

There are a number of misprints, but practically all of them are of the kind that do not cause any difficulty. Although the figures are good, some of them have been reduced so much that it is an effort to read the lettering. We should congratulate engineering students who get so thorough a training in theoretical mechanics.

PETER FIELD.

*Projective Geometry with Applications to Engineering.* By Peter Field. New York, D. Van Nostrand Company, 1923. viii + 98 pp.

The purpose of this text book is concisely stated in the preface:

"In most American universities the course in descriptive geometry is purely a course in drawing. On the other hand, writers on technical mechanics frequently assume their readers have a knowledge of the fundamental theorems of projective geometry. It therefore seems there is a good opportunity for the mathematical departments in the technical colleges to offer an elective course in projective geometry which emphasises the technical applications."

Professor Field's projective geometry covers the subject matter of such a course given by him at the University of Michigan.

"No attempt has been made to give references. The authors most frequently consulted in working up the course were Cremona, Veblen and Young, Emch, Föppl, Mohr, Ritter, Culmann, and Koenigs."

The reader who is familiar with the works of these authors may therefore approximately surmise what a treatise in which the applications are emphasised must contain. There are altogether ten chapters, comprising definitions and fundamental forms, plane homology, linkages, the complete quadrangle and quadrilateral, the cross ratio, ranges and pencils, the hexagon, involution, pole and polar, and the null system. A course of this sort in technical colleges and universities with colleges of engineering is certainly very desirable. One of the most effective methods of reinforced concrete arch-construction, for example, depends largely upon projective geometry and projective properties of conics. The only reason why these methods are not taught is the lack of preparation in projective geometry of most of the teachers as well as the students of this branch of engineering.

Professor Field's attempt to remedy such defects is therefore very commendable and his little book will be welcomed by all, teachers and students, who seek information along the line of technical applications of projective geometry. The null system is of such importance that the reviewer should have liked to see a much more extended treatment and range of applications of this chapter.

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