

*Analytische Geometrie des Punktes, der geraden Linie und der Ebene.* Von OTTO STAUDE. Leipzig, B. G. Teubner, 1905. viii + 447 pp.

THIS volume is offered as an introduction to the theory of surfaces of the second order, which the publishers requested Professor Staude to write in connection with the *Encyklopädie der mathematischen Wissenschaften*. It is largely concerned with the various systems of coordinates used in the study of points, lines, and planes. Each subject is based upon cartesian coordinates, from which the other systems are derived.

The text is divided into three parts: the first treats of ranges of points and plane pencils; the second deals with the point, line, triangle, and quadrangle; the third discusses configurations of lines and planes. The subject matter is not new; the method is elegant.

Two characteristic features of this excellent work are the thoroughness with which the fundamental notions have been discussed, and the large place given to the principle of duality.

The historical and critical notes of the appendix are exceedingly valuable. The author indicates the important contributions of various geometers, states the sources of new conceptions, indicates parallel lines of development, and gives a multitude of references.

G. N. BAUER.

*Problems in Strength of Materials.* By WILLIAM KENT SHEPARD. Ginn and Co. viii + 72 pp.

THE purpose of this book, another of the Yale series of mathematical texts, is to furnish a large variety of problems to supplement and illustrate the theory of the strength of materials. The author believes that, in order to obtain a working knowledge of any scientific subject, the average student should solve numerous problems illustrating the application of the theory, and that the present text-books on the strength of materials do not furnish a sufficient number.

The 568 problems proposed cover fully the field of the subject, as usually taught in scientific and technical schools. The fundamental subjects of tension, compression, shear, and elastic deformation are first considered; after which the problems are mainly those of the design and investigation of cylinders and spheres, riveted joints, the various types of beams and columns, plates, and shapes to resist torsion and combined stresses.

The use of the factor of safety in designing is emphasized throughout.

The purpose of the author evidently is to make the problems as practical as possible; this he might have realized more fully if, for instance in the design of columns, he had given specific illustrations of such shapes actually designed and erected. Again, while the figures throughout the book are excellent and make their point, they would have been more efficient if, for example, in the case of riveted joints, they had represented actual sections, correct from the standpoint of engineering practice.

The typography of the book is up to the high standard of all of the texts of the Yale series. Tables of constants and data usually included in engineers' handbooks are given at the back.

ERNEST W. PONZER.

*Das 200-jährige Jubiläum der Dampfmaschine, 1706-1906. Eine historisch-technisch-wirtschaftliche Betrachtung.* Von KURT HERING, Ingenieur. Leipzig, Berlin, B. G. Teubner, 1907. Pp. 58.

THIS pamphlet is not put forth as a history of the steam-engine. Such a history could not very well be written within so small a compass. Prepared at the 200th anniversary of Denis Papin's invention, as set forth in his "Ars nova" (1707), the pamphlet devotes itself mainly to an exposition of the ideas and experiments of this noted French physicist, who for many years resided in Germany. Papin is looked upon by the author as the theoretical inventor ("geistige Erfinder") of the steam engine. It is unfortunate that an exact date (1706) is set up in the title of the publication for the invention. This date fixes Papin as the inventor, but such a claim the author does not really make in the body of the book. We translate from his introduction: ". . . but who was the inventor of this most important machine of modern times? Not as the work of one only, but as the product of many scholars and practical men of the most different nations, does the steam engine come down to us." One historical point, discussed by Hering, needs emphasis here, namely that Papin never constructed a steamboat and that the boat on which he travelled on the river Fulda from Kassel to Münden on September 24, 1707, though embodying the novel idea of paddle wheels, was not driven by steam. Since 1690 Papin had been con-