

The structure of a bird; birds and their habits; the study of an egg at various stages. The structure of a well-known mammal, as a rabbit; the differences in form and habit of various mammals. The human body. The structure of a fish. Insects: the life-history of a few common insects—*e.g.*, butterflies, moths, flies, beetles, grubs and caterpillars, hive-bees and wild bees, &c. (butterflies or moths may be reared in the school). Lizards, frogs, crabs, oysters, worms, and other forms of animal life as seen in ponds or on the sea-shore. Plants; flowers, wild and garden; roots, leaves, seeds, and fruits; the life of plants, germination and growth; the effect of light, moisture, soil, and manures. Food of plants. Trees and the common kinds of timber. Shrubs. Wheat and other useful grasses. Other useful plants. Useful vegetable products: starch may be obtained from a potato, sugar from a parsnip, beet, or carrot. Ferns. Fungi; mildew. Water, its nature and forms. Soils; clay, sand, limestone, mud, gravel, &c. Quarries; a few common rocks, minerals, and fossils; typical volcanic rocks contrasted with stratified rocks and metamorphic or altered rocks (specimens should be handled by the children). Coal. Quartz. Shingle of rivers and of the sea-shore. Clay; bricks and tiles. Building-stone. Pottery. Glass. Mortar; cement. Road-metal. The air; oxygen; carbonic acid. Vapour-clouds. The thermometer and temperature. Ventilation. Winds. The barometer. Frost and heat. The weather; weather-charts. Rainfall. Hydrometer. Milk; cream; curds; whey; cheese; tests for milk; separators. The pump; siphon; fire-engine. Pressure of water; artesian wells; use of a head of water. Density; flotation. Mechanics in everyday life: levers, pulleys, steam. Physics: expansion of solids, liquids, and gases when heated; magnetic compass. Solutions. Solvents: water, alcohol. Crystals. Common elements and compounds: sulphur, iron, common salt, soda, saltpetre, mercury, tin, zinc, lead. Distillation; filtration. Fire. Candle. Coal-gas. Tar. Kerosene and kerosene-lamps. Sun, moon, planets, stars, meteors, comets. Tides. Eclipses. The seasons. The sea and the sea-shore. Outdoor studies in geography. Land-measuring. Natural history calendars; weather calendars; astronomical calendars; &c.

Some of these subjects may be taken in junior classes; others are suitable only for senior classes; others, again, may be taken twice, three times, or even oftener in the school course—at first in a simple manner, afterwards in a way suited to the more mature powers of observation of older children. Natural-history calendars of a simple character might be kept as early as S2. Weather calendars might begin in S4. (The school should be equipped for this purpose with a thermometer, maximum and minimum by preference, and a rain-gauge; also, if possible, with a barometer.)

Of course, no school will attempt all the topics that are suggested above. Lessons will be arranged for various schools according to the tastes and acquirements of the teachers, and should in all cases have immediate reference to the local surroundings.

#### ELEMENTARY SCIENCE.

The course in science for the upper classes should be chosen with regard to the district in which the school is situated. Even with careful attention to individual practical work, a course of science for young children will probably fail as an educational instrument if it is too far dissociated from their daily life and experience. Two specimen courses are given below—one (in elementary physics) for town schools or large country schools, the other for country schools. These courses are intended as suggestions. Any suitable program of work in elementary science drawn up to cover the three or four years of S4 or S5 to S6 or S7 will be accepted by the Inspector.

A course of elementary physics for the upper classes of a town school or of a large country school might include such work as is indicated in the following notes, some of the more elementary portions of which may be attempted even before the pupils reach S4:—

Measurement of lines in inches and sixteenths, in inches and tenths, using decimal points to mark tenths; measurement of length, &c., of desks and other objects, of girth of chest, &c. Take the mean of several measurements. Measurement of lengths in the class-room in feet and inches, in the playground in yards, &c., or in chains, yards, &c., or in chains and links. Measurement of circumference and diameter of circles, as of a penny, and of a cylinder. Ratio of circumference to diameter approximately. Diameter of a sphere.

Divide a square drawn on paper or cardboard into square inches; find area of square. Similarly, find area of a rectangle.

Draw to suitable scales plans of top of desk, table, class-room, &c. Find area of each.