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TRANSLATIONS FROM HUNG-CH'I (Red Flag)

(Peiping, No. 13, 1 July 1960)

- COMMUNIST CHINA -

by Yung Wen-t'ao and Hsu Yeh

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I. DEVELOP THE COMPREHENSIVE USE OF LUMBER  
WITH ARTIFICIAL BOARDS AS THE CORE

Pages 15-19

Yung Wen-t'ao

Our lumber industry has progressed rapidly under leadership party. Especially during the past couple of years, following the party's socialist construction principle, the industry made tremendous advancements in production. In 1958, the country's total output of logs was 35,000,000 cubic meters; this exceeded the planned target for 1962, the last year of the Second Five-Year Plan. 1959 production reached a total of 41,200,000 cubic meters, more than six times that in 1949. During the past eleven years, the average annual increase of lumber production was 22 percent. Despite this rapid increase of output, however, it is still far from sufficient to satisfy the needs for the speedy development of our socialist construction.

Lumber is one of the important raw materials used in socialist construction. It is also essential to the people's material and culture life. The launching of various types of construction work requires enormous quantities of lumber. Building a combined structure 10,000 square meter in area, for example, needs a total of more than 1,300 cubic meters of lumber. Production of every million tons of coal requires approximately 20,000 cubic meters of pillars and beams for the mine shafts. The laying of a 1,000-kilometer long railroad calls for 300,000 cubic meters of sleepers. Every ton of paper pulp utilizes six cubic meters of lumber. The manufacture of a truck requires two cubic meters of lumber. Packing industrial and agricultural products shipbuilding, manufacturing farm implements, furniture and various other types of daily necessities, all these also involves the supply of large quantities of lumber. At the same time, the continuous development of industrial and agricultural production and the rapid improvement of the technical level demand supplies of higher quality and more varieties of lumber products. For example, numerous modern construction projects require enormous quantities of insulating boards (zenitherm) and certain industrial departments need various types of highgrade lumber that are wear-proof and pressure-proof with a high degree of hardness. All these have created a delicate but glorious mission for the lumber production enterprises. The enormous demand for lumber products by the various departments of the national economy not only should be satisfied in quantity but also in quality and in variety to insure the con-

tinuous progress of our socialist construction.

In the past, we have made several different efforts to fulfill the above mission. We have expanded the scope of lumbering and explored new forests to strive for increase of log production. We have launched tree planting campaigns to increase forest resources. We have also economized lumber consumption by using substitute materials. All these efforts have met with great success. During the ten years after liberation, young cultivated trees covered a total area of more than 600,000,000 mou (Note: 6.6 mou equal one acre), which was equivalent to over 40 percent of the total area of available forests in the pre-liberation days. Numerous lumber consuming agencies used concrete and cement as substitute materials in the manufacture of power line poles, sleepers and pillars and beams for mine shafts. All this work should be positively continued. These measures, however, cannot possibly solve completely the inadequate supply problem, nor fulfill the requirement of higher quality and more varieties of products for national construction for three obvious reasons: 1) young trees take years to become usable lumber, 2) carrying out of excessive lumbering will affect their continuous growth, and 3) the use of substituting materials has a definite limit. Consequently, along with increasing production economizing lumber consumption and launching tree planting campaigns we must also develop the comprehensive use of the material with special emphasis on the production of artificial boards.

The scope of developing the comprehensive use of lumber with artificial boards as the core is extremely wide. Apart from artificial boards, other by-products include rosin, quebracho extract and alcohol. Here, let us confine ourselves to discussing artificial boards.

