

Vorlesungen über projektive Geometrie. By FEDERIGO ENRIQUES.

Second German edition by H. FLEISCHER. Leipzig, Teubner, 1915. xiv + 354 pp. Price (cloth), 10 Marks.

THE first German translation (with a prefatory note by Klein) of Enriques's lectures on projective geometry appeared in 1903 and was ably reviewed in the BULLETIN* by Professor Virgil Snyder. As the second edition does not contain any essential changes, not much needs to be added to that review. In view of the considerable advances that have been made in this field during the past two decades, a fuller discussion of the various aspects of the fundamental theorem of projective geometry would have been of great assistance to the student. At any rate the otherwise well written historic-critical note at the end of the treatise might have been brought up to date in this respect. In the discussion of projective coordinates, pages 332-336, which is essential for a proper understanding of the one-to-one correspondence between an analytic space (x_1, x_2, x_3, x_4) and the space based upon and abstracted from intuition (parabolic, hyperbolic, or elliptic), in which the points are defined by means of cross-ratios, a detailed proof of this correspondence would be commensurate with its importance.

From a didactic standpoint Enriques's "lectures" can still be recommended as an excellent introduction to the subject.

ARNOLD EMCH.

Descriptive Geometry. By H. W. MILLER, head of the department of general engineering drawing in the University of Illinois. New York, Wiley and Son, third edition, 1915. 149 pages, 86 figures and 8 quiz sheets.

Descriptive Geometry for Students in Engineering Science and Architecture. A carefully graded course of instruction, by HENRY C. ARMSTRONG, associate professor of descriptive geometry and drawing, McGill University. New York, Wiley and Son, 1915. vi + 125 pages and 114 figures.

Darstellende Geometrie, von MARCEL GROSSMANN, professor at the technical school of Zurich. Leipzig, Teubner, 1915. v + 137 pages and 109 figures.

THE first sentence of the preface to Professor Miller's book reads: "Believing that no one study plays a larger part than

* Vol. 10, pp. 355-58, April, 1904.