Experience of Apprentice Training in the United Arab Republic

M. AL-ARABI [1]

THE ESTABLISHMENT and first years of operation of a new apprenticeship scheme introduced in the United Arab Republic in 1957 were described by the writer in a previous article in this *Review*.[2] Although the scheme is not yet out of its experimental stage, the perspective of eight years makes it possible to examine its evolution and to draw from experience some lessons that may be of value to other developing countries embarking upon similar training ventures. These concern administrative organisation on the one hand and certain practical and operational aspects on the other. First, however, it will be useful to recall briefly the basic structure of the scheme and to provide some figures illustrating its expansion over the years.

Structure and expansion of the apprenticeship scheme

Apprentice training under the U.A.R. scheme consists of two distinct phases: a basic period of training lasting one year and given according to a predetermined plan in training centres run by the Government or, occasionally, by large enterprises; and a period of on-the-job training lasting two years during which the apprentice gains further experience in his employer's plant by applying what he has learnt at the centre in real production work, under the supervision of a skilled worker and in accordance with work-process schedules. The two periods are complementary and the scheme aims to turn out skilled workers possessing not only the knowledge but also the skills necessary for their trades. The Produc-

[1] Professor, Faculty of Engineering, Al Azhar University, Cairo. Former Head of the Technical Office, Productivity and Vocational Training Department, Cairo.

[2] M. AL-ARABI: "A modern apprenticeship scheme in the United Arab Republic", in *International Labour Review*, Vol. LXXXIV, No. 6, Dec. 1961, pp. 478-498.

tivity and Vocational Training Department of the Ministry of Industry [1] is the authority responsible for the scheme.

The scheme began with a small pilot project in metal trades and two previously existing centres, one for training in glass trades and the other for training in leather tanning trades. It has since expanded rapidly, as a glance at table I will show.

TABLE I. GROWTH OF THE APPRENTICESHIP SCHEME, 1957-65

Year [1]	Number of centres	Number of apprentices
1957	3	81
1958	5	292
1959	7	790
1960	9	1 358
1961	21	1 418
1962	22	1 652
1963	27	2 189
1964	33	3 497
1965	35	4 719

[1] Oct.

If the number of apprentices is taken as a measure of the load on the Department, this load will be seen to have increased 60-fold in eight years, quite a jump indeed. But expansion has not been confined to the number of trainees and centres alone: the variety of trades taught has also increased greatly. Whereas in 1958 some ten trades were taught in the metal, automotive, glass and leather tanning industries, now training is given in 58 trades in these three as well as in printing, textiles, mining, electricity and electronics. The number of instructors and teachers, which was 58 in 1958, is now 776; and the total number of employees serving the scheme has grown from 277 to 2,300.

That in 1965 the number of apprentices accepted by the Department's training centres was over 4,000 (as compared with 300 in 1958) is indicative of two facts worthy of mention:

First there has been a considerable change in the attitude of employers towards the scheme. In 1958 it was not easy to convince them of the benefits of apprentice training; some of them thought it was too expensive and others spurned it, preferring to stick to the old (unorganised) system. The marked change in seven years (1958-65) is a clear indication that the scheme is gaining in popularity among employers.

Second there is also a marked change in the attitude of parents. At first there were not enough applicants to fill the vacancies, most

[1] The Department comprises two main divisions, one concerned with productivity and the other with vocational training. For convenience " Department " will be used here to refer to the Vocational Training Division alone.

probably because parents were in doubt as to the future the scheme could guarantee for their sons. Since a monthly wage of some £E12-14 has been paid to the graduates of the scheme (quite a reasonable wage in the U.A.R. for a worker 18 to 20 years of age) and quick raises have been given by many undertakings, a better understanding of the benefits of the scheme to young boys has naturally developed.

