SYLLABUS OF PLANE GEOMETRY (CORRESPONDING TO EUCLID, BOOKS I-VI)

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ASSOCIATION FOR THE IMPROVEMENT OF GEOMETRICAL TEACHING

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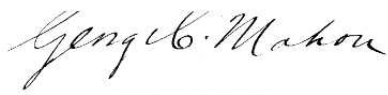

SYLLABUS

OF

PLANE GEOMETRY.

(CORRESPONDING TO EUCLID, BOOKS I. VI.)

PREPARED BY THE

ASSOCIATION FOR THE IMPROVEMENT OF GEOMETRICAL TEACHING.

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BOOK IV. *Fundamental Propositions of Proportion.*

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SYLLABUS

OF

GEOMETRICAL CONSTRUCTIONS.

THE following constructions are to be made with the Ruler and Compasses only; the Ruler being used for drawing and producing straight lines, the Compasses for describing circles and for the transference of distances.

1. The bisection of an angle.
2. The bisection of a straight line.
3. The drawing of a perpendicular at a point in, and from a point outside, a given straight line, and the determination of the projection of a finite line on a given straight line.
4. The construction of an angle equal to a given angle; of an angle equal to the sum of two given angles, &c.
5. The drawing of a line parallel to another under various conditions—and hence the division of lines into aliquot parts, in given ratio, &c.
6. The construction of a triangle, having given
   - (α) three sides;
   - (β) two sides and contained angle;
   - (γ) two angles and side adjacent;
   - (δ) two angles and side opposite.

7. The drawing of tangents to circles, under various conditions.

8. The inscription and circumscription of figures in and about circles; and of circles in and about figures.

7 and 8 may be deferred till the Straight Line and Triangles have been studied theoretically, but should in all cases precede the study of the Circle in Geometry.

The above constructions are to be taught *generally*, and illustrated by one or more of the following classes of problems:

(α) The making of constructions involving various combinations of the above in accordance with *general* (*i.e.* not *numerical*) conditions, and exhibiting some of the more remarkable results of Geometry, such as the circumstances under which more than two straight lines pass through a point, or more than two points lie on a straight line.

(β) The making of the above constructions and combinations of them to scale (but without the protractor).

(γ) The application of the above constructions to the indirect measurement of distances.

(δ) The use of the protractor and scale of chords, and the application of these to the laying off of angles, and the indirect measurement of angles.

SYLLABUS

OF

PLANE GEOMETRY.

INTRODUCTION.

[NOTE.—The Association have prefaced their Syllabus by a Logical Introduction, but they do not wish to imply by this that the study of Geometry ought to be preceded by a study of the logical interdependence of associated theorems. They think that at first all the steps by which any theorem is demonstrated should be carefully gone through by the student, rather than that its truth should be inferred from the logical rules here laid down. At the same time they strongly recommend an early application of general logical principles.]

1. Propositions admitted without demonstration are called *Axioms*.
2. Of the Axioms used in Geometry those are termed *General* which are applicable to magnitudes of all kinds: the following is a list of the general axioms more frequently used.
   (*a*) The whole is greater than its part.
   (*b*) The whole is equal to the sum of its parts.
   (*c*) Things that are equal to the same thing are equal to one another.
   (*d*) If equals are added to equals the sums are equal.