

**MODERN
MATHEMATICAL TEXTS;
PROJECTIVE GEOMETRY**

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Modern Mathematical Texts; Projective Geometry by L. Wayland Dowling & Charles S. Slichter

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MODERN MATHEMATICAL TEXTS

EDITED BY CHARLES S. SLICHTER

PROJECTIVE
GEOMETRY

BY

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PREFACE

The present volume embodies a course of lectures on Projective Geometry given by the author for a number of years at the University of Wisconsin. The synthetic point of view was chosen primarily to develop the power of visualization and of pure geometric analysis for young men and women preparing to teach geometry in our secondary schools. Such a course should naturally avoid a review of the subject matter of Elementary Geometry and, at the same time, should not be so far removed from familiar concepts as to lose connection with them. In the second place, the synthetic treatment of loci of the second order and of the second class opens up a new field to the student familiar with analytical processes and has certain advantages in arousing his enthusiasm for continued work in mathematics.

No especial preparation beyond Elementary Geometry and a slight knowledge of Trigonometry is required in order to read this book with perfect understanding. The reader who knows his Analytic Geometry will often find himself on familiar ground, but no knowledge beyond the use of coördinate axes is assumed.

The book is frankly patterned after Reye's *Geometrie der Lage*, with the feeling that the general method of treatment adopted by Professor Reye best serves the purposes outlined above. On the other hand, the author has not failed to consult and to profit by other texts on Projective Geometry that occupy important places in recent literature; notably, Veblen and Young, *Projective Geometry*; Enriques, *Geometria Proiettiva*; Severi, *Complementi di Geometria Proiettiva*.

No attempt has been made to set forth a necessary and sufficient set of postulates for Projective Geometry; not that the author fails to recognize the importance of research already completed in this field, but because of the conviction that the student is unfitted to appreciate work of this character until he has assimilated the main body of theorems and their applications based upon concepts familiar to him from the study of Elementary Geometry. This,

too, is in accord with the aims set forth above. The existence of ideal elements must be assumed (Art. 7); and the Dedekind postulate, or an equivalent, must be used in order to arrive at continuously projective forms. The treatment of the Dedekind postulate for this purpose (Art. 39) is confessedly meager, and many teachers may feel the need of expanding it, or indeed of restating it, as occasion seems to demand.

No attempt has been made to introduce new or strange terms, the only exception, so far as the author is aware, is the use of the word "confocal" to indicate those elements of a double polarity which are the supports of coinciding involutions of conjugate elements (Art. 159).

While this book has grown out of lectures given to students preparing to teach geometry, the subject matter is by no means of interest to this class of students alone. The engineer and the artisan must of necessity become familiar with the elementary processes of projection and section, and these processes are the same whether they lead to properties of geometrical figures or to methods in mechanical drawing.

The author takes this occasion to express his gratitude to Professor Thomas F. Holgate, now Acting President of Northwestern University, for inspiration and enthusiasm acquired under his instruction at Clark University; and also his indebtedness for many helpful suggestions during the preparation of the manuscript for this book.

Especial acknowledgment is due to Professor Henry S. White, of Vassar College, who read the manuscript and whose kindly comments and criticisms have materially improved the book in a number of points.

The author wishes also to express his thanks to Professor Charles S. Slichter, of the University of Wisconsin for his sympathetic interest during the preparation of the manuscript and for his aid in seeing the book through the press.

L. WAYLAND DOWLING.

UNIVERSITY OF WISCONSIN,
June, 1917.

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