(Methodik, page 8), is impossible, for he was dead then. Moreover it was not at all a new idea when he published his arithmetic in 1540, for it had been generally repeated by writers from the time of Boethius down. His statement that the study of the Pascal triangle began with Stifel is also incorrect, for it was apparently known long before Stifel's works were written, appearing for example in the engraved title page of "Eyn Newe Vnnd wolgegründte vnderweysung aller Kauffmanss Rechnung" published by Apianus at Ingolstadt in 1527.

DAVID EUGENE SMITH.

Elements of Descriptive Geometry. By O. E. RANDALL. Boston, Ginn & Company, 1905. iv + 209 pp.

Elements of Descriptive Geometry. By CHARLES E. FERRIS. New York, American Book Company, 1905. vii + 127 pp.

THESE books meet the demand for texts in which the objects are shown in the figures in the third quadrant. They follow the method of Warren and Church in presenting first the analysis and then the construction of a given problem. The figures are not in a separate volume or collection of plates, but in the text where most convenient for the reader.

The authors present the fundamental ideas with care, and Dr. Randall supplements the figures for the first fifty pages with "pictorial drawings" showing the projection planes and the object as they actually appear to the eye of the observer.

It will be noticed that the chapters on "Lines and surfaces" retain the definitions and principles used by the older American writers. If it is necessary to set up for engineering students a complete theory of curves and surfaces without analysis, it is desirable that in doing it naïve expressions that may confuse students of mathematics should be avoided.* For example, in Dr. Randall's book, § 203, we read * * * "The portion of the line generated by the point while moving from one position to its consecutive position is called an *elementary line* and while in theory it may be regarded as having length, practically speaking it has none."

The error of classifying a warped surface as a surface of single curvature is implied by Dr. Randall in § 221, where we find:

*Compare Rohn, Lehrbuch der darstellenden Geometrie, Leipzig, 1906, p. 219.

"Depending upon the character of the generatrix we have two classes of surfaces: first those which are generated by straight lines or those which have rectilinear elements; and second those which are generated by curved lines known as *surfaces of double curvature.*" * Professor Ferris also states in Chapter IV on "Double curved surfaces" that "double curved surfaces have no right line elements" and he classes warped surfaces by themselves.

Monge's original sharp classification of surfaces into planes, single curved or *developable* surfaces, and double curved surfaces† has been mangled by several American writers including Warren‡ and Church.§ The present classification by Dr. Randall into single curved surfaces, § 222; surfaces of revolution, § 223; and double curved surfaces of revolution, § 224; seems without adequate foundation.

Professor Ferris has a brief chapter on shades and shadows and one on perspective.

L. I. HEWES.

NOTES.

THE Thirteenth Annual Meeting of the AMERICAN MATHEMATICAL SOCIETY will be held in New York on Friday and Saturday, December 28–29. Friday morning will be devoted to a joint session with Section A of the American association for the advancement of science and the Astronomical and astrophysical society of America. President OSGOOD'S address will probably be delivered at the opening of the Friday afternoon session. The Council will meet on Friday afternoon. The annual election of officers and other members of the Council will be held on Saturday morning. Special railroad rates will be available for this meeting.

THE concluding (October) number of volume 7 of the *Transactions* of the AMERICAN MATHEMATICAL SOCIETY contains the following papers: "Weierstrass' theorem and Kneser's theorem on transversals for the most general case of an extremum of a

* See also Randall, §§ 223, 224.

† G. Monge, Géométrie descriptive. Paris, 1858, p. 120.

‡ S. Edward Warren, Descriptive geometry. New York, 1860, p. 4 and p. 194.

§ A. E. Church, Descriptive geometry and shades and shadows. New York, 1870, p. 41.