

SHORTER NOTICES

Fundamentals of Electricity and Magnetism. By Leonard B. Loeb. New York, John Wiley and Sons, 1931. xi+432 pp. Price \$4.00.

This is not intended to be a text-book for an intermediate course in electricity and magnetism as the title might suggest. It was written to satisfy the needs of engineering students in the University of California, who spread the study of general physics over two years. The book covers about the same ground as the chapters on electricity and magnetism of most text-books on college physics. Certain topics, however, are more fully discussed, e.g., circuits containing capacity, self-induction and resistance, Kirchoff's laws of divided circuits, and thermionics.

The book is the outcome of several years of demonstration lectures in the University of California and is written in lecture style. New concepts are usually introduced through experiments and formal definitions are given only after the concepts are fully explained. This makes the presentation informal and readable. An interesting feature of the book is the first chapter where an excellent account of the history of the general development of physical science is given.

H. M. DADOURIAN

Cours de Mécanique. By Paul Painlevé. Tome I. Paris, Gauthier-Villars, 1930. vi+664 pp.

This is the first volume of a series which is to present a course of lectures delivered at l'Ecole Polytechnique. The volume is divided into four books, the first of which is devoted to vector addition and multiplication. The second book is on the fundamental axioms of Newtonian mechanics, the most important of which may be stated as follows:

It is possible to adopt, once for all and for the entire universe, a measure of distance, a measure of time, and a system of reference axes such that the following principles always hold good: I. The constancy of the velocity of an isolated particle; II. The equality of action and reaction; III. The determinate character of the mutual accelerations of two isolated particles when their velocities and their distance apart at any instant are given; IV. The geometric addition of forces.

A reference system relative to which the foregoing four propositions are true is called an *absolute* system of axes; velocities and accelerations referred to such a system are called *absolute* velocities and accelerations. "The fundamental postulate of mechanics," says the author, "consists, therefore, in the admission of a system of absolute axes." Every system which has a uniform motion of translation relative to an absolute system is also an absolute system.

The third book is entitled *The general theorems of the dynamics of systems*, and deals mainly with the motion of a particle.

The fourth book is on the general theory of the equilibrium and motion of systems. It is less elementary than the third book. D'Alembert's principle, Lagrange's equations, and the principle of virtual velocities are here applied to problems of equilibrium and of motion.