number of the livery companies of London. The department encourages instruction in pure science aud in art ; the institute in the application of science, and to some extent of art also, to different trades.

Both the department and the institute make grants on behalf of properly registered teachers on the results of the examination of their pupils. The directory of the department contains a detailed syllabus of the twenty-five different subjects on the teaching of which grants are paid, and in the programme of the institute arc found syllabuses of instruction in the technology of fifty different trade subjects. In the evening classes organized by the depart­ment, as well as in those in connexion with the institute, the workman or foreman engaged in any manufacturing industry has the opportunity, by payment of a very small fee, of studying art in all its branches, science theoretically and practically, and the technology of any particular industry. Provided his early education enables him to take advantage of this instruction, no better system has been suggested of enabling workmen, whilst earning wages at an early age, to acquire manual skill by continuous practice, and at the same time to gain a knowledge of the principles of science connected with their work and explanatory of the pro­cesses of the manufacture in which they are engaged.

For those engaged in handicraft trades this evening instruction is equally valuable, and in many parts of Europe there exist evening trade schools in which the workman is able to supplement the “ sectional ” practice he acquires in the shop by more general practice in other branches of his trade. In Vienna, for example, and in other parts of Austria, there are found practical evening classes for carpenters, turners, joiners, metal-workers, and others ; and similar classes, some of which are subsidized by the City and Guilds Institute, have recently been established in England. Throughout Europe schools for weaving, with practical work at the loom and pattern designing, have existed for many years.

To provide a training more like the old system of apprenticeship, schools have been established in many parts of Europe which are known as professional, trade, or apprenticeship schools (*écoles pro­fessionelles, écoles des apprentis, Fachschulen*)*.* The object is to train workmen ; and the pupils, after completing their course of instruction in such a school, are supposed to have learnt a trade. The school is the substitute for the shop. In such a school the pupils have the advantage of being taught their trade systemati­cally and leisurely, and production is made subsidiary to instruc­tion. Under such an artificial system of production, the pupil is less likely to acquire excellence of workmanship and smartness of habit than in the mercantile shop, under the strain of severe com­petition. Moreover, tho cost of maintenance of these schools renders it impossible to look to them as a general substitute for apprenticeship. By sending into the labour market, however, a few highly-trained workmen, who are absorbed in various works and exert a beneficial influence on other workmen, these schools serve a useful purpose. Schools of this kind have been tried with more or less success in different countries. In Paris there is the well-known École Diderot for the training of mechanics, fitters, smiths, &c. ; and similar schools have been established in other parts of France. A furniture-trade school of the same category has recently been opened in Paris, and for many years a society of Christian Brethren have directed a large school in which several different trades have been taught. In this establishment, situated in the Rue Vaugirard, all the secular and general instruction is given gratuitously by the brothers, and in the several shops attached to the school skilled workmen are employed, who in­struct the pupil apprentices, and utilize their labour. This system combines many of the advantages of shop work and school work, but it depends financially for its success upon the religious spirit which actuates its promoters and supporters. The Artane school, near Dublin, is conducted on somewhat similar principles, but is intended for a lower class of children. In Austria, particu­larly in the rural districts, there are numerous schools for the training of carpenters, joiners, turners, cabinetmakers, workers in stone and marble, in silver and other metals, &c. Schools of the same class are found in Germany, Italy, and elsewhere. It is only in certain cases, however, that apprenticeship schools can be said to satisfactorily answer the purpose for which they have been established. Where a new industry, especially in rural districts, has to be created ; where decaying industries need to be revived ; where machinery is superseding hand work, and, owing to the demands for ordinary hands, there is a dearth of skilled workmen ; where through the effects of competition and other causes the trade is carried on under conditions in which competent workmen cannot be properly trained in the ordinary shop,—in these cases, and in various art industries, an apprenticeship school may prove to be the best means of training workmen, and of advancing particular trades. Generally, an apprenticeship school should be looked upon as a temporary expedient, as a form of relief applied at the birth or during any temporary depression of a particular industry. The proper training school for workmen is the factory or shop.

