

Road of Training Technicians From Among the Workers

— Three years of implementing Chairman Mao's July 21 Directive
at the Shanghai Machine Tools Plant

By Jen Wen

The Shanghai Machine Tools Plant is known in China for making precision grinders. Guided by Chairman Mao's revolutionary line, the plant has gradually trained a contingent of working-class technicians in the post-liberation years. On July 22, 1968, "Renmin Ribao" published an investigation report on this plant (see "Peking Review," No. 31, 1968) explaining the enormous changes in its technical force brought about by the Great Proletarian Cultural Revolution. According to the report, the plant had 250 technicians who came from the workers' ranks and they accounted for some 45 per cent of the plant's technical personnel. Compared with college graduate technicians, they had a relatively high political consciousness and showed better ability in technical work. Since 1960 and especially since the start of the Great Proletarian Cultural Revolution, almost all new products here have been designed and manufactured by worker-technicians in co-operation with other workers and revolutionary intellectuals.

The road of training technicians from among the workers has been a useful indicator to the proletarian revolution in education. Our great leader Chairman Mao affirmed this road in his July 21, 1968 directive. — Editor.

ON July 21, 1968, Chairman Mao issued the directive: **"It is still necessary to have universities; here I refer mainly to colleges of science and engineering. However, it is essential to shorten the length of schooling, revolutionize education, put proletarian politics in command and take the road of the Shanghai Machine Tools Plant in training technicians from among the workers. Students should be selected from among workers and peasants with practical experience, and they should return to production after a few years' study."**

This directive is a tremendous inspiration to the masses in the Shanghai Machine Tools Plant. Over the past three years it has trained technicians from among the workers in the direction indicated by Chairman Mao and this road is becoming broader than ever. Various forms of training and bringing up the working class' own technical ranks have been adopted. The workers said: Chairman Mao points out the direction of bringing up proletarian intellectuals who understand Marxism-Leninism-Mao Tsetung Thought and master modern science and technology. Carrying out this directive is a basic measure in breaking down the monopoly over science and technology by the bourgeoisie and exercising all-round dictatorship by the

proletariat over the bourgeoisie in the realm of the superstructure.

The plant's "July 21" Workers' College was set up in September 1968, two months after Chairman Mao's directive. The first group to be enrolled consisted of 52 students, including seven women. Chosen from among the workers of different workshops, they had a comparatively high political consciousness and more practical experience in production. Most had an educational level equivalent to junior middle school graduates.

Put Proletarian Politics in Command

Firmly implementing Chairman Mao's instruction **"Put proletarian politics in command,"** the workers' college constantly criticizes the revisionist line in education and the college is in full swing.

The college always puts the living study and application of Chairman Mao's works above all other work. The day it opened, workers who had been deprived of the right to study in the old society recalled their bitter past in the old society and contrasted it with their happy life in the new society. They held

mass discussions on such questions as "for whom to study and whom to serve" and "what to study and how to study." This further enhanced their thought of studying for the revolution. All agreed they had entered the college to occupy the educational position and wield power over science and technology for the working class. They must keep to a firm and correct political orientation.

"There is no construction without destruction." The bourgeoisie and Liu Shao-chi's counter-revolutionary revisionist line in education are constantly criticized. Soon after the college was founded, for instance, there were two diametrically opposed views on setting up a specialty. One stressed making grinding machines, the other stressed designing such machines. The latter view held that the college run by the plant was not just for training a few worker-technicians, but it should enable the working class to transform and occupy the scientific and technical position with Mao Tsetung Thought. The students trained by this college should not only master the technological process of producing grinders but be able to do designing, because designing played the key part as far as the technical aspect in the plant was concerned and had been the most firmly controlled position by the bourgeois technical "authorities" for many years. Among the plant's more than 200 worker-technicians, only a few could handle the general designing of grinders. Therefore, it was necessary to train more worker-designers to take over this important position.

Together, teachers and students at the college and the plant's workers and worker-technicians criticized the revisionist line of "relying on specialists to run factories." Citing a host of facts, they exposed the criminal acts of the bourgeois "authorities" in squeezing out and attacking the workers. For instance, 50 worker-technicians had entered the plant's grinding machine research institute in 1960. But many had been pressured to leave by the bourgeois "authorities." Within a few years only 17 were left in the institute. Still fewer were the worker-technicians who actually designed products.

Revolutionary mass criticism helped achieve unity in thinking. They agreed that the college should make designing grinding machines its main subject and set up the specialty of grinding machine designing and manufacture. The first group of students studied two years and ten months.

