SOLID GEOMETRY AND CONIC SECTIONS: WITH APPENDICES ON TRANSVERSALS, AND HARMONIC DIVISION; FOR THE USE OF SCHOOLS

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649707454

Solid Geometry and Conic Sections: With Appendices on Transversals, and Harmonic Division; For the Use of Schools by James M. Wilson

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Edited by Trieste Publishing Pty Ltd.
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JAMES M. WILSON

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Trieste

SOLID GEOMETRY

AND

CONIC SECTIONS.

"Ὡς οἷόν τ' ἄρα, ἦν δ' ἐγώ, μάλιστα προστακτέον, ὅπως οἱ ἐν τῇ καλλιπόλει σοι μηδενὶ τρόπῳ γεωμετρίας ἀφέξονται· πρὸς γὰρ πάσας μαθήσεις, ὥστε κάλλιον ἀποδέχεσθαι, ἴσμεν που ὅτι τῷ ὅλῳ καὶ παντὶ διοίσει ἠμμένος τε γεωμετρίας καὶ μή. τῷ παντὶ μέντοι νὴ Δί', ἔφη."

PLATO, *Repub.* Bk. VII. 527.

This was Diuine Plato his Eudgement, both of the purposed, chief, and perfect vse of Geometrie; and of his second, depending and deriuatiue commodities. And for vs, Christen men, a thousand thousand mo occasions are to haue nede of the helpe of Allegethologicall Contemplations; wherby to trayne our Imaginations and Myndes, by litle and litle, to forsake and abandon the grosse and corruptible Obiectes of our biward sensis: and to apprehend, by sure Doctrine demonstrative, Things Mathematicall.

John Dee his Mathematicall Preface to Euclides Elementes.
A. D. 1570.

SOLID GEOMETRY

AND

CONIC SECTIONS,

WITH APPENDICES ON TRANSVERSALS,
AND HARMONIC DIVISION,

FOR THE USE OF SCHOOLS,

BY

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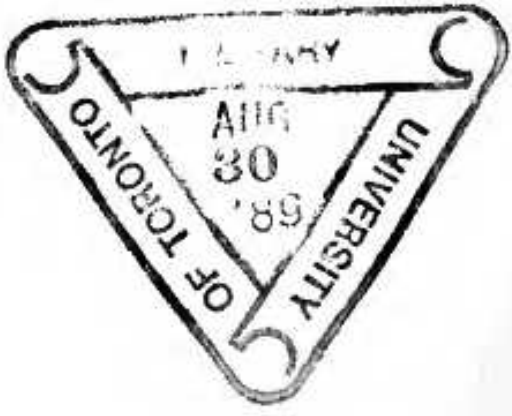
MACMILLAN AND CO., LIMITED
ST MARTIN'S STREET, LONDON
1908

First printed 1872.
New Editions 1873, 1876.
Reprinted 1879, 1880, 1882, 1883, 1885, *January and October* 1887,
1888, 1890, 1891, 1892.
1894, 1898, 1903, 1908



PREFACE.

This work is an endeavour to introduce into schools some portions of Solid Geometry which are now very little read in England. The first twenty-one Propositions of Euclid's Eleventh Book are usually all the Solid Geometry that a boy reads till he meets with the subject again in the course of his analytical studies. And this is a matter of regret, because this part of Geometry is specially valuable and attractive. In it the attention of the student is strongly called to the subject matter of the reasoning; the geometrical imagination is exercised; the methods employed in it are more ingenious than those in Plane Geometry, and have greater difficulties to meet; and the applications of it in practice are more varied.

I have added short Appendices on Transversals, and on Harmonic Division, which will, I hope, be found useful.

In the chapters on Conic Sections I have endeavoured to shorten the subject, which, as presented in the most extensively used text-books, those of Drew, Taylor, and Besant, has somewhat outgrown the capabilities of school-boys. This is accomplished partly by defining these curves as sections of a cone, and deducing immediately their fundamental properties; and partly also by taking

the ellipse and hyperbola together in proving many of their common properties. I have tried in all cases to give the most natural proof, and to arrange the Theorems in an easily remembered order, and have used Corollaries freely. I have also left out the subject of Curvature, which may be read by the student along with Newton with greater advantage than at this early stage of his studies.

RUGBY, *January*, 1872.

PREFACE TO THE SECOND EDITION.

IN this edition there has been some change in Section I, and Section IV. has been largely added to. There have been also some slight changes in the chapters on the ellipse and hyperbola.

I have much pleasure in acknowledging my obligations to Mr R. Tucker for corrections and criticism.

RUGBY, *January*, 1873.

PREFACE TO THE THIRD EDITION.

IN this edition I have added an important theorem on the parabola, and a few exercises, but have made no other change.

RUGBY, *Feb*, 1876.

TABLE OF CONTENTS.

GEOMETRY OF SPACE.

SECTION I.

PAGE

Planes 1

EXERCISES 22

SECTION II.

Polyhedra 23

EXERCISES 30

SECTION III.

Stereometry 31

EXERCISES 51

SECTION IV.

The Sphere 52

EXERCISES 66

MISCELLANEOUS EXERCISES 68

APPENDIX I.

Transversals. Positive and Negative Signs in Geometry . . 72

EXERCISES 79

APPENDIX II.

Harmonic Division 81

EXERCISES 91