JPRS: 33,699

TT: 66-30143

11 January 1966

TRANSLATIONS FROM HUNG-CH'I (RED FLAG)

No. 13, 1965

- Communist China -

No. 17

U. S. DEPARTMENT OF COMMERCE

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This serial publication contains translations of all of the articles from the Chinese-language periodical Hung-ch'i (Red Flag), No. 13, 1965. Complete bibliographic information accompanies each article.

CONTENTS

MASSIVE ADVANCE OF SANITATION WORK TOWARD RURAL AREAS

/Following is a translation of an article by Ch'ien Hsin-chung (6929 0207 1813) in the Chinese-language periodical Hung-ch'i (Red Flag), Peiping, No 13, 6 December 1965, pages 1-9./

At present, in the extensive territory of our country, from the plateaus of Tibet to the coast of the China Sea, from the banks of the Heilungkiang to the foothills of the Wu-chih Mountains, we can find the traces of circuitory medical teams.

Since last spring, the broad masses of the medical and sanitation personnel, in enthusiastic response to the call of the party Central Committee and Chairman Mao, have organized a thousand or so of circuitory medical and sanitation teams, penetrating into rural areas to serve 500 million peasants. This is a part of the massive advance of sanitation work toward rural areas as well as a good beginning of the ideological revolutionization of the medical and sanitation personnel.

By Entering Rural Areas, Medical and Sanitation Personnel Have Inspired the Masses and Transformed Themselves

Since the liberation, the whole country has organized some medical teams, which have entered rural areas and areas of minority nationalities and, in coordination with the then revolutionary and construction tasks, conducted circuitory medical activities and made many contributions. This time, not only have the circuitory medical teams going into the countryside greatly increased in numbers, scope, technical quality, and penetration of work, compared to the past, but more especially, the broad masses of the personnel concerned, with the education provided by the party Central Committee and Chairman Mao, have clearly understood the importance of extending medical and sanitation work to rural areas for

the service of the 500 million peasants and that of coordinating the personnel concerned with workers and peasants, so that they can all transform their thinking in the midst of the revolutionary struggle.

Under the leadership and with the concern of the various levels of the party committee and the People's Government, the circuitory medical and sanitation teams have in a short time carried out a great deal of medical treatment and prevention and written many touching episodes.

A great many of the medical personnel on the teams are industrious and frugal. They have made the best use of even inferior equipment. Under conditions of comparative difficulty in the rural areas they have shown an exceptional sense of responsibility in attending to all kinds of treatments and performing a great many operations and achieved very remarkable results. In their rush to save the lives of patients, they have given up their food, spent sleepless nights, struggled day and night, and even contributed their own blood for transfusions. Some of the team members, undaunted by deep mountains, dense forests, and difficult roads, have insisted on the delivery of drugs to thinly populated interior sections. Others have defied tempestuous storms to cross dangerous rivers and rush to the rescue of women faced with difficult births. They have wholeheartedly rendered their service to the people, cured many of the common diseases prevalent in rural areas in a both satisfactory and economical manner, saved many seriously sick patients from death, and restored many blind persons to their sight.

At the same time that the treatment and prevention of diseases are going on, the sanitation work of controlling night soil and drinking water has been expanded, the knowledge of hygiene diffused, a large number of sanitation workers not separated from production trained for rural areas, and a beginning made to help production brigades train semi-agricultural and semi-medical personnel.

The broad masses of peasants have made a high evaluation of the medical teams. Everywhere they go, the masses rush out to tell one another, "Chairman Mao has sent out good physicians to us!" "Such physicians," they continue to say, "were unobtainable at our invitation in the old society. But now they voluntarily deliver their drugs to our very doors. This is due indeed to the good leadership of the Communist party." When some of the blind who have not seen for years have had their sight restored to them and when the dying patients have been saved and obtained their new leases on life, they are all moved to their tears and yell "Long live Chairman Mao!" Deeply grateful to Chairman Mao for his solicitude in providing medical care, the broad masses of peasants have had their enthusiasm in the production and class struggles stimulated. The activities of the medical teams

have cemented more closely the relations between the party and the masses.

In their circuitory pursuits and participation in the movement of socialist education, the members of the medical teams have obtained a more substantial understanding of the situation of the class struggle currently facing rural areas and strengthened thereby their class viewpoint. Through their intimate contacts with the masses of peasants, their service for these peasants, and their attempt to learn from the firm class attitude and surpassing ideological quality of poor and lower-middle peasants, the medical personnel have begun to experience a change in their ideological feeling. They feel the urgency and agony felt by the sick, and the good behavior of devoting every effort to the sick is beginning to be formed. They deeply sense that "being in the countryside for three months is better than studying for ten years." Their description of their change after their presence in rural areas is this: "the rice is sweeter and sweeter, the heart is warmer and warmer, and the road traveled is wider and wider."

With their presence in the countryside this time and through their circuits, the medical teams have, in coordination with the movement of socialist education, carried out rural sanitation construction and caused sanitation work to take root progressively in rural areas. Thus the circuitory medical team is not only a unit for the protection of the health of the peasants, but a propaganda set-up for the party's policies and for the diffusion of the knowledge of hygiene as well as a working party for strengthening rural sanitation construction. The facts prove that the organization of the broad masses of medical and sanitation personnel for the service of the 500 million peasants is the indispensable road to the revolutionization of medical and sanitation work and of the thinking of the medical and sanitation forces themselves. Therefore the organization of such teams for the countryside is not merely a temporary measure, but should be a system to be maintained for the long term.

Make Politics Stand Out, Insist on "Politics First," Make Live Study and Application of Chairman Mao's Works

The experiences of the last few months prove that the circuitory medical teams must hold aloft the red flag of Mao Tse-tung's thinking, make politics stand out, learn the behavior of the Liberation Army in mainining the four first things and the three-and-eight spirit. Only thus can they maintain from beginning to end their full revolutionary zeal and their high-rising revolutionary will and persist in turning their faces toward workers, peasants, and soldiers and serving the interests of the broad masses of peasants.

To make politics stand out is to give the commanding posi-

tion to Mao Tse-tung's thinking. To place the key points of sanitation work in rural areas and to conform this work to the requirements of the three great revolutionary movements of production struggle, class struggle, and scientific experimentation, we must insist from beginning to end on the commanding position of Mao Tse-tung's thinking, stir up on the sanitation front the high tide of penetratingly and regularly studying Chairman Mao's works, and in our struggle with disease and nature, simultaneously transform the objective and subjective worlds.

The medical teams consist of physicians, nurses, and administrative workers. There are both young and old specialists. Their experiences and work posts are different, and their ideological conditions are not entirely the same. With politics standing out in medical teams, their technical work have a correct direction and the positive factors of each individual can be fully mobilized, so that each team can become a united collective for struggle, which can make signal contributions even under difficult material conditions.

How can circuitory medical teams make politics stand out?

To make politics stand out, it is first of all necessary to understand the great strategic significance of placing the key points of sanitation work in rural areas. The adoption of this revolutionary measure for the service of the 500 million peasants is one of the necessary conditions for the promotion of the new upsurge of current agricultural production and for the construction of new rural areas of socialism. From the long-term point of view the adoption of this revolutionary measure is beneficial to the gradual diminution of the differences between the city and the countryside, between industry and agriculture, and between mental and physical labor. Only by clearly recognizing this can members of medical teams understand their role in the revolution and coordinate their work with the great tasks of socialist revolution and socialist construction, so that they can ascertain their direction, broaden their outlook, strengthen their vigor, and wholeheartedly serve the broad masses of peasants.

To make politics stand out, it is necessary to implant the thinking of wholehearted service for the people. Peasants constitute the absolute majority of our population. Without the thinking of service for the peasants it is idle to talk about service for the people. Therefore one of the principal ways in which each member of a circuitory medical team can show his stress of politics is to bear in mind the 500 million peasants, to serve them diligently, to establish gradually, through the experiences gained in rural medical care, class feeling based on ties of blood, and to regard service for the broad masses of peasants and service for poor and lower-middle peasants as his greatest happiness and greatest honor. Each member of the

medical team should emulate the examples of Lei Feng (7191 6912) and Wang Chieh (3769 2638), learn their great Communist spirit, and wholeheartedly serve the revolution and the people for his whole life.

To make politics stand out, it is also necessary to put oneself self-consciously into the three great revolutionary movements in the rural areas and forge and transform oneself in the midst of the struggle. The principal function of the circuitory medical team is to carry out the work of medical care and sanitation in rural areas, but at the same time it should concern itself with and participate self-consciously in the rural production and class struggles. The circuitory medical team should be coordinated with the central tasks of the party, around which it should carry out its work. For example, in the movement of socialist education, it should coordinate its medical work with the mobilization of the masses, and in the massive construction of water conservancy projects in winter and spring it should penetrate into the first line of production, protect the health of the army of laborers, and participate in whatever labor it is capable of. It is also necessary to learn to tackle mass work and deal with problems with the class viewpoint. Finally it is necessary to give publicity, through its medical work, to the party's policies, bind itself up intimately with the masses, and mobilize the positiveness of the broad masses.

To make politics stand out, the most basic step is the live study and application of Chairman Mao's works. It is necessary to study Chairman Mao's works with problems in mind, to work hard in the "application" of these works, and to guide one's own action with Mao Tse-tung's thinking. At the same time it is essential to study seriously the directives of the party Central Committee and Chairman Mao relating to sanitation work. So far as the majority of members of medical teams are concerned, their presence in rural areas is a very severe test. In their work and in their living they are bound to encounter this or that difficulty, and the class struggle in rural areas is bound to have this or that influence on them. Therefore they must at all times consult Chairman Mao's works with the problems they have in mind and obtain the correct direction and derive the necessary strength from these works. They should especially use Mao Tse-tung's thinking to check on their own attitudes, viewpoints, and methods, have a firm grip on the main problems in their thought, and carry out the forging and transformation of their ideological consciousness with definite aims.

The circuitory medical teams are faced in the countryside with tasks of tremendous difficulty, as they are faced with a good situation for their own revolutionization. The teams should take full advantage of this good situation and perform the work of political ideology minutely, so that their members

can receive a more profound class education and a more strict political training in rural areas.

How should peasants be treated? Should one learn from them with humility and serve them sincerely or should one feel conceited, look down on them, and regard the treatment of diseases as a favor to them? This is a question of attitude. In the last half-year, in which a great many teams have been to the countryside, this basic question has undergone a preliminary change. Though the members of these teams do not see the peasants, they bear them in mind. Instead of regarding them as dirty and unrefined, they feel that the peasants are respectable and amiable and even "cleaner" than the intellectuals. From remoteness and aloofness the team members have grown to live in harmony with the peasants and have developed a real feeling for them. Especially have the team members witnessed with their own eyes the support peasants have given to the party and to socialism and the contributions they have made to the country by virtue of their diligent labor and energetic production from morning till night, month by month, and year by year.

On the other hand, when they look at themselves, these team members find that their contributions to the country have not been significant, but that their livelihood is much better than that of the peasants, though they continue to seek fame and profit unrelentingly. Comparatively speaking, therefore, the team members are far behind the peasants. What reason do they have for not learning from the peasants in all earnest?

A great many have also learned from their experiences that one great fault they had in the past was not to give serious consideration to the requirements of the peasants nor to show concern for their difficulties. They have been so deeply touched that they say, "As we have treated the diseases of the peasants, they have treated the diseases in our thinking." Also, "With the poor and lower-middle peasants in our minds, we should think of our own transformation."

How should we coreectly serve the peasants? As the circuitory teams visit rural areas, do they start from the requirements of the peasants and devote themselves to serving them wholeheartedly or is there still room for individualist planning and the adoption of a half-hearted attitude toward their work? This is a basic question. It should be seen that most team members have adopted a correct attitude when they go down to the countryside, although there are not lacking those who have been motivated by individualism. For example, some regard themselves as mere window-dressing without effectively planning to do good work. Others aim at the collection of material for research without giving good consideration to service for peasants. Still others feel that their presence in the countryside for a few months alone counts as the fulfillment of their functions,

and they lack self-consciousness in transforming their thinking in the service for peasants. In circuitory medical care in rural areas there are present both the content of scientific experimentation and that of ideological revolution, and one must strictly require oneself to persist in self-conscious ideological revolution, whereby only can one gradually liquidate the individualist thinking of the capitalist class and understand clearly the question of whom and how to serve. If one lacks strict requirements, does not abandon individualist planning, and performs one's work half-heartedly, one cannot wholeheartedly serve the peasants, let alone talking about the transformation of one's thinking through the practice of medical care.

There is a chief surgeon in a Heilungkiang hospital, who, when he first went into the countryside, had thought of displaying his technical skill by performing operations. After he got settled down there, he saw that the common diseases were those that most needed treatment. Through study and ideological struggle he changed his original thinking, and in addition to giving careful treatment to the commonly seen diseases, he learned from toe-nail parers in the bathhouse how to cure corns and from specialists how to deal with ear, eye, and dental troubles. As a result he was capable of taking care of many varieties of patients and became known as the "good doctor without any unpleasant air." This demonstrates that so long as one can set one's thinking right, then only can one serve the peasants properly.

How should achievements and praise be dealt with? In their activities in rural areas, circuitory medical teams frequently receive the welcome and praise of the masses. In the face of this good reception, team members should use the method of the division of one into two to make a cool analysis of their performance, and they should only see their inadequacies, get rid of pride and impulsiveness, and strive to improve their work. There are many instances where medical teams have given the party and the masses the credit for their successes. Realizing that what they have done is their duty to the peasants, they feel that the praise which they have received indicates, on the one hand, their progress under the party's leadership and, on the other, the scantiness of their service for the peasants in the past. They have treated the praise of the masses as a spur to further endeavor, and they have taken the initiative to get increasing numbers of poor and lower-middle peasants together at forums and listen to their views, so as to improve their work. This is indeed the correct attitude toward achievements and praise.

The experiences of the past several months have proved that to convert a medical team into a revoluionized force devoted to struggle, we must organize the administrative and political workers to participate in it and go down to the countryside together. Each team must be provided with a stronger pol-

itical ideological nucleus, to place political ideological work in the first line, launch everybody into ideological work and coordinate it with operational work, so that team members can fulfill their tasks in the treatment and prevention of diseases and sanitation construction in an outstanding manner and transform their own thinking.

In the medical teams the old "bureaucratic" behavior must be dispensed with and the revolutionized working behavior and method implanted. An effort must be made to emulate the Liberation Army's spirit of harmony between upper and lower echelons and between officers and men and to spread the tradition of democratic unity, partnership in weal or woe, and class friendship. Concern should be shown about the livelihood and difficulties of team members, and under the premise of not deviating from the local standard of living and on the basis of the varying health and ages of team members, proper care should be taken of them so far as their livelihood and labor are concerned.