There were also differences over what courses should be offered. Some people considered that in the light of the needs of the plant's production and technical development seven specialized courses would be sufficient. Others held that "only seven specialized courses were not enough for a college." Centring on this question, they criticized the bourgeois view on education and achieved unity in thinking. Whether a college meets its requirements does not lie in the number of courses offered, but mainly in the usefulness of what the students learn and the quality of the students

who are trained, that is, their understanding of Marxism-Leninism-Mao Tsetung Thought and ability in analysing and solving technical problems.

Foreign languages and calculus in higher mathematics are tools designing personnel should master. But some people maintained that neither calculus nor English should be offered. Others even said with ulterior motives: "Our plant engages in production. There's no need for calculus and English. What's the use of studying them!" The worker-students indignantly said: When we didn't know calculus and English, the bourgeois technical "authorities" described them as all-powerful and very useful. Now, when we're going to study and master these tools to serve proletarian politics, they've changed their tune and say calculus and English are no use.

The worker-students cited many instances to further refute this mistaken view. Prior to the Great Cultural Revolution, a worker-technician once asked a bourgeois technical "authority" about a mathematical method of calculation which he was unfamiliar with. Quite aware that the technician did not know any foreign language, the "authority" took a foreign language book from a bookshelf, saying: "The calculation formula you want is in this book. Find it yourself!"

The college analysed and critically evaluated the more than 30 courses in the specialty of mechanical engineering in the old universities and, in the light of the needs of production and technical development in the plant, set up seven specialized courses — drawing, mathematics, mechanics, hydraulics, electro-techniques, grinding machine designing and manufacture and a foreign language.

Following Chairman Mao's teachings, the college arranged for the students to learn military affairs in army units and farming in people's communes, and to take part in the struggle-criticism-transformation movement in the plant and productive labour. This enabled them to participate constantly in the three great revolutionary movements — class struggle, the struggle for production and scientific experiment — and to be with the workers, peasants and soldiers. As one student put it, "If we only study behind closed doors in college without revolutionizing our thinking and taking part in productive labour, this will bring on bourgeois thinking and revisionism."

Unity of Theory and Practice

Lenin once pointed out: "One of the greatest evils and misfortunes left to us by the old, capitalist society is the complete rift between books and practical life." Chairman Mao has always advocated the Marxist-Leninist style of study — "the unity of theory and practice." In accordance with the law of "practice, knowledge, again practice, and again knowledge" and with the actual conditions of the worker-students, the "July 21" Workers' College first arranged a short-term study of basic knowledge. To enable the students to



Students take cylindrical grinding machine blueprint they made to the workers for opinions.

apply their basic knowledge to production and master the technique of mechanical drawing, it organized them to carry out an on-the-spot survey and drawing of a grinding machine so as to increase their perceptual knowledge of its whole structure.

Organized into several designing groups and helped by their teachers, the students then went to the users of the grinding machines to carry out investigation and study. In this way they got to know their opinions of their designing. They proceeded with their designing and studying simultaneously. The teachers taught and helped the students individually to solve problems which cropped up in work. All the students, guided by the teachers and technicians, finished in less than three months the work of designing four different types of cylindrical grinding machines, all of which were new products. Two of these, the semi-automatic cylindrical and universal cylindrical grinding machines, were produced by the students themselves in a matter of two months with the help of factory workers. Tests proved the machines to be up to designing requirements and they are being used in production.

On the basis of having participated in designing and manufacturing in the previous stage, the students carried out a more systematic theoretical study of designing and manufacturing grinding machines in their second year, including courses such as higher mathematics, hydraulics, electro-techniques and designing and manufacturing grinding machines so as to raise their theoretical level. Their practical experience helped them grasp theory more easily.

The students were finally assigned to work in the workshops so that they could do scientific research and

designing and make equipment together with the workers and revolutionary technicians. In this way, the students were able to apply the theory they had learnt to production and directly test the results of what they had been taught. At the same time, they could study more theory in the course of practice so as to raise their ability of analysing and solving practical problems.

Through the repeated process of going from practice to knowledge, the students attained the unity of theory and practice. Through such study for 34 months the worker-students have been able to design by themselves spare parts for ordinary cylindrical grinding machines, and some of them have been able to design a complete grinding machine. This could not be done by people in the same specialty in the old colleges.

This first group of students in the workers' college graduated on July 21 this year, when the third anniversary of the publication of Chairman Mao's directive was being celebrated. With new militancy they have gone to their new posts. Recently, another group of more than 90 workers have been enrolled in the college and have begun their studies.

Various Methods for Training

There are various methods for training technicians from among the workers.

Apart from the "July 21" Workers' College, there has been a "July 21" Workers' Spare-Time School for the past three years. In it more than 700 workers, engineering technicians and cadres often study politics, techniques and raise their educational level. Such specialized subjects as hydraulics, electro-techniques and machine-building are taught in spare-time technical classes; students in spare-time political classes integrate their study of Marxism-Leninism and Chairman Mao's works with the plant's struggle-criticism-transformation movement. The period of study was set at about one month and there have been over 1,000 workers, cadres and revolutionary intellectuals involved. In addition, lectures on new techniques are given from time to time.