The first point mentioned shows that patience is essential if a new scheme is to succeed. The second draws attention to a matter of great importance: graduates of an apprenticeship scheme must be assured a reasonable income from the start. In no case should this be less than the income normally offered to clerical workers, or to trade-school graduates if such schools exist. It is one of the duties of the scheme's organisers to see to it that employers are convinced of this necessity. Otherwise parents will seek—and cannot be blamed if they do so—the channels which secure for their sons a better income. In this case even a new scheme will suffer greatly, especially in localities where the belief is still that the " white collar " is more respectable than the " blue collar ". So far the Egyptian scheme has succeeded in ensuring that almost all its graduates receive an income better than that of corresponding " white collar " boys.

To an outside observer the rate of expansion of apprentice training in the U.A.R. may appear a little too rapid for a new scheme which can be considered to be still in the experimental stage. This would have been true had local conditions been normal; but special conditions call for special measures. In 1957 a new industrialisation plan was introduced in the U.A.R. The skilled workers needed for the planned industries had to be provided somehow and, since no surplus of this grade was available in the employment market, the young scheme had to play its part in solving the problem.

Naturally some sacrifice of quality was unavoidable as a result of this slightly too rapid expansion. But, if the decision taken is regarded in the light of local conditions, it will be seen that it was in fact to the benefit of the scheme; for, had the scheme not participated in solving the problem, industry would have been forced to find some other way of meeting its demand for skilled workers.

The employment of a lower grade—the solution industry would probably have adopted—would have had far more serious effects on the scheme than a slight sacrifice of quality for only a limited time, for such a measure would have increased the number of not-fully-skilled men occupying skilled jobs and hence postponed the long-awaited hour when all these jobs are filled by men who, being fully trained themselves, can appreciate the benefits of the scheme and assist in its implementation.

This solution would also have led to a low grade of on-the-job instruction; bearing in mind that some two-thirds of the training period is spent on the job, the effect this would have had on the quality of training needs no stressing. Of course it cannot be claimed that employment of

the limited number of graduates turned out by the apprenticeship scheme can alone solve the problem of on-the-job instructors; only time and effort and special long-term measures such as upgrading of existing workers can offer a solution, but the employment of not-fully-skilled men would no doubt have made the situation worse.

Another important point should not be overlooked: if the scheme, at such a critical stage of industrialisation, had failed to play its part it would have been attacked by many as incapable of satisfying a national need. This would have weakened the position of the scheme's supporters tremendously and would probably have caused a serious setback.

It cannot, of course, be assumed that those concerned with apprenticeship schemes will be faced with special conditions such as exist in the U.A.R. Unless local conditions dictate otherwise, cautious progress is advisable in the initial stages. A small experimental project is much easier to observe and supervise; and correcting its mistakes and making good its deficiencies in the light of experience is less costly. In a new scheme such mistakes and gaps are many and unavoidable.

Administrative organisation

In the earlier article already referred to, a brief reference was made to the administrative organisation of the scheme as it then existed.[1] The following more detailed account, by tracing the successive stages of development of the Department as a result of seven long and tedious years of effort on the part of both Egyptian experts and their I.L.O. colleagues, may give the reader a deeper insight into the problems encountered and the reasons underlying the choice of the particular solutions adopted.

The responsibilities of the Department in respect of the scheme include: (1) establishing training standards; (2) recruiting and selecting (or assisting in recruiting and selecting) new apprentices; (3) organising and running basic training courses (practical and theoretical) at its own centres for apprentices belonging to undertakings which cannot afford training centres of their own; (4) assisting undertakings that have their own training centres to organise and run basic training courses for their apprentices; (5) providing the theoretical courses for apprentices who are in the on-the-job phase of training; (6) following up and supervising on-the-job training; and (7) organising final examinations and issuing apprenticeship certificates.

In 1956, after the I.L.O. expert had submitted the results of his investigations, and taking into consideration the Department's responsibilities as described, it was decided that the Department's organisational structure should include:

[1] Loc. cit., pp. 481-482.

(a) the Administrative and Financial Section [1];
(b) the Technical Information Section [1];
(c) the Training Standards and Psychological Testing Section;
(d) the Programmes and Field Supervision Section; and
(e) the Training Centres Section.

