

tion and Examination of Schools, but will be somewhat more advanced in character. Special stress will be laid on physical geography.

(6.) *Elementary Practical Agriculture*.—The candidate will be expected to show (a) that he has a practical knowledge of the operations incident to the work of a school garden, and (b) that he has conducted experiments and observations bearing on the life and growth of plants, on the lines indicated below under the head of experimental and observational work:—

(a.) Work in the garden.—General: Preparation of the land; digging, trenching, hoeing, raking, and surface cultivation. Drawing drills. Sowing. Thinning, pricking off, hardening, and planting out seedlings. Methods of treating light and heavy soils. Fertilizers; the time of year and the condition in which to apply fertilizers; the selection of fertilizers for particular purposes. Use of lime, soot, clay, road-sweepings, ashes, leaf-mould, &c., as soil-improvers. Arrangement of the garden to the best advantage from the points of view of space, succession of crops, and weeding. The application of preventives and remedies for garden pests and diseases.

Special: Methods of plant-cultivation. Cultivation and management of plants selected from one or more of the following groups:—

- (i.) Green, pod-bearing, and tap-rooted vegetables, potatoes, onions, vegetable marrows, tomatoes. Gathering and storing of vegetables.
- (ii.) Flowering-plants (annuals, perennials, and bulbs). Method of propagating flowering-plants. Succession of crops.
- (iii.) Tree and bush fruits. The care of fruit-trees. The operations of pruning, budding, and grafting.
- (iv.) Cereals and other grasses, and fodder-plants generally.

(b.) Experimental and observational work. The seed: Parts of the seed. Conditions necessary for germination and growth. Testing the vitality of seeds. The collection and preservation of seed. Experiments illustrating the phenomena of germination and the establishment of the young plant (*e.g.*, absorption of moisture by seeds; temperature of and pressure exerted by germinating seeds; how seeds escape from their covers; how seeds get buried in the soil; how young plants get above the ground, and how they deal with obstacles met with during the process; how seeds on the surface get their roots into the ground; proof that germinating seeds take in oxygen and give out carbonic acid, &c.).

The root: The function of the root. Root-systems. The use of root-hairs and root-caps. Effect of injury to these parts. How roots grow. Experiments illustrating the work of roots (*e.g.*, relation between root-hairs and soil-particles; exploration of soil by roots in search of moisture; the quantity of water required by roots; use made by roots of mineral matters dissolved out of soil by water; the use of culture-solutions; proof that roots require air and give out carbonic acid, &c.).

The leaf: The general structure, forms, and functions of leaves. Seed-leaves and foliage-leaves compared. Transpiration. Respiration. Formation of starch. Experiments illustrating the work of leaves (*e.g.*, demonstration of the occurrence of water, air, and starch in leaves; behaviour of green leaves in sunlight and in the dark; how the rate of transpiration is controlled; the functions of the upper and lower surfaces of leaves compared, &c.).

The stem and buds: General structure and functions of stems. The "habit" of a plant. The habits of different plants compared. Twining and climbing plants. Peculiar forms of stems (potato, crocus, &c.). General structure of buds. Winter buds. Bud-scales. How the growing point is protected. Influence of temperature, moisture, and light on growth. Experiments on the work of stems (*e.g.*, effect on a plant of "ringing" the stem; how the sap circulates; demonstration of the presence of starch and sugar in stems, &c.).

The flower and fruit: The parts of the flower and their functions. Causes influencing the opening and closing of flowers. Pollination. Devices for the protection of pollen, for the prevention of self-pollination, and the promotion of cross-pollination. The formation of fruits. Different types of fruits. Devices for the protection of seeds from foes. Dissemination of seeds. Experiments on cross-fertilization.

The soil: How soil is made. The mechanical analysis of soil. The texture of soil. The soil as a sponge from which a plant may obtain water, as a storehouse of plant-food, and as a laboratory in which plant-food is prepared and dissolved. Experiments with soils (*e.g.*, how moisture is held in the soil; how the moisture-holding capacity of a soil may be increased; conservation of moisture; rate of evaporation at surface of different soils; how the texture of a soil may be improved; the selection and testing of fertilizers).