Correctly Deal with Several Relationships in Work, Better Develop Role of Circuitory Medical Teams

To develop better the role of circuitory medical teams, team members must seriously study the thinking of dialectical materialism and deal correctly with the questions of such relationships as the diffusion and improvement of medical and sanitation work, ordinary and doubtful cases, specialized and all-purpose treatment, the improvement of the quality of medical attention and the reduction of medical expenses, prevention and treatment.

So far as the relationship between diffusion and improvement of medical and sanitation work is concerned, the former is the principal task at present. With the broad masses of peasants in mind, Chairman Mao has aptly said, "The first requirement is not to 'enrich the affluent' but to 'relieve the poor.' So, under present conditions the task of diffusing our work is more urgent." /See Note/

/Note/ "Talk before the Yenan Literary and Art Forum," Mao Tse-tung Hsuan-chi (Selected Works of Mao Tse-tung), Vol III, 2d ed, People's Publishing Agency, 1953, page 863.

To place the key points of sanitation work in the rural areas is in fact a movement for the extensive diffusion of this work. All the work of the medical team must, on the basis of practical possibilities, first solve the questions whose solution is urgently awaited by the masses. However, diffusion and improvement cannot be split into two things. On the basis of diffusion improvement should follow immediately. The latter should not be the blind application of city methods nor the uncritical adoption of measures taken abroad. On the contrary,

it should be based on the actual conditions of our rural areas and follow the development of production and the betterment of living, creating a set of socialist methods of sanitation work suited to the national character and revolutionary traditions of our medical and sanitation work.

The treatment and prevention of ordinary and doubtful cases should be coordinated. The treatment and prevention are generally more effective in such ordinary cases as those of parasitic, contagious, and local diseases, which pose the greatest threat to the health and working strength of the people. Therefore medical teams should get together with local basic medical personnel and concentrate their strength on such treatment and prevention, so as to relieve the sufferings of the largest number and accelerate production as soon as possible. It is entirely wrong to regard the above-mentioned cases as commonplace and their treatment and prevention as not requiring high techniques. At the same time it should be realized that there are also many more doubtful and complicated medical cases in rural areas. The diseases of some, which are ordinary cases and which for this reason have not been dealt with promptly, have developed into more serious ones. The treatment and prevention of these cases are equally the urgent requirements of the masses. Conditions should be actively created for dealing with such cases, and medical teams should do everything possible to make the necessary study and research.

Specialized and all-purpose treatment should be coordinated. To meet the practical requirements of the broad masses, medical team personnel should through practice and by all means seek to become general practitioners, who can engage in the treatment and prevention of all the commonly seen diseases in rural areas and apply both Chinese and Western methods of therapy with proficiency. To do this, the scope of medical teams cannot be too large, and their activities must be sufficiently scattered, which is a most important condition. But at the same time the teams should uninterruptedly accumulate and summarize the practical experiences in their specialized fields, and on the basis of appropriate conditions, organize specialized squads to handle treatments, preventive work, and operations, so as to raise the levels of treatment and prevention and solve all doubtful cases and the special problems involved therein.

Medical and sanitation work requires both high quality and low expenses. This is also a dialectical relationship. Teams should be so frugal as not to waste even a penny, and they should see that they can cure with little or no expense. The reason for neglecting minor cases lies in economic difficulty in most instances. Therefore, as pointed out by some comrades, the question of whether to make careful calculations in giving med-

ical attention to peasants is not merely an economic question, but has its political implications and involves a question of attitude. The stress of this point has resulted in economy in medical expenses among a great many teams.

Some have resorted to such native methods as acupuncture and massage, which cost next to nothing. Others have made very close calculations in writing prescriptions and cut down the expenses to pennies. One poor peasant at the An-chia Commune, Fushun, had cataracts in both eyes. In 1961 he went to the municipal hospital for treatment. After spending more than 100 yuan, he had his left eye cured. But this time, with the medical team in the country, it cost him only a few yuan to have the right eye cured. The same operations varied by more than ten times in expense.

Formerly many medical men regarded as inconceivable those operations which are away from modernized operating rooms and perfect equipment. Now medical teams have made the best use of inferior equipment, converted thatched huts and mud houses into operating rooms, set up bricks and boards as operating beds, replaced kerosene lamps and flashlights for shadowless lamps, and used ordinary cooking utensils in place of pigh-pressure sterilizers. And yet they have successfully performed operations of all kinds and accomplished what their predecessors have not been able to do.

Thus, not only have the masses been greatly facilitated and their burdens lightened, but the spirit of arduous struggle against insurmountable difficulties has been cultivated and the solid skill forged of carrying out medical work outstandingly under baffling material conditions. Of course excessively close calculations and the arbitrary reduction of expenses can unconsciously result in the neglect of rational medication and the degradation of therapeutic quality. On the contrary, economy should not be achieved at the expense of satisfactory treatment, and it should be built on the foundation of careful diagnosis and accurate medication. It requires the physician to devote to his practice a larger amount of creative labor with a view to rational medication and thorough cure. This is also an important aspect of the technical innovation and technical revolution in medical and sanitation work.

Prevention and treatment should be coordinated. With treatment, prevention should be strengthened. The most urgent demand of the broad masses of peasants on medical teams is the treatment and cure of their troubles. If there is only prevention and no treatment or cure, the masses can certainly not find themselves receptive. However, if we engage only in treatment and pay no attention to the control of preventable diseases, it is not a responsible attitude either. We take the stand that

medical personnel should stress prevention and that sanitation and epidemic personnel should, on the basis of the requirements of the masses, engage in a certain amount of treatment and cure. Treatment without prevention or prevention without treatment is alike a one-sided metaphysical viewpoint inconsistent with the wishes of the people.

Task of Circuitory Medical Teams Is to Make Medical and Sanitation Work Take Root in Rural Areas

To solve the medical and sanitation problems in rural areas gradually, the seeds of medical teams must be sowed and they must take root there, and wherever the teams are, there medical and sanitation work must blossom.

To this end, the teams must, under the party's leadership and with their reliance on the masses, carefully and systematically carry out the following tasks:

(1) They should wholeheartedly and diligently treat and prevent diseases for peasants. Whichever diseases have the highest incidence and affect production and the people's health most seriously should be the key points of treatment and give a lead to the treatment of other diseases, with a view to helping the local population alleviate their distress and menace as soon as possible. At the same time, through the large-scale practice of treatment and prevention, summary of the experiences of the masses in this work, and the study of simple and effective methods of treatment and prevention compatible with rural conditions, a set of regulations governing rural medicine and sanitation should be gradually adopted, in order to improve widely the quality of rural medical techniques in dealing with commonly prevalent diseases.

At each place which it visits, the medical team should investigate local conditions of production, livelihood, and sickness, seek to understand the requirements of the masses, and at all times solicit their views. On each job connected with treatment, prevention, and sanitation construction, reliance should be placed on the masses and full consultations had with them, and those problems whose solution is mostly urgently awaited by them and is possible should first of all be solved.

The formula of organization and activities of the medical team must determined with an eye on the greater facilities of the masses. One formula which is welcomed by peasants is the scheduling of visits according to the condition of scattered residence characteristic of the peasants. However, to carry out certain operations and deal with certain doubtful cases, the concentration of medical care is often required, in which case more or less fixed points should be established for the treat-

ment and prevention of certain specialized cases. In some remote villages where communications are difficult, it is also necessary to set up medical stations of a fixed nature for the scheduled treatment of out-patients and prompt medical attention to the masses.

Now, with regard to the methods for the most effective treatment and prevention of commonly prevalent diseases in rural areas and the questions of how to eliminate the four evils effectively, how to carry out sanitation and disease prevention, how to render drugs and materials both easily obtainable and effectual, we lack the summarized experiences of systematic investigations and researches and know very little. This is an important reason for the present failure of our medical and sanitation techniques to meet the requirements of the broad masses of peasants with satisfaction and to take root in rural areas. The medical teams should regard the solution of the above questions as their own task, study them on the basis of rural conditions of production and standard of living, and gradually seek their solution according to local requirements.

(2) Medical and sanitation personnel should be carefully trained for rural areas and it should gradually be insured that all production teams have sanitation personnel not separated from production, that all production brigades have semi-agricultural and semi-medical physicians and obstetricians not separated from production, and that all communes have a few physicians of comparatively high caliber.

The training of semi-agricultural and semi-medical medical and sanitation personnel not separated from production is an urgent requirement facing rural areas. It is also possible to carry out this training on the basis of the characteristics of the rural collective economy. This work should be planned and should go through trial, the summary of experiences, and gradual extension.

In the training of medical and sanitation personnel stress should be laid on quality. This should be insured in such a way that they will turn out to be a new type of workers combining mental with manual labor, who not only are determined to serve the masses, but have the skill to handle the treatment and prevention of disease. To this end, there should be both practice and study and the workers concerned both taught and led. After a period of concentrated study they should be led to participate in circuitory teams, consolidate their knowledge, and organize themselves in scheduled refresher courses and advanced studies. In the training of medical and sanitation personnel there should also be the coordination of Chinese and Western medicine, and the simple and effective methods of therapy employed in the

former, such native methods as acupuncture and massage, should become their basic techniques.

The training of medical and sanitation personnel not only should proceed from rural conditions, spread the revolutionary tradition of short-term training established during the revolutionary war, shorten the courses as far as possible, and abbreviate the contents of these studies, but should give consideration to the actual conditions prevailing in rural areas and the requirements of peasants for the treatment and prevention of many and varied diseases, include the careful study of present and long-term requirements, render possible appropriate arrangements, and avoid the achievement of quick results.

(3) Rural sanitation organizations should be revamped and strengthened. The medical teams should, under the party's leadership, cooperate with local organs, coordinate with the movement of socialist education, and follow this directive of Chairman Mao: "Unite with all new and old, Chinese and Western medical and sanitation personnel, organize a consolidated, united front, and struggle for the development of the great sanitation work of the people." They should obey the plans of the party on unity, education, and the transformation of intellectuals and carry out the reorganization and construction of rural sanitation units in the directions of politics, organization, and technique.

The medical teams should take the basic rural sanitation personnel as bridges for their coordination with the masses, unite them effectively, learn from them with humility, and in performing their joint work, adopt the methods of guidance, progress, and performance. They may also open short-term training classes or lecture courses, to help them improve their iedological cognition and medical technique. The medical teams and basic sanitation personnel should all stress their merits, overcome their defects, learn from one another, and strengthen their unity. On the basis of penetratingly understanding prevailing conditions, medical teams should help local units make the distinctive arrangement and training of basic sanitation personnel. Basic rural units should be simplified in their organization as far as possible and establish a set of working systems for facilitating the masses.

The organization of experienced physicians and nurses for visits to rural areas to serve as "seeds" and to take root there is an important aspect of the strengthening of rural sanitation construction. In recent years a large medical and sanitation personnel and many graduates of medical colleges and schools have settled down in various parts of the country and made up their minds to become red and expert in their respective fields.

For example, the physicians and nurses of the Ha-erh-t'ao Hospital of Liaoning Province have expressed their determination to serve the peasants for the rest of their lives, and they have made signal contributions in their work. Ni Li-chuan (0242 7787 1227), a physician of the hospital of the Yen-ch'iao Commune, Shanghai, have worked for seven years in the rural area and performed active service for the peasants. Many other medical workers have carried out difficult and arduous work in the fatherland's remote regions for the protection of the health of the people of fraternal nationalities and for national defense. With the strengthening of rural sanitation activities, more of such people with a revolutionary will must be organized to take root in rural areas.

(4) Preventive work must be actively expanded to change the faces of rural areas. The expansion of the patriotic movement of sanitation, in coordination with agricultural production and with the control of night soil and the improvement of drinking water as the key points, is a fundamental measure in the prevention of disease. The work in this direction should be based on the people's levels of production and living standards, give attention to the summary of mass experiences, keep to the habits of the masses, take into account prevailing conditions and local peculiarities, and proceed from realism. Only thus can the largest results be achieved.

For example, in Tsun-hua (Hopeh), Jih-chao (Shantung), and Mien-chu (Szechwan) human and animal refuse has been collectively controlled under unified management, and special agents have been designated to accumulate and manufacture fertilizer and deal with the heaping and fermentation of fertilizer. As a result the objects of increasing the volume of fertilizer, improving its effect, and destroying bacteria and larvae have been fulfilled. In Hopeh, Chekiang, Szechwan, Kwangtung, and the Shanghai suburbs, in addition to simple waterworks, numerous methods of well-digging, installing machinery on wells, and employing tools for carrying water have been adopted, whereby the masses have been enabled to drink clean water. Their experiences are worthy of emulation and extension by medical teams in other parts of the country.

(5) The knowledge of sanitation should be energetically diffused. On the basis of investigating and understanding commonly prevalent local diseases, circuitory medical teams should make use of concrete results they have achieved to propagandize the causes of such diseases and methods for their prevention, and in coordination with actual conditions, summarize the experiences of the masses, and bring up preventive measures and the demands of the patriotic movement of sanitation. At the same time the meaning of birth control should be effectively ex-

plained to the peasants, so that the desirability of controlled families may be appreciated. In this kind of propaganda broadcasting, plays, lantern slides, motion pictures, story-telling, singing, and foreign records should be used in forms which are enjoyed by the masses.

* * *

By placing the key points of sanitation work in rural areas, we have been presented with more and more pressing requirements for the revolutionization of sanitation work. Only after the revolutionization of this work in cities can greater strength be spared for service in rural areas. Furthermore, as we turn our faces to the countryside and organize the visits of medical teams there, a driving force is given to the revolutionization of sanitation work in cities. Some good preliminary ideological behaviors shaped up by medical teams in rural areas, such as the standing out of politics, the live study and application of Chairman Mao's works, the intimate contacts with the masses, the wholehearted service for the people, and industry and frugality, should be brought to the cities, to be spread and to push ahead the revolutionization of sanitation work therein, so that the same work in both cities and rural areas can be mutually complementary.

The placing of the key points of sanitation work in rural areas for the construction of socialist rural sanitation is a tremendously difficult long-term task, which is fraught with strategic and revolutionary significance. We believe that so long as we dare to engage in uninterrupted revolution and continue our difficult struggle without let-up, it is entirely possible, in a not very long time, to change the backward face of the sanitation work in our rural areas and to strengthen considerably the construction of this work in rural areas.

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THE STORM OF THE PEOPLE'S STRUGGLE IN THE US

/Following is a translation of an article by Kuo Chi-chou (6753 3444 3166) in the Chinese-language periodical Hung-ch'i (Red Flag), Peiping, No 13, 6 December 1965, pages 10-11./

A storm of protest against US imperialism's war of aggression is rising in the US. This violent storm indicates clearly that the people of the US have started a new awakening.

With the step-by-step escalation of the Johnson Administration's aggressive war, the movement of the people of the US against war is becoming more and more widespread, more and more penetrating, and more and more violent. The magnitude of the scope of this protest and the length of its continuation have rarely been seen in the history of the US.