Except for sections *(a)* and *(b)*, the staffing of these sections required mainly engineers and people with experience in various trades. As there was a general shortage of such personnel, especially of staff of the high calibre required, recruitment was by no means easy. The comparatively low salaries paid to government officials were also an obstacle, as people with experience could get higher salaries in industry and could not be easily attracted.

As regards psychological testing, which was accepted from the outset as one of the tools for selection, the lack of specialists in industrial occupational testing led to the decision to employ a number of young psychologists under the supervision of a senior specialist from one of the universities working part time, and to put this service under the Training Standards Section until such a time as it could stand on its own feet as an independent section.

Until late in 1957 the Department's staff was not sufficient to warrant full independence of the different sections and it was necessary for the different groups to co-operate in many tasks. An example of this fruitful co-operation was the participation of all groups in " selling " the scheme to industry in 1957-58 prior to the opening of the first training centres. This task was by no means easy, since most employers had no conception of modern apprenticeship and its benefits.[2]

This co-operative work between the personnel of the different sections of a newly established scheme has other advantages worth mentioning. The members of staff in such a case normally come from branches of activities which bear little or no relation to training and in particular to apprenticeship. For instance in the U.A.R. most of those who worked at laying the foundations of the scheme belonged to the engineering profession. They had a good understanding of the metal-and-automotive trades requirements (in which training was to begin first) but many of them had little familiarity with the requirements of modern apprenticeship schemes. If the activities of these men had been restricted from the first to one branch of work only (for example field supervision, recruitment of apprentices or training standards) their knowledge of the other branches would have remained sketchy. This is by no means to the advantage of a newly established scheme, especially since it is on the first group of men that subsequent development depends.

[1] Sections *(a)* and *(b)* were to serve both vocational training and productivity activities.
[2] See M. AL-ARABI, loc. cit., especially pp. 482-485.

In 1958, in addition to the two old centres already in operation (glass and leather tanning), three new centres for training in metal trades and automotive trades were opened in Cairo and Alexandria. As a result, the total capacity of training centres and the number of trades in which training was given went up considerably. It then became clear that the period in which all could participate in every branch of work had come to an end. In the light of experience it was also found necessary to limit the duties of the Programmes and Field Supervision Section to actual field work. Under the original set-up this section had had to prepare training programmes and work out training exercises for both the basic training and on-the-job periods; but it was later found that field work (" selling " the scheme, recruitment and registration of apprentices, follow-up of on-the-job training) is of such volume and importance that it needs a specialised section. It was therefore decided to transfer the programme function to the Training Centres Section.

In 1959 two more centres were completed, a building trades centre in Cairo and a metal-and-automotive trades centre in Alexandria. Work had also begun on some of the 22 centres that were to be built within the first five-year plan of industrialisation. These were to cover a number of different industries including metal, electricity, refrigeration, textiles, printing, leather tanning, glass and building trades. The task was a heavy one and gradually it became clear that the structure of the Department had to be modified to meet the new situation. It was obvious that a special section had to be formed for the establishment of new centres. This section would investigate the needs of the centres, work out the necessary designs, draw up equipment specifications, place purchase orders, receive and install machines, investigate the need for instructors and other personnel and take all the necessary measures to complete the centres and hand them over to the training centres section in running order. This section was named the " Technical Office " and was charged also with investigating complaints received from the first group of centres in order to take the necessary measures to put matters right. These investigations proved to be a valuable basis for planning the second group of centres.

Besides establishing the new centres the Technical Office also took over the programme function from the Training Centres Section. It thus comprises two separate units: one for the construction work already described and the other for organising the elaboration of programmes —a job normally done by committees specially constituted for this purpose and comprising people with direct experience of the trade concerned and representatives of the Department. The programmes unit was also made responsible for the preparation of training aids and the equipment necessary for this purpose was provided. It has to be admitted, however, that local preparation of this material is still slow and most of the available aids came from abroad. Much has yet to be done in this

field, in which progress is hampered mainly by the lack of specialised personnel.

