Vocational and Technical Training in the U.S.S.R.

by H. Zelenko

In the following article H. Zelenko, who is Chairman of the State Vocational and Technical Training Committee of the U.S.S.R. Council of Ministers, describes the organisation of vocational training in the U.S.S.R. and the fundamental principles on which it is based. Although the majority of young skilled workers are trained in special institutions of various kinds, theoretical instruction is in all cases blended with a large proportion of practical work and students even spend many hours working under actual production conditions; this link between school and industrial life is to be further strengthened under a recently introduced educational reform. On the other hand the many semi-skilled workers trained on the job in factories or on construction sites receive the necessary minimum of theoretical instruction.

IN Tsarist Russia three-quarters of the population were illiterate and about four-fifths of the children and adolescents did not go to school. Education was at a particularly low standard among the eastern peoples : in what are now the Kirgiz, Uzbek and Turkmen Republics the number of persons who could read and write ranged from 1 to 3 per cent.; out of the Empire's 71 languages, 48 had not been reduced to an alphabet at all. Throughout the whole country there were less than 200,000 professional men and women with secondary and higher education.

In what must be described, in terms of history, as an extremely short period, the Soviet State abolished cultural backwardness. Illiteracy has long since been wiped out. The number of pupils in the higher classes of the general schools is now almost 40 times as great as it was before the Revolution. Over 4 million young people attend the universities, high-schools and special secondary schools. In the Soviet Union every fourth person is a student of some kind.

Great attention is paid also to vocational training of both juveniles and adults. Back in 1918, compulsory education was introduced in the U.S.S.R. for young persons aged 15 to 17 years of age employed in factories and offices. In 1920 Vladimir Lenin signed a decree which made vocational or technical training compulsory for all manual workers aged 18 to 40 years with the sole exception of those who had received vocational training not inferior to that of the former trade schools or had studied at technical institutions.

At the same time, factory training schools (F.T.S.) were established for young workers in many an industrial undertaking; these played an outstanding part in the development of Soviet vocational and technical training. Combining classes and productive employment, general study and vocational instruction, bringing in physical, moral and aesthetic training also, the F.T.S. were able to turn out skilled workers with general as well as technical education.

As the national economy of the Soviet Union developed, the vocational training system was progressively improved and modified. In particular it became clear in 1940 that the F.T.S., hitherto the principal means of turning juveniles into skilled workers, were no longer doing an adequate job. They were training personnel for a narrow group of trades and only for the particular establishment concerned. In consequence the new factories, mines and building sites that were then being opened on a very large scale, as well as existing undertakings which had no schools of their own, were obliged to train their own skilled personnel as best they could.

The system of vocational training institutions and state manpower reserve schools set up in 1940 was intended to make good this serious shortcoming. Unlike the F.T.S., the manpower reserve schools train the skilled workers needed, in accordance with coordinated national economic plans, by all undertakings, building sites and other employment units in the country.

At present technical training in the Soviet Union is mainly given at permanent government vocational institutions. Apart from these, there are many instances of accelerated training of various kinds, during which trainees can continue full-time or part-time employment.

The Manpower Reserve Schools

Among vocational training institutions the system of manpower reserve schools has the most important place. Basically homogeneous, the system now includes institutions of various types which differ according to the level of skill to be acquired by the students, the industry for which they are to be trained and the level of their general education, as well as their age and other characteristics.

In many industries the manual workers are divided into three skill groups : low, medium and high. Two types of institution train workers in the lowest group—industrial schools, and mining schools. The former train workers who will perform either one repetitive operation only or various simple operations, as well as some groups of auxiliary workers; they usually offer a sixmonth training course and are attended by lads and girls of 16 to 18 years of age. The mining schools train production workers for coal and ore-mining; because of the special character of underground work the training period in this case is somewhat longer (ten months), and the schools are attended by boys only (aged 17 to 19 years).

There are several types of institution for "medium-skilled" workers. They include, industrial, mining, railway and building colleges. The industrial colleges train workers of this class for metal production, all kinds of engineering and the metal trades, other processing industries, communications, printing, etc. The types of occupation for which the other colleges mentioned train workers are obvious from their titles. The length of courses in all these colleges is from two to three years, according to the complexity of the trade. They are attended by boys of 14 to 17 and girls of 15 to 17 years of age, mostly after at least seven years in general (primary-secondary) education.