Artificial boards are made through the physical and chemical processing of "waste materials" (including tree branches, tips, shavings, edges and fragmentary materials) left over from lumbering and the finishing process of lumber products. The five types of artificial boards presently extensively used are fiberboards, shavings boards, splint boards, fine carpentry boards and veneer; among these, fiber boards are most extensively used. Fiberboards, generally known as "non-defective lumber", are a type of product most suitable for universal development. They can be made from numerous types of raw materials. Their structure, compared with that of natural lumber, is finer and more uniform, and is free from such deficiencies as knots, changes of color, decay and worm-holes. They do not easily expand, contract, warp or crack. After going through an oil immersion process, they become water-proof, fire-proof, decay-proof and acid-proof. Fiberboard has extremely wide usage. Apart from being extensively used in various industries and for building construction, it is also used as interior fittings of cars and vessels, for packing commercial products and manufacturing of furniture. The development of the com-

prehensive use of lumber with artificial boards as the core not only can satisfy the needs of the various lumber consuming agencies, but also, from the look of the progress of the lumber processing industry, it is a stern necessity.

The development of the comprehensive use of lumber with artificial boards as the core can bring about an appropriate and full utilization of forest resources. At present, the utilization of lumber is still uneven. First, the enormous quantity of left-overs from production process has not been utilized. In the process of initial cutting to final processing of finished products, the tree retains only approximately 40 percent of its original size, with the other 60 percent becoming "waste materials". For every thousand cubic meters of logs processed in a lumbering enterprise, a total of 300 cubic meters of branches and tips is treated as "waste materials" and discarded in the forest. For every thousand cubic meters of planks and balks from logs, more than 250 cubic meters of sawdust, bark and cut pieces are left over without being utilized. In processing every thousand cubic meters of planks and balks into finished products, approximately 350 cubic meters of sawdust, shavings and cut pieces are again discarded. All these discarded so-called "waste materials" are actually valuable and can be used for manufacturing artificial boards to substitute for planks, or for producing wood fiber for paper making, thus enormous quantities of logs could be saved. Taking the period of the First Five-Year Plan as an example, the total amount of logs consumed throughout the country was over 100,000,000 cubic meters. If all the branches, tips and other left-overs were used to produce fiber board, they would equal half the output of logs: i.e., production would increase by 50,000,000 cubic meters.

The development of such lumber processing industries as the artificial board and wood fiber industries can also bring about an effective utilization of all our natural secondary forests (See Note). The full use of these forests will result in an increase of our total forest resource area by over 100 percent. (Note: "Natural secondary forests" are those which have been excessively lumbered or destroyed by fire and which have been restored through maintenance and protection. They are sparse and scattered, with more young trees and shrubs and fewer lumber deposits).

The development of the comprehensive use of lumber with artificial boards as the core can expand lumber production resources. Lumber is the major forest product, and extensive lumber production has hitherto relied on forests, especially, on those that produce lofty trees. On plains, there must be lofty trees so that a minimum quantity of lumber can be produced. In manufacturing artificial boards, especially fiberboard, numerous different types of raw materials can be used. Apart from branches, bark and fragments, shrubs, bamboo, one or two-year old trees and herbs (such as, cotton stalks, reeds, wheat straw, rice straw,



sugar cane refuse and rushes) can all be used to produce good quality fiber board. In general, shrubs and herbs with a definite amount of fiber content can all be processed into fiber board. According to a calculation made at T'ang County in Ho-pei Province, the total of shrubs grown on the 400,000 mou of hilly country in the county, wild vegetation naturally developed on the 700,000 mou of mountain ranges, and stalks remaining from farm products produced from the 600,000 mou of farmlands, together amount to 4,700,000 catties. If five percent of these resources were used for fiber board production, they would equal over 600,000 cubic meters of lumber, which is more than ten times the total annual requirement in the entire county. From this example it is evident that the development of the comprehensive use of lumber with artificial boards as the core has a great effect upon the expansion of lumber production resources. The use of herbs as substitutes for lumber can greatly expand the resources for lumber production. On the plains, large quantities of such lumber (artificial boards) can also be produced. The old saying that, "without trees, lumber cannot be produced" used to be an unalterable principle but now, even without trees lumber can still be produced.

