

translator of Bonola's work into German) in his own *Nichteuclidische Geometrie*, namely, one in which non-euclidean lines and planes are represented by euclidean circles and spheres, respectively.

Two supplementary chapters, one on non-euclidean statics and one on Clifford parallels, Clifford surfaces, and the Clifford-Klein problem, and in the German edition another supplementary chapter on the construction of Lobachevsky parallels, add considerably to the value of the book. There is an index of authors cited, but no general index.

It would be fortunate if we could have an English translation of so valuable and interesting a work; for in English there is nothing covering even approximately the same ground except possibly the scattered papers of G. B. Halsted.

ARTHUR RANUM.

*Analytic Geometry*. Revised Edition. By E. W. NICHOLS. D. C. Heath and Company, 1908. xi + 282 pp.

THE general scope of this book is the same as that of the first edition which appeared fifteen years earlier. In the first edition the last chapter—a discussion of surfaces—was written by Professor A. L. Nelson and in the new edition this chapter has been entirely rewritten. Otherwise comparatively few changes in the subject matter have been made. The revised edition is very neatly bound in flexible covers—the style so largely used by D. C. Heath and Company lately. The printing, too, is distinctly better than in the former edition.

“The aim of the author has been to prepare a work for beginners, and at the same time to make it sufficiently comprehensive for the requirements of the usual undergraduate course.” The first part of this aim has been more successfully carried out than the second. The book is written clearly and contains numerous, well-chosen problems. The conventional order of topics is followed—the conic sections being discussed separately with little emphasis upon their relation to each other. Probably the book is more elementary than would be acceptable in the best engineering schools.

G. H. SCOTT.

*Complete Arithmetic*. By GEORGE WENTWORTH and DAVID EUGENE SMITH. Boston, Ginn and Company, 1909. v + 474 pp.

THIS book preserves and combines most of the strong features of two well-known series of arithmetics—the Wentworth and