Through spare-time study, the workers have raised their political and theoretical level, mastered scientific and cultural knowledge and brought about a great change in their mental outlook and production. The Shanghai Machine Tools Plant successfully made China's first big crankshaft grinding machine last year with a veteran worker leading the designing and manufacturing of this new product. His studies in the spare-

time school raised his political and technical level enormously. In making this big crankshaft grinding machine, he and the workers, using Mao Tsetung Thought as their weapon, criticized the "slavish comprador philosophy" and the "doctrine of trailing behind at a snail's pace." They applied Chairman Mao's philosophical thinking in solving many difficult technical problems in their work. They took only six months to design and manufacture the grinding machine, thereby filling in a blank in China's machine-building industry.

In addition, workers participating in the "three-in-one" designing and technical innovation activities is also an effective way followed by the plant in training worker-technicians. Designing of every product and major technical innovations are done by the "three-in-one" group with the workers as the main force and technicians and leading cadres participating. In the past three years, over 100 workers have taken part in "three-in-one" group activities. Through practice, the workers have rapidly raised their technical level. About 20 of the nearly 100 veteran workers taking part in the "three-in-one" designing groups of the Nos. 2 and 4 workshops have been able to design parts for grinding machines and four have begun to master designing a complete precision grinding machine. One veteran worker took part in "three-in-one" designing six times during more than two years. Last year he joined several comrades in designing a special grinding machine which, compared with the same kind of product designed by a deputy chief engineer, had 45 per cent less spare parts, was 300 kilogrammes lighter, had a higher precision and took only one-sixth the time to design.

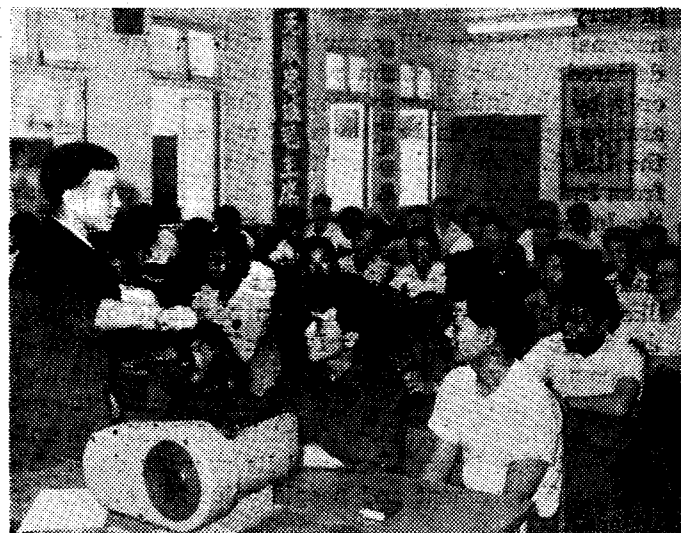
The plant's working-class technical force is growing up rapidly. Many of the 250 worker-technicians trained before 1968 have in recent years studied in "July 21" spare-time political or specialized classes. Through practice in the three great revolutionary movements — class struggle, the struggle for production and scientific experiment — they have constantly raised their political consciousness and technical level. Statistics show that from 1968 to 1970, the plant had succeeded in trial-producing 66 new products, an increase of 2.75 times over those produced from 1965 to 1967. In 1970 the plant made 630 technical innovations. Technicians of worker origin were a dynamic backbone force in achieving all this.

In 1968 worker-designer Wang Teh-fa, who had been apprenticed to a capitalist at the age of 14, led a group of workers in designing and manufacturing a big hydraulic surface grinding machine in three months. Its function and precision were up to advanced level. Six months later, he again took part in making two hydraulic surface grinding machines. He often worked with the workers and joined them in studying ways to revise the designing blueprint on the spot. Because he is constantly with the workers, it is difficult for out-

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Mass criticism board at "July 21" Workers' College.



Teacher explaining technical theory concerning a grinding head.

siders to realize that he was the chief designer of these two grinding machines. Wang Teh-fa has often said: If we want to always retain the fine quality of the working class, we must never divorce ourselves from proletarian politics, the masses and collective labour. The workers praised him, saying: Wang Teh-fa really is our working class' own intellectual.

More technicians like Wang Teh-fa are maturing in the Shanghai Machine Tools Plant and advancing along the road indicated by Chairman Mao. A red and expert technical force of the proletariat has further developed and expanded in the last three years. Tempered in the Great Proletarian Cultural Revolution, the workers and worker-technicians, led by the plant's Party committee and fired by lofty aspirations, are uniting the intellectuals in the plant to make new contributions to socialist construction.