Technical progress in the Soviet Union has led to a fall in the demand for low-skilled workers and to a corresponding rise in the percentage of employment in the medium and higher grades. As a result the industrial and similar colleges have been training more young persons and the importance of the industrial and mining schools giving a shorter course has been diminishing. For instance the majority of metallurgical and metal trade workers were formerly trained in industrial schools, but now they go to industrial colleges. Until recently workers for the basic trades in the building industry went to construction schools for six to ten months; now they are trained at construction colleges with a two-year course.

Colleges of agricultural mechanics are another important type of training institution. They train skilled workers to operate, maintain and repair the machinery used in the cultivation and harvesting of farm products and in stock raising. The courses last from six months to two years and are attended by lads and girls of 17 years and upwards, most of whom have had seven years of general education. As Soviet agriculture is supplied with more and more new and improved machinery, fewer trainees are taking the six-month course and already most of them are enrolled in the 18-month or two-year courses.

In 1954 a new kind of vocational school was introduced in the Soviet Union in connection with the wide expansion of secondary education in the last few years. Anyone who has finished secondary school (i.e. completed the ten-year general school course) and who wants to go into productive employment can go to this special new institution—the technical institute—which turns out highly skilled workers in trades requiring an advanced level of education, or junior technicians, after courses lasting one or two years.

Among full-time vocational training institutions for young people mention must be made of special vocational and technical colleges for orphans. Their chief distinguishing feature—apart from the outstanding material conditions provided—is that the pupils receive not only vocational education and training but also systematic general education.

Finally the educational system includes 12-year vocational and technical colleges which give a broad polytechnical training with both general and specialised secondary education. The curriculum is framed in such a way that graduates are prepared for a wide range of occupations and so can choose the one that attracts them most. Moreover, in order to continue and complete their education, they can, when necessary, easily transfer to another similar institution with a curriculum better suited to their tastes and aptitudes.

Attendance at all kinds of vocational schools is free of charge and the students receive books and other educational requirements from the Government, as well as full board, uniform and shoes, or an allowance instead. Students from rural districts and those coming from other towns are housed in well-equipped hostels. In addition, all students receive between one-third and one-half of the money paid to the school for the work they do in course of practical instruction at undertakings or in school workshops.

The above brief outline gives some idea of the various types of schools in the state manpower reserve training system of the U.S.S.R. There are some 3,200 of these schools, which every year train up to 1 million skilled workers for the various branches of the economy.

Very large amounts are provided annually from the state budget for the maintenance of these schools. In addition, undertakings attached to them give the schools systematic material assistance, providing them with new industrial equipment and instruments, helping them with repairs to buildings, etc. Considerable sums are also spent each year on the construction of new vocational schools. Alongside the manpower reserve system there are also many vocational schools operated by undertakings, chiefly in the light and food industries, on the same lines as the manpower reserve schools; 800 of these factory training schools prepare an annual average of 100,000 skilled workers for their respective undertakings.

The Curriculum of a Training Establishment

The curricula at the various kinds of vocational training establishment are fixed in the light of the general aims of the schools, the manpower needs of the economy and the level of general education of the students.

Let us look, for instance, at the curriculum for the training of coalminers who are to work in horizontal or inclined seams by the advancing system (two-year course at a mining college).

	Subject	No. of hours
1.	Practice on the job	1,856
2.	Safety technique	64
3.	Special technology	267
4.	General study of mining	90
5.	Mining electro-technics	147
6.	Study of materials to be used	80
7.	Mechanical drawing	80
8.	Elements of applied mechanics	140
9.	Mathematics	80
10.	General education	140
11.	Physical training	140
12.	Examinations	42
		3,126

As this schedule shows, practical instruction is the largest item in a coalminer's training, as in that of any other worker; this practical part of the course is analysed in greater detail below, but first let us take a look at the theoretical items.

In order to work successfully in a modern undertaking, the Soviet worker must have a thorough knowledge of various subjects, both general and special or technical. He must understand the physical and chemical background of production processes and be familiar with the complex kinematics of machinery and with the action of various types of electrical and hydraulic apparatus. He must be able to read plans and understand the composition and qualities of materials; he must know his way about in economics, industrial organisation, etc. How is all this knowledge to be acquired ?

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The above curriculum is intended for young persons who have had seven years' general education and have acquired a sufficiently extensive, indeed a fairly complete, fund of knowledge on general subjects. Accordingly, the theoretical instruction at the mining college includes seven technical subjects, together with mathematics, general culture and physical education. The technical subjects are chosen having regard to the student's future job, but students studying for any occupation at this type of institution have to take a prescribed amount of special technology, general technology, mechanical drawing, elements of applied mechanics and elements of electro-technics.