2. *Foremen.—* The foreman must be familiar with the various branches of work he is to overlook, and the training which the workman receives in the factory or shop affords him but scanty opportunities of obtaining this general knowledge. The foreman needs also a generally superior education. How then are foremen to be trained ? The problem is somewhat easier than that of train­ing workmen, because the number required is fewer. The variety of schools in Europe devoted to this purpose is very great. There are three distinct ways in which foremen are being trained.

(*a*) The evening technical classes in Britain and on the Continent offer to ambitious workmen an opportunity of acquiring a know­ledge of other departments of the trade than those in which they are engaged, as well as of the scientific principles underlying their work. These classes serve the double purpose of improving the workpeople and of affording a means of discovering those who are best fitted to occupy higher posts.

(*b*) Special schools have been established for the training of fore­men. There are many trade schools of this kind in which selected boys are received after leaving the elementary school. The best known are those at Chalons, Aix, Nevers, Angers, and Lille in France. These schools are intended for the training of foremen in engineering trades. They are state institutions, in which practical mechanical work in the shops is supplemented by theoretical instruction. The first of these schools was founded in 1803. The course lasts three years, and the number of students in each school must not exceed three hundred. The students spend from six to seven hours a day in the workshop, and are trained as fitters, founders, smiths, and pattern-makers. As in all such schools, saleable goods are produced, but, as production is subordinated to instruction, the school does not bind itself to deliver work at a given date, and therefore does not compete with any manufacturing establishment. The students on leaving these schools are com­petent at once to undertake the duties of foremen, managers, or draughtsmen. At Komotau, Steyr, Klagenfurt, Ferlach, and many other places schools have been established on somewhat similar principles. In Germany there are special schools for the training of foremen in the building trade, which are chiefly frequented in the winter, and numerous schools are found in all parts of the Continent for the training of weavers. At Winterthur in Switzer­land a school has been established the main purpose of which is the training of foremen. In Italy there are numerous technical institutes, the object of which is to train young men for inter­mediate posts in industrial works. In the United States the manual training schools, the number of which is rapidly increasing, have somewhat similar objects. In London, the Finsbury technical college of the City and Guilds of London Institute has a day de­partment, the main purpose of which is the training of youths as foremen, works managers, &c. ; but in this school, as well as in those last mentioned, the character of the instruction deviates considerably from that given in French schools, and aims rather at preparing youths to learn, than at teaching them, their trade.

(c) A third method adopted for the training of foremen is by en­couraging selected children of the ordinary elementary schools to continue their education in schools of a higher grade of a technical character. It is thought that, by developing to a higher degree the intelligence and skill of those children who show aptitude for scientific and practical work, they will be able, when they enter the shop, to learn their trade more quickly and more thoroughly, and to acquire that general knowledge of their work, and to exhibit those special aptitudes, which may qualify them for the position of foreman or manager. The education given in these schools, although having direct reference to the future career of the pupil, is disciplinary in character, and consists of the subjects of primary instruction further pursued,—of drawing, modelling, science, mathematics, and manual exercises. The curriculum is varied to some extent according to local requirements, the technology of the staple industries forming in many cases part of the instruction. Such schools, under varied forms, have been established in most Continental countries, some of the best examples of them being found in Paris, Lyons, Rheims, Rouen, and in other towns of France. The want of similar schools in Britain has been frequently pointed out. One of the oldest of these schools is the École Martinière at Lyons. The school was founded in 1820 by a bequest from Major-General Martin, who had fought against the English under Tippoo Sahib. In this school, in which the education is gratuitous, as in nearly all the higher elementary schools of France, instruction is given in drawing, modelling, chemistry, mechanics, and physics, in the working of wood and iron, and in German and English in addition to the subjects of an ordinary school education. Surveying is also taught to some of the pupils, and the instruction generally is of a very practical character. The students visit fac­tories under the guidance of tho masters, and on their return they write out full descriptions of their visits. The school hours are from seven till eleven in the morning and from one till seven in the afternoon. The boys from this school rapidly obtain places in the commercial and industrial houses of Lyons, and many of them, after a time, succeed in obtaining high positions. A very similar school, on more modern lines, has been established at Rheims, and