Comrade Mao Tse-tung pointed out long ago, "When the US reactionaries stir up a war, they must first attack the American people." /See Note/ In expanding the aggressive war in Vietnam the Johnson Administration is seriously damaging the vital interests of the American people. To make up for the shortage of military strength, it has resorted to a massive conscription in the whole country, sent larger and larger numbers of American youths to serve as cannon fodder on the South Vietnam battlefront, and brought unlimited calamity to thousands upon thousands of American families.

/Note/ "Interview with Anna Louise Strong, An American Correspondent," Mao Tse-tung Hsuan-chi (Selected Works of Mao Tse-tung), Vol IV, People's Publishing Agency, page 1191.

Politically, the Fascist rule has subjected the American people, especially the forces of progress, to cruel oppression.

Economically, owing to the rapid increase of military expenditure, the American people are bearing a burden, which exceeds the heaviest in World War II and during the war of aggression against Korea. At present, the exorbitant taxes borne by the American people have reached the average of 32% of personal income. On the other hand the US monopoly group has profited tremendously. According to an estimate, the profits derived from the war industry by this group are higher than those of industry in general by more than 70%.

US imperialism is the best teacher for educating the American people to rise in struggle. Now several hundred thousand people in more than 40 States and nearly 100 cities in the US, representing all strata of society, have joined the struggle against war and formed an irresistible flood. They point the spearhead of their struggle directly at the policies of aggression and war under US imperialism, pointing out clearly, "The US is the aggressor" and resolutely demanding that "the US withdraw from South Vietnam." The American Negroes, who are fighting for their democratic freedom, basic rights, and liberation, are also conducting a righteous struggle, which is more and more intimately bound up with the anti-war movement of the American people. Thousands and thousands of American Negroes are standing in the forefront of the movement against the aggressive war in Vietnam.

This brave struggle on the part of the American people is an effective support to the anti-American revolutionary struggle of the Vietnamese people as well as the peoples of the whole world. It is also a heavy blow to the US policies of aggression and war. This storm is violently shaking the ruling circles of the US, who are frightened to such an extent as to make the outcry that the anti-war movement of the American people "poses a very great menace" to them.

By frantically carrying out its policies of aggression and war, US imperialism has resolved to antagonize the peoples of the world as well as the people of the US and has surrounded its neck with one vise after another, thus causing itself to be submerged in numerous contradictions, from which it is impossible to extricate itself. The flamboyant development of the anti-war movement of the American people is precisely an indication of the increasing sharpening of these contradictions.

In 1918, in "A Letter to American Workers," Lenin said, "The American revolutionary proletarian now shoulders an especially important mission, that of opposing irreconcilably US imperialism, opposing this newest and strongest imperialism, which has last participated in the great world massacre carried out by capitalists with a view to the division of profits."

/See Note/ The proletariat and broad masses of the people of the US, through their struggle, will surely fulfill this especially important mission pointed out by Lenin.

/Note/ Lieh-ning Ch'uan-chi (Complete Works of Lenin), Vol XXVIII, People's Publishing Agency, page 43.

The anti-war struggle carried on by the American people not only has dealt a heavy blow to the policies of aggression and war sponsored by US imperialism, but has made a mockery of the defeatist line of Khrushchev revisionists.

On the question of Vietnam the Khrushchev revisionists have sought by every possible means to bring about the so-called "unconditional talks" of US imperialism and helped the US aggressors to prolong their stay in South Vietnam indefinitely. On the other hand the American people shout aloud with outstretched arms, "No interference with Vietnam!" "Johnson, get out of Asia!" "Win the victory of the Vietnamese Revolution--oppose any talks!"

The Khrushchev revisionists are doing their level best to stress the "important meaning" of Soviet-US cooperation in ruling over the world, and they cannot wait to demand the "total" and "effective" cooperation between the two countries. On their part, however, the American people have firmly expressed their view that on the question of Vietnam "we refuse to cooperate with the US government."

The Khrushchev revisionists loudly proclaim that all mankind has lived on the same "old earth," and they force the oppressed nationalities and peoples to have "peaceful coexistence" with US imperialism. On the other hand the Americans have solemnly declared that US imperialism is the "common enemy" of the peoples of the world and a counterreevolutionary fortress." They demand that "this wicked oppressor be driven out of the planet."

The Khrushchev revisionists have relentlessly preached that the essence of imperialism has changed, denying that imperialism is the source of modern warfare. On the other hand the American people have solemnly pointed out that "the entire US system of economic and political exploitation is precisely the basis of the war in Vietnam."

The struggle of the American people has effectively refuted the fallacies of the Khrushchev revisionists and proved that the contradictions between the American people and the American monopoly capitalists are absolutely irreconcilable. The unprecedented rise of the American people's movement

today precisely reflects the penetrating development of the class struggle in the US.

In his letter to Comrade Foster in 1959 Comrade Mao Tse-tsung pointed out, "The dark night has its end."

ROAD TO THE FLOURISHING OF THEORETICAL WORK

/Following is a translation of an article by Hsiao Shu (5135 6615), in the Chinese-language periodical Hung-ch'i (Red Flag), Peiping, No 13, 6 December 1965, pp 12-13./

In recent years workers on all fronts in our country -- including those at the basic levels and the masses of workers in industry, peasants and soldiers -- have published in newspapers and magazines a great number of articles concerning the study of Chairman Mao's writings. These articles deal separately with political and ideological work, life in the armed forces, industrial and agricultural production, science and technology, culture and education, table tennis, etc. Though differing in the subjects they touch on, they have one feature in common: all the writers have striven to apply the thought of Mao Tse-tung in their work and integrate theory with practice closely.

Comrade Mao Tse-tung says: "It is necessary to master Marxist and apply it, master it for the sole purpose of applying it. If you can apply the Marxist-Leninist viewpoint in elucidating one or two practical problems, you should be commended and credited with some achievement. The more problems you elucidate and the more comprehensively and profoundly you do so, the greater will be your achievement." ("Rectify the Party's Style of Work," Selected Works of Mao Tse-tung,Vol. 3, People's Publishing House, 2nd edition, p. 817).

It is by following this instruction laid down by Comrade Mao Tse-tung that the writers of the above mentioned articles have to a certain extent applied /Marxist/ theory in elucidating a number of practical problems.

By coming to grip with the contradictions in their work and analyzing them, the writers have found the ways for resolving them. They have applied theory to summing up their experience and found universal laws from individual things. Simple but vivid in language, these articles are filled with

the liveliness of materialistic dialectics, radiating the brilliance of Marxism-Leninism and the thought of Mao Tse-tung.

These articles are written on the basis of popular study of the thought of Mao Tse-tung -- on the basis of the colossal achievements gained on all fronts of the nation. They are a manifestation of the fact that theory, having been mastered by the masses and turned into a material force for the transformation of the world, has played a vital role in our country's socialist revolution and socialist construction. We believe that only by travelling in this direction shall we be able to produce more such articles, articles with a still higher level, and specialized works which systematically elucidate problems and sum up experience. And then we shall enable more practical workers to become theoretical workers at the same time and make theoretical work still more flourishing. This will have a greater effect of speeding up the development of our country's socialist revolution and construction.

Applying the thought of Mao Tse-tung in the course of practice, the authors of these articles learn while they work. They always consult Mao Tse-tung's writings in their work, reading them in order to solve the problems they face in their work and to search for the causes of success and failure. They study Mao Tse-tung's works because they want to find a weapon with which to carry out their combat. This is the reason why they have gradually understood and mastered the laws of their own work and gradually mastered the thought of Mao Tse-tung as well.

Learning consists of two aspects: Reading and application. Books are tools for recording and disseminating human knowledge. To make revolution and engage in construction requires Marxist-Leninist theory and knowledge in various fields. Says Comrade Mao Tse-tung: "It is impossible for a party to lead a great revolutionary movement to victory if it has no knowledge of revolutionary theory, no knowledge of history and no profound understanding of the actual movement." ("The Role of the Chinese Communist Party in the National War," Selected Works of Mao Tse-tung, Vol. 2, People's Publishing House, 2nd edition, p. 521.) Therefore, book reading is a matter of necessity. We should, as constantly instructed by Comrade Mao Tse-tung, manage to find as much time as possible to read more books, particularly classical works of Marxism-Leninism.

Naturally, we must not overlook application because we pay serious attention to reading, as Comrade Mao Tse-tung says: "Reading is learning, but applying is also learning and the more important kind of learning at that." ("Problems of Strategy in China's Revolutionary War," Selected Works of Mao Tse-tung, Vol. 1, People's Publishing House, 2nd edition, p. 174.) Hence the need to combine reading with application.

Theory should not remain in the books but should be liberated from the study and from the classroom to come into contact with all aspects of practical life in the world. Only thus will it play its role and develop.

As facts testify, Marxism-Leninism has unceasingly developed in the rich practical life of China's socialist revolution and construction and in the course of its practical struggle against modern revisionism.

To persevere in the principle of integrating theory with practice, use the thought of Mao Tse-tung to continuously sum up the rich experience gained from the three major revolutionary movements of class struggle, the struggle for production, and scientific experiment, and criticize modern revisionism and all bourgeois ideological tides -- such is the road to the flourishing of theoretical work.

CSO: 3530-D

STUDY HISTORY FOR REVOLUTION

/Following is a translation of an article by Ch'i Pen-yu (2058 2609 4416) in the Chinese-language periodical, Hung-ch'i (Red Flag), Peiping, No 13, 6 December 1965, pp 14-22./

The grave digger of the old world and the builder of the new, the proletariat shoulders the greatest responsibility in human history. In order to fulfill its historical mission, it must have a thorough grasp of historical development. No one can be a conscious proletarian revolutionary without having a knowledge of the laws of historical development. This is the reason why the proletariat gives serious attention to history and to historical research.

In the course of its own revolutionary practice, the proletariat must draw its lessons from past class struggles and historical experience. Historical experience can enlighten and help proletarian revolutionaries to correctly formulate their strategy and tactics. The historical experience of their own revolutionary activities is the most valuable reference for proletarian revolutionaries to guide their current revolutionary movement.

History is the textbook on class struggle. A history which reflects class struggle is capable of giving the masses of people and the new generation of revolutionaries a profound class education as well as an education in revolutionary traditions. The glorious deeds of struggle waged by the oppressed classes and nations against oppression in history have always been a force inspiring the masses of people to take part in revolutionary struggle actively and courageously.

All great revolutionary mentors of the proletariat have attached importance to history and historical study.

Engels said thus:

"History is everything we have. We pay more attention to history than any school of philosophy and even Hegel." ("The Condition of England: On Thomas Carlyle's 'Past and Present'", Collected Works of Marx and Engels, Vol. 1, People's Publishing House, p. 650.)

Comrade Mao Tse-tung's attitude toward history and historical study has particularly drawn our attention. More than once he told us:

"/We/ must know not only the China of today but also the China of yesterday and of the day before yesterday." ("Reform Our Study," Selected Works of Mao Tse-tung, Vol. 3, People's Publishing House, 2nd edition, p. 801.)

"We must make a summing-up from Confucius down to Sun Yat-sen and inherit this precious legacy. This will help much in directing the great movement of today." ("The Role of the Chinese Communist Party in the National War," Selected Works of Mao Tse-tung, Vol. 2, People's Publishing House, 2nd edition, p. 522.)

These words most clearly show the importance of history and historical study.

All viewpoints which underestimate history, all viewpoints which manifest an unwillingness to study history, and all viewpoints which hold that historical study is dispensable or that teaching on history can be abolished are wrong and run counter to Marxism-Leninism and the thought of Mao Tse-tung.

In stressing the importance of history and of historical research, we do not call on others to kneel on the heap of old paper of history, burn joss sticks and worship their ancestors, and study history for its own sake.

There is no historical research which is above class. All ruling classes of the past interpreted history according to their own class interests. Their class interests were so disharmonious with those of the masses of people and so inconsistent with the demands of social development that, instead of recognizing the true reality of history, they distorted it. If we crawl on the heap of old paper of history, follow the footprints of historians of the past, and closely follow their example in studying history, then we are bound to turn ourselves into their captives and propagate for them those outdated viewpoints which are contrary to the spirit of the present era.

The representative of the highest interests of the people, and proposing its own historical task on the basis of the laws of social development, the proletariat is basically different from all ruling classes in history so as the attitude toward history is concerned. It studies history

for the sake of the interests of the masses of people and in order to realize its own great revolutionary task.

To study history for the revolution, we must take the proletarian stand and engage in historical research with the proletarian viewpoint and method. Whether or not we have this stand, this viewpoint and this method is the most important question for our historical study.

Ever since Confucius, peasant uprisings had been described as illogical. A great many historians, in teaching the aim of keeping one's self alive, portrayed the numerous peasant heroes who perished in those uprisings as murderers, "rebels" who committed the biggest crime. Under the pressure of such a habitual opinion which existed for the past thousand years, even a number of fighters for a new culture in the "May 4" movement could not avoid being condemned as "rebels."

With a bang, Marxists appeared on the scene and loudly proclaimed to the masses of people: "Uprisings are logical." Peasant uprisings ever since the Ch'in Dynasty were presented as "peasant movements of resistance" -- "peasant revolutionary wars."

Comrade Mao Tse-tung points out: "In China's feudal society, only peasant class struggles, peasant uprisings, and peasant wars were the true motive power for historical development." ("The Chinese Revolution and the Chinese Communist Party," Selected Works of Mao Tse-tung, Vol. 2, p. 619.)

For several thousand years, emperors, kings, prime ministers and generals received all kinds of praise from historians. History became the song of eulogy in their temples. With the exception of some isolated thinkers who secretly voiced their doubts, none dared to say "No." But the proletariat, with its great revolutionary spirit, holds these socalled sacrosanct "rulers" of society in contempt. "The people, and the people alone, are the motive force for the making of world history." ("On Coli Coalition Government," Selected Works of Mao Tse-tung, Vol. 3, p. 1031.) This has basically broken the blind faith in emperors, kings, prime ministers, and generals, which had existed for several thousand years.

How serious the difference is! When the same historical events were studied with different stand, viewpoint, and method, an entirely opposite conclusion was drawn.

A school of thought holds that it will not do to study history with the proletarian class viewpoint alone and without a kind of "historicalism." Without "historicalism," one who is guided by the class viewpoint alone is liable to make the mistake of "non-historicalism," the idea of "negating everything."

We are astonished by the posing of such a question. How can the proletarian class viewpoint lead to the "negation of everything" and

"non-historicalism," in which case a kind of "historicalism" has to be used as a remedy? Can there be a kind of "historicalism" which is separated from the class viewpoint in the treasure-store of Marxism?

