

## CONTENTS

List of symbols . . . . .	IX
---------------------------	----

### CHAPTER I. INTRODUCTION.

§ 1.1. The axiomatic method. . . . .	1
1.2. Notions from set theory. . . . .	8
1.3. Notions from algebra . . . . .	10
1.4. Analytic projective geometry. . . . .	18
1.5. Analytic solid projective geometry . . . . .	20
1.6. Vector spaces over a division ring . . . . .	21

### CHAPTER II. INCIDENCE PROPOSITIONS IN THE PLANE.

§ 2.1. Trivial axioms, duality . . . . .	24
2.2. Desargues' proposition . . . . .	28
2.3. Collineations . . . . .	41
2.4. The first quadrangle proposition, harmonic pairs . . . . .	46
2.5. Projectivities between lines . . . . .	56
2.6. Pappos' proposition . . . . .	60

### CHAPTER III. COORDINATES IN THE PLANE.

§ 3.1. Ternary fields attached to a given projective plane . . . . .	70
3.2. Ternary field and axiom system . . . . .	74
3.3. Some complementary results . . . . .	78
3.4. The geometry over a given ternary field . . . . .	84
3.5. Independence results . . . . .	90
3.6. Homogeneous coordinates . . . . .	91

### CHAPTER IV. INCIDENCE PROPOSITIONS IN SPACE.

§ 4.1. Trivial axioms and propositions . . . . .	93
4.2. The sixteen points proposition . . . . .	96

**CHAPTER V. COORDINATES IN SPACE.**

§ 5.1. Coordinates of a point . . . . .	100
5.2. Equation of a plane . . . . .	102
5.3. Homogeneous coordinates . . . . .	104
5.4. The geometry over a given division ring . . . . .	106

**CHAPTER VI. THE FUNDAMENTAL PROPOSITION OF  
PROJECTIVE GEOMETRY.**

§ 6.1. The fundamental proposition . . . . .	107
6.2. Summary of results . . . . .	111

**CHAPTER VII. ORDER.**

§ 7.1. Cyclically ordered sets . . . . .	113
7.2. Cyclical order of a projective line . . . . .	119
7.3. Order and coordinates . . . . .	121
7.4. The geometry over an ordered ternary field . . . . .	127
7.5. A counterexample . . . . .	136
7.6. The axiom of Archimedes . . . . .	140
7.7. The axiom of continuity . . . . .	143

<b>INDEX . . . . .</b>	<b>147</b>
------------------------	------------