The development of the artificial board industry, especially the fiberboard industry, is not limited to forest resources. Production not only can be carried out in deep mountains and dense forests, but also on plains where trees are scarce and in cities and farm villages. Everyone knows that the growth of trees generally requires several tens of years, with the most rapid growth from eight to ten years, and yet fiber board production can fully rely on vegetation grown within a year. This will enable those areas where lumber is scarce to gain more time in solving their supply shortage.

In developing the comprehensive use of lumber with artificial boards as the core numerous different types of high grade lumber products and special materials of high intensity can be made available to the various departments of the national economy. Lumber, after going through physical and chemical processes, becomes more wearable than bronze and certain types of alloy. The use of multiple-layer lumber plastics for manufacturing gears is not only much more durable, but can also reduce the noise while they are functioning. This type of gears is generally called "noiseless gears". After high temperature and high pressure processing secondary grade lumber can be converted into a high-grade material (compressed wood), which can substitute for hard wood. In the past, shuttles used in the textile industry were made from the rare Ch'ing-kang chestnut-leaved oak, but now, they can be made from compressed wood processed from inferior quality poplar. This type of material is more durable than the chestnut-leaved oak. The interior fittings of railroad cars were previously made from high quality red pine, but at present are replaced by arti-

ficial boards.

The development of the comprehensive use of lumber with artificial boards as the core can bring about an appropriate arrangement for our lumber production. Because of the uneven disposition of our forest resources, with lumber production concentrated in several distant mountainous regions, transportation from the producing to the consuming areas is extremely difficult. In 1957, the average lumber transportation distance in the country was over 1,000 kilometers, and lumber transported on railroads occupied a great percentage of total goods shipped. With the development of the artificial board industry, raw materials can be obtained and products disposed of locally. This will result in a great change of the uneven disposition of lumber production, and at the same time, lighten the burden of the railroad and other transportation departments as well as economize much labor.

All these facts prove that the development of the comprehensive use of lumber with artificial boards as the core is a major course to be taken to solve the lumber supply shortage, and is also a way to increase and accelerate production, especially good quality products economically-processed.

Along with the continuous advance of our scientific and technical levels and the production power, lumber production must be developed from simple processes toward modern physical and chemical processes, and from a natural product into numerous varieties of high-grade products. This has been proven by our production experiences of the past several years. The comprehensive use of lumber is a means of estimating the technical level of the lumber processing industry. The higher the scientific and technical level and the more advanced the production power, the greater the comprehensive use of lumber. When the comprehensive use of lumber becomes greater, more lumber will be saved and its use will be more appropriate. Consequently, the promotion of the comprehensive use of lumber with artificial boards as the core is not only an important method of solving lumber supply shortage, but is also a long term objective for lumber production development.

Since 1958, great achievements have been made in the comprehensive use of lumber. Prior to that period, fiber plants were non-existent in our country, but during this short two year period, more than 2,000 large intermediate and small native or modern operated plants were established. Before liberation, the supply of veneer relied on import, but now, production of the material not only is carried out in large quantities, but is continuously increasing, with the total output of 1959 exceeding that of 1958 by 42 percent. Production of shavings boards in 1959 was more than three times that in 1958. Other items, such as fine carpentry boards, splint boards, high-grade veneer and veneer pipes, multiple layer plastics, and numerous types of forest chemical industrial products were also developed. Such speed of development

cannot possibly be overtaken by the capitalist countries.

The fact that the lumber processing industry was able to develop so quickly was due to its resoluteness in carrying out the party's principle and its "double barrel" policy. In developing the comprehensive use of lumber, work must be carried out simultaneously at large and intermediate as well as small enterprises, with the intermediate and small ones as the principal targets, and both the native and modern method should be employed. Simultaneous developments must also be made at state-operated as well as commune-operated enterprises. Thus the positiveness of the various enterprises can be created, with the result that a full development can be made in this newly developed industry.

