

# EDUCATION

## Apprentice Training in the Austrian Metal Industry

by

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### APPRENTICE TRAINING IN THE AUSTRIAN METAL INDUSTRY (1)

**T**HE distinguishing characteristic of Austrian industry is the great predominance of the small craftsman. Really large concerns are very few in number; there are only two which employ more than 10,000 workers, namely the mines at Eisenerz and Donawitz and the munitions factory at Steyr. No census of industries has been taken in Austria since the war, but, according to that taken under the former Austrian Empire in 1902, of one million establishments 448,552 employed only one person and 460,331 employed from two to five. Thus nearly nine-tenths of the industrial concerns in the old Austria were small, and this is probably true of Austria of today.

The small concern is the special sphere of apprenticeship. These small craft undertakings, working without systematic organisation or machinery, can only enter into competition with modern large establishments if they employ a more or less unlimited number of apprentices. The system of training by a master craftsman is regarded by the small craftsman, and all those who support the corporate organisation of industry, as the best form of training. In theory, it is true, the system of placing the young worker under the complete control of an experienced craftsman for a number of years appears to offer the best chances of success. In practice, however, matters are rather different. In the first place, the technical training of the craftsman himself often leaves much to be desired, so that even with the best intentions he is unable to give the apprentice a complete technical training. Too often even these good intentions are absent, and many masters lack the patience, teaching ability, and moral qualifications to undertake the difficult tasks involved in training. The old system of apprenticeship is made even more ineffective by the fact that the equipment of the small concern is too often obsolete and inadequate. Moreover, small concerns cannot be set up in those branches of industry which require a large amount of fixed capital. Machinery, railway locomotives, electrical apparatus, automobiles and bicycles can obviously only be manufactured in factories; extensive and costly equipment is required to keep up with modern technical progress. The small craftsman cannot provide this equipment, and the defects of training by master craftsmen are particularly noticeable in metal-working establishments. It must also be pointed out that the small craftsman is anxious to make the greatest possible profit out of the apprentice, and therefore employs him in fetching and carrying rather than on strictly industrial work,

although this abuse has been checked to a certain extent in the larger towns. While doubtless profitable to the instructor, it is most injurious to the apprentice.

These defects in the system of apprenticeship have long been recognised. The craftsmen's associations have endeavoured to remedy them by such measures as certificates of proficiency, examinations for master craftsmen, state encouragement of industry, prizes and courses of training for master craftsmen, travelling industrial instructors, and formation of craftsmen's associations. The apprentices in small concerns have gained little or nothing from these efforts, and insistence on a certificate of proficiency has been a positive hardship.

Many years ago industrial and general continuation schools were established in Austria in order to supplement the training of apprentices by master craftsmen. Clause 75 of the Austrian factory regulations, which were issued under the Act of 5 February 1907, requires the owner of every industrial concern to allow all his employees to attend the industrial and vocational continuation schools until the end of their eighteenth year. Special continuation school laws have been passed in most of the Austrian States, and a general system of such schools has been set up. The most successful have been vocational schools in which theoretical instruction is given to supplement practical training in special apprentice workshops. This type of school has been mainly set up in the large towns where trade instructors are readily available. The system of general industrial continuation schools, which are intended to continue the general school instruction, has been less successful, and has been opposed by the teaching staff of the elementary schools. There is a growing movement, therefore, in favour of converting these general continuation schools into vocational schools.

A new factor has arisen owing to the war which, added to the drawbacks of the old system of apprenticeship and the defects of the continuation school system, has made the training of the next generation of industrial workers a question of the greatest importance in the economic reconstruction of Austria. The new factor is the enormous development of war industries, which absorbed a very large proportion of the young workers of Austria owing to the relatively high wages and special privileges in food rations which they offered. The young people employed there were not given vocational training in the true sense of the word, but were merely taught the roughest and most mechanical work, so that they are now without technical training or qualifications. The reduction of war industries to a peace basis has taken some time, so that altogether it is estimated that five or six years of the rising generation have been lost to the skilled trades of Austria. This makes itself felt through a growing shortage of skilled workers, especially in the metal industry.