In this new set-up, the Training Centres Section was completely relieved of all activities other than the running and maintenance of training centres, and its efforts were directed to training functions only. Thus operation was entirely separated from preparatory work. Besides a unit responsible for operation, the Training Centres Section comprised another unit for maintenance work (maintenance and repair of machines and tools) since the number of centres was now sufficient to occupy maintenance men full time. More recently, when accelerated training and upgrading work started [1], units were added to the Training Centres Section specially for these purposes. With the continuing growth of the project, the work of the psychological testing unit assumed such proportions that it was transformed into an independent section. Besides selection of new apprentices this section was charged with other duties and its name was accordingly changed to Psychological Testing and Social Supervision Section. More will be said about this new function below.

Control of activities in Cairo and Alexandria, the two main industrial zones of the country, presented no difficulty in 1958 and 1959. However, as additional centres and courses were opened it gradually became clear that some decentralisation would be necessary. Since there was already a regional office for the Department in Alexandria, it was decided that this should be enlarged and strengthened. A controller for the Alexandria zone was appointed and now has a local director of centres and local field supervision personnel. Administratively the centres and the on-the-job activities are run locally, but technical control and guidance are still exercised by the specialised sections in Cairo. This was necessary in order to ensure unity of policy and uniformity of training standards in the two zones. It is hoped that more autonomy will be given to the Alexandria office in the future as this would no doubt help solve several problems which now result from the delay caused by the necessity to refer to Cairo.

By 1962 the first stage of the project as stipulated in the first five-year plan was almost completed. Most of the centres built at this stage were in Cairo and Alexandria. Those to be established during the second stage of the project (the second five-year plan) will, however, be in all parts of the country. Some 18 centres will be built in different towns scattered from North to South (between Alexandria and Aswan). The fact that the distance covered is some 1,000 kilometres has led to a proposed new organisation for the Department in which more regional offices on the same lines as the Alexandria office are planned.

[1] See Moufid ELIA: " Upgrading training of skilled workers in the U.A.R.", in *International Labour Review*, Vol. XC, No. 1, July 1964, pp. 35-44.

The training centres of the Department are built to serve the small and medium-sized industrial undertakings with limited financial resources. But there are other larger undertakings which can afford training centres of their own. As it is the aim of the Department to lay the foundations for a national apprenticeship scheme, one of its duties is to convince these undertakings of the benefits they will gain if they establish training centres for their own use, and also to persuade them to follow the lines of the scheme adopted by the Department. The efforts made so far have met with mixed success: some undertakings have been unreceptive while others welcomed the idea. In conditions such as those existing in Egypt initial reverses must not be regarded as too discouraging: it is only natural that management should resist what appears to them to be a waste of money, and great efforts are required before they can be brought to realise that it is in their own interests. On the other hand successful efforts must not be thought to mark the end of the task; in fact they only open the door to the very necessary and important work of " follow-up ". Those who accept the new notion normally need guidance, especially with long-term training such as apprenticeship. It is for this purpose that it was decided in 1961 to form a special section for " training in industry " to act as a link with big industrial enterprises that have, or may in future have, their own training centres. Much can be done in this field, since many of the large industrial undertakings have been found to be still not sufficiently training-conscious to enable them to adopt the new ideas.

Psychological testing and social supervision

Brief mention has already been made of the Psychological Testing and Social Supervision Section. The paragraphs that follow describe in greater detail the functions of this section, which—in a scheme that aims at exercising full control over the creation of a modern skilled labour force on a nationwide basis—is undoubtedly destined to play an important part from the outset.

Occupational testing was accepted from the first as a tool for the selection of apprentices, and in the early days of the scheme this was the main task of the Psychological Testing Section. The volume attained by this work can be gauged from the fact that 4,600 applicants were tested in 1965, out of whom only 3,650 were found fit for the trades covered by the Department's centres. Some 12 psychologists were engaged in the tests.