On the question of historicalism, the bourgeois viewpoint is basically different from the proletarian one. The bourgeoisie has different views about historicalism, regarding history either as a process of natural development having nothing to do with class resistance or a process of development of ideas. On the other hand, the proletariat understands history according to the original face of historical development. Comrade Mao Tse-tung says: "The China of today has developed from the China in history. As we are believers in the Marxist approach to history, we must not cut off our whole historical past." ("The Role of the Chinese Communist Party in the National War," Selected Works of Mao Tse-tung, Vol. 2, p. 522.)

Marxist historicalism requires us to observe -- on the basis of the viewpoint of historical materialism -- historical events from the course of development of history itself as well as from the course of conflicts in history. It goes without saying that the course of historical development and that of conflicts as referred to by Marxism take classes and class struggle as their actual content. For in the view of Marxism, in a class society there would be no historical development without classes and class struggle. And so "historicalism" divorced from the proletarian class viewpoint -- "historicalism" without classes and class struggle as its content -- is absolutely not Marxist historicalism. Without the proletarian class viewpoint there would be no Marxist historicalism.

Marxist historicalism which observes historical events from the development of history and from the course of conflicts in history presupposes that historical events be subject to concrete analysis within a certain historical framework, all events being determined by the given time, locations, and circumstances. A presupposition which is the feature inherent in the proletarian class viewpoint.

The reason is that the history of class struggle as the history of civilization has from the first been connected with a given historical stage of production development. Comrade Mao Tse-tung says: "Class struggle, some classes triumph, others are eliminated. Such is history, such is the history of civilization for thousands of years." ("Cast Away Illusions, Prepare for Struggle," Selected Works of Mao Tse-tung, Vol. 4, People's Publishing House, 1960 edition, p. 1491.) This statement clearly shows that the proletarian class viewpoint itself is at one with Marxist historicalism.

It can thus be seen that the application of the proletarian class viewpoint to historical study will absolutely not lead to "negation of everything" and to "non-historicalism." Any attempt to use "historicalism"

which is divorced from the proletarian class viewpoint to remedy the "deviation" and "defect" of the proletarian class viewpoint can only be an attempt to substitute bourgeois historicalism for Marxist historicalism. For if we have not correctly mastered or have not entirely correctly mastered the proletarian class viewpoint, we should, when deviations and defects occur in our historical research, correctly elucidate the proletarian class viewpoint and its correct application to historical research, and should not attribute the so-called deviations and defects to the proletarian class viewpoint.

Erroneous interpretation of historicalism and the class viewpoint is not merely a question of ambiguity of ideas. Essentially it reflects the doubt and oscillation of some people toward the application of the proletarian stand, viewpoint, and method in the study of history, and some even oppose the application.

With regard to the application of the proletarian stand, viewpoint and method in the study of history, some who are bound by the old viewpoint feel unaccustomed to it, while others even resent it. They are dissatisfied with the criticism of emperors, kings, prime ministers and generals and praise of peasant uprisings, and, moreover, set forth a whole set of erroneous views. On the one hand, they believe that feudal landlords could be criticized and opposed only when they were in the phase of decline and disintegration but could not be criticized and opposed when they were in the phase of ascendancy and development because their role was progressive. Hence, in studying history, we cannot indiscriminately "condemn feudalism and criticize landlords."

On the other hand, they contend that peasants, being also private holders, ignorant and backward, do not deserve being called revolutionary. In their view, the peasants revolt because they want to become government officials, get rich, become new aristocrats and new kings, and that the program of their struggle is likewise feudalism. So they feel that theoretically, in guiding historical study, it will not do to have the class viewpoint alone. It is necessary to use something - the so-called "historicalism" - to remedy the deviation and defect. Thus they get on the rostrum of history.

As a matter of fact, what they advocate is what Marxist historicalism must discard.

From the Marxist class viewpoint, the most essential relationship in the feudal society, and its principal contradiction, is the antagonism between the peasantry and the landlord class. The peasants are an exploited class; the landlords are an exploiting class. Though different were the historical roles of the landlords in the initial and final stages of feudal society, so far as their class nature is concerned, they were one and the same.

Landlords in the early period of feudalism were similarly the exploiters and oppressors of the peasants. Where there is exploitation and oppression, there is struggle and resistance. The Ch'in and Han dynasties represented the early period of Chinese feudal society, but in that period already peasants rose to oppose the landlords and feudalism. One after another, Ch'en Sheng, Wu Kuang, Ch'ih Mei, and Tung Ma rose to resist, dealing telling blows at the rulers of the feudal society in that "wonderful" early period and thus accelerating the continuous advance of society. If peasants in that period could rise to oppose the exploitation and oppression by feudal landlords, why cannot the proletariat criticize and oppose them today? Naturally, what we mean by criticism and opposition is not hollow curse nor simple negation, but concrete analysis and profound criticism of their exploitive nature. What class viewpoint and historicalism are they if they are intolerant of the analysis and criticism of feudal landlords in the early period?

Criticism and opposition against feudal landlords of the early period do not prevent the proletariat from recognizing the historical progressive role they once played. Furthermore, only the proletariat is capable of scientifically analyzing and evaluating the historical role and class nature of a system of exploitation. In studying the history of social development under capitalism, Marx had used the sharpest language to attack the bourgeoisie of the early period, saying that members of this class were "wolfish" "wolf-like" bloody exploiters. But it was also he who made the fullest evaluation of the role they played in history.

Nor criticism and opposition to feudal landlords of the early period prevent us from appropriately affirming the role played by a few outstanding figures among emperors, kings, prime ministers and generals in the development of history. Lenin says: "The proletariat is hostile to every bourgeoisie and to all manifestations of the bourgeois system, but this hostility does not relieve it of the duty of distinguishing between the historically progressive and the reactionary representatives of the bourgeoisie." ("The Fall of Port Arthur," Collected Works of Lenin, Vol. 8, People's Publishing House, p. 34.) Such is the attitude of the proletariat toward figures of the ruling classes in history.

We have never negated the historical roles played by a few outstanding characters of the ruling classes. Progressive roles in the development of history played not only by emperors, kings, prime ministers and generals of the feudal society of the early period but also those of the feudal society of the late period, and even the same work they did in some respects promoting the development of history, should be recognized. A case in point is our recognition of the historical role by Emperor Kuang Hsü in the last years of the Ch'ing Dynasty and other figures of the Reformation at the time.

However, what we mean by such recognition is that we use the proletarian stand, viewpoint and method and critically carry out appropriate

historical evaluations of emperors, kings, prime ministers and generals. We do not mean devoting all our efforts to writing articles in praise of them. While we recognize the historical roles played by a few outstanding characters among emperors, kings, prime ministers and generals, we are aware that they were outstanding because some work they did was objectively in agreement with the requirements of social development or with certain wishes of the people. We have all along held that the masses of people are the masters of history, that the few outstanding characters among emperors, kings, prime ministers and generals were, in the last analysis, merely representatives of the ruling classes, and that their historical roles were insignificant in comparison with those of the masses of people and the great revolutionary leaders who stood in front of the locomotive in history. Only the masses of people and those true revolutionary leaders are the great heroes who most deserve our songs of praise.

While we recognize the historical roles of the few outstanding figures among emperors, kings, prime ministers and generals, we know that they, like all others of the ruling classes, were the oppressors and exploiters of the masses of people, and that while providing history with new things, they often practiced brutal oppression and exploitation, and, what is more, proceeded from the prevailing interests of the rulers. For that reason, in assessing appraising their historical roles, we also should make the necessary exposure and criticism of their actrocities of oppression and exploitation.

To be sure, sometimes in order to elucidate in a concentrated manner the problems in a certain respect, we should lay the emphasis on appraising their progressive aspects. Those historical figures who did more good than evil should be given a historical appraisal on the basis of seeking truth from facts and in the context of all their historical activities; we should not draw the conclusions at will on the basis of some of the deeds they did. In any case, however, we must not exaggerate their historical roles in an unprincipled manner, arbitrarily praise their civil rule and military deeds, and even whitewash and defend their crimes.

In seeing certain problems arising from the study of emperors, kings, prime ministers, and generals, some people come to the conclusion that emperors, kings, prime ministers and generals need not be studied. This is wrong. We must seriously study not only those few outstanding figures among them but also the most reactionary characters among them. The key issue is that we must carry out this study with the proletarian stand, viewpoint and method. The book "Yuan Shih-kai the Traitor" deals with a most reactionary character among emperors, kings, prime ministers and generals in recent times. Because the author conducted the research with the proletarian stand, viewpoint and method, he has not only brought out the features of the activities of a representative of the reactionary class, but through the characterization of a reactionary figure, he has portrayed the historical reality from a certain aspect at the time.

The history of class society is history of class struggle. To understand the history of class struggle, we must study both opposites of class contradictions. Emperors, kings, prime ministers and generals or other negative characters represent one opposite of the contradictions. Without making a proper study of them, we cannot properly understand the other opposite of the contradiction. The controversy in the historical circles on the question of emperors, kings, prime ministers, and generals reflected a problem which still existed in the study of this question, and to solve this problem, we must carry out the study with the proletarian stand, viewpoint and method, and not retreat in face of the study.

Just as we cannot correctly understand the ruling classes and emperors, kings, prime ministers and generals in the feudal society without having the proletarian class viewpoint, so we cannot correctly understand the peasant classes and peasant wars in the feudal society without having it.

Peasants in the feudal society were small private holders and, as such, they had their own shortcomings: being, for instance, narrow-minded, lethargical, conservative, etc. This is what we often refer to as historical limitation. Thus, it will not only be inconsistent with historical facts but also a denial of the vital significance of the role of the proletariat in leading the peasants if we object to remold them in the image of the proletariat. Just as Engels said in his book "The Peasant War in Germany," peasants in the feudal society were at the lowest stratum of society. In the feudal society the peasants' movement of resistance against the landlords was the motive power for social development. The strange thing is that these small private holders who were pressed at the lowest stratum of society and who were so poor that they were left with only a hoe and two shoulders are now turned, by the pens of some historians, into private holders not a bit different from feudal aristocrats who owned ten thousand hectares of fertile farm and a thousand houses. You see, the peasants rose in revolt for the sole purpose of becoming government officials, getting rich, and becoming new aristocrats and new kings, and the program of their struggle was similarly feudalism. Were this to be really true, what class antagonisms and class struggle could not be reconciled? How can we imagine that millions upon millions of serfs who were suffering from hunger and cold, struggling on the verge of death, and waging a life-and-death struggle against feudal landlords who exploited and oppressed them wanted to turn themselves into overlords opposed by the people?

Existence determines consciousness. The economic status of each class determines its ideology. As a class, peasants are the exploited. This basically determines their ideology of resistance. The landlord class, being in the position of exploiters, can only have the idea of oppressing the peasants.

To be sure, because peasants in the fuedal society were influenced in certain respects by the ideas of the ruling classes, the program of their struggle often contained some things reflecting the ideas of the feudal ruling classes. And in the course of development of the peasant revolutionary movements, there were often cases where some members of the revolutionary leadership core transformed themselves into feudalists or where the leadership of the revolution was usurped by the landlords, with the result that the peasants' revolution became a tool with which the feudal ruling class changed the dynasty. Such a historical fact, just as Comrade Mao Tse-tung pointed out, is conditioned by historical circumstances. As for certain things in the programs of the peasant revolutionary struggle reflecting the feudal ideology, they were after all not the main things when compared with their revolutionary slogans, "sharing poverty or riches," "equality in ranks," "farming land together," and "sharing food." The allegation that the peasants revolted in order to control the government and get rich was a distortion, pure and simple, of the peasant revolutionary movement.

A school of thought holds that in recent years we have written only about the peasant uprisings in writing history. We have not written or have written very little about emperors, kings, prime ministers and generals. As a result, the bright side of history has been lost and everything in history has become black.

What a misleading statement:

We have all along held the belief that peasant uprisings and the rule of emperors, kings, prime ministers, and generals who represented the interests of the landlord class are the two opposites of the contradiction in feudal society. In order to reflect fully the true reality of history, it is necessary to write about both aspects, so that the question is not how much is written about either of the two aspects, but, more important still, why and how we should write about either of them. For instance, when writing about the history of emperors, kings, prime ministers and generals, if we still follow the examples of "Actual Records" and "Notes On Living" in the feudal dynasties and wilfully describe the emperors' "temperaments" and the "virtues" of imperial concubines and even the geomantic system of their ancestors' graves, then it is wrong to write about them, however little we want to write. Or, when writing about the history of peasant uprisings, if we still follow the sentiments of feudal scholars and the tones of feudal historians and if we wilfully paint the faces of peasant heroes black, then it is equally wrong to write about them, however more we want to write. Furthermore, on the question of writing more or less, the fact is: Up to now, we have actually written too little about the history of peasants -- the masters of history in feudal society. Up to the present also, not even a general history of peasant uprisings has been written. How can we say that we have written only about peasant uprisings?

As regards the history of emperors, kings, prime ministers and generals, much has been written, and a lot that has been written has not been correct. Some historians have piously offered many beautiful crowns to the feudal rulers of the past, calling them "wise monarchs," "sacred and competent ministers," "people's saviors," and "men who performed world-shaking deeds." Is this correct?

The basic question, therefore, is not how much has been written. It is this: Why is it that when more has been written about peasant uprisings and less about emperors, kings, prime ministers, and generals, history loses its brightness and turns dark? Can it be that the light of history does not come from the millions upon millions of the laboring people who created civilization, from the masses who held aloft the torch of revolution? Can it be that in the prolonged feudal society, emperors, kings, prime ministers and generals had to be begged for giving history a ray of light? Why is it that whoever writes more about peasant uprisings is guilty of a big crime? Is such an accusation against our historical research work run the result of our departure from the proletarian class viewpoint?

The criticism of the so-called non-historicalism in historical research is perplexing at first glance. But if only we find out the facts, we understand that the non-historicalism in historical research in recent years consists of nothing but the praise of emperors, kings, prime ministers and generals and negation of peasant movements. The reason for the appearance of such non-historicalism is not, as some people have alleged, that we have abused the proletarian class viewpoint, but, on the contrary, it is that we lack the proletarian class viewpoint.

"It is said that history likes to tease people and make fun of them. It says it wants to enter this room, but in the end it enters another room." ("Tactics of Bourgeois Intellectuals Against Workers," Collected Works of Lenin, Vol. 20, People's Publishing House, p. 459.) The same is true of historical study. You see, some people originally tried to use some problems to prove that it would not do to have the proletarian class viewpoint alone in studying history, but in the end, these problems proved that the study of history could not be conducted without the proletarian class viewpoint.