Large modern artificial board plants, which have a higher labor production rate and are capable of producing good quality products are the backbone of the lumber industry. Henceforth, more of this type of plants should be established. However, in establishing this type of large plants, more investments are needed and the construction period is much longer. To build a fiber board plant capable of an annual output of 18,000,000 tons, for example, requires a total of 1,800 tons of iron and steel and a period of two years, with production of each ton of fiber boards calling for an investment of 380 yuan. But, to build ten small modern plants with a total output equivalent to that of a large plant requires only 490 tons of iron and steel and a period of three months for each of the plants, with production of each ton of fiber boards calling for a mere investment of 200 yuan. Also, to build a small native plant requires only a small quantity of iron and steel and a period of ten and several days, with an investment of 60 yuan for the production of each ton of fiberboard. Small native plants are simply equipped, easy to be put into operation and can use local resources to satisfy the local needs. Furthermore, the majority of these plants are operated by people's communes and closely coordinated with farm production. Consequently, while large modern plants are being established, more intermediate and small plants should also be built, with native and native-modern production methods employed so as to facilitate rapid lumber production and development. In 1960, for example a total of 208 fiberboard plants was established in Fukien Province within a period of a little over two months. In February, 1960, production of fiberboard was started in Wu-hsi City of Kiangsu Province, and by the end of April, more than 50 plants were established. Among these plants was one established within the Communication Equipment Plant which produced its first batch of fiberboard by using such simple equipment as two stone grinders, two iron plates and an iron drum, which were waste materials, and a number of others, which were installed within a period of three days.

The superlativeness of the people's communes offers several

conditions advantageous to the development of the comprehensive use of lumber, especially the fiberboard industry. People's communes have enormous manpower and rich material and financial resources. In carrying out the policy of fully developing the agricultural, forest, pastoral, by-product and fishing industries, tree plantations were also established at numerous communes. These plantations are mainly located near mountain regions with abundant resources. The communes are generally carrying out different types of world enterprises in these plantations, and with the development of these enterprises, practically every commune is able to launch fiberboard production. In the K'ai-feng Special Administrative District in Ho-nan Province, for example, the total number of small native fiberboard plants was increased from 18 in 1959 to 148 in early May, 1960, with the total annual production reaching approximately 40,000 tons. In nine of the counties (cities), including Ning-ling, Huai-yang and Shang-ch'iu, in Honan Province, nearly every people's commune has a fiber board plant. At the Shih-ch'iao People's Commune in Ning-ling County, a fiberboard plant was built in half a month. Within 20 days this plant produced more than 1,500 fiberboards valued at over 3,000 yuan.

The development of the comprehensive use of lumber can well be carried out in various forest industrial enterprises. At present, a great many plants are being built in various forest regions. Such materials as wood fragments, shavings and sawdust, left over from lumber processing plants in the urban areas, are plentiful. If more are added, they can produce artificial boards and other forest chemical products. At present, numerous lumber processing plants are working toward this purpose. Other lumber consuming agencies can also produce fiber boards for themselves. In this connection, the Nanking Tea Plant is a good example. In 1959, this plant established a native method operated fiberboard plant, the output of which is used not only for tea packing but also for supplying other consuming agencies.

All the above facts show that the development of the comprehensive use of lumber with artificial boards as the core is not only a possibility in our country, but also can be accomplished in such a manner as to increase and speed up production, produce good quality products and practise economy.

At present, a campaign for technical reform and revolution is in progress. This campaign has brought about further development and improvement in the comprehensive use of lumber. The masses of workers and commune members, under the leadership of the party, have exerted much of their daring effort in the technical reform and revolution. In the course of building the plants, some of the workers showed self-reliance by obtaining materials locally. Numerous pieces of highly efficient production equipment including fiber separating machines and native-type baking ovens, were created, enabling a great number of plants to increase their production

capacity, improve the quality of products and produce numerous new types of products. It is believed that, under such advantageous circumstances, only if we continue to exert our efforts will the development of the comprehensive use of lumber with artificial boards as the core gradually improve our lumber production.