Subsequently it was decided to adopt the principle of " social supervision ". Training in a modern scheme like the Egyptian one could not be restricted to teaching a trade alone; it has also to aim at ensuring that apprentices become good citizens. For this purpose a social supervisor is now attached to each training centre, and the small unit that

consisted of two psychologists in 1957 has grown until it now employs 42, of whom 12 are psychologists and 30 are social supervisors. Besides occupational testing, its activities include sports as well as social and cultural activities.

Under the heading " sports " come such activities as football, basketball and table tennis. Games are organised between the different centres and also between the centres and outside teams.

Social activities encouraged include visits and camps. Visits are either to industrial undertakings or to places of general interest. Summer camps are organised to enable apprentices to take a seaside holiday at minimum cost. Apprentices are given opportunities to participate in organising and running both visits and camps. Besides the direct benefits of these activities, there is the more important indirect benefit of weaning the apprentice slowly from the school atmosphere to an entirely different life, success in which depends mainly on understanding people and on the ability to co-operate; this is the kind of life that apprentices will have to face partially during the on-the-job phase of their training and fully when they assume their responsibilities as skilled workers.

Cultural activities include encouraging the use of the training centre library. Efforts are made to instil into the apprentices a love for books and to enhance their ability to gather information from references—something the Egyptian skilled worker, it has to be admitted, is still in bad need of. Without underrating the value of the work already done, it is hoped that more stress will be placed on the importance of the library and of reading, especially in view of the fact that in modern industry no skilled worker can continue to be skilled in his trade unless he can keep himself informed of its ever-changing materials and techniques. The importance of this point to a modern apprenticeship scheme such as the Egyptian one, it is felt, is still not fully appreciated. Other activities of a cultural nature include the publication of a wall magazine, the organisation of film shows, and so forth.

Among the other initiatives of the Psychological Testing and Social Supervision Section two are especially worthy of note. Perhaps the most important in the eyes of the organisers of a new scheme are the meetings held to study the problems encountered by apprentices, particularly those they have had to face in some of the undertakings during the on-the-job phase of training. A free discussion of these problems takes place with the participation of representatives of both the Department and the undertakings concerned. The benefits of such meetings to the scheme cannot be overestimated.

Finally, a system for the follow-up of apprentices has also been introduced, and a card specially designed for this purpose is now in use. All the data of interest covering the whole apprenticeship period are recorded on these cards, which will no doubt be of great value to the authorities of the scheme in future reviews of the progress achieved.

An unsuccessful initiative in the building trades

From the beginning building trades were on the list of those for which apprenticeship was to be organised. Construction of a training centre for these trades in Cairo began in 1958 and the centre was ready for work by February 1959. It was agreed to provide training in five trades: bricklayer, plasterer, carpenter, plumber and concrete form maker.

Since these trades are all well defined and well established in Egypt, it was easy to draw up the necessary training standards and the work-process schedules and training programmes. Plans were made to receive 100 apprentices, 20 in each of the above trades, and the Chamber of Contractors for Constructional Work was approached for assistance. Meetings were held to explain the scheme to the members, who welcomed the idea. They explained, however, that employment in the building trades depends on the availability of work and that a contractor can only keep his workers on when there is work for them. This led to a suggestion that apprentices could be indentured not to contractors but to the Chamber itself. The Chamber could then move apprentices as necessary to ensure continuity of training and the coverage of all the skills required for the trade.

The members added, however, that the Chamber's financial resources were not sufficient to meet the expenses of this system and requested that a tax be imposed on all building contracts especially to provide a source of finance for the scheme. The money thus collected could be used for training apprentices irrespective of the contractor employing them. This co-operation of all for the benefit of all was welcomed by the Department. Compulsory measures were not, however, acceptable to the authorities, who favoured voluntary participation. So, instead of imposing a tax, efforts were made to collect funds from contractors who showed willingness to help run the scheme. Unfortunately the result was not encouraging; not much could be collected and after two groups of boys had been taken on (90 in 1959, and 80 in 1960) it was decided to abandon apprenticeship in building trades. Instead, a one-year course of accelerated training was introduced and since January 1961 has been in operation in Cairo and Alexandria.