The mathematical curriculum contains several supplementary sections which are required for the study of certain technical subjects. Provision is made for the elementary physics required for the courses on basic applied mechanics and mining electrotechnics. If the trade studied were to belong to the chemical or metallurgical industry, chemistry too would figure in the curriculum. As for general education and physical training, these appear in all the curricula because of their prime importance for the allround development of the young.

It should be borne in mind that the curriculum of each institution sets out only the compulsory subjects studied by the group. Apart from these, students at vocational schools of all types do a great deal of extra-curricular work aimed at broadening their technical knowledge and attaining all-round cultural and physical development.

The following study schedule for coal-mining students on horizontal and inclined seams worked by the advancing system is typical of the structure of practical instruction in a vocational training college :

First Year

First Quarter.		No. of hours	
1.	Getting to know the pit	18	
2.	Getting to know the training workshops; safety rules in the training workshops	6	
3.	Instruction in general fitters' work (180 hours in all)	72	
Tes	ts	12	108
Sec	ond Quarter.		
3.	Instruction in general fitters' work (concl.)	108	
4.	Instruction in electrical fitting (60 hours in all)	24	
Tes	ts	12	144

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36	
160	20.9
	208
184	
36	020
12	
	692
186	
12	198
	170
180	
	192
120	
180	
12	312
	012
60	
300	160
	402
	1,164
	1,856
	36 160 12 184 36 12 180 12 180 12 120 180 12 60 366 36

The above plan shows how carefully instruction in the school and pit workshops, the timber store, the school mine workings and at a real workplace is integrated into a single programme and how the contents of the course are articulated and combined. Thus, general fitting, electrical fitting and woodwork (item 7) appear as separate subjects. The assembling and stripping of advancing-system machines and basic practice in their operation are also studied as a separate subject because of the complexity and variety of the machines and the character of conditions underground (in similar cases with less complexity the two matters would not constitute a special subject). Subsequently, the students are instructed in the maintenance and repair of these machines.

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Instruction in the advancing-system methods themselves takes an important place in the programme. In a planned progression from one workplace to another the students carefully familiarise themselves with the drilling of leads, the mechanical transport of coal and rock, the working of the coal and rock loading machines, the fitting and repair of props and roof, the clearing of roads, and the operation of conveyors, drills, coal-cutters and combines.

In order to complete their programme the students carry out the whole complex of advancing-system operations at a real workplace, learning from the experience of the most efficient miners of the area and getting to know the established production standards.

The programme as a whole, like each of its parts, is put together so as to proceed from the simple to the complex and is the result of years of creative research by Soviet vocational training specialists. Instruction starts with the study of individual operations; when each group of not more than three operations has been mastered complex work involving the operations already studied is introduced; the proportion of complex work, and its level, are steadily increased; and instruction ends with the student performing all the tasks involved in the occupation concerned in the very circumstances that will face him when he is a qualified skilled worker.

It is not difficult to see that such a system creates the best possible conditions for thorough, systematic, effective and appropriate instruction, a proper balance between theory and practice, and implementation of the various educational principles worked out by Soviet specialists in this field.

Material Arrangements

Efficient material arrangements—premises and equipment are an important factor in all educational work. At the Soviet vocational and technical schools and colleges, the students work in classrooms, school laboratories and workshops, in special areas reserved for the study of heavy machinery, and in the training sections of factories, laboratories and warehouses.

Classrooms are provided for each subject taught and for each speciality. In individual cases, however, if there is little work to be done on a given subject the rooms for two related subjects or specialities may be combined. Classrooms are equipped with everything necessary for the various kinds of instruction, with a full range of visual aids, and with material for extra-curricular work; they contain samples of raw materials, industrial material or products in various stages of processing, tools and measuring instruments, machinery, models, textual posters, photo-posters, diagrams, graphs, blueprints, technological and instructional charts, slides, instructional films and film strips, and various kinds of instructional and auxiliary literature. They also have the necessary furniture and equipment for students and teachers lockers, shelves, stands, desks, projection apparatus and screens (ordinary and daylight).

School laboratories are provided for chemistry, electrotechnics, study of machinery for certain trades, etc. All these have wellequipped workplaces with the appropriate laboratory apparatus, laid-on electricity, gas and water. Sets of apparatus are provided in sufficient numbers to enable the whole class or group to do prescribed laboratory work at the same time.