II. ENGAGE EXTENSIVELY IN THE COMPREHENSIVE USE  
OF LUMBER AND IN THE CHEMICAL INDUSTRY FOR  
LUMBER PRODUCTION

Pages 20-24

Hsu Yeh  
Lieutenant Governor  
Fukien Province

To develop the comprehensive use of lumber and to engage extensively in the chemical industry for lumber production are a major course to be taken in expanding industrial material resources and speedily developing the lumber industry. The entire structure of a tree is valuable. Apart from the log which can be used for various purposes, there are the root, leaves, branches, bark and sap as well as shavings, saw dust, edges and fragments left over from log processing, which, after physical and chemical processing, can be used for manufacturing nearly 1,000 different types of products including fiberboard, quebracho extract and alcohol. All these products are necessities for production, construction and for people's livelihood. The climate of Fukien Province is warm with abundant rainfall. Plant growth is rapid and forest resources are rich. Forest regions and lands suitable for plantation occupy over two-third of the total area of the province. The total forest deposits amount to over 300,000,000 cubic meters, with approximately 600,000,000 bamboos of different varieties and more than 1,000 different types of abundant wild plants. All these have created extremely advantageous conditions for the development of the comprehensive use of lumber and the utilization of the chemical industry for lumber production. In the course of the great leap forward movement in 1958 under the leadership of the party, we resolutely carried out the "double barrel" policy by simultaneously employing native as well as modern methods and developing both the national and commune-operated enterprises, with special emphasis placed on the small native enterprises. As to the comprehensive use of lumber the development of artificial boards (mainly fiberboards) has been designed as the principal target, and on the production of chemical products, rosin, quebracho extract and acetate of lime have been treated as the main objectives. The great leap forward movement quickly spreaded throughout the province, with progress made from the mountain regions to the plains, from the farm villages to the urban areas, and from communes, plantations and lumber yards to government agencies, schools and streets. At present, artificial board plants and forest chemical product plants are established in every county (city) throughout the province. Such plants are available in every commune and team in numerous localities, producing over 50 different types of products including

fiberboards, rosin, citronella oil and synthetic petroleum. The development of this movement is still being continued.

The Advantages of Engaging Extensively in the  
Comprehensive Use of Lumber and in the Chemical  
Industry for Lumber Production

The extensive engagement in the comprehensive use of lumber and in the chemical industry for lumber production carries great political and economic significance, and has brought about numerous benefits to the nation and the people.

First, it has resulted in an increase of production and contributed a tremendous amount of aid in socialist construction. For a long period in the past, the production rate of logs in the various tree plantations in Fukien Province was low, with only approximately 65 percent of the output being used. The enormous quantities of branches, tips, leaves and bark, left over from lumbering work, were abandoned in the mountains. Chips, shavings and saw dust left over from lumber process were not fully utilized. However, after the masses of people engaged themselves extensively in the comprehensive use of lumber and in the chemical industry for lumber production, incomplete statistics show that in 1960 the entire province will be able to produce 500,000 tons of fiberboards, which can be substituted for wooden boards made from 2,500,000 cubic meters of logs. The output of forest chemical products is expected to reach a total value of over 100,000,000 yuan, which will be an increase of approximately three times that of 1959.

Second, it has brought about economic progress in the entire province, especially, accelerated the development of the county and commune-operated industries, improved overall industrial arrangements and created an important factor for changing the backward economic conditions in the mountain regions. Prior to the great leap forward development of 1958, there were very few artificial board plants and forest chemical products plants established in the province. However, after extensively engaging in the comprehensive use of lumber and in the chemical industry for lumber production, the number of these types of plants was rapidly increased. In 1958, approximately 100 plants were established. The number was increased to more than 500 in the early part of 1959 and over 7,400 by the end of May, 1960. Among these plants, 1,100 are state-operated and 7,300 are commune-operated, occupying respectively 15% and 85% of the total number. The establishment of these plants has resulted in the rapid increase of the industrial production value of the province and has changed the past inappropriate industrial disposition by concentrating in a minor number of coastal cities. Take for example the Nan-ching County, whose lumber production is at an intermediate level; here industrial and agricultural output value in 1960 are estimated to reach 100,000,000 yuan

each, with the value of forest chemical products occupying approximately 30 percent of the total industrial output. At the Hsi-ch'in Commune in Nan-p'ing City, the total value of forest chemical products produced in the first quarter of 1960 amounted to 228,000 yuan, which represents 38% of the commune's total industrial output value of the same period and is equivalent to 55% of the 1959 total industrial output value. This commune plans to produce 4,500,000 yuan worth of forest chemical products in 1960; this will be approximately 45 percent of the total industrial output value and 74 percent of the total agricultural output value of the same period. After the plan is fulfilled, the average per capita yield will be increased by 187 yuan.