The failure of the building trades apprenticeship project, despite the fact that all concerned are convinced of the need for the high calibre of worker who can only be provided through organised training, is indeed a sorry example from which the following can be learnt: (1) that attempts to introduce new ideas may in some cases be unsuccessful but must not be a cause of discouragement; (2) that care must be taken not to overestimate the ability of industry to share the responsibility for training; (3) that to base the system on entirely voluntary participation, which may have its merits, can lead in certain trades to failure.

This experiment also confirms the writer's previous remark that in the initial stages it is advisable to proceed slowly and that, in case of doubt, as small a project as possible should be adopted to start with so that losses in cases of failure will be kept to a minimum. Hopes are still high, however, that some system will be worked out in the near future, in the light of the experiment described above, to provide the building industry with the skilled workers it so badly needs.

Problems of costs during practical training at centres

A training centre is in fact a form of school where the apprentice learns the basic skills of the trade in a predetermined sequence by carrying out suitable practical (shop) exercises under the supervision of an instructor. Thus basic training conditions are entirely different from those of on-the-job training, when no special exercises are carried out and training is achieved through the performance of actual production work. In view of this difference, the problem of costs during the basic training period, and especially the cost of the materials necessary for shop exercises, is often raised.

If training exercises could be arranged so that the result is a useful product, this would obviously help to reduce costs. But skills must be taught in a predetermined order and it is not always easy to reconcile this requirement with the production of useful articles. In some trades this is admittedly possible: for instance in leather tanning, where raw skins and chemicals are the main materials used, useful leather is the final result of the training process; the same applies to textile trades, where cotton is the raw material and yarn or threads are the articles produced during training. There is little waste in training for the leather tanning and textile trades; during 1962, for example, the cost of the raw materials consumed at the Cairo leather tanning centre was £E3,190 whereas the estimated price of the leather produced was £E2,990—a minimal loss.

Conditions in the metal and electrical trades are, however, quite different. Some of the practical exercises employed at the Department's centres result in simple but useful articles such as tools and instruments (a try square, a centre punch, a scriber block, etc.). Many others, however, serve for training only and do not result in useful articles: the materials used for such exercises finish up in the scrap bin.

This state of affairs has been the cause of some criticism by outside observers and training specialists. In dealing with this problem, however, one has to differentiate between two kinds of training centre.

The first is the centre run by a production undertaking to serve its own needs, and the second the centre run to serve different companies without being connected to any of them. In the first type, arrangements can always be made between the production shops and the training

centre to provide the latter with work suitable for training purposes. This work can later be sent back to the production shops semi-finished or ready for assembly.

In certain circumstances this system can also be partly utilised in centres of the second type. With the conditions prevailing in local industry and with the type of training centres run by the Department (which are of the second type mentioned) it is extremely difficult to arrange for such co-operation with production plants. But, to reduce the amount of scrap to a minimum, exercises can be directed as much as possible towards the making of useful articles which can be sold to outside users or employed by the centre itself, on condition that this will not interfere in any way with training requirements. It is also possible to design certain exercises so that the same piece of material can be used more than once either by apprentices of the same trade or by those of different trades. A preliminary study of the exercises used at the Department's centres has shown the possibility of improvements along these lines, and it is hoped that these exercises will be reviewed in the near future. It is felt that all those concerned should participate in this study, which will undoubtedly result in considerable savings of materials.

At the present another scheme is under consideration. Some of the training centres and particularly the specialised ones could be attached to mother factories under the supervision of the department. In this way these centres could be supplied with exercises from the production line and thus both the material used for training and the labour put into it could be saved. Moreover, the specialised factories are in a better position to introduce recent developments in techniques and keep training up to date.