Would the application of the proletarian stand, viewpoint and method to the study of history jeopardize the scientific character of historical research? The bourgeois scholars have always opposed us by using the theory that the class character would hamper the scientific character. Hu Shih was among those most energetically trying to do so. He argued that the study of history must be "above class" and "purely objective," and that the application of the proletarian stand, viewpoint and method would only result in having us led by the nose by Marx and Lenin. This junk has long

been criticized by Marxists and smashed into pieces. However the influence of this erroneous theory on the thinking of some people has not been eliminated. Even after the liberation, there were still people who used this theory who opposed the principle of Party character for the study of history. In 1963 some people publicly advocated that history must not be interpreted with the theory of class struggle. The view that it would not do to have the class viewpoint alone in undertaking historical research and that a kind of "historicalism" was also needed was, in fact, associated with the old question of scientific and class character for historical research.

In talking about the scientific character of historical research, we must first of all talk about what scientific character for historical research is, and how historical research is turned into a science.

The scientific character of historical research simply means that our understanding of history must conform to the true reality of historical development. The true reality of historical development can be understood, but all exploiting classes are necessarily restricted by their class positions in their understanding of the course of historical development. Their interests prevent them from scientifically and objectively examining the historical incidents. In order to protect their class interests, they often deliberately distort the true reality of historical development. Engels says: "The bourgeois turns everything into a commodity, and the study of history is no exception. The nature of the bourgeoisie, and the condition for its existence, is to forge all commodities and therefore also forge history. The more the historical writings forged conform to the bourgeois interests, the more they are paid." ("Fragments of 'History of Ireland'", Collected Works of Marx and Engels, Vol. 16, People's Publishing House, p. 573.)

Man's understanding of history is usually restricted by the level of development of the productive forces at the given time. Under conditions of undeveloped science, man also could not understand history scientifically and objectively. Therefore, before the advent of Marxism, although many historians provided useful data for historical research, these were still a heap of unsystematic, fragments of facts. Then in the hands of the proletarian historical research underwent a great change. Marx and Engels, mentors of the proletarian revolution, applied the proletarian world outlook to the observation of history, discovering objective laws of historical movement from the complicated and confusing mass of historical phenomena. History was thus turned into a science.

Why has the proletariat been able to turn historical research into a science? This is determined by the conditions of the time and the social position in which the proletariat finds itself.

The proletariat is the most progressive class in modern society. It personally participates in the practice of modern large-scale production. The sum total of knowledge accumulated by human civilization and modern science accords the proletariat the capacity to come to an understanding of the objective world that is greater than that in any previous era.

The proletariat is also the most revolutionary class in modern society. Its class position -- being the most oppressed and exploited class -- determines the consistency between its interests and those of the masses of people, and also the consistency between its interests and those of social development. As Engels says: "The more science is free, impartial and disinterested, the more it conforms to the interests and wishes of the workers." ("Ludwig Feuerbach and the End of Classical German Philosophy," Collected Works of Marx and Engels, Vol. 21, People's Publishing House, p. 353.) Only the proletariat which represents the interests of the masses of people and of social development in the world is capable of impartially and fearlessly expounding on the actual course of historical development. The class character and the scientific character of the proletariat are entirely consistent.

The advocacy for studying history with the "above-class" and "purely objective" attitude is itself a kind of theory of objectivism with a strong bourgeois class character. The slogan for "above-class" and "purely objective" is merely a signboard used to cover up the bourgeois class character in the study of history. And the reason why they use this signboard is none other than that they wear a mask to deceive the laboring people, in an attempt to make the laboring people accept the things filled with bourgeois class character as things that belong to the whole people and the whole society. Let us examine the facts. Germany's Lank, who was acknowledged by the Western bourgeois academic circles as the "father of the modern school of history of objectivism," despite the fact that he spent his life in the dust-covered storehouse of historical literature, had the ultimate aim of studying history which was merely to use the best historical material as a tribute to the German bourgeoisie and the Junker landlords. He himself was in support of the Prussian regime and of the iron-fist policy of Bismark. His most famous work, "The History of the Pope," is a summation of the experience of the ruling class in ruling the people. And was Hu Shih, who consistently called for "respect of evidence" and "respect of facts," the advocator of the fallacious theory that history was "big money" manipulated by man? To justify the aggression of China by imperialism and to defend all capitulationists, he might freely manipulate the "big money" of history to defend the traitor Ch'in Kuei. "Chin Kuei had performed great meritorious services, yet people have condemned him down to this day. What an unjustice has been done to him." (Hu Shih: "Military Expenditures in the Early Years of Southern Sung Dynasty.") How could these people justify their claims for "above-class" and "purely objective!"

Lenin once said that any one who is living cannot but stand on the side of this class or that class and cannot but be gladdened or saddened by the success or failure of this or that class. True, there had been no historical research that is devoid of a class character. The experience and lessons of historical research itself deserve our close attention. The people have supported us and we should not forget them. Writing history for the people and for the revolution, we must draw an ideological line of distinction with theory of objectivism and must free ourselves from its influence.

Historical research has always been a sphere where the ideological struggle is extremely sharp. The feudal ruling classes and the bourgeoisie, in order to defend their class interests and to dampen the will of the laboring people to resist, have never relaxed their control over this sphere. In the socialist society classes and class struggle still exist, and the historical viewpoint of the overthrown ruling classes will not automatically disappear from the sphere of historical research. To safeguard the revolutionary interests and the interests of the masses of people, proletarian fighters should hold aloft the all-conquering banner of the thought of Mao Tse-tung and bravely occupy and consolidate all positions in the sphere of historical research.

Our mother country is a great country with a long history and fine legacy. Our people are a great people with glorious traditions of resistance against class oppression and national oppression. And our Party is a great party with glorious historical experience and precious historical experience. In face of this extremely rich treasure-store of history, we are still pupils. Let us humbly learn Marxism-Leninism and the thought of Mao Tse-tung properly master the proletarian stand, viewpoint, and method, and study history for the sake of revolution.

CSO: 3530-D

TA CH'ING OIL FIELD DEVELOPED UNDER THE DIRECTION OF THE THOUGHT OF MAO TSE-TUNG

/Following is a translation of an article by Min Yu (7036 6276) in the Chinese-language periodical, Hung-ch'i (Red Flag), Peiping, No 13, 6 December 1965, pp 23-28./

The development of socialist construction in our country calls for ample supply of petroleum. The first question confronting us in solving the problem of petroleum is whether or not our country has rich deposits of petroleum. In the past the imperialists told lies recklessly to everybody that China was poor in petroleum resources and could only depend on imported oil from foreign countries.

The first that sang this tune was U.S. imperialism. As far back as in 1914 when the Standard Oil Company of the United States sent its geologists to China to survey petroleum resources, they asserted that "both the types of rocks and their genetic age in the greater part of China preclude the possibility that there are deposits of petroleum worthy of exploitation." (Petroleum Science, Vol. I, by F. G. Clapp, 1938 edition, p. 139.) In 1941 Rodgens, manager of the Texas Oil Company of the United States said: "There is almost no possibility of petroleum deposit in the greater part of China." (Chapter "Petroleum Industry" in The History of Industrial Development in the United States, by W. S. S. Rodgens, 1941 edition, p. 339.) According to their assertions, China can only depend on "imported petroleum" and can only serve as a market for the petroleum products dumped by imperialism.

Facts have proved that this "theory that China is poor in oil" is completely groundless.

Over the past ten years and more, China's geological personnel have found huge deposits of petroleum and developed oil fields after exerting

uninterrupted efforts. This is a strong proof that under the geological conditions of more continental strata our country has rich resources of petroleum and is anything but an "oil poor country."

The development of the Ta Ch'ing Oil Field and other oil fields has laid a foundation for China's petroleum industry. This promotes a better and greater development of socialist construction of our country.

Concerning the development of the Ta Ch'ing Oil Field, guided by the thought of Mao Tse-tung and relying on our own strength we have over the past years solved a series of technically difficult problems, gained a clear view of the geological formation of the oil fields, worked out practical designs for developing the oil fields and developed the oil fields. We have completely smashed the petroleum blockade imposed by U.S. imperialism and modern revisionism.

I

Petroleum is deposited under ground and cannot be seen and felt. It is from several hundred meters to several thousand meters deep under the ground. A small oil field has an area of 1 to 2 sq. kilometers and a large one an area of several tens, several hundred or nearly a thousand sq. kilometers. But how can we find the oil field in a basin which has an area of from several tens of thousand to several hundred thousand sq. kilometers? This is a problem to be solved by geological prospecting for petroleum. Here the different views, different methods of thinking and different methods of work on the part of geological workers will produce different results.

The distribution of petroleum in each basin follows a set pattern. This regular pattern is knowable. The question of decisive importance is from what viewpoint and in which way is it made known.

So far as petroleum prospecting is concerned, one who takes a metaphysical view and makes a metaphysical approach will, instead of carrying out overall survey and selecting the most advantageous area, confine himself, on the basis of limited data, to drilling wells in one or two localities. Without paying attention to overall study of the whole area, an incorrect judgment will often be formed of these localities and the main prospecting force will be assigned to the most disadvantageous locality. This will affect the results of the prospecting operation.

Our geological workers made repeated study of Chairman Mao's writings on philosophy and clearly recognized that in prospecting for oil fields they must thoroughly and systematically survey the whole basin, acquire first-hand data and proceed from the whole in dialectically handling the relationship between the whole and the part.

We adopted various prospecting methods in the Ta Ch'ing area. We carried out all-round, comprehensive surveys and research in the whole basin and acquired rich, first-hand data. The data acquired through each method reflected only a certain aspect of the underground conditions and only the characteristics of each side. If judgment were rashly formed mainly on the basis of the data acquired through one or two methods, no all-round knowledge could be gained and even wrong conclusions would be drawn. As pointed out by Chairman Mao in his "On Contradiction," a one-sided view of a problem cannot lead to success in work. Therefore, we must flexibly apply different prospecting methods in light of the actual conditions, synthesize and study all data including contradictory data and find the inherent connections between various phenomena before we can draw scientific conclusions.

After conducting such surveys and research, we verified the most advantageous area, decided on the direction of main attack, made disposition of our prospecting force and discovered the Ta Ch'ing Oil Field in a comparatively short time.

Comrade Mao Tse-tung pointed out: "A comprehension of the whole makes it easier for one to handle the part because the party belongs to the whole." ("Problems of China's Revolutionary War," Selected Works of Mao Tse-tung, Vol. I, People's Publishing House, 1952, 2nd edition, p. 168.) The process of discovering the Ta Ch'ing Oil Field has once again borne out this scientific thesis.

After discovering the Ta Ch'ing Oil Field, we went a step further and did a comprehensive, detailed prospecting work in each advantageous area of the basin. In several years, seismologic survey of the whole basin was completed. Utilizing these seismologic survey data and the data on the test wells in each structure zone in the basin, we studied the process of geologicial formation of the whole basin from the old to the new geological periods, worked out structure maps for each period in the geological history, and the present structure maps* and drew maps of distribution of the arenaceous bodies of each oil layer. Further, we studied the conditions for forming oil and the distribution of the oil-forming layers in the whole basin. In this way we gained a comprehensive, overall knowledge of the geological conditions for petroleum and of the basic law for distribution of the oil fields in the whole basin.

To be sure, in the work of prospecting for petroleum the judgment formed of the distribution of underground oil fields frequently did not correspond to realities; in a new area in particular, the difference was sometimes quite a big one, and it frequently happened that no oil layer was found in drilling.

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* "Structure maps" are maps showing the structure of strata.

How to cope with this state of affairs? One who took a metaphysical view and made a metaphysical approach would consider that failure or success in drilling oil fields was purely a matter of luck. Persons taking such a view would always show blind optimism before selecting a locality and would not carefully analyze the favorable and unfavorable conditions. When they failed to discover oil layers in one or two wells drilled in the selected locality, they would jump to the conclusion that the locality was without prospect. Instead of seriously summing up experiences they would shift to a new locality. Of course, they may run into some oil fields by chance, but on the whole this method of finding oil fields will take long and yield poor results.

The geological workers in Ta Ch'ing regarded the prospecting work in each locality and each operation of drilling test wells as a link and a phase of the whole process of development from practice to knowledge and then back to practice. The test well plans they drew up were based on judgment and inference made after making a comprehensive analysis of the data acquired. The process of carrying out the drilling plans was a process of testing the knowledge gained at the previous stage as well as a process of knowing the new conditions.

Before drilling wells in each locality, we must make a comprehensive, objective analysis of the data acquired. Even if no oil layer is discovered at the start in one or two wells in the course of drilling wells, we should not jump to the conclusion that there is no oil field in the locality; rather, we should make a serious analysis and find out the cause. In this way, even if there is no oil field we can still increase our knowledge which is necessary for the next step in finding oil fields.

Practice proves that the process of petroleum prospecting is a repeated process of carrying out uninterrupted survey and research and developing from practice to knowledge and then back to practice. It is a process of deepening our knowledge from the surface to the underground, from the part to the whole and from phenomenon to substance.

II

To know things as they are is the basic requirement of materialism. If the oil layers are to be known as they are, comprehensive, true and accurate data must be acquired in the first place. But these data must be carefully studied before a correct knowledge can be gained and the law for the changes in oil layers found out.

The method used in the past was to study the oil layers in separate groups and separate sectors instead of studying the oil layers as a whole. This could only arrive at an average figure of various parameters (thickness, porosity, seepage rate) of separate groups and separate sectors of

the oil layers. The knowledge thus gained did not correspond to the actual state of the oil layers. The reason was that each sector included several oil layers which were vastly different from one another in character. If the oil layers different in character were averaged, the average figure would be representative of neither the rich layer nor the poor layer. If we adopted only the research method of averaging the groups and sectors and rest content with the average parameter, we would be unable to detect the characteristics of separate layers, and the knowledge thus gained could only be a very vague and superficial one. In such a case we would be unable to comprehend neither the characteristics of each oil layer nor the thing common to all the oil layers.

Oil is deposited in different layers under the ground. It would be imperative to study the different oil layers in order to verify the original feature of the oil layers. Yet from the data available to us on the development of oil fields in foreign countries we have found no precedent where different layers were studied to verify the original features of all the layers. The geologists of some foreign countries take the view underground conditions cannot be made known in detail. For example, American geologist Li-no in Oil Prospecting and Underground Geology cites many difficulties in contrasting different strata. For instance, the discontinuity and complicated structure of strata, the transverse changes in the thickness of strata, the lithological character and living organisms of past geological periods, the confusions in the names of strata, and the erroneous data etc. make it difficult to contrast different strata. In his view, no contrast can be presented between different strata in the case of almost all the oil fields.

We ourselves had not presented the contrast between different strata of the oil fields, and we have no experience in this respect. But we have blazed the path. We will do what our forefathers did not do, and we will try to do it well. Dialectical materialism holds that any objective things are knowable. The objective law for oil layers is knowable, and the method of contrasting different layers can be found. As is the case with all things, the whole of an oil field can be more deeply known only after we have known every part, aspect and siee of it. Herein lies the importance of making a study of different oil layers. Without knowing each oil layer we cannot go a step further and reveal the whole picture of the oil field.

