

5.—ALGEBRA.

(10 Lectures.)

History of the science. Arithmetical Algebra. Symbols of quantity, symbols of operation. Notation and first principles. Definition of signs. Extension of definitions. Laws of combination. Proofs of the rules for the signs in multiplication and division. Symmetry and its application. Examples in symmetry. Mathematical induction. Remainder after division. Factoring. Measures and multiples. Algebraic fractions; their difference from arithmetical fractions; proofs of the rules, application of the principles of symmetry and factors to the simplification of fractions. Ratio and proportion. Complete squares and cubes. Special methods of solving equations.

Text-Book.—McLellan's Algebra.

6.—EUCLID AND MENSURATION.

(10 Lectures.)

Euclid.—History of Euclid's Elements. Defects and merits of the work. Methods of teaching Geometry. Objects to be aimed at, and errors to be avoided. Criticisms of Euclid's definitions. Postulates and axioms. Demonstrations direct and indirect. Classification of propositions. Riders and problems. Geometrical analysis and its application to the solution of problems.

Mensuration.—Objects to be aimed at in teaching Mensuration. To find the area of rectangle and from it to deduce area of square, parallelogram, triangle, and circle. Examples and special methods of solutions. Solids; cube, prism, cylinder, pyramid, cone, and sphere.

7.—HISTORY AND GEOGRAPHY.

(10 Lectures.)

History.—The purpose of historical teaching. Text-Books and methods of using them. Methods of teaching, chronological and topical. Selection of facts to be taught. Biography in History. Poetry in History. Hints on teaching; errors to be avoided. A first lesson in History.

Geography.—Objects to be aimed at. Mainly useful for information. Its disciplinary value. Right methods of teaching it and how to arrive at them. The Synthetic and Analytic methods discussed. Home Geography. Lessons on earth and water. Order of geographical facts. Use of globe and maps. Mathematical Geography. Physical Geography and its influence on national character. Illustrations of the effects of physical conditions on national history. Commercial Geography. Descriptive Geography.

8.—OBJECT LESSONS.

(5 Lectures.)

Subjects for Object Lessons. Definite aim—Unity. Hints on teaching: errors to be avoided. Development lessons on form, colour, qualities, etc. Information Lessons.