Proportion of theoretical instruction in different trades

When the theoretical instruction programme was drawn up, an important point was kept in mind. Apprenticeship aims at providing industry with skilled workers who are masters of both the practical and the theoretical aspects of their work. The amount of theoretical instruction given must not, however, be in excess of the real needs of the trade; otherwise training time will be wasted. Bearing this in mind and also the fact that apprentices are selected from preparatory school graduates with nine years of general education, a theoretical instruction programme as shown in table II was adopted for the metal, automobile, printing and textile trades.

General culture subjects include Arabic, English, history, geography, physics and chemistry. Trade subjects include technology, drawing and arithmetic.

TABLE II. THEORETICAL INSTRUCTION PROGRAMME FOR THE METAL TRADES

Phase	Hours of general cultural subjects per—		Hours of trade subjects per—	
	Week	Year	Week	Year
First year	5	210	5	210
Second year	3	126	5	210
Third year	2	84	6	252

Later (in 1961), when training in electrical trades was planned, it was found that these trades need a level of theoretical instruction higher than that needed for the metal trades. A programme as shown in table III was therefore adopted.

TABLE III. THEORETICAL INSTRUCTION PROGRAMME FOR THE ELECTRICAL TRADES

Phase	Hours of general cultural subjects per—		Hours of trade subjects per—	
	Week	Year	Week	Year
First year	5	210	11	462
Second year	2	84	6	252
Third year	2	84	6	252

The hours devoted to trade subjects increased by some 44 per cent. in comparison with the metal trades. This increase is mainly in the first year and is at the expense of the shop work, which was reduced by a corresponding amount.

A further increase of theoretical classes was found necessary for the electronic trades. Table IV shows the programme adopted in 1964 for the radio and television trades. It will be seen that 1,302 hours are devoted to trade subjects as compared with 966 and 672 in the electric and metal trades respectively.

All these figures indicate a marked change of attitude towards theoretical instruction. In the early days of the scheme there was always resistance to any attempt to increase the theoretical content of training beyond a certain limit. The introduction of training in the more " refined " trades has, however, resulted in acceptance of the principle that different trades need different proportions of theoretical instruction, with the results mentioned.

TABLE IV. THEORETICAL INSTRUCTION IN THE RADIO AND TELEVISION TRADES

Phase	Hours of general cultural subjects per—		Hours of trade subjects per—	
	Week	Year	Week	Year
First year	5	210	11	462
Second year	2	84	14	588
Third year	2	84	6	252

Safety training as an integral part of apprenticeship

Safety is a problem of major importance in all branches of industrial activity. Great efforts are nowadays made, both nationally and internationally, to convince everyone of this for the benefit of all. It is therefore only natural to introduce the principles of safety into a training programme for industrial trades in order to create a safety-minded generation of workers.

The importance of safety has always been recognised by the Department. In fact the Productivity Division contains a special section the duty of which is to promote the work of accident prevention and the improvement of occupational health, and to help organise industry's safety activities by giving advice, training supervisors and engineers and preparing documentation and propaganda materials for this purpose.

At the Department's centres all the safety equipment necessary for each trade is provided, and apprentices are taught to use it. Safety posters are also exhibited in order to draw attention to the dangers workers in the different trades are exposed to. However, it was not until recently that safety as a formal subject of instruction was introduced into the apprenticeship programme. In 1961 it was decided that a safety course should be given to first-year apprentices. Two hours per month are devoted to safety instruction in the classroom. The principles given are then applied in practice by the shop instructors. The course is a simple one but serves to draw the attention of the boys to the importance of adhering to safety procedure during their work.

In a training centre an apprentice is under full supervision and the probability of accidents is therefore limited. Matters are not so easy when he is moved to his employer's plant after the basic training course. Among persons fully engaged in production work he will not be as well looked after as before. Hence, if safety is important at the centre, it is more necessary to teach it on the job. This raises a difficult problem. Control of training on the job is exercised by means of a schedule specifying a certain period for each work process. By means of a daily registration book the hours spent in each work process can be controlled.

