxwell's equations. It is to be presumed, however, that the second part, yet to be published, will contain some amplification of this important section. At the end of the volume are tables giving the dimensions of electrical and magnetic quantities in terms of ϵ and μ, ϵ and c, and μ and c and giving the relations between Gauss's units, electrostatic units, electromagnetic units, and practical units. A table of contents is provided, but no index. Vector analysis is used freely, the cumbersome continental notation of parentheses, brackets, grad's, div's, and rot's being preferred to Gibbs' dots, crosses, and dels.

The theory is developed from the basis of the experimental laws of Coulomb, Ampère, and Faraday in the Maxwellian manner instead of from the point of view of the special relativity theory. While this method of treatment is perhaps desirable in an elementary exposition, it lacks the simplicity and unity which the subject acquires when developed from the point of view of the emission theory. Few applications to the solution of problems are made, no mention being made of the method of images, conjugate functions, or spherical harmonics.

A large share of the volume is devoted to a discussion of polarized media. Here Professor de Donder finds it convenient to distinguish between the electric force and the electric resultant. The former he defines as the negative of the gradient of the potential, and the latter as the limiting value of the mechanical force on a unit charge placed in a small cavity in the medium as the volume of the cavity approaches zero. The electric resultant so defined depends upon the shape of the cavity which must be specified in advance. His definition of electromotive force (page 13) as the line integral of the electric force seems rather unhappy, as in most applications to current circuits the electromotive force is the line integral of a quantity which cannot be expressed as the gradient of a scalar function of position in space.

The book is written clearly and logically, and constitutes a notable addition to the literature on the subject. It should prove especially serviceable to those who desire a working knowledge of Maxwell's theory rather than a unified exposition from the point of view of modern ideas. In particular the detailed discussion of polarized media is to be commended.

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