Die Arithmetik der Quadratischen Formen, zweite Abteilung. By P. Bachmann. Leipzig, B. G. Teubner, 1923. xxii + 537 pp.

Bachmann's series of books, which together aim to cover the entire field of the theory of numbers, are recognized as the standard from the standpoints both of scholarship and clearness. Hence the publication of a new book in this series is an important event to the many devotees of this field. Although the new volume forms the second part of the work bearing the same title, it is really independent of the first part (which appeared in 1898), as well as of the other volumes of the series. This self-contained book employs largely the methods of the geometry of numbers initiated by Minkowski, and treats mainly the problem of the reduction of quadratic forms.

There are sixteen chapters, the number of pages in each of which varies only slightly from the average 33. The topics of the chapters are as follows: Binary quadratic forms; Lattices and continued fractions; Reduction of indefinite binary quadratic forms; Their minima; Geometrical interpretation of binary quadratic forms by means of lattices in a plane; Lattices in space and positive ternary quadratic forms; Geometry of numbers in n-dimensional space; Positive quadratic forms in n unknowns; Their reduction; Complete forms of Voronoï, limit (or extreme) forms; Equivalence and classes of positive quadratic forms; Decomposable forms; Quadratic and cubic irrationalities; Generalized algorithm of continued fractions; Minkowski's criterion for algebraic numbers; Indefinite quadratic forms in more than two unknowns.

The book was edited by Haussner, but follows essentially the manuscript left by Bachmann at his death in 1920.

L. E. Dickson

Analytische Geometrie des Raumes. By Salmon-Fiedler, revised by Brill-Kommerell. Leipzig, Teubner, 1922. 590 pp.

Those familiar with the original Salmon-Fiedler will at once recognize that about ninety per cent of the revised edition is identical with the original. The remaining ten per cent of the book has been rewritten in such a manner as to make the revision a real contribution as a text book on the subject. The changes have been made in the form of more detailed explanations of certain rather obscure articles, the addition of many cuts and the addition of new subject matter. A great deal of the projective treatment has been omitted and analytic proofs substituted. The subject of quadratic forms has been entirely rewritten and precedes the transformations of surfaces. By changing the order the latter subject is introduced by means of the former. Many new examples have been added and several of the original exercises have been omitted. As a text I consider it superior to the revised English edition.

F. M. MORGAN