Safety, however, is not an item for which a certain period can be set aside in the work-process schedule: it is a factor common to all work processes. The on-the-job instructor, who is assumed to be a fully skilled worker, is supposed to show the apprentice not only how the work process is performed but also how it is performed safely. Safety is therefore a part of the work process and as such it may be considered that safety teaching is automatically covered. In view of the importance of the subject, however, and to guarantee that all concerned with on-the-job training will always give it the attention it deserves, it has been decided to insert " safety " in the work-process schedule without specifying any period. The mere appearance of the word on the schedule is considered to be a reminder to the instructor not to forget it.

Training of instructors

The success of an apprenticeship scheme of the type used in the U.A.R. depends to a great extent on the training centre instructor and the on-the-job instructor. If the available skilled worker does not possess the qualities of a good on-the-job instructor, the role of the training centre instructor becomes more important since he has to make up for at least a part of the deficiency in on-the-job training. This was clear from the first and explains the reason for the importance of the training centre in the U.A.R. scheme. Recruiting the instructors required for the centres, however, presented a problem. Since they had to be skilled workers, the most obvious source from which to draw them was industry. This was tried but the results were not encouraging.[1] The alternative of employing trade-school graduates and gradually upgrading them had to be accepted.

In 1959 an agreement was concluded between the U.A.R. Government and the United Nations Special Fund for the establishment of an instructor training centre. This project has recently been completed. The centre aims at preparing instructors for training centres in the following trades: fitting, tool-making, turning, machining, blacksmithing, welding, sheet-metal work, automobile repair work and electrical trades. The course given comprises 1,440 hours, half of which are devoted to shop work and the other half to trade theory and related subjects. Trainees are recruited from the apprenticeship scheme graduates who have practised their trade for at least five years, or from graduates of trade schools with at least three years' experience.

Hopes are high that this centre will help solve the problem. Whether the period of practical experience required as a condition for admittance is sufficient has still to be proved. The centre is as yet in the experimental stage and a group of I.L.O. experts are assisting in the development of its work.

[1] See M. AL-ARABI, loc. cit., pp. 493-494.

Future development

This article has described some of the developments in the Egyptian apprenticeship scheme. This is by no means the last in the story of a scheme which is, after all, still in its infancy. The following points, in the writer's opinion, are amongst those which are worth considering for future work:

(1) Progress in general should be reviewed and weaknesses studied in the light of experience gained in the last seven years.

(2) Training standards and work-process schedules should be reviewed, the more so since most of them have been in operation since 1958-59.

(3) Ways and means should be investigated in which the different schemes in operation in the country at present can co-operate for the benefit of all. A great deal can be gained from the establishment of friendly relations and from the exchange of experience between the different training authorities.

(4) The field supervision personnel should be strengthened. Without denying the extreme importance of the training centre in local conditions such as those prevailing in Egypt, it cannot be considered that field supervision work is receiving the attention it deserves. A capable field supervisor can do a great deal to ensure the success of the scheme.

(5) Not only apprentices but also industrial workers in general should be provided with the material they need to be good, up-to-date skilled workers. This, in the writer's opinion, is not an easy task and may be one in which the co-operation mentioned under (3) above is necessary, especially since this material will have to be reviewed continuously.

(6) The reasons underlying the adherence of certain undertakings to the old unorganised apprenticeship system despite its known drawbacks should be investigated. Much patience will be required in handling this problem if the investigation is to be a success.

(7) Last but not least, some means must be found of ensuring continuous friendly relations between the existing (non-apprenticed) skilled worker and the skilled worker to be (the present apprentice). This is quite a complicated problem, but one of extreme importance for the success of the scheme. The key may well be found in the organised upgrading of existing workers, for once they feel that their knowledge and skills are not inferior to those of new-comers most of the problem will disappear.