The Ta Ch'ing Oil Field has numerous layers, each having its characteristics. But the different layers are not isolated from one another; they are connected with one another. At the outset we did not recognize this problem. We took each oil layer as an isolated thing and believed that if we found the special mark we would be able to solve the problem of contrasting different layers. Later, we did find the special mark but not many layers were found. We were still unable to solve the problem of contrasting different layers.

Comrade Mao Tse-tung pointed out in his "On Contradiction:" Particular things are connected with universal things; when studying things we should "discover the particular character and the universal character inherent in all things and their inter-connections, and discover the inter-connections between one thing and numerous other things." (Selected Works of Mao Tse-tung, Vol. I. p. 306.) Oil layers should also be studied in this way. Oil layers are inter-connected with one another. Without knowing the inherent connections between different oil layers we cannot really understand the character of each oil layer itself and, consequently, cannot contrast different layers and study different layers. With this understanding, we carefully re-examined the core sector by sector. After repeated research and comparison with a mass of well-drilling data we eventually discovered that the changes between oil layers followed a set pattern: from bottom up, each small sector of the layer grew from being thick to being thin and many compositions of this type were formed. In other words, we found the cyclical character* on the profile of the oil layer sedimentation. This cyclical character is a law common to all oil layers in the whole oil field. The same cyclical character was observed in each well.

In light of the concrete conditions of oil sedimentation in the oil fields, we concretely applied the general principle (applicable to the large sector of stratum) of cyclical character to every small sector on the profile of the oil layer, and studied the law for its changes, thereby evolving the method of contrasting different layers. The method was like this: The standard layer was contrasted with a big sector; the arenaceous rock group formed by the cycle of sedimentation was contrasted with a small sector; within each cyclical group, different single layers were contrasted with one another in light of the composition of different rock layers.

In this way, we broke through the technical barrier of contrasting different layers. This placed us in a position to study not only each sector but each single layer as well.

By contrasting different layers we came to know the state of every oil layer. We went a step further and studied the inter-connections between all oil layers in order to gain a knowledge of the whole situations. As a result of such analysis and study, the knowledge we gained of every oil layer was penetrating and concrete. Moreover, it was a knowledge of the whole situation synthetically gained on the basis of studying the particular characters of different layers. Such a knowledge was vastly different

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* "Cyclical character" is the characteristic of the profile of stratum: gradual change from thick granules to thin granules, from thin granules to thick granules and from thick granules to thin granules.

from the vague and superficial knowledge of oil layers, which we had in the past.

Comrade Mao Tse-tung pointed out: The two processes of acquiring human knowledge, that is, from the particular to the general and from the general to the particular are inter-connected. Our knowledge of the oil layers embodied this process: Having gained knowledge from the particular to the general, we could proceed from the general to the particular, that is, we could use the knowledge gained of the law to direct the practice of exploiting every oil layer.

In this way, we solved a difficult problem which had not been solved by our forefathers, devised a new method of oil layer research, and raised the geological research in oil field to a high level.

III

With a detailed knowledge gained of the distribution of oil layers, a good foundation was laid for the development of the oil field.

Comrade Mao Tse-tung said: "Different contradictions can only be resolved in different ways." ("On Contradiction," Selected Works of Mao Tse-tung, Vol. I, p. 299.) Different oil layers should be exploited in different ways. To work out the scheme of exploitation and the procedure of exploitation is a designing work which must be based on concrete conditions of the oil layers.

In the process of working out the schemes for the development of the oil field, there exists a contradiction: If no well is drilled, there is no way of knowing the conditions of the oil layers; if the wells are not large in number and are not of sufficient density, there is still no way of knowing the conditions of the oil layers; the greater the number of wells, the better knowledge of the concrete conditions, but if all the wells required are drilled there will be no need to work out the scheme of exploitation. This contradiction in designing has not been resolved in the case of many oil fields abroad.

In the case of many oil fields abroad, the only basis used is the average parameter for different groups and sectors of the oil layers, and it is not possible to study the schemes of exploitation according to the changes of separate layers. Thus the development and design of many oil fields abroad can be worked out and wells arranged only according to a rough idea of the conditions. Wells can only be arranged on the basis of the data of several test wells. Average parameter and subjective hypothesis of the average oil layers substitute the concrete conditions of the oil layers which are not even and are marked by great changes. Moreover, development schemes are fixed once and for all. It is precisely because of this that the designs of quite a few oil fields are different

from the actual results of development, and some designs simply do not work.

The geological workers of the Ta Ch'ing Oil Field did not beat a retreat in the face of this problem and did not bow to difficulties which baffled the foreign specialists. We may not subjectively draw designs according to the hypothesis that the oil layers are of the same quality. We should design according to the changes of the oil layers, and we must proceed from concrete conditions of the oil layers when drawing designs.

In the process of developing the oil field, we opened a production experiment area in the oil field on the principle, as laid down by Comrade Mao Tse-tung, that everything must be put to test.

Through production experiment we identified the types of oil layers and studied the well network and method of exploitation for different oil layers. This provided a dependable basis for developing the whole oil field. As the production experiment was a scientific experiment carried out under concrete conditions of production, it was different from the scientific experiments carried out in laboratories. Therefore, after making this production experiment we could apply our important experience to large-scale, complicated production practice. The knowledge we gained in the production experiment area was, generally speaking, of universal significance to the oil field as a whole.

To be sure, this does not mean that after carrying out experiments in the production experiment area we could smoothly solve all the problems of production found in all other areas and oil fields. The conditions of oil layers in areas other than the experiment area cannot be completely the same as the conditions of the oil layers in the experiment area.

Basing ourselves on our experience acquired in the experiment area and taking into account the concrete characteristics of the oil field, we adopted a new procedure for the oil field development. The special features of the new procedure of development were: A group of wells was drilled in the area with the most reliable oil layers; these wells were not put into operation after the drilling operation; the detailed changes in the whole oil layers were compared and studied; in light of the actual conditions of the oil layers, a well network, which was in conformity with the oil layers, was decided upon. After the second group of wells was drilled, they were still not put into operation; new data were acquired through well-drilling operation; the conditions of the oil layers were repeatedly compared and studied; the original well network, which was not in line with realities, was then altered; injection* scheme -- concrete working scheme of formal development -- was worked out.

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* "Injection": Before putting an oil well into operation, an injector must be used for injecting steel pipe and concrete cement into the oil layers in the well before the oil can flow into the wall. This is the last phase of work before an oil well goes into operation.

After that, injection was done and the whole oil wells and water wells were put into operation according to the injection scheme.

This procedure of development -- "design, practice, study and revision of design, more practice, more study and revision of design" -- can insure that designs are drawn according to concrete conditions of the oil layers and are brought as far as possible into line with the actual conditions of the oil layers and that errors, if any, can be promptly corrected. This process is also a process of carrying out uninterrupted practice and raising our cognition level. This procedure of development is directed by the dialectical materialistic theory of knowledge.

This procedure of oil field development is fundamentally different from the development procedure adopted by some foreign oil fields which are dominated by metaphysical view and method. Their procedure is to work out a scheme on the basis of limited test well data. Once it is decided upon it will be carried through to finish. From the viewpoint of the theory of knowledge, this method essentially regards knowledge as a metaphysics. It will bring serious consequences to production.

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On the whole, the great achievements scored by the Ta Ch'ing Oil Field in the geological work in a few years were attributable to the fact that the geological workers persevered in the study and application of Comrade Mao Tse-tung's "On Practice" and "On Contradiction" and took the thought of Mao Tse-tung as the guide. We integrated a revolutionary drive with a scientific attitude. We integrated an enterprising spirit -- daring to try and create things and daring to break away from conventions -- with an honest attitude -- knowing how to learn, showing modesty and circumspection and carrying out repeated experiments. We combined small-scale, exploratory production experiment with large-scale production practice. We regarded every phase of prospecting and development as a link in the process of knowledge, and correctly handled a series of contradictions between our subjective knowledge and the objective reality. The victory in the geological work in Ta Ch'ing Oil Field is a victory for the thought of Mao Tse-tung.

From the practice of geological work in Ta Ch'ing Oil Field we may clearly see to what a serious extent did the metaphysical method of thinking handicap the science of petroleum geology, the prospecting for oil fields and the development of oil fields. Each victory in the geological work in Ta Ch'ing Oil Field is a victory of dialectical materialism over metaphysics.

Metaphysics is found in foreign countries as well as in China, and in other people as well as in ourselves. In the past we brought from foreign countries some useful, specialized knowledge as well as some metaphysical

conventions which seriously clogged our minds. It was in the process of studying "On Practice" and "On Contradiction" that we gradually became conscious of the harm of metaphysics and freed our minds from the bondage of metaphysics. We must continue to make flexible study and application of the thought of Mao Tse-tung before we can prevent and triumph over metaphysics.

Politically we science and technology workers must achieve revolutionization, firmly support the Chinese Communist Party, follow the socialist road and serve the people with all our hearts.

As to the method of thinking, we must also achieve revolutionization. We must learn how to apply dialectical materialism.

Lenin said: "We must know that without materialism and ample and dependable basis of philosophy, no natural science and materialism can persist in the struggle against the attacks by the bourgeois thought and the restoration of bourgeois world outlook. In order to persist in this struggle and to carry it through to complete victory, natural scientists should become modern materialists and conscious disciples of materialism represented by Karl Marx, that is, they should become dialectical materialists." ("On the Significance of Militant Materialism," Collected Works of Lenin, Vol. 33, People's Publishing House, p. 204.)

We should make a serious study of Marxist-Leninist classic writings, raise our consciousness and transform ourselves as regards stand, viewpoint and method. If in each practice of petroleum geological work we can consciously apply materialistic dialectics, our work will change day by day. Less manifestation of metaphysics will mean less failure; more manifestation of materialistic dialectics will mean more success.

Our comprehension of the thought of Mao Tse-tung is still not deep and our application of it is still not good enough. In our work we traversed some tortuous path. We feel that concerning the geological work in Ta Ch'ing Oil Field, we must look at both the success and the defects and we must continue our efforts to overcome the defects. We will not rest content with what we have achieved. We are determined to study Chairman Mao's writings more strenuously, remold our thoughts, continue to hold aloft the great red banner of the thought of Mao Tse-tung, and forge ahead in the spirit of uninterrupted revolution.

CSO: 3530-D

MAKE EXPERIMENTS OF AGRICULTURAL SCIENCE IN THE MIDST OF PRODUCTION

/Following is a translation of an article by Liu Keng-ling (0491 2577) and Chiang Ch'ao-yü (3068 2600 0151) in the Chinese-language periodical, Hung-ch'i (Red Flag), Peiping, No 13, 6 December 1965, pp 29-33./

Beginning in the spring of 1960, together with other units concerned, we set up a rural base point in Ch'i-yang hsien, Hunan province, and studied there the problem of controlling the "autumn sedentariness" of rice plants in slime fields. After several years of efforts, the problem has eventually been solved. How was it solved? What enlightening lessons have we agricultural science and techniques personnel learned?

I. Agricultural Science Research Must Serve Agricultural Production

In the past, when a number of agricultural science and techniques personnel conducted scientific research, they mostly copied foreign practices. They spent the greater part by far of their energy in reading documents, observing and analyzing samples, drawing charts, and writing theses and reports. Some even copied their research topics from foreign books. They studied what other countries were studying. When they had obtained results, they would compare these with foreign documents. They would consider the results established if they agreed with the research results obtained by foreigners. If the results did not agree, they themselves would not dare believe in them. Accustomed to such a practice, some agricultural science workers even thought that this was the way of catching up with the international standard of science. We youths once came under their influence.

Not long after the liberation, for instance, some people wanted very much to apply a foreign farming system to China. They did so rigidly without regard for conditions and possible results, and thought that this was

the direction for research on agricultural science and techniques. I remember that, when we had just graduated from university, we tried to adopt this farming system in a district but were criticized and opposed by the farm workers and the masses around. Full of enthusiasm, we had wanted to do some work for the people. But we met with this setback the moment we left school. We felt very unhappy. We asked a teacher about this, and he said, "Those who conduct scientific research have to bear criticism. Many great scientists in history were criticized. There is nothing strange about this. Just stand your ground." These words sounded very soothing at the time. But the more we thought about them afterward, the more they appeared to be improper. Agricultural science and techniques personnel were to serve the people. How could they "stand their ground" and take no heed of the criticism of the people? How could one confuse ill-treatment of scientists by the ruling class in the old society with criticism by the laboring people today? We thought and thought, and we began to raise doubts about our practice. Yet we could not jump free of the old confines. All day long, we continued to keep company with only flasks and bottles. We worked busily on our small experimental plots, our minds full of fanciful ideas. As a result, the more we followed the path, the narrower it became. The more we tried to solve the problem, the more abstruse it became. We became increasingly detached from the practice of production. We became increasingly confused. Time passed, but we never obtained any useful result. Whenever the leadership called on agricultural science and techniques personnel to serve agricultural production and solve key technical problems in agricultural production, we would experience some mental struggle. We felt that we could not go on like this.

Reading our minds, the leadership promptly pointed out to us that, to make our agricultural science research work welcomed and supported by the masses, we must first establish clearly the policy of letting agricultural science serve production and the masses. In order to develop, agricultural science must be combined with the practice of agricultural production. Agricultural science and techniques personnel must go to the rural areas and to the front line of agricultural production. They must not think in terms of their own selves and must not be afraid of hardship. At this time, we also repeatedly studied Chairman Mao's teachings concerning the need for educated youths to combine themselves with the workers and the peasants, and discussed the policy of letting science serve production. Only then did we give up many personal plans and make up our minds to defy hardship and difficulty. We would go to the rural areas and into the midst of practice. We would go to the front line of agricultural production to conduct research.

In the spring of 1960, the Scientific and Technical Commission of Hunan Province, the Provincial Department of Agriculture, and the Academy of Agricultural Science organized a force jointly with the comrades of our Soil and Fertilizer Research Institute of the Chinese Academy of Sciences. This force went to Kuanshanp'ing production brigade, Wenfushih people's

commune, Ch'i-yang hsien, and set up a base point of agricultural science research there. It was to study improvement of low-output rice fields in the south. At the time, a cold wave had just set in, and the masses were taking emergency measures in protecting seedlings from the cold. We actively plunged ourselves into this struggle of the masses. In the middle of the night, together with the masses, we applied fertilizer and covered the seedlings with grass, lighted fires and made smoke, dug ditches to drain off water, and observed changes in the temperature of the slime and that of water. After more than ten days of struggles to protect the seedlings, we made a good impression on the masses. We ate, lived, labored, and held discussions together with the masses. We labored actively and with initiative. We chose the hardest jobs to do. We were not afraid of filth or hard work. Some commune members said to us, "You wear glasses and leather shoes. But you are really modest and work really hard." We felt very glad to hear these words. We knew that we had done right. We were all in high spirit, and our relations with the masses became closer. Many poor peasants and lower middle peasants confided their secrets in us, and told us about the problems in local production. They entertained high hopes of the experiment and research on improvement of low-output fields. This greatly encouraged us and filled us with strength.

