

## SHORTER NOTICES

*L'Oeuvre scientifique de Laplace.* By H. Andoyer. Paris, Payot & Cie., 1922. 162 pp.

After a brief sketch of the life of Laplace, Andoyer sets forth the characteristics of the works of this great French scientist. Andoyer cites the problems in celestial mechanics, which the eighteenth century mathematicians encountered, and reminds the reader how, through insufficient approximation, doubt was cast for a time upon the validity of Newton's law of inverse squares, and how a closer numerical approximation dispelled those doubts. Andoyer presents evidence showing the excessive harshness of the judgment passed upon Laplace by certain writers, to the effect that Laplace, in his writings, often failed to give due credit to his predecessors and contemporaries. Laplace's relations to D'Alembert, Biot and Poisson are described. Andoyer explains how Laplace again and again returned to certain topics in order that he might improve his exposition and perhaps free the subject from metaphysical entanglements. Not altogether surprising is Laplace's lack of interest in certain abstract fields of mathematics, like the theory of numbers. But strange is Laplace's adherence to Newton's corpuscular theory of light a quarter of a century after Thomas Young had advocated the undulatory theory and a decennium after Fresnel had won Arago over to the latter theory.

Andoyer's masterly account of Laplace's researches on celestial mechanics, on the figure of the earth, on the tides, on the système du monde, on the analytical theory of probability, and of researches on physics contains numerous quotations from the works of Laplace, bearing on points of scientific and philosophical interest. Andoyer's booklet will be enjoyed by students interested in the evolution of the mathematical sciences. An alphabetical index would have enhanced still further the usefulness of the book.

FLORIAN CAJORI

*La Composition des Mathématiques dans l'Examen d'Admission à l'Ecole Polytechnique de 1901 à 1921.* By F. Michel and M. Potron. Paris, Gauthier-Villars, 1922. 12 + 452 pp.

This volume contains the questions asked in the examinations for admission to the Ecole Polytechnique for the twenty years from 1901 to 1921, together with complete solutions. It should be of great value anywhere as a source book of interesting and rather difficult problems in the fields of analytic geometry, calculus and dynamics. It will be chiefly illuminating to American readers, however, as exhibiting the very high standard in force in mathematical instruction in France. Probably only a very small percentage of our college graduates who have specialized in mathematics would be able to make a creditable showing on any of these examinations. The book therefore presents to us in this country a high ideal towards which we may aspire, even though under present conditions it seems far from attainable.

J. W. YOUNG