

itself to all readers, namely, a separate caption for each page intended to indicate briefly the contents of that page. This is especially useful as the author seldom sums up results in a way readily to catch the reader's attention.

J. I. HUTCHINSON.

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### BÔCHER'S HIGHER ALGEBRA.

*Introduction to Higher Algebra.* By MAXIME BÔCHER, Professor of Mathematics in Harvard University; prepared for publication with the cooperation of E. P. R. DUVAL, Instructor in Mathematics in the University of Wisconsin. New York, Macmillan, 1907. xi + 321 pp.

*Einführung in die höhere Algebra.* Von MAXIME BÔCHER, Deutsch von HANS BECK, mit einem Geleitwort von E. STUDY. Leipzig, Teubner, 1910. xii + 348 pp.

THE term "higher algebra" has been so often used in America to denote a very low type of merely formal algebra and to include subjects like infinite series, which are not properly algebraic at all, that it is refreshing to find a book like this one of Professor Bôcher's, which really corresponds to its title. It does so, not only by reason of the purely algebraic character of its material, but also because this material is worked up in a strictly logical as well as systematic manner.

The amount of available algebraic material is so enormous, and it branches out in so many different directions, that some selection is inevitable; even the extensive two-volume works of Weber and Netto are confined to certain special lines. The volume under review aims to furnish the reader with an *introduction* to the whole field, to lay a broad and deep foundation for further study, and in particular, to give an adequate algebraic preparation for the study of modern analytic geometry. This aim has been accomplished with remarkable success.

There is one special topic, however, to which the author gives more than an introduction, and that is the theory of elementary divisors (Elementarteiler). In the last three chapters he not only introduces elementary divisors in a most expeditious and satisfactory manner, but carries their theory through to a fair degree of completeness, so far as the more important applications are concerned.