Actively supported by the masses, we proceeded to learn the characteristics of local production. We discovered that, in a large number of slime fields after winter drying, "autumn sedentariness" of rice plants was a problem which needed urgently to be solved. By "autumn sedentariness" was meant that, after transplanting, rice seedlings did not resume a green color for a long time, during which their blades were yellow, their tips withered, their roots turned black, and they stopped to grow. The result of this would be a sharp decrease in output. This phenomenon which the peasants called "autumn sedentariness," was more prevalent in the south. In Ch'i-yang hsien, for instance, over half of all the rice fields were threatened by it. Serious harm could result. Once the phenomenon occurred, the damage could not be undone by means of ordinary technical measures. A serious decrease in rice output would result. Only 100 to 200 catties could be gathered per mow. What is more, no successful crop could be gathered for two to three years in a row. The local peasants said, "One dry winter, three fruitless years." The problem was the main obstacle to the local development of production. Unless it was solved, improvement of the local low-output fields would be out of the question. Unless we conducted research with regard for such acute problems in production, we would be unable to realize the policy of letting science serve production. Accordingly, as required by the masses, we chose the control of "autumn sedentariness" of rice plants as our research topic.

Improvement of slime fields and prevention of "autumn sedentariness" of rice plants constituted a tough topic. After we had chosen this topic and when we were beginning with our work, we heard people say such things as that "'autumn sedentariness' is the product of the soil and cannot be

controlled," and that "a born dwarf cannot grow tall, nor can the natural quality of the soil be improved." In our work team, too, some people wanted to beat the retreat, saying, "It is not our task to study 'autumn sedentariness.'" But the majority of our comrades felt very anxious when they saw the eager expectation of the masses, when they saw that on a vast area of farm land affected by "autumn sedentariness" the rice seedlings were dying and their blades were yellow and their tips had withered as if they had been burned with fire, and when they saw that one year's hard work of the commune members was about to come to nought. We said to ourselves, "Our work is agricultural science research. If we are indifferent to problems which so gravely endanger agricultural production, how can we say that we are serving the people? In order to increase grain output and for the sake of socialist construction, we should study solution of the problem of 'autumn sedentariness' of rice plants." The leadership supported our idea and plan very much and said, "Those who conduct scientific research must have the spirit of looking downward and being undaunted by a hundred setbacks. They must go deep into the midst of the masses, ask about things they do not know, and try again after they have failed."

After several years of efforts, the problem of "autumn sedentariness" of rice plants was eventually solved. This greatly raised local grain output. In Kuanshanp'ing production brigade, grain output, which was 350 catties per mow on an average in 1960, rose to 680 catties per mow in 1964.

II. Summing Up Masses' Production Experiences, Learning Nature's Laws

Is it possible to accomplish something worthwhile by conducting scientific research in the rural areas? At first, we were skeptical. We had a metaphysical viewpoint. We set production and science against each other and experience and theory against each other. We thought that "the rural areas could only carry out production; they could not produce science," and that "the experiences of the masses will always be experiences only; they cannot rise to the status of scientific theories." Though we had studied Chairman Mao's On Practice and thought we agreed with the words that practice was the foundation of theory and the criterion of truth, yet in our minds we never felt assured but were half skeptical as to whether or not production practice could give rise to science and whether or not the experience of the peasants had scientific value. As a result of several years of practice, we have come to realize gradually that the vast rural areas are the principal grounds for agricultural science activities, and that the summed up production experiences of the masses of the peasants are the foundation on which the development of agricultural science is advanced. Our original doubts were dispelled one by one.

How did we proceed about the research work after we had chosen the control of "autumn sedentariness" of rice plants as our research topic? At first, we merely studied books, searched for documents, and looked up reference materials. The books, though offering an abundance of explanations

and conjectures of various kinds, did not afford many practical methods. Some books stated that "autumn sedentariness" was due to lack of sulphur in the soil. Other books stated that it was due to lack of silicon. Still others stated that it was due to the fact that "the soil is lacking in humus so that good granular structures cannot be formed." Yet others stated that it was due to "ferrous poisons resulting from prolonged soaking." We tested all the methods mentioned by the books, but the results were disappointing.

What should we do? As taught by Chairman Mao, we consulted the masses. We began by summing up the experiences of the masses of the peasants. We conducted investigation extensively and discussed and studied the matter together with the peasants. We first conducted a survey in Kuanshanp'ing. Next, we gradually extended the survey to the whole of Ch'i-yang hsien and then to other hsien including Ch'itung, Hengyang, and Shaotung. From these surveys and from our direct experience of participation in labor, we acquired an abundance of perceptual knowledge. For instance, concerning the laws of occurrence of "autumn sedentariness" of rice plants, the masses told us that, where the topographical situation was the same, "autumn sedentariness" occurred in slime but did not occur in yellow mud; that, among slime fields, only those which were dry in winter gave rise to "autumn sedentariness," while those which were soaked in winter did not give rise to it; that, in slime fields which were dry in winter, the rice seedlings which were transplanted earlier developed "autumn sedentariness" to a greater extent, while those which were transplanted later developed it to a smaller extent; that, among seedlings which were transplanted late, those which were transplanted at a time when the atmospheric temperature and the earth temperature were low developed "autumn sedentariness" to a greater extent, while those transplanted at a time when the atmospheric temperature had risen developed it to a smaller extent; and that "autumn sedentariness" occurred to a greater extent in fields with accumulations of cold water and to a smaller extent in fields without accumulations of cold water. In view of these phenomena, we realized that the "autumn sedentariness" of rice plants was closely connected with environmental conditions and agricultural technical measures.

But what technical measures were to be adopted to prevent "autumn sedentariness"? Chou P'ei-hsiang, an old poor peasant in Kuanshanp'ing, told us that he had obtained good results from application of small quantities of chicken or duck excreta to seedling bases. Hsü Hsiu-hsien, an old peasant in the mountainous district of Ch'i-yang hsien, told us that good results could be obtained from application of pulverized old bricks to fields affected by "autumn sedentariness." The old peasants in Ch'i-tung hsien told us that good results could be obtained from application of pulverized cow bones to the roots of seedlings. Other experiences showed that "autumn sedentariness" of rice plants could be reduced by application of bits of burned clay, soot, or rice husk ash to bases. We made scientific experiments on the basis of these experiences of the masses, and proved that

all these methods were effective for reducing the "autumn sedentariness" of rice plants. The effect of pulverized cow bones for the control of "autumn sedentariness" was particularly pronounced. By analysis, we found that this was due to the effect of phosphorus. In 1961, we made an experiment with calcium phosphate. The experiment worked the first time, resulting in a marked increase in output. Application of 40 to 50 catties of calcium perphosphate per mow could increase rice output by 100 to 150 catties. After that, 157 experiments were made in 14 production brigades, and similar results in terms of output increase were yielded.

From the experience of application of phosphorous fertilizer for the control of "autumn sedentariness" of rice plants, we realized that the "autumn sedentariness" of rice plants was caused by the lack of phosphorus in the soil. But for the light shed by the experiences of the masses, we could not have learned that it was caused by this. If we had not gone deep in summing up and improving upon the experiences of the masses, if we had simply repeated the masses' methods of applying bits of chicken or duck excreta, applying pulverized old bricks, and applying pulverized cow bones, not only would the shortage of these materials have made application over a vast surface impossible, but our ignorance of the real cause would have hindered adoption of measures suited to the local conditions, flexible adoption of the methods, and further improvement. Since we realized that the "autumn sedentariness" of rice plants was due to lack of phosphorus in the soil, we put forward the measure of increasing the application of phosphorous fertilizer. At the same time, we discovered the laws governing the changes in the motion of phosphorus in the soil, and thus found a way of further raising output.

Chemical analysis showed that the phosphorus content of the soil in the fields affected by "autumn sedentariness" was not small. The reason why the supply of phosphorus was inadequate was that, in the process in which slime dried up, effective phosphorus became solidified and could not be absorbed and assimilated by the plants. Hence, activation of solidified phosphorus became another important research task.

Analysis and experiment showed that the peasants could increase the content of effective phosphorus of the soil by 30-50 percent by storing water to soak the fields in winter. By means of frequent plowing, frequent raking, and breaking up of soil lumps, the peasants could shorten the period of soaking and speed up the activation of phosphorus. The peasants had the experience of making compost with mountain plants and applying pig manure. These had the effect of breaking up soil lumps, activating phosphorus, and preventing solidification of phosphorus. For instance, it was 30 percent more effective to apply liquid pig manure for the breaking up of soil lumps than to soak the fields with water; and the quantity of effective phosphorus could be about doubled with compost made with the stems and leaves of green manure crops and the hardly soluble calcium phosphate. In view of the light shed by these experiences and the

results of many experiments, we further realized laws governing changes in the motion of phosphorus in the soil. In the soil, there took place the process whereby phosphorous fertilizer became effective and the process where it became ineffective. In other words, these were the process of anti-solidification and the process of solidification. Soaking, raising of soil temperature, application of pig manure, applying compost made with mountain plants, and frequent plowing and frequent raking could advance the conversion of ineffective phosphorus in the soil into effective phosphorus, which was the process of anti-solidification. Drying up of the soil, lowering of soil temperature, and decrease of organic matters could bring about conversion of effective phosphorus into ineffective phosphorus, which was a process of solidification.

Through summing up the experiences of the masses, we acquired a great deal of knowledge about the laws governing the internal changes of the soil in slime fields. As a result, we could take a great deal more of initiative when studying technical measures for the control of "autumn sedentariness" of rice plants. For activating the phosphorus in the soil and increasing organic matters in the soil, we thought of planting green manure crops in addition to increasing application of pig manure and gathering mountain plants. But planting of green manure crops called for the digging of ditches to drain off water. This meant conversion of winter water fields into winter dry fields and was contradictory to the local experience of storing water to soak the fields in winter. As these fields dried up in winter, the phosphorus in the soil was solidified. Lack of phosphorus in the soil would not only prevent growth of green manure crops but also cause "autumn sedentariness" of rice plants grown in the following year. This would mean a decrease in output. Bearing this special fact in mind, we solved the problem by means of letting big fertility feed on small fertility. When green manure crops were grown, a small quantity of phosphorous fertilizer was applied first. This caused the green manure crops to grow. Secretions from their root systems and organic acids produced by the process of decomposition then activated the solidified phosphorus in the soil. The facts proved that this was a correct method. Green manure crops developed very rapidly. In 1964, green manure acreage accounted for over 60 percent of the total rice acreage in Kuanshanp'ing. A new farming system was thus put into practice, and the soil was enriched. In fields where green manure crops were grown in three or four years successively, effective phosphorus was abundant, and rice output was comparatively high even where no phosphorous fertilizer was applied. Thus, planting green manure crops was a basic measure for improving slime fields liable to "autumn sedentariness" of rice plants.

How should we apply the law that the phosphorus in the soil is activated by raising of soil temperature, so as to insure the healthy growth of the seedlings? The experiences of the peasants were that an attempt should be made to grow a late crop of rice in slime fields which dried up in winter. Transplanting of the rice seedlings was to wait till the soil

temperature had risen, and where there were accumulations of cold water in the fields, these should be drained off. These measures were effective for safeguarding the growth of the seedlings. However, in July and August, the soil temperature rose, and a large quantity of phosphorus in the soil was activated. At such a time, if only one rice crop a year was grown, the rice plants would not need phosphorous fertilizer, and that which was applied would be wasted. Following this clue, we studied development of double cropping of rice. During the growth of the early rice crop, the soil temperature was very low, and not much of the phosphorus in the soil was activated. During its growth, the early rice crop needed phosphorous nutrients set free by green manure. As for the late rice crop, it needed only the phosphorous nutrients released by the soil. The facts showed that this double rice cropping and green manure system was an economic and rational system in this district. It turned to full account the latent fertility of the soil. After experiments and demonstrations, the double rice cropping acreage of Kuanshanp'ing production brigade increased continuously. By 1965, it had developed to account for over 80 percent of the total rice acreage. In many hitherto low-output slime fields, the two rice crops yielded a total of over 1,000 catties per mow.

III. Popularizing Fruits of Research, Developing Agricultural Science

When research had borne fruits, what was the next step to be taken? According to past practices, our task would have been completed the moment we completed the thesis or report and submitted it to the higher levels. In the past, we completely depended on the agricultural administration departments and techniques popularization departments to apply the fruits of research. We erroneously thought that it would do more harm than good for research personnel to do the work of demonstration and popularization. The leadership repeatedly pointed out to us that the purpose of scientific research was to develop production, and the purpose of cultivating demonstration plots was to guide the surface from a point. We must popularize the fruits of research among the masses before we could comprehensively examine the degree of accuracy of these fruits and enrich them with the experiences and suggestions of the masses which were to be absorbed. In our practical work, we gradually realized ourselves that popularization of the fruits of research was actually a continuation of the work of scientific research and evaluation in the midst of the masses and in a bigger scope. We could not further perfect the fruits of research except by examining them, revising them, making them more complete, and improving them in the midst of the production practice of the masses. At the same time, we must rapidly propagate and popularize the fruits of scientific research and succeed in closely combining experiment, demonstration, and popularization together, before we could free slime fields to a greater extent from the harmful "autumn sedentariness" of rice plants, and enable agricultural science research to render better service to production.

During the past few years, under the leadership of the Party committee of Ch'i-yang hsien and because we attached importance to returning fruits of research into the midst of production practice in big fields, we carried out a great deal of work for popularizing the fruits of scientific research. In 1963, the whole hsien organized 50,000 mow of phosphorous fertilizer experimental fields. In 1964, it organized 70,000 mow of phosphorous fertilizer demonstration fields. During the experiment to demonstrate the effect of green manure, all types of demonstration plots were set up in six ch'ü and 12 communes. We had direct control successively of 287 phosphorous fertilizer experimental points, 87 green manure experimental points, and 15 low-output field improvement base points. The results of experiment, demonstration, and popularization at these numerous points showed that the measures of adopting phosphorous fertilizer and planting green manure crops were effective for improvement of low-output slime fields and for prevention of "autumn sedentariness" of rice plants; that it was beneficial to develop double rice cropping in this district; and that it was possible to realize a "greater output of the late than of the early rice crop" in slightly raised plots and in deep slime fields. The results of the demonstration and popularization also showed that application of phosphorous fertilizer not only produced marked effects in slime fields but also produced good effects in over 10 types of soils including heavy clay and poor soils with accumulations of cold water. This enriched our experiences concerning suiting application of phosphorous fertilizer to each particular type of soil. Methods of applying phosphorous fertilizer, at first imperfect, became comparatively perfect. The method of sticking the fertilizer to the roots of the seedlings developed into a variety of methods including application of surface fertilizer, application of fertilizer to seedling bases, and water rotting. Each method could be employed for a particular time and a particular place. Concerning green manure, we derived cultivation techniques for protecting seedlings from drought and for planting green manure crops in low-output fields.

