increasingly necessary that its people shall be trained in logical mathematical thought.

F. E. ALLEN.

The Training of Teachers of Mathematics for the Secondary Schools of Countries represented in the International Commission on the Teaching of Mathematics, by RAYMOND CLARE ARCHIBALD. With the Editorial Cooperation of D. E. SMITH, W. F. OSGOOD, J. W. A. YOUNG, members of the Commission from the United States. Washington, Government Printing Office, 1918.

THIS well-executed piece of work includes an able discussion of the training of teachers in Australia, Austria, Belgium, Denmark, England, Finland, France, Germany, Hungary, Italy, Japan, the Netherlands, Roumania, Russia, Spain, Sweden, Switzerland, and the United States, as well as appendices with typical examinations as given in England, France, Germany, and Japan. The Summary is also a valuable feature.

No one can deny the assertion that most of the countries discussed have far higher standards for their teachers of mathematics in secondary schools than we have in the United States. In this connection the interesting fact is brought out that there were in the United States, in 1913–1914, 13,714 "accredited secondary schools." Similar statistics for other countries, unfortunately not given, would have been of great significance.

Our need for well-trained teachers is not less than that of any other country. However, our problem to obtain and train these teachers has been fundamentally different from the European problem of obtaining teachers. We have been trying to educate all the children of all the people, whereas no great European country has made any similar attempt. England, France, Germany, Italy and Russia are all on the same footing, in training only a select few and differentiating *upon entrance into the most elementary school* the elect, those who may go on, from those who will not go on into secondary schools. With this system, the relatively few teachers needed can be given a higher and more intensive training.

The effect of the war upon the educational systems of European countries will be great. Undoubtedly the present industrial unrest will culminate in the democratization of the

schools of all the world. More than ever it is incumbent upon American leaders in education to exert every effort to improve the preparation of the teachers and the status of the profession, for it is to our system of education that Europe will turn for guidance.

The recent tremendous increases in enrollment of students in our universities includes fortunately large numbers who are taking up the study of mathematics. It is somewhat significant that this increase is affecting only the universities, not the normal schools. Undoubtedly, the day is not distant when our universities and colleges will be called to train not only high school teachers, but also the "junior high school" teachers. The nature of this training for the instructors in mathematics in the secondary schools needs systematic and continued study, taking into account the changes in the world in which we live.

This study under review, while reflecting a world which has passed, will nevertheless continue for many years to be of great value to all concerned with the preparation of our teachers of mathematics.

L. C. KARPINSKI.

Theory of Maxima and Minima. By HARRIS HANCOCK. New York, Ginn and Company, 1917. v + 193 pages. Price $2.50.

THE student of mathematics meets the interesting subject of maxima and minima early in his first course in calculus. The subject appears again and again in his courses in advanced calculus and functions of a real variable, each time carrying the student a little deeper into the theory, but rarely giving him opportunity to view the subject as a whole. The English reading student finds it particularly difficult to study the theory for functions of two or more variables as expounded by Scheefer, Stolz, von Dantscher, and Weierstrass. Professor Hancock's book is for this English reading student.

The opening chapter discusses functions of one variable, first taking up functions having complete derivatives throughout the interval in question (ordinary maxima and minima). This covers the usual discussion in a first course in calculus with a somewhat more mature reader in view. Then follows a discussion for functions having derivatives only for definite values of the variable, or having one-sided derivatives (ex-