It should also be realised that in Austria, as in other countries where large-scale industry has developed rapidly, apprentices trained in small concerns are not qualified for employment in large power-driven factories. Long ago Austrian metal manufacturers complained that locksmiths and tinsmiths trained in craftsmen's shops were of no use in factories; they either were not engaged at all or had to be entirely retrained for factory work. The large concerns, especially in the metal trades, have therefore for some time taken to training their own apprentices from the beginning. A variety of systems of training have been adopted and three types may be distinguished.

In the so-called group training system one or two apprentices are put in charge of a skilled adult worker in the factory and help him

in various ways, fetching tools, material, etc., and eventually assist him in his actual work on the machinery. The system has the advantage over training by a master craftsman that the apprentice learns modern methods of machine production, but has one serious drawback. The adult worker receives no special pay for training the apprentice; he therefore tries to keep him as long as possible when trained, in order to recoup himself by means of the apprentice's additional output. Thus the latter only receives partial training on a single machine. The management and the recently created works councils must intervene in the interest of the apprentice, so that he is not kept too long on one machine, but can take advantage of all available opportunities of training in the factory.

The Austrian chambers of labour have issued circulars on this method of training in which some of its effects, notably in the workshops of the Alpine Mining Company of Styria, are mentioned. In the Neuberg iron works 38 workers under the age of 18 are employed in the moulding shops and machine shops and trained on the group system. In the Donawitz smelting works there are 133 learners in the machine shops under the supervision of adult workers. In the smelting works themselves they are attached to the foremen for training. In the Kindberg smelting works 80, and in the Zeltweg works 46, young workers are employed without any contract of apprenticeship. They are trained under the supervision and direction of master workers, gang leaders, foremen, and specially skilled workers, and on leaving the works are given a certificate of proficiency as locksmith, turner, or moulder.

The practice of employing young workers without a contract of apprenticeship is a very great disadvantage to them, as they receive no certificate of apprenticeship which will be recognised by other works, and therefore are not regarded as fully skilled workers. Their freedom of movement is thus limited, and they are more or less compelled to remain in the works where they were trained. Attempts have been made to remedy this defect, but have been strongly opposed by the company in question.

A further stage in the development of training is reached when the learners are not put in charge of a single worker in the ordinary workshops, but are placed in special shops within the factory where they are trained under the direction of an engineer or shop manager. Two types can be distinguished: (1) apprentice workshops which are only distinguished from other departments in that only apprentices are employed; after receiving some general instruction, they are engaged on ordinary production work; (2) apprentice shops where the learners do not work on production goods but make articles solely for purposes of training. The latter is naturally the more desirable and systematic method of training.

For years the trade unions and political Labour Party have demanded the establishment of such apprentice workshops by the state, but in view of the lack of financial resources of the Austrian state there is small likelihood that this will be done. The idea has, however, been put into practice by the Austrian state railways, following the example of the Prussian and Wurtemberg state railways. State railway shops have been set up at Wien-Floridsdorf and Knittelfeld. The Knittelfeld railway shops employ 1,500 workers, of whom 45 are apprentices in a special apprentice department. The period of training lasts three years, and every year 15 apprentices complete their course and 15 new apprentices are engaged. The apprentice shops are entirely distinct

from the ordinary shops, both in building and organisation. The working week is 44 hours, and the apprentices attend the industrial continuation schools. Some of them are trained as turners, others as locksmiths. The turners receive six months' training as locksmiths in the apprentice shops and then go into the moulding shops, while the locksmith apprentices have six months' training in the moulding shops and are then trained under the direction of a shop manager and three locksmiths. An example of a special apprentice shop in a private concern is to be found in the Saurer works, which is a small factory of commercial motors in Wien-Simmering.

The most complete form of factory training of apprentices is that in which the works establishes, in addition to the apprentice shops, a works school which takes the place of the state continuation schools. This has been done by the great Daimler works in Wiener-Neustadt, the Puch works in Graz, and the Gräf and Stift Company in Vienna, which are all automobile or cycle factories. Very satisfactory results have been achieved in some cases.