Third, it has increased the income of the people's communes and their members, enabling the former to become secure and undertake further development. The T'o-ch'i Commune in Shou-ning County, for example, was originally a financially poor commune. But in 1959, after unifying its operational plan and organizing a team of 250 workers to open up the resources in the mountain regions, five forest chemical products plants and a mushroom field were established within half a month, with the result that the commune's income was increased by more than 160,000 yuan. Production of forest chemical products by the commune's Miao-yang Team brought in 97,900 yuan, which is equivalent to 63 percent of its total income, enabling this financially poor team to become a rich team. At the Hsien-shih People's Commune in Yung-ting County, after carrying out two months' hard work starting in December, 1959, a comprehensive forest chemical products plant and nine fiberboard plants were established and more than 3,000 sheets of fiberboards valued at 12,000 yuan were produced. Among these fiberboard plants is one capable of producing 156 fiberboards in six hours. The total investment in this plant was 300 yuan, which means that this sum can be recovered by the profit made within less than ten days. If every commune in the province carries out the same type of operation as the T'o-ch'i and Hsien-shih Communes, its economy will be well developed.

Fourth, it has cultivated technical personnel for the agricultural reform and industrial development in the communes. As a result of the extensive engagement in the comprehensive use of lumber, the communes have manufactured a great many press boards, pulp-making machines and cutting machines, this accelerated the development of the machine-repair and assembling industry and at the same time, trained a number of technical personnel. Take the Hsi-ch'in Commune in Nan-p'ing City as an example: the deputy director of its forest chemical product plant, Chang Hsiu-lien, was formerly a housewife, but now she has become a manufacturer of fiberboards, quebracho extract and citronella oil. A female worker, Ts'ai Lien-ying, has mastered the manufacturing technology of quebracho extract. Numerous other workers not only are familiar with the operation of motors and water turbines used for running



the machines for forest chemical products production, but also understand the manufacturing methods of such equipment. They have gradually become specialists in the forest products industry.

Fifth, it has promoted cultural and educational development. The extensive engagement in the comprehensive use of lumber and in the chemical industry for lumber production has enabled the people of the entire province to undergo a universal education in the chemical industry, and has promoted scientific, cultural and educational developments. In the course of their plant construction work the masses of people had their ideology liberated, and manifested their daring communist disposition, thus raising their socialistic and communistic consciousness.

#### Firmly Maintain Politics as the Leading Element and Extensively Engage in Mass Movement

The comprehensive use of lumber and the forest chemical products industry are a newly developed business. In the course of their creation and growth, it is hard to avoid suspicion, and opposition, as well as various other difficulties. Only if we firmly maintain politics as the leading element, strengthen the leadership of the party, rely on the masses, eliminate superstitions, liberate our ideology and concentrate the wisdom of the masses, then no obstructions or difficulties can limit our advance. The comprehensive use of lumber and the forest chemical products industry in Fukien Province were developed in accordance with these principles. At the beginning, a kind of mysterious thinking was lodged in the minds of the masses of workers and the cadres. They thought that since they were ignorant of technology and lacked the necessary facilities, chemical products would be difficult to be manufactured. After extensive publicity and discussions, however, production began in November, 1959, using native methods. On-the-spot inspection and study was organized at the well-established Hsi-ch'in Forest Chemical Products Plants in Nan-p'ing City. This plant was started by six cadres and workers with only a sum of 100 yuan appropriated as testing expenses. However, after putting in a tremendous amount of hard work, they were finally able to produce many different types of products including fiberboard, quebracho extract, active carbon and citronella oil. This was indeed a good example of starting a plant with "bare hands" and employing native methods, and has inspired the enthusiasm of other workers, strengthening their faith and determination to go through with the establishment of new plants. From then on, an extensive mass movement was launched to develop the comprehensive use of lumber and the forest chemical products industry.

