

*First Year's Examination.*

The first year's examination will consist chiefly of practical exercises in metal-work, but candidates will also be required to answer in writing a few simple questions on the tools used and methods employed in working the exercises of the following syllabus, and on the chief properties of the common metals in their relation to workshop processes. The exercises for the practical examination will be such as are included in the following syllabus, and candidates should be able to complete any of the exercises mentioned, but they will be required to pass in two only of the divisions A, B, and C.

*Division A : Vice-work.*—The form and use of flat and cross-cut chisels ; flat, round, square, and half-round files ; scrapers ; taps, stocks, and dies ; screw-plates ; measuring and other tools, including calipers, square, centre-punch, scribing- and V-blocks, straight-edges, and surface-plates. Different forms of vices for bench-work, and the grinding and keeping in order of the tools used. Chipping, filing, and scraping cast-iron, wrought-iron, steel, brass, and gun-metal to simple forms and given dimensions. Cutting keyways and holes from plates or blocks to fit a given gauge, and preparing and fitting taper- and headed-key, or other piece. Cutting out and filing up a hexagon or octagon gauge from thin plate, filing and preparing a straight-edge. Drilling, tapping, and filing to shape a square or hexagonal nut ; screwing round bar with screw-plate and stocks and dies to fit a given nut.

*Division B : Bench-work.*—Composition of soft solders ; use of copper soldering-bit ; composition and use of ordinary fluxes ; soldering simple joints in tin- and brass-work. The connection of plates and bars, and of joints, with rivets, single- and double-countersunk, hammered cold.

*Division C : Forge-work.*—The form and use of the ordinary forge tools, management of fire, precautions to be observed in heating metals, drawing out bars to square and round ends, parallel, and taper ; bending iron to simple curves, or to square or circle of given size ; jumping-up. Forging of simple examples, as headed-key, spike-nail, &c. ; forging and tempering centre-punch, drill, and small chipping-chisel. Connection of pieces of bar by welding. Case-hardening with prussiate of potash. Annealing.

*Final Examination.*

Candidates for the final examination must produce a certificate of having passed the first year's examination. They will be required to undergo an examination in practical work, and also a written examination and a drawing examination.

1. *Practical Work.*—Exercises may be selected from the first-year syllabus A, B, and C, only that greater accuracy and finish will be expected ; or more difficult exercises of the same character, including examples in brazing, may be set.

Candidates will also be required to work exercises requiring a use of the simple lathe and drilling-machine to the following syllabus : Form and use of hand-tools for turning iron and brass ; centring of work and fixing in lathe ; turning of plain cylindrical rod ; simple taper- and collar-turning ; use of V-centre for drilling ; turning of simple curved pieces to template. Chasing screw-threads. Use of slide-rest and back gear ; and of shifting headstock for taper-turning. Methods of screw-cutting. Exercises may set involving forge-, vice-, and lathe-work, and drilling.

## 6. DOMESTIC ECONOMY.

Manual instruction is to the boys what domestic economy is to the girls, a necessary part of daily life instruction. Opinions differ as to the age in which such instruction should commence. I am of opinion that, until the work is organised, a medium course is advisable, and that girls of Standards V. and VI. should receive instruction in the domestic sciences, whilst the boys of the same standards would be engaged in manual exercises. A writer to *Education* thus defines the sections of instruction : (1.) Laundry-work taught practically and thoroughly. (2.) Cookery : all kinds of plain cookery, with simple lessons on the choice and food-value and money-value of articles used. (3.) Housewifery : simple definite rules for general housework and cleaning, the pupils being guided to think out for themselves proper methods of spending, using, and saving. (4.) Simple lessons in health, care of infants and children, and sanitation. (5.) Dress-cutting from any size measurement, with sufficient practice. (6.) Simple dressmaking and fitting. (7.) Undergarment-pattern cutting from any size measurement. (8.) Plain needlework. (9.) Mending.

The above would be an excellent course of work ; the question is how much can be done in connection with our primary-school system. In connection with the last five sections we already have sewing in our schools. Girls unfortunately are often taught to sew, but not to cut out, or make use of material to the best advantage. The London School Board in this respect requires that cutting-out, both in paper and material, shall form an important part of the children's training. The method usually adopted is that of a simple system of measurement on paper, the elder girls in many cases cutting out for the younger ones. Mending is also encouraged, particularly in country schools, children bringing work from home for that purpose. Pupil-teachers during their training are taught needlework and cutting-out, and are required to give a lesson in the presence of Her Majesty's Inspector. The lesson is not considered satisfactory unless sketches and measurements are freely and fully given upon the blackboard. In this particular way I think the lessons in sewing might be made considerably more practical.

*Cookery.*—Lady Warwick, in an excellent article upon the training of girls, states that the following principles should be followed in connection with such classes : (1.) To teach the value of economy and cleanliness. (2.) To teach principles rather than to give recipes. (3.) To teach the nutritive value of different foods. (4.) To show that, with the exercise of thought, diet can be varied without extra cost, and that all instruction given should be of a character adapted to the homes of working-men.