Lesson X.—Chlorine, its preparation from hydrochloric acid and manganese-dioxide; and also from common salt, manganese-dioxide, and sulphuric acid. Properties of chlorine:—colour, solubility, power of bleaching, its affinity for hydrogen and metals. Bleaching powder.

Lesson XI.—The atmosphere—a mechanical mixture of nitrogen and oxygen, containing small quantities of other gases. Solubility of air. Carbonic-acid gas in the atmosphere; produced by combustion and respiration. Necessity for ventilation. How plants restore oxygen to the atmosphere.

Lesson XII.—Aqueous vapour in the atmosphere, proofs of its presence. Ammonia in the atmosphere; produced by the decomposition of nitrogenous organic matter; acts as a plant-food. Nitric acid in the atmosphere, how produced. Impurities in the air of towns. Sulphur-dioxide; produced by the burning of coal containing iron-pyrites. Organic matter in the air.

Recapitulatory lessons will be given as time permits.

Third Stage.—"The properties of carbon and its chief inorganic compounds. Differences between metallic and non-metallic bodies. Combination by weight and volume. The use of symbols and chemical formulæ."

Syllabus of Fortnightly Demonstrations.

Lesson I.—Definition of the term "symbol"; differences between symbols; symbols of the metallic and non-metallic elements.

Lesson II.—Comparative abundance of the elements; elements concealed in compounds; other uses of symbols; how to represent more than one atom of the same element.

Lesson III.—Nature of chemical formulæ; how formulæ represent compounds; how to express any given number of molecules; formulæ of certain binary, ternary, &c., compounds; composition and number of molecules; how to calculate the number of atoms in molecules.

Lesson IV.—Differences between metallic and non-metallic bodies; number of the known chemical elements; division of the elements into metals and non-metals; the fifteen non-metals; state of the non-metallic elements; the fifty-five metals; nature of metals; properties of metals—lustrous, good conductors of heat and of electricity, &c.

Lesson V.—The elementary body called carbon; meaning of the word "allotropic"; crystallized carbon—the diamond; graphite or plumbago; amorphous carbon; charcoal; charcoal as an absorber of gases.

Lesson VI.—Carbon contained in coal; coke as an amorphous kind of carbon; gas-carbon; lamp-black as an allotropic form of carbon; bone-black; how to prove that these various forms of carbon are all composed of the same element.

Lesson VII.—Inorganic compounds of carbon; meaning of the word "inorganic"; two important inorganic compounds formed by the combination of carbon with oxygen; carbonic-acid gas, its nature and preparation; action of acids upon carbonates; properties of carbonic-acid gas.

Lesson VIII.—Carbonic-acid gas (continued): It does not support respiration; also known as choke-damp; test for carbonic-acid gas; nature of lime-water; action upon carbonic-acid gas upon lime-water; carbonic-acid gas in the breath; composition of the air; how plants absorb carbonic-acid gas.

Lesson IX.—Carbonic oxide: Its preparation by passing carbonic-acid gas over heated coke or charcoal; carbonic-acid gas absorbed by caustic soda; the chemical changes in a coal-fire; preparation of carbonic oxide from oxalic acid, and also from a mixture of yellow prussiate of potash and sulphuric acid; properties of carbonic oxide.

Lesson X.—Carbonic acid proper; how carbonates are formed; carbonate of lime, and its occurrence in nature as chalk, limestone, &c.; use of limestone as a flux; quicklime, its nature and composition.

Lesson XI.—Chemical combination; chemical compounds are definite in composition; combination always takes place in definite proportions; Dalton's Atomic Theory; atomic weights and combining weights; chemical combination in multiple proportions; combining weights of compounds.

Lesson XII.—Chemical combinations by volume; use of the word "volume"; chemical equations express combination by volume as well as by weight; the metric system of weights and measures; equations correct for all weights and all measures; thermometer-scales; how to convert Fahrenheit degrees to Centigrade, and *vice versâ*.

Recapitulatory lessons will be given as time permits.

The following text-books in elementary science are authorised by the Birmingham School Board: Harrison's "Mechanics," Parts 1, 2, and 3, 1s. each, Nelson and Sons, London; Harrison's "Science of Home Life," Parts 1, 2, and 3, 1s. each, Nelson and Sons, London; Harrison's "Chemistry," Parts 1, 2, and 3, 5d. each, Blaikie and Sons, London; Harrison and Bailey's "Chemistry for All," 1s. 6d., Blaikie and Sons, London.

Instruction of Sixth and Seventh Standard Scholars.—In several districts I found that these boys were instructed at special centres, known as higher-grade centres, where every facility in the way of room and appliances was provided. This is, naturally, a considerable saving in expense. I would suggest similar centres being established at one of the larger schools in each city and at the larger country centres. (See "Higher-grade Schools," in Section 3.)

Training of Teachers and Peripatetic Demonstrations.—In Birmingham, Liverpool, and London peripatetic science demonstrations are employed. In Birmingham lessons are given once fortnightly, of about forty-five minutes' duration, to boys in the Fifth and higher standards in each school. These lessons are illustrated experimentally with apparatus carried from school to school in a handcart. Between the visits of the science demonstrator, at least one lesson is given to the