

long analysis is required to justify the approximation that the bending couple is proportional to the curvature. In the cases of plates and shells the necessary analysis is still more lengthy. The problem is complicated by the fact that the bending is usually accompanied by stretching particularly near the edges. The book concludes with an account of the important practical problem of the stability of cylindrical shells. It is perhaps needless to say that the treatise can be heartily commended both as a text-book and a book of reference. A German edition was published by Teubner in 1907.

F. R. SHARPE.

Les Découvertes modernes en Physique. Par O. MANVILLE.
2ème édition. Paris, A. Hermann et Fils, 1909. 463 pp.

ONLY a year after the first edition of Manville's short book of 182 pages on *Les découvertes modernes en physique* a second edition was needed. The author evidently did not have to contend with costly electrotype plates in which the publisher would allow few changes, for he has practically written a new book about three times the size of the first — the term second edition is really a misnomer. The new work is divided into two parts, entitled *Electricité et matière* and *Les ions et les électrons dans la théorie des phénomènes physiques — La matière et l'éther*. This entire rewriting and expansion of the original is very fortunate. The state of fundamental electrical theory is to a considerable extent still speculative, and experiments which reveal new and sometimes nearly crucial results are still of frequent occurrence. To write at all on this subject brings with it the liability and desirability of rewriting after the lapse of a very short period.

From the title of the work we might be inclined to fear that the author had written a popular and unreliable essay on the wonders of recent discoveries. Fortunately this is by no means the case; many chapters contain considerable hard physics and more or less hard mathematics, which require and repay close application on the part of the reader. The presentation, however, let it be stated, deals with a vast variety of interrelated physical data after the manner of the experimental physicists rather than with the broad mathematical groundwork of electrical theories as treated by such theorists as Larmor, Lorentz, or Minkowski. Sooner or later, theory and experiment in regard to atomic electricity will probably be well knit together;