School workshops are used for the practical study of production methods. Each class has its own section of the workshop, fitted out with a series of similar machine tools (turning lathes, for instance) so that each student has a place. Besides the basic equipment, the necessary minor tools and appliances are also provided. In the section there are also communal workplaces with grinding machines, gauging blocks, a few special lathes, etc.

In each such section there is a place for the master-craftsman, fitted out with the same tools, equipment, etc., as the students' own workplaces. At the master's place there is also a desk and a black-board; a locker for drawings, school and reference books and visual teaching appliances; a stand for posters, graphs and tabulations; shelves for reserve tools and measuring apparatus for use by the whole group; and a glass-fronted case for model work, typical spoilt work and other objects which can be used for demonstration to the class. The master's workplace is so disposed that he can see all the students and watch what they do. In the same way the students can see and hear all that the master says or shows them from his place.

At the school workshop there is usually also a technical office which gives information on all questions of practical training. Apart from the engineers and technicians on the staff, students in the higher classes sometimes work in this office. There are also a technical inspection service, a tool-room, a store-room for materials and finished products, a repair service, etc.

Outdoor spaces are also reserved for initial instruction in the use of machines (pit electric locomotives, tractors, etc.) in cases where it is difficult to arrange appropriate instruction in the early stages under production conditions.

These outdoor spaces and the school workshops at the manpower reserve schools and colleges are equipped with a great deal of apparatus of various kinds. For instance, they have 48,000 metal-cutting machine tools, hundreds of thousands of vices, 4,300 woodworking machine tools, 2,250 tractors, 7,800 combines, etc.

The students also form training sections in undertakings, which they run alone without any help, except, of course, from the engineers or technicians and their assistants. There are many such sections in mines and some in open-hearth furnaces, for instance.

Sometimes part of the training is done in factory laboratories (testing materials, technical analysis) or in the materials or products store. Instruction is always supplemented by work under actual production conditions.

On concluding their theoretical and practical instruction all the students take final graduating examinations. The examining board includes representatives of the college (or school), of the assisting undertaking, and of the trade unions. The board tests the student's knowledge both of the theory of his subject and of the order, effect and control (with suitable apparatus) of technological processes. Apart from this the students have to do, under production conditions, a test job of a specified complexity. After passing the final examination the student enters an occupation at the appropriate level of skill. There is a job in his trade for every trainee.

All-round Education of Trainees

Students at Soviet training institutions also receive all-round education. General education is included alongside technical instruction and provision is also made for extra-curricular work and participation in students' societies.

During regular classroom studies the teachers and instructors introduce their pupils to various aspects of material and spiritual culture, and attempt to instil in them high moral principles and a scientific approach to life. The young workers learn to put into practice these precepts and principles, and to work conscientiously and responsibly. Decisive factors in this process of training are the combination of theoretical study and practical training, and participation in productive work and in the building of a new society.

Labour in the Soviet Union is not only a means of achieving material results; it also contributes to an orderly and rational advance from socialism to communism. As he helps to produce material wealth for the good of society as a whole, so the young worker develops a responsible attitude towards labour and public property. Correctly organised technical training is of great importance in producing in young workers a strong will, initiative, decision, perseverance, optimism and love of life. Socialist competition has a large place in the activity of the manpower reserve schools and colleges. The competitive effort to exceed output targets by mastering new techniques and advanced working methods, to produce complex products of outstanding quality, to economise materials and electric power, to improve the material equipment and amenities of the school and its grounds all this develops in the young student a spirit of mutual aid and collective effort in work and study, a sense of duty, a tendency not to be content with his achievement or to be beaten by difficulties.

All-round education, however, is not a matter for the classroom alone; students also have a host of extra-curricular activities the aim of which may be to improve their technical, occupational, social or political education, to promote the development of various tastes and talents, to enhance individual activity and initiative, or simply to provide cultural recreation.

Hundreds of thousands belong to the study groups which deal with subjects on the curriculum and related matters, and in which they can broaden their technical horizon and acquire habits of rationalisation and invention. Experienced leaders help them to make working models of complex machines, to construct devices for greater productivity, to modernise the machine tools and to prepare visual appliances for classrooms and laboratories.