Capital, equipment and technology are the main problems in plant establishment. In solving the problem of capital, we relied on the savings of the communes and collections from the masses. For

equipment, we also relied on the masses to develop self-reliance by obtaining simple facilities locally. For the plant itself, old houses and ruined temples and ancestral halls were used, which not only can reduce the amount of investments, but also can be speedily adapted. At the four communes, namely Ta-heng, T'ai-p'ing, Hsia-tao and Chang-hu, in Nan-p'ing City, 14 ruined temples consisting of 178 rooms were used to establish nearly 100 chemical plants (workshops). At a chemical plant operated by the Hsu-tun People's Commune in Chien-ou County, the operational characteristics are that "water is used as motive power, women as laborers, sheds as plant buildings and brick and wood as equipment". This plant is now semi-automatically operated and has become a good example of plants established with diligence and frugality. Apart from steel plates or pig iron which are required for the pressing process of fiberboard, all other production equipment can totally be developed locally. In tackling with various technical problems, our method is to dispatch personnel to inspect and learn from others within and without the province, to obtain instruction from experienced people and to organize discussions among the masses of workers.

Being inexperienced, some of the plants often suffered losses in the initial stage of their establishment. To enable them to keep faith in their operations, they were encouraged to start with the manufacture of simple products and such products as citronella oil, quebarcho extract and synthetic petroleum, in which it is not easy to suffer losses. When they become experienced, they will embark on the expansion of their operations and production of fiberboards and other complex products.

To solve the labor problem, the method adopted in various localities is that, providing agricultural production will not be affected, appropriate arrangements will be made to fully utilize woman laborers. At present, the number of persons in the province working at the plants totals more than 40,000, among which, 50 to 60 percent are women and part-time laborers. At the fiberboard plant operated by the Hsu-tun Commune in Chien-ou County, for example, only 24 women and part-time laborers are employed. This plant is scheduled to produce 120 tons of fiberboards in 1960, enabling the commune to increase its income by more than 50,000 yuan. The advantages of establishing such type of plants aroused the interest of the various groups and teams of the commune. Having realized that only minimum number of laborers were required, and especially, that using woman laborers liberated from housework would not affect agricultural production, these groups and teams subsequently embarked on the establishment of their own plants.

In the course of establishing plants, support must be given to the masses and testing work must be continuously carried out without fear of failure. At the Hsi-ch'in Forest Chemical Products Plant, for example, while test manufacturing synthetic petroleum, a tin

welded pipe was melted under high temperature causing the gas contained in the pipe to burn: fire destroyed the laboratory. As a result, some people suggested abandoning the attempt to manufacture instead synthetic petroleum and produce turpentine, while others were sarcastic about the technical competence of the plant. However, such sarcasm could not limit the advance of the masses. Under party leadership, they continued their testing work and finally, not only were able to produce synthetic petroleum by means of native methods, but also to manufacture numerous other types of products, enabling the plant to become one of the comprehensive type.

#### The Power of the Small Native and Small Modern Plants

The campaign presently being launched to develop the comprehensive use of lumber and the chemical industry for lumber production has fully manifested the great superlativeness of the small native and small modern plants; this helps us realize that the simultaneous development of the large and intermediate as well as the small plants, and the employment of both native and modern methods are the major course to be taken to expand the output of our lumber industry. This has indeed a great political and economic significance. The fact that the launching of this campaign has resulted in such speedy development and made all these remarkable achievements was due to the use of small plants as the main production sources and the employment of native methods as the primary mode of operation. Since small native plants are simply equipped, easy to operate, convenient to local supplies of material, require less investment and can be established and put into production in a short time, they are suitable for each and every commune. At the Ch'i-ping Commune in Fu-an County, for example, 165 small plants were established within one month. Among them, 89 have already been put into operation. Another example is that the equipment of the small native and small modern plants throughout the province, which produce quebracho extract and citronella oil, is not made of steel materials but from bamboos and ceramics. All this native equipment and material was obtained locally. The process of refining synthetic petroleum from pine-roots is simple, with effective results. It can be carried out in a kiln dug in the ground without the use of a shed. The petroleum produced has aided the farms in fighting drought this spring.

