

ANY one of the following alternative courses may be chosen in schools in which the same subject is not taken up as a specific subject. The courses should be taught throughout the school by means of conversational object-lessons in the lower standards, and more systematic instruction with the aid of text-books in the higher standards.

The object-lessons given in Standards I. and II. should include, in mechanics, botany, and physics, some lessons on the phenomena of nature and of common life; in physiology, on the external structure and habits of animals; in agriculture, on food-substances, familiar animals, and common plants; in domestic economy, on the principal substances used for food and for clothing. Specimens of a few such topics are given.

If two standards are grouped together, the portion given to the lower standard may be taken one year, and more fully in the next year.

It is intended that the instruction in elementary science shall be given mainly by experiment and illustration. If these subjects are taught by definition and verbal description, instead of by making the children exercise their own powers of observation, they will be worthless as means of education. The examinations by the inspectors will be directed so as to elicit from the scholars, as far as possible, in their own language, the ideas they have formed of what they have seen.

	Standards I. and II.	Standard III.	Standard IV.	Standard V.	Standard VI.	Standard VII.
Course A. Mechanics ...	Thirty object-lessons, <i>e.g.</i> ,— A pair of scales. A pair of bellows. A hammer. A clock. Carriage-wheel. Building of a house. Iron and steel. Gold.	Thirty object-lessons illustrating matter in three states: solids, liquids, and gases.	The mechanical properties peculiar to each state. Matter is porous, compressible, elastic.	Measurement as practised by the mechanic. Measures of length, time, velocity, and space.	Matter in motion. The weight of a body, its inertia and momentum.	The lever; the wheel and axle pulleys; the inclined plane; the wedge; the screw. The parallelogram of velocities. The parallelogram of forces. Examples commonly met with illustrating the mechanical powers.
Course B. Animal Physiology	Thirty object-lessons, <i>e.g.</i> , on the external structure and the habits of common animals.	Thirty object-lessons illustrating the build of the human body.	Names and positions of the chief internal organs of the human body.	The properties of muscle. The mechanism of the principal movements of the limbs and of the body as a whole.	The organs and functions of alimentation, circulation, and respiration. The use and abuse of foods and drinks.	The general arrangement of the nervous system. The properties of nerve. Sensation.
Course C. Botany	Thirty object-lessons, <i>e.g.</i> ,— Tea. Sugar. Coffee. Cabbage. Carrot. Potato.	Thirty object-lessons illustrating characters of the root, stem, and leaves of a plant, illustrated by common flowering-plants.	Characters of the parts of the flower, illustrated by common flowering-plants.	The formation of different kinds of fruits. Cells and vessels.	Functions of the root, leaves, and different parts of the flower. Food of plants, and manner in which a plant grows.	The characters of the larger groups and most important families of flowering-plants. The comparison of a fern and a moss with a flowering-plant.
Course C. Horticulture...	Thirty object-lessons on common garden-plants, tools, watering, effect of frost and heat.	Thirty object-lessons illustrating seeds and their requirements. Nature and composition of soils.	Nature and functions of roots. Stems and branches. Leaves.	Buds and tubers. Flowers and fruit. Operations connected with the land. Preparation of seed-bed. Planting and planting.	Propagation. Outtings. Budding. Grafting. Layering.	Branch- and root-pruning. Fruit, flower, and vegetable culture. Fungus and insect pests.
Course D. Principles of Agriculture	Thirty object-lessons, <i>e.g.</i> ,— The usefulness of the various animals kept on a farm, and how they repay kindness and care. Beet. Earth-worms. A grain of wheat. Hay. Work in a forge. The work to be done on a farm in the different seasons. Gardening. Garden tools.	Thirty object-lessons illustrating the supply of plant-food in the soil.	The necessity for cultivation, and the circumstances making tillage more or less effective.	The principles regulating the more or less perfect supply of plant-food.	Manures as supplemental sources of plant-food, and recapitulation of the course for Standard V.	The principles regulating the growth of crops, and the variation in their yield and quality.
Course E. Chemistry	Thirty object-lessons on familiar objects, <i>e.g.</i> , of the inorganic world.	Thirty object-lessons illustrating properties of the common gases, such as oxygen, hydrogen, nitrogen, and chlorine.	The chemical character and constituents of pure air, and the nature of the impurities sometimes found in it.	The chemical character and constituents of pure water, and the nature of the impurities sometimes found in it.	The properties of carbon, and its chief inorganic compounds. Non-metallic bodies.	Metallic bodies. Combination by weight and volume. The use of symbols and chemical formulae.
Course F. Sound, Light, and Heat	Thirty object-lessons, <i>e.g.</i> ,— Bell. Trumpet. Tuning-fork. Sunlight. Primary colours. Candle. A fire. Boiling water. Red-hot poker.	Thirty object-lessons illustrating the three modes in which heat may be conveyed from place to place.	Effects of heat on solids, liquids, and gases. Expansion by heat. The thermometer.	Propagation of light. Intensity shadows. Reflection mirrors, refraction, lenses.	Elementary explanation of the microscope camera-obscura, and magic-lantern. Reflecting and refracting telescopes.	Propagation of sound. Elementary notions of vibrations and waves. Reflection of sound, echoes.
Course G. Magnetism and Electricity	Thirty object-lessons, <i>e.g.</i> ,— Amber. Glass. Sealing-wax.	Thirty object-lessons illustrating attraction repulsion and polarity, as illustrated by the magnet. Mariners' compass.	Attraction of light bodies by rubbed sealing-wax and glass. Experimental proof that there are two forms of electricity. Attraction and repulsion.	Gold-leaf electroscope. Construction of electro-phorus, electrical machines, and Leyden-jar.	Voltaic battery and notions of a current. Magnetic effect of a current. Galvanometer. Electro-magnets.	Terrestrial magnetism. Chemical effect of a current. Electrolysis induced currents. The electric telegraph.
Course H. Experimental Arithmetic, Physics, and Chemistry. N.B.—Instruction in this subject should be experimental, the experiments being carried out by the scholars.	Thirty object-lessons illustrating addition, subtraction, multiplication, and division of whole numbers experimentally ascertained by measurement of lines in inches and centimetres, the number of squares in a given area of squared paper ascertained by counting.	Thirty object-lessons illustrating inch and centimetre rulers to be used, the inches and centimetres being divided into ten parts. Addition and subtraction, the same method to be used as in Standards I. and II. Results in each case to be recorded in columns. Multiplication and division of above by whole numbers.	Mere, its subdivisions. Addition and subtraction of lengths containing inches and centimetres. Results to be recorded in columns as in Standard III. The grammes and its subdivisions treated similarly. Application of above to numbers generally.	Measurement of length, area, volume, and weight. English and French systems, relative weights of liquids and solids. Floating bodies. Barometric thermometers. Graphic representation.	Distillation. Filtration. Evaporation. Wet and dry-bulb thermometer. Solubility. The heat unit. Heat capacity. Latent heat. Substances burnt in air, such as coal, sugar, &c.; also metals, such as iron, copper, &c. Investigation into the increase in weight of certain metals when burnt. Rusting of iron. Candle, phosphorus, sulphur burnt in air confined over water. Active and inactive parts of air. Composition of air.	Dilute acids on zinc and iron. Inflammable air and the formation of water therefrom. Inflammable air over heated red-lead. Composition of water. Steam over heated iron filings. Chalk and lime their properties. Heat and acids on chalk, limestone, &c. Chalk = lime + chalk-gas. Chalk-gas on lime and lime-water. Hardness of the air. Mortar. Hardness of water.