Local exhibitions of the students' creative technical work are held every year. There is also a permanent "all-Union" exhibition of this work, which has had very great success and is visited by a great many workers from the Soviet Union and from abroad. At the international level the students' work has been shown in Poland, Rumania, Hungary and Czechoslovakia, as well as at the Brussels World Exhibition, where it caused great interest and made an excellent impression. Of the prizes awarded at Brussels in the field of vocational education 16 went to work by students at the manpower reserve schools and colleges of the Soviet Union, which included such unique exhibits as a working model of a "selfpropelled excavator" made by the students at the Sverdlovsk Industrial College No. 1 (first *Grand prix*) and many others.

Lectures on political and scientific subjects, groups for the study of history and folk-lore, literary evenings and students' conferences —all these form part of the life of vocational training institutions.

These activities cover a wide range of scientific and technical knowledge, familiarise students with the best examples of classical Soviet and foreign literature and art and develop their artistic tastes and cultural habits. About 18 million books are available in the libraries of the manpower schools and colleges and wide use is made of them. The manpower reserve system has 46 special buildings for amateur cultural and artistic activity, 2,600 "red corners", over 1,300 club rooms, 900 wind orchestras and 1,000 orchestras of popular instruments. All this helps to stimulate amateur artistic activities, in which hundreds of thousands of students take part.

Important contributory elements in general education are the physical development of the young and the steps constantly taken to ensure that each new generation grows up healthy and happy. Students of the manpower reserve schools and colleges get their physical exercise in a variety of ways including daily physical training arrangements (morning exercises and breaks for physical training during practical work), games or amusements between or after classes and excursions. There are also physical education classes as part of the curriculum, organised group gymnastics and sports.

The amateur sports club called "Manpower Reserve" is well known throughout the country : it has done a great deal to encourage students to take part in physical culture and sports. Regular athletic competitions (summer and winter sports) are held at individual schools and also at the district and national levels. Students from the manpower reserve institutions regularly take part—and win leading places—in Union and international competitions. They have set up a good number of Soviet and world records.

A distinctive characteristic of communist education is its collective approach ("education in the community, by the community, for the community"). A solid, well-organised student body can be a powerful force for education and discipline in any school or college. The formation of such a community, and success in its work, can be achieved only with the active participation of all masters, teachers, instructors and administrative personnel.

TRAINING AND FURTHER TRAINING OF PRODUCTION WORKERS IN THE UNDERTAKING

The vocational and technical training of workers is not confined to schools and institutions. Training, and especially further training designed to raise the workers' skill, is carried out on a large scale in the undertakings themselves.

Undertakings train their own semi-skilled workers. A combination of individual and team instruction is used for this purpose, the duration of courses not exceeding six months. The individual instruction is mainly practical and is given directly at the workplace during performance of the factory's output programme. The learner is attached to an instructor appointed for this type of training—usually himself a skilled craftsman for whom this is an activity concurrent with his main job. Practical instruction consists in demonstration by the instructor of the work process to be learned and an explanation of the rules to be followed in doing it; the learner then does the work himself under the instructor's supervision. Theoretical instruction is given by the same craftsman or—if several learners in the same or allied jobs can be brought together—by an engineer or technician. Team training plays a minor part in the training of semi-skilled workers. Usually the learners are placed in the existing teams of production workers; occasionally they are formed into "trainee teams" of their own.

In a number of industries new entrants are trained in special introductory courses, usually reserved for the more complex trades in which it is particularly important to provide systematic theoretical instruction, and for those in which it is difficult to give practical training at the workplace.

So-called "schools of advanced experience" are widely used to improve the skills of workers already in employment. These schools apply a basic principle of socialist emulation : in them the best workers provide comradely assistance to those who are less experienced with a view to improving group output.

At first these "schools" worked as follows: each school leader (chosen for his outstanding production record) imparted his personal fund of experience to a small group of workers in the same trade; directly from his workplace the leader demonstrated the methods he used to obtain a high output, improve its quality, economise raw materials, maintain his equipment in the best possible condition, etc. A consultant (from the engineering and technical grades) was attached to the school leader and had talks with the trainees, explaining and justifying to them the methods of work that they had learned. Instruction also included exercises at the learners' workplaces designed to give them practice in improved methods.

Subsequently, "schools of mutual instruction" and "schools of collective advanced experience" were started, in which the best working methods employed by a group of highly efficient workers are studied. Often it becomes necessary to help workers to master new equipment, to apply more or less fundamental changes in a technical process, to learn to make new kinds of products. Special courses are then arranged; as this provides a flexible method of giving instruction on new questions which face a whole group of workers. These courses consist of short spells of training, mainly of a theoretical character.