The vocational continuation school in the Puch works was established in October 1913 for the benefit of the apprentices, who in 1922 numbered 180. Only works engineers and officials with adequate theoretical knowledge and experience are employed as instructors. The curriculum is based on that of the state schools, but other special subjects are introduced in order to enable the apprentices to specialise in various branches of work. Instruction is given twice a week from 2 to 6 p.m. It thus falls partly within working hours, and on these days the apprentices leave work earlier in order to go home and change. The subjects of instruction include civics, commercial subjects, book-keeping, arithmetic, algebra, electricity, theory of materials, engines, and tools, theory of construction, and geometrical drawing and sketching. Attendance is compulsory and no fees are charged. The school is recognised as a state school under the authority of the Education Department and liable to inspection. It is managed by a school committee, on which the directors of the works, the Federal and State governments, the municipality of Graz, and the Chamber of Commerce are represented. Certain conditions are laid down for admission, including a period of probation. In the Puch works there is no special apprentice shop, but, as in the Gräf and Stift works also, the apprentice is moved from one department to another. This enables him to choose the particular type of work he prefers and assists the management in selecting and training specialised workers, such as locksmiths, moulders, engineers, and tool-makers. The Daimler works in Wiener-Neustadt, on the other hand, has a special apprentice workshop.

It is obvious that even this system is open to certain objections, which must be met before it can be extended to the rest of the metal industry and to other industries in Austria. It is possible that large works, just as much as the small craftsmen, may engage large numbers of apprentices in order to obtain cheap labour, although the Act on the remuneration of apprentices passed on 11 July 1922, which requires the establishment of rates of pay for apprentices, does something to check this. In each works the number of apprentices to be employed, even in special apprentice workshops, should be specified. It should be controlled by the trade unions and works councils in the interests of the workers in that branch of industry. The representatives of the workers should also share in the management of the works schools, in order to prevent the employer providing merely one-sided and inadequate instruction — a danger much less to be feared in state concerns. In

some of the firms mentioned, for example the Daimler and Gräf and Stiff works, the works council is represented on the school committee and exercises a very useful influence in the interests of the young workers.

In view of the fact that the establishment of state apprentice workshops is at present out of the question in Austria, the experiments here described are of great interest. They are desirable from the point of view of the workers, as the new generation of workers can thus be trained in large establishments under the supervision of the workers themselves instead of in the small shops of the craftsmen beyond the control of the Labour movement and the factory inspectors. It is also desirable from the point of view of the community as a whole, which has everything to gain from the provision of skilled labour in the next generation, as on this the future of Austrian industry depends.

## Five Years of Vocational Education in the United States

The latest annual report of the Federal Board for Vocational Education <sup>(1)</sup> is of more than usual interest, as it gives a general survey of the work done during the first five years of the operation of the Vocational Education Act passed in 1917. In this connection it is interesting to note that the Federal Board has arranged that in future the States shall submit plans covering a period of five years instead of only one year as previously ; thus greater continuity of policy will be possible and plans of a more constructive type can be drawn up. The report also mentions that in a great number of cases State supervisors and directors of vocational education are now appointed for a longer period than one year.

### STATE CO-OPERATION

The primary duty of the Federal Board is to administer the Federal funds set aside for vocational education. It therefore has to approve the plans submitted to it by the States, and supervise their expenditure of Federal funds. It takes no part in the organisation of education within the States, but co-operates with them in every way which appears desirable ; for example, it assists them in drawing up their plans, in the light of the experience of other States. The Board conducts investigations in various occupations and forms of training, in order to provide a more secure basis for programmes of instruction and for the training of teachers. It also organises conferences in various parts of the country where representatives of industry and education may compare experiences and make suggestions. From time to time the Federal Board issues rulings for the guidance of the States in carrying out the provisions of the Act, and has recently revised its original statement of policies issued shortly after the passage of the Act. Although additions were necessary, it was found that no fundamental change had taken place in the general policy and administration of vocational education during the five years that had elapsed.

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<sup>(1)</sup> U. S. FEDERAL BOARD FOR VOCATIONAL EDUCATION : *Sixth Annual Report to Congress*. Washington, Govt. Printing Office, 1922. 405 pp.