Small native and small modern plants can adapt themselves to different environments. Generally speaking, resources in mountain and forest regions are scattered about, and the different types of materials requiring processing are numerous. In order to utilize fully the materials which are available, establishment of small

native plants; this is also welcome by the masses of people. At the Chien-yang County, the method of manually transporting plant equipment to the mountains to carry out production was adopted. This type of operation, which people call "one-load chemical plants" is widely practiced throughout the province. They first made on-the-spot process of resources scattered about in various localities and then have the semi-products concentrated for further processes. The operation of small native and small modern plants is highly flexible. It can be expanded or curtailed depending upon the condition of agricultural production.

Some people, thinking that since production by the native method is simple and easily carried out, were reluctant to pay special attention to such type of operation. This is entirely incorrect. The simplicity of the equipment and techniques and the convenience of operation are actually the advantages of the native method: it can save considerable investment, facilitate rapid establishment of a great number of small plants, and enable the masses to become quickly familiar with the manufacturing techniques, with the output increased to meet the present needs for the industrial and agricultural developments. Taking as an example the comprehensive use of pine-needles by the Food Bureau of the Yung-ting County, 32 to 35 cattles of crude oil are produced from every hundred cattles of pine-needles. Pine-needle oil can be substituted for tung oil and lubricating oil, and is also a raw material for soap manufacturing. Another example: at the Fu-chou Lumber Comprehensive Processing Plant, alcohol is made from the native hydrolytic dissociation process of saw dust. As a result of this operation, numerous types of by-products including citronella oil, fir camphor and baroos camphor (Chinese medicine) are also produced.

Large plants are relative to the small ones, and the modern to the native. All these types of plants are constantly in existence, with the small plants capable of being expanded into large ones and the native plants improved to become modern plants. Only if we continue with our technical reform and revolution, will such miracles happen. At the Hu-t'ao Fiberboard Plant in Ch'ung-an County, for example, as a result of relying on the masses, extensively engaging in technical revolution and carrying out mechanized and semi-mechanized operation in material transportation, pulp making and pressing processes, the total labor strength was reduced from 128 to 44 persons, with the labor production rate increased by ten times and the daily output raised from 60 to 250 fiberboards. At the Quebracho Extract Plant, established within the Hsiao-tung Paper Plant in Shou-ning County, after carrying out a technical revolution the production operation has become entirely automatic and is controlled by only one worker. At the Lien-ch'eng County Quebracho Extract Plant, the number of products has been developed from one to 24 different types, and the labor strength has been increased from 20 to more than 300 workers, with the daily

output of quebracho extract raised from 8 cattles to over one ton. All these facts show that the native type of operation can become gradually improved and production can be continuously increased.

Large and modern forest chemical products plants are well equipped, maintain high production efficiency and are capable of producing numerous different types of products. While extensively engaging in the establishment of small plants and employing native operating methods, such type of plants, whenever circumstances permit, should also be established, so that they can aid the small native and modern plants in solving various technical problems and training technical personnel.

Although successful results have already been achieved in the extensive engagement in the comprehensive use of lumber and in the chemical industry for lumber production in Fukien Province, this is, however, merely a fine beginning. Under party leadership, we must continue to exert our vigorous efforts and strive for an upper hand to bring about the establishment of plants in every commune, group and team. We must also endeavor to transform small native plants into small modern plants, enabling them to gradually become forest chemical products complexes capable of producing numerous varieties of products.

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