a discussion of the real values of the inverse function and the various ways of representing this function geometrically.

Chapter five is devoted to a discussion of the usual normal forms of the elliptic integral of the first kind.

The sixth and last chapter contains Abel's theorem and its consequences; in particular addition theorems for the inverse function and for related functions.

As is stated in the preface, the book contains no discussion of modular functions, the transformation theory, or the applications. The author's purpose is to present, in a concise manner, the necessary concepts and theorems which form the definition and fundamental properties of elliptic integrals and their inverses. This he has succeeded in doing without digression, although the temptation to include one or more chapters on the subjects noted above must have been great.

The beginner will better appreciate the first volume if he follows Dr. Boehm's suggestion (Vorwort, Erster Teil, page iv), viz., to read this second volume first.

L. WAYLAND DOWLING.

Éloges académiques et Discours. Volume publié par le Comité du Jubilé scientifique de M. GASTON DARBOUX. Paris, A. Hermann et Fils, 1912. 525 pp. Fr. 5.

THE present volume was published by an international committee of mathematicians, formed for the purpose of expressing an appreciation of the scientific work of M. Gaston Darboux at the completion of his fiftieth year of public instruction. This committee addressed a circular letter to the mathematicians of all countries, inviting subscriptions for the purpose of awarding M. Darboux a medal on this occasion. The responses were so numerous and so liberal that the committee was enabled to have the medal executed by the eminent French artist M. Vernon, and also to publish the present volume and send it to all the subscribers.

The greater part of the volume consists of a collection of eulogies by M. Darboux. The subjects of these are: Joseph-Louis-François Bertrand, François Perrier, Charles Hermite, Antoine d'Abbadie, Général Meusnier, Donateurs de l'Académie. These eulogies are followed by a collection of discourses by M. Darboux and by an account of the Jubilé, including the various addresses and a list of the subscribers. The Jubilé was to be held towards the end of October, 1911,

but it was postponed until January 21, 1912, on account of the death of Mme. Darboux on October 8, 1911.

The addresses which were delivered at the Jubilé give abundant evidence of the great influence of M. Darboux as a teacher. Several of them direct attention to his fundamental contributions to the advancement of mathematical knowledge. The address by M. Henri Poincaré is especially interesting in this direction. The American representatives on the committee in charge of this Jubilé were G. E. Hale and H. Hancock.

G. A. MILLER.

Applications of the Calculus to Mechanics. By E. R. HEDRICK and O. D. KELLOGG. Ginn and Company, 1910. 116 pp.

IN the mathematical courses given to engineering students the analytic procedures find applications to geometry, and here the applications often end. Hedrick and Kellogg through their book, Applications of the Calculus to Mechanics, have given material help toward eliminating this mistake.

The book is clearly written, and for the most part in such a way that the student after his first course in the calculus will be able to read it understandingly. It is refreshing to find an accurate treatment of subjects in mechanics in which the authors have evidently kept their prospective readers in mind while writing it. It shows that after all there is no inherent reason why such a treatment may not be accurate, and at the same time clear to the student who is to read it. With the exception of a few paragraphs the authors seem to me to have put into their book these two essential qualities of a good text book. There are a few paragraphs which, I think, are too condensed, in which too much is left to the student. To illustrate what is meant, on page seven it is stated that "If a vector vary with the time t, or any other parameter, its derivative may be defined, for we know how to subtract vectors and divide by numbers. The notion of limit of a set of vectors will be sufficiently clear." The rest is left to the student. However, even if my supposition here is correct, this is only one of a few isolated cases and the teacher can easily supply the necessary amplifications. In nearly the whole of the book the definitions and theorems are led up to in such a plausible way, and so well illustrated by examples worked out and fully explained in the text, that