Technical progress leads to more complex operations, and the progressive mechanisation and automation of groups of processes make increasing demands on the workers' skills. Hence the present need for a special kind of technical instruction, aimed at raising the skill and wage-grading of the workers. This kind of instruction is given in courses in "production technique", as they are called in the Soviet Union. The training consists of practice on the job and theoretical instruction outside working hours.

New techniques, as well as advanced methods of scientific management, require a considerable widening of the workers' occupational qualifications—indeed, they may have to learn a second or even a third trade. Experience shows that combination of trades secures an economy in manpower, increases the productivity of labour and avoids breaks in production. Instruction for this purpose is provided, as a rule, by individual "attachment": a worker teaches his own skills to another coming from a different trade, and sometimes the instruction is mutual.

Training of production workers is not confined to industry. In agriculture, too, courses in farming and stock-raising techniques are widely used to spread scientific knowledge and advanced experience in collective and state farms. These courses are held in the winter (when little work can be done in the fields), so that great numbers of workers are able to attend them without leaving their jobs. They are spread over two years, and graduates receive the title of "agricultural technician, first (or second) class".

Apart from these courses in farming and stock-raising techniques, there are various kinds of short courses at which agricultural workers improve their skills and obtain experience in trades allied to their own.

Reform of Vocational and Technical Training

In December 1958 the Supreme Soviet of the U.S.S.R. adopted an "Act for the purpose of linking the schools more closely to life and of further developing education among the people". Apart from progress in general education at the secondary and higher levels, this measure prescribes a number of important steps for the further extension and improvement of the vocational training of the young. All institutions, of the various existing types, for the training of manual workers are to be transformed within the next seven years into a comprehensive system of vocational and technical colleges, which are classified as urban (courses lasting one to three years) and agricultural (one to two years). The network of these colleges will be gradually expanded.

The vocational and technical colleges will specialise in particular branches of the economy and prepare skilled workers for specific trades and occupations in manufacturing industry, construction, communications, public utilities, agricultural mechanics, rural electrification, commerce, and cultural and social activities.

Measures are to be taken to improve the staffing of all vocational and technical colleges, and supply them with the appropriate training workshops and laboratories. Moreover, to ensure that the necessary practical instruction and training will be given, the colleges are to be closely linked with progressive undertakings that have new equipment and apply the most advanced techniques and methods of organisation. Arrangements will be made for the use of the best methods of instruction, the systematic co-ordination of theory and practice, and the judicious combination of practical instruction in school workshops and in undertakings.

Besides all this, some young persons will be trained for simple semi-skilled jobs either by study at the general secondary schools with practical industrial instruction or by means of individual and group instruction on the job.

The vocational and technical colleges will take young persons who have completed the eight-year general school course (which is being introduced instead of the existing seven-year course). As the reform of the general secondary schools envisaged by the Supreme Soviet will take three to five years, during this period some of the present technical colleges will be retained so that there will be accommodation for all those wishing to enter them on completion of the ten-year general school (full secondary education). Some of the other existing vocational training institutions will also be retained (industrial, construction and other colleges of the same type) for juveniles who, for some reason, have not finished their secondary education.

Substantial changes are being made in the curricula of vocational and technical colleges to take account of the new conditions under which they are to operate. More attention will be paid to training under production conditions and to learning new techniques. The students will be familiarised with typical operations in several cognate or related trades. In order to turn out young workers who are fully prepared for self-reliant, highly productive work, the length of the period of practice in undertakings is being considerably increased.

A number of changes are being made in theoretical instruction too. A new course entitled "Automation and Mechanisation of Production" is being introduced, so that students will be able to learn of the achievements and prospects in industrial technology and the development of new techniques; they will study methods and means of mechanisation and automation of groups of production processes; and they will acquire the minimum of additional knowledge they will need if they are to take an active part in improving industrial performance.

For the same reasons a separate course is to be given on the organisation and economics of production. The course in electrical engineering will be expanded to cover the elements of radioelectronics, for without some knowledge of these subjects a worker is lost in a modern automated undertaking.

Each person who takes the full course at a vocational and technical college will be given every opportunity of completing his general secondary education and obtaining further specialised education in the trade which interests him—all without leaving his job.

This reform of vocational and technical education, together with the improvement in general and higher education, will lead to further progress in the cultural and technical levels of all workers in the Soviet Union and will hasten the execution of the new plans for the development of the U.S.S.R. contemplated by the Government and the Communist Party.