

The classes intended to educate apprentices and workmen in matters bearing on their own trades meet, as a rule, in the evening, and their class-rooms are occupied in the daytime by the pupils of the manufacturing school, who are young people belonging to the fairly well-to-do classes, and who are being prepared for responsible positions in the control or supervision of some of the industries of the district. Also in the daytime a school is carried on which may be regarded as preparatory to the manufacturing school, and which is attended by boys who have left the primary school and have not yet entered upon a determinate occupation. In each of its parts the institution seeks to supply instruction in the scientific principles which underlie the processes of the trades and industries of the neighbourhood, and to show by experiment the application of these principles. Its aim differs from that of the universities and university colleges in that, in its teaching of science, it has always in view the application of science to practical uses in commerce and industry, and not the mere culture of the mind. At the same time it offers to the students of university colleges the opportunity of acquiring practical knowledge of the industrial application of the sciences.

In the evening-classes there are courses of work in the laboratory and in the shop, and lessons for apprentices, workmen, and foremen in the scientific principles most applicable to their own trades or manufactures, and especially in any newly-discovered processes or improved methods.

To the day-classes no one is admitted who has not been sufficiently educated at a secondary school. Manchester took a more active part than any other city in the movement for the spread of technical education, and in promoting the legislation of recent years which has rendered it possible to found this great municipal school of technology.

A.—*Commercial and Manual Instruction School for Boys.*

This school receives boys of thirteen years and upwards, who must pass an examination in the subjects taught in the upper classes of the primary schools, and must engage to remain at least a year. The school course extends over three years. The fee is £6 a year. The course is arranged with the design of developing the intellectual faculties, and at the same time training the hand to dexterous service. Habits of careful observation, and of precision in measurements, and in the execution of manual work are cultivated. No attempt is made to prepare the pupils for any particular trade. At the same time the studies are so arranged as to bring into view individual aptitudes. Instruction is given in literature, mathematics, science, and drawing, and at the same time in practical affairs, in the use of tools, and in the value and nature of materials. No better preparation for the manufacturing school could be devised; and at the end of the three years' course, scholarships, giving the right to free tuition in the manufacturing school, are offered, with the addition in some cases of a money-grant.

The programme of studies is as follows: Languages and literature, geography and history, five hours a week; arithmetic and mathematics, four hours; writing, shorthand, and drawing, nine hours; sciences, six hours; carpentry, six hours.

B.—*School of Manufactures, or Day-classes.*

Pupils on leaving the day-school (commercial and manual) of the institution may enter the day-classes of the manufacturing school. Other pupils are admitted, the minimum age being fifteen. There are seven sections. The fee for any section is £15 15s. a year. A pupil entering for a single class pays £1 1s. a year for every hour per week that the class meets.

There are 3,731 students in the institution, and about one-sixth of them are in these day-classes. In some sections the course extends over two years; in others, the course extends over three years. This is a secondary school, but its studies are less theoretical and literary than those of other colleges of this kind; it is principally a secondary school of manufactures. The Leeds Central Board School is an organised science school, where the physical and chemical sciences are studied from the point of view of the manufacturing industries; but this technical day-school at Manchester has a more direct bearing on handicrafts, and prepares for the arts and trades by cultivating taste and ability, and by developing the inventive faculty. The teaching occupies thirty-eight hours a week.

Section 1. Pure and applied Mathematics.

Section 2. Machines.—In this section are laboratories for physics, chemistry, and metallurgy; a large hall for drawing; shops for woodwork, ironwork, and modelling; and a forge.

Section 3. Physics and Electricity.—This section is for electricians and mechanicians, for chemists, and for architects and engineers (civil, mining, or sanitary) who recognise the importance of recent developments in the use of electricity, and the necessity of studying their bearing on building construction. In the basement are the dynamos, which furnish electricity, especially for lighting; and on the ground-floor and above are the class-rooms, laboratories (for physics, electricity, mechanics, photography, and telegraphy), a museum of electrical science, and workshops for the making of instruments of precision.

Section 4. Plumbing and Sanitary Engineering.—This section is intended for young people who wish to be architects, municipal (sanitary and civil) engineers, constructors and superintendents of works, sanitary inspectors, or plumbers. There is a complete workshop for plumbing.

Section 5. Chemistry and Mineralogy.—This section is for sons of manufacturers, for directors and firemen, and others who intend to devote themselves to chemical manufactures, dyeing, glass-staining, printing (of textile fabrics), bleaching, or metallurgy. The laboratories are furnished with appliances for all experiments in organic and inorganic chemistry, qualitative and quantitative, and in the dyeing department every provision is made for practical work.

Section 6. Spinning and Weaving.—This section is for designers, supervisors, managers, manufacturers, and merchants. The collection of machines is, perhaps, unique. There is a collection of models and products, materials and tools, and an excellent library of English and foreign books and