

Sufficient illustrations are given to make the meaning clear. The discussion is detailed, almost wordy at times. This very wordiness makes the book of especial value to the beginner. Each chapter ends with a summary and a list of references to other standard works on the same and allied subjects.

The chapter on averages discusses at some length the arithmetic mean, the mode, and the median and omits the geometric mean, and the mean given by  $\sqrt{\Sigma x^2/n}$ , and combinations of these averages.

Illustrative matter is mainly from the economic field. A few illustrations are from agriculture. References are made, however, to other fields, such as biology, psychology, genetics.

Although non-mathematical, the book is of interest to a mathematician from the point of view of the applications. This is a good book for a beginner and at the same time useful to one already initiated into the study of statistics.

W. V. LOVITT.

*Cours de Mécanique.* Vol. III. By LÉON LECORNU. Paris, Gauthier-Villars, 1918. 669 pp.

THIS is the third and last volume of a treatise on mechanics for use in l'École Polytechnique. The first was reviewed in the BULLETIN for April, 1915, and the second, November, 1917.

The present volume is devoted to applications of mechanics to engineering and consists of five parts (parts X to XIV of the complete course). The subjects considered are strength of materials, hydraulics, thermodynamics, theory of machines, and a brief discussion of the problems involved in aviation.

It is interesting to compare the preface to the third volume with the preface to the first, which appeared in 1914. Just before the war, Professor Lecornu, in speaking of the course in mechanics as a whole, referred to the necessity for resisting a demand for the teaching of practical applications and expressed his firm belief that the course in l'École Polytechnique should be purely theoretical. In support of this position he quoted General Langlois. "The officers who leave the school at the end of one year are, in general, inferior to their comrades in the matter of studying logically and deeply a scientific question of tactics or organization. The method of work indispensable to every man of action demands imperiously the study of a science to its foundations, a study which makes

the intellect supple and develops a habit of logical deduction necessary to one who commands."

In the preface to the third volume, written after three and a half years of war, the author explains that the experiences through which the country is passing have influenced him to extend the treatment of applied mechanics beyond the course as it is now given. He foresees, after peace is reestablished, a profound transformation in scientific study, which will adapt it more directly to the realities of life (*réalités de la vie*). He refers to the action of L'Académie des Sciences in deciding (January, 1918) to admit a certain number of representatives of industry and predicts that l'Ecole Polytechnique will reduce the time now given to abstract theory and increase the time allotted to applied work.

W. R. LONGLEY.

*Electric and Magnetic Measurements.* By CHARLES MARQUIS SMITH. (Edited by E. R. Hedrick.) New York, Macmillan, 1917. xii + 373 pp.

FROM the point of view of the mathematical reader the interest of this book is purely incidental. Moreover, it is incidental to study not in any general field but only in the special field of the mathematical theory of electricity and magnetism. In fact, the book belongs to a series of texts on topics in engineering. As such a detailed review of it is out of place in this BULLETIN. It is well, however, at this time when more interest is being manifested in applied mathematics than heretofore in this country to have attention directed to a convenient description of the instruments and methods by means of which are measured the quantities involved in the theory of electricity and magnetism, a subject which has lent itself in a remarkable way to precise mathematical treatment. The book under consideration furnishes in convenient form what such a mathematical reader will desire. The fact that it was written for engineering students does not interfere with this use of the book.

R. D. CARMICHAEL.