From 1960 to the present, under the leadership of Party committees at various levels in Hunan province, and on the basis of summing up the experiences of the masses, we discovered effective ways for controlling "autumn sedentariness" of rice plants in slime fields; Chi'yang hsien improved 180,000 mow of low-output fields and raised output by 30 percent. Hunan province energetically popularized the experiences of Ch'iyang hsien in parts of Hengyang, Lingling, Shaoyang, and Hsiangt'an administrative districts where the conditions were similar. The production increasing effect was also very conspicuous.

Five years' practice of research on control of "autumn sedentariness" of rice plants in slime fields has made us realize deeply that we agricultural science and techniques personnel must regard the thought of Mao Tse-tung as our weapon, go deep into the front line of agricultural production, sum up the experiences of the masses of the peasants, grasp and key production problems which need urgently to be solved, and conduct research on them. Only thus can we develop agricultural science and advance agricultural production.

CSO: 3530-D

THE WORK-STUDY SYSTEM OF EDUCATION

[Following is a translation of an article by the Work-Study Intermediate Technical School, Yang-p'u Cotton Textile Printing Plant, Shanghai, in the Chinese-language periodical, Hung Ch'i (Red Flag), Peiping, No. 13, 6 December 1965, pages 34-40]

In the fall of 1961, the Yang-p'u Cotton Textile Printing Plant established a three-year work-study industrial middle school to admit senior elementary graduates. Last year, it was expanded into a seven-year work-study intermediate technical school. At present, we have ten classes from the first to the fourth year and 449 students. The 264 students of the two previous terms have graduated from junior middle school. Except for 72 of them promoted to the fourth year, the greater part of them remain in the plant to labor, and a small number have been assigned to other plants.

In the past four years, under the guidance of the party commissioner and with the direction of the Mao Tse-tung ideology, we have been persevering in the school operation, adhering to the work-study system, the mass line, and education revolution, and gaining experience in practice, thus gradually consolidating and expanding the school.

The Process of Persevering in School Operation Being a Process of Elevating Understanding through Ideological Struggle and Ceaseless Practice

At the beginning, some teachers were rather doubtful of a school requiring both study and labor. They said that such a school was "irregular," "a temporary measure," and "not long lasting." They considered teaching in such a school "one level below others" and were dissatisfied. They felt that since the students would eventually become workers anyway, they did not have to study hard. During

one period, the teaching work was copied from the old system and severed from the three great revolutionary movements.

Concerning the student participation in productive labor, some of the workshop cadres did not welcome them at the beginning, on ground of their youth, their mischievousness, and their ineptitude. They had three fears: trouble, accidents, and defective and rejected products. Hence, the school could only assign the students to the kitchen to peel beans and wash vegetables. Subsequently, after the students entered the workshops and could do their share of the work, some cadres developed the idea of making use of them, wanting them to fill the vacancies whenever there was a large number of workers absent.

The foregoing conditions could be summed up into the following three issues: (1) Whether school operation by a plant was the correct direction; (2) whether senior elementary graduates could participate in productive labor; (3) whether labor participation would affect their studies. The teachers' resistance against the work-study system was actually a reflection of the bourgeois education thinking advocating the separation of mental and physical labor; the erroneous view of the workshop cadres was a result of the influence of the old apprenticeship system and their inadequate understanding of the task of the socialist enterprise to cultivate new men. At the very bottom, it was a struggle between the two ways of education: The integration, or separation, of education and productive labor?

In face of this situation, the plant party commissioner conscientiously conducted a study and found that school operation by the plant was correct and must be continued. The issue was how to strengthen the ideological education and unify the understanding. We organized the cadres and the teachers of the plant three times to learn the party's education policy and study Comrade Lu Ting-i's (7120 1353 0001) article entitled "Education Must Be Integrated with Productive Labor." We repeatedly emphasized the fact that the criterion to determine whether a school was regular or irregular was whether it could thoroughly implement the party's education policy and whether the students cultivated by it were up to the standards of revolutionary successors. Meanwhile, we also pointed out that a socialist enterprise must consider the cultivation of revolutionary successors, as well as the production of material products, its political task.

After a series of studies and discussions, the ideological understanding of every one was somewhat elevated and the work improved. Especially after studying the article entitled "concerning Khrushchev's Spurious Communism and Its Lesson in the World History," the cadres and teachers further realized the tremendous importance of cultivating revolutionary successors on the future of our party and state and the five conditions to cultivate such successors, received a great enlightenment and education, and strengthened their confidence in school operation.

Reliance on the Old Workers for the Class and Labor Education of the Students

The students of the first term were enrolled upon application after the recruitment of the all-day schools was filled. Seventy-five percent of them failed to make 60% in their school entrance examinations. They were mischievous and undisciplined. Though the majority of them were children of workers, they did not realize the happiness of the new society as they had never tasted the bitterness of the old society. To cultivate them into firm revolutionary successors, we emphasized their class and labor education.

First, full reliance on the strength of the old workers to influence the students with the ideological qualities of the workers and help them train their thinking and work style in labor:

We asked the workers of the entire plant to serve as models and pass on the ideological qualities of the worker class to the students in addition to teaching them productive skills. Meanwhile, we carefully selected those old workers with a high awareness and superior skill to serve as mentors or trainers. With a deep class sentiment, they showed a general concern over the students from the ideological, productive, and living aspects and considered the cultivation of the younger generation their own political task. Learning the skill of oiling under old worker Wei Lu-chu (7614 6922 4554) in the weaving workshop, a student thought the work had no future and set his heart on becoming a clamp worker. He had no interest in his work. Finding the spout of the oil can too long and fine, he cut off a part of it with scissors. Discovering this, mentor Wei pointed at the spout and said: "By so doing, it has become more convenient for you, but, with a bigger opening in the spout, the oil pours faster, easily soiling the products on the machine and causing oil waste. We of the worker class must not just think of ourselves!" He also patiently explained to the student how, in the old society, he did not get to learn the skill of oiling after three years of apprenticeship, and asked him to uphold the honor of the worker class. After accepting the position of a trainer, Lu Chin-hsing (7120 6855 2502), a former child laborer, demonstrated her concern over the 48 students under her charge from all aspects. Discovering the feeling of conceit and self-satisfaction, she sent them to work in the five-good workers' machine unit and re-examine themselves; when their labor attitude was not good, she educated them by telling them her painful experience during the time when she was a child laborer in order to raise their labor morale; when the students overlooked the quality of the products, she influenced them by her own meticulous practical actions; when the students became ill, she voluntarily took them to obtain medical care. Under the influence of the old workers by words and by deeds and their minute concern, the students gradually acquired the ideological qualities of the worker class.

Second, vivid and concrete class education to raise the students' class awareness:

The school organized the students to attend the old workers' bitterness reminiscence meetings and the performance of Blood and Tear Feud, a Shanghai opera depicting the tragic fate of Pao Shen-kung performed by the workers of the plant, asked them to write their impressions, and made them learn their own family history from their parents. Through such activities, the students received a profound class education. They declared: "When we saw how the workers suffered the oppression and exploitation of the capitalists in the movies and novels, we always took them to be individual cases, but now we know that the old society was filled with 'blood and tear feud' everywhere. This is so with many of the old workers of our plant and in some of our own families." After this problem was preliminarily solved, many students were still hazy about the existence of the class struggle today and the bourgeois influence on themselves. Some felt: "Being the children of workers, we have no bourgeois ideas." Pinpointing at this view, we organized them to participate in a mass meeting where we exposed the fact of the four young workers who suffered seriously from the corruption of bourgeois ideas. The students were greatly shocked and began to realize the acute and complex nature of the class struggle. In connection with what they, themselves, saw and heard, they revealed and criticized all types of bourgeois ideas and conduct and realized that the children of workers could also come under the bourgeois influence if they did not reenforce their own steeling.

Third, organic integration of education within and without the classroom and developing the combat effect of the politics course:

For example, to make "surplus value" more easily understood by the students, the teacher first asked the old workers to reveal their personal experience of the capitalist exploitation of workers before he explained the theory. Thus, the students not only understood the meaning of surplus value, but also enhanced their class hatred, and the politics course became a living subject. Under the situation of aiding Vietnam and resisting the US, we selected Chairman Mao's anti-imperialist articles to teach them and appealed to them to direct their fervor to the production high tide of the plant. The students all proposed to spin more yarn and weave more fabric in order to support the anti-US patriotic struggles of the Vietnamese people by practical actions.

Productive Labor Commensurate with the Age of Senior Elementary Graduates

The goal of our cultivation and training is to make the students understand the weaving process and the structure and principles

of the major machines, master the operation skills of tang-ch'e (2346 6508) and maintenance work, and be able to work as a full fledged worker in three years. When determining their labor requirements in the various stages, we gradually increase the period of labor and the requirement commensurate with their age and the growth of their physical strength. They labor six hours per week during the first year, divided into two half-day periods, to do supplementary productive labor, for the purpose of cultivating their labor concept and habit and familiarizing them with the production conditions, without any requirement as to quality and quantity. In the second year, they labor two six-hour days per week in the early shift. They begin to do special types of work. Quality, but not quantity, is required. (Actually, they generally have reached the level of three to one). In the third year, they work three eight-hour days per week in the early and middle shifts, but not the night shift, and both quality and quantity are required. They must be able to do independent work. From our experience, the foregoing requirements are practical. Third year students have attained the level of two to one in production. According to statistics, each one of them labors 150 days per year, with an output value of 12,000 yuan.

As the production features and conditions of the various workshops vary, the organization form of the students in special labor cannot be uniform. One of our ways is to gather the students together, divide the work areas, and assign them to specific fixed machine units. Another way is to scatter them in the various work sections to work under old mentors.

In productive labor, the students cultivate their labor concept and habit and acquire productive skills, creating wealth for the state. The workshop cadres praise them by saying: "Though the elementary graduates are young, weak in bodily strength, and mischievous, their hands and feet are nimble, their movements agile, and they are fast and excellent in learning operation skills. We detested them in the first year, welcomed them in the second year, and cannot do without them in the third year."

Teaching Reform and the Principle of Connecting Theory and Practice

In the curriculum, besides politics, Chinese, foreign language, mathematics, physics, chemistry, and physical culture, we also teach productive skill courses according to the needs of special types of work. The total number of periods of instruction in the three years is 2,340. The ratio of teaching and labor is two to one. Thus, the students are given sufficient time to learn the necessary basic subjects. Special subject lectures are given as a supplement to teach them other knowledge.

In the teaching content, we adopt junior middle school textbooks, with appropriate revisions and adjustments. In the Chinese

language text, for example, we add practical terms in production and living and omit the classic terms in answer to their need when serving as recorders and correspondents in the workshops. In mathematics, we add practice problems, examples, and abacus needed in production. The productive skill subjects are also arranged according to the special types of work and the practical need of the plant, and urgent knowledge is imparted first. For example, as the first year students engage in supplementary labor and must understand the general condition of the production process, we schedule basic knowledge of production process in their curriculum. As a result of the close coordination between study and application, the students can learn successfully.

In the teaching method, we emphasize the two types of "coordination:" The explanations of the teacher and of the workers, and classroom and field instructions.

Coordinating the explanation by the teacher and that by the workers gives life to academic knowledge. For example, in case of electricity in the physics course, the old workers of the electrical workshop first lecture on the electric supply system of the plant before the teacher explains the theory, so that the students acquire a more complete knowledge.

Coordinating classroom and field instructions connects the theoretical and the practical. For example, the students find the productive skill course the most difficult. We utilize plant holidays to hold the class in the workshops, so that the students can see, hear, touch, dismantle, and re-assemble the machines for a greater comprehension. When lecturing on the "piling prevention installation" of the duct (t'ung-tzu 4592 1311) workshop (preventing the yarn from piling up together), after repeated explanations and many diagrams, the students still could not understand, and most of them could not give the right answers at the examination. During field instruction, the old workers dismantled the installation for the students to see its internal structure and movement principle, and the students themselves also learned to dismantle and re-assemble it. In less than twenty minutes they understood the whole thing. After returning to the class room, the teacher analyzed it theoretically. The students said: "We will never forget it again." Subsequently, the students could flexibly apply their knowledge when encountering problems in production. One student, for example, discovered the unevenness of the cotton rolls in the steel wire workshop. Recalling the knowledge learned by her, she found that it was due to the inaccuracy in the "spacing" and immediately reported it to the teacher, and it was promptly adjusted.

Simultaneous Working and Teaching and the Revolutionization of Teachers

The teachers of our school are generally young, with a relatively high cultural level. The majority of them came from families of the exploiting class. At the beginning, they had no interest in the school, and their teaching was seriously severed from production, labor, and reality. In view of this condition, the plant party commissioner pointed out to the school that the key to the success of a work-study school was the revolutionization of the teachers. According to his instructions, we adopted three concrete measures: The study of Chairman Mao's works; labor and teaching at the same time; penetrating the workshops, investigating and studying according to the subjects, seeking instructions from the old workers, and following the mass line. After study and practice, their view toward labor and the laboring people began to change, and they improved somewhat their understanding of the work-study system and the party's education policy.

The teachers discovered many instances of the severance of teaching and reality in their labor practice. For example, a diagram teacher always thought the drawing of the sexangle his "specialty." But, one time, when working in the wooden mould workshop, he could not draw a sexangle on a rectangular piece of wood up to the specifications. Seeing this, the old mentor did it in a few strokes. The incident gave him a profound lesson, and he realized that what he had mastered was merely dead knowledge and would not benefit the students. His consciousness in reforming his teaching was raised.

When the teachers and the students labor together, it will also promote mutual benefiting and establish a new type of teacher-student relationship. One teacher used to be impatient when teaching and would become irritated when the students asked too many questions, thinking that they were too stupid. When she labored in the steel wire workshop, the mentor assigned a student to be her instructor. She was always confused about the positions of the several cotton strip spouts, but the student instructor eagerly, conscientiously, and carefully explained to her time and again. She felt embarrassed about her own impatience in the class room and told the student instructor: "I am your student as well as your teacher." Democracy began to develop in the class room.

In labor, all the teachers basically follow the "four certain" system: Certain work type, certain post, certain schedule, and certain mentor. Many teachers have learned one kind of productive skill, built up their physical strength, and begun to cultivate the labor habit.

Organizational Guidance and the Necessary Ssytems

Under the guidance of the plant party commissioner, we estab-

lished a small work-study guidance team, formed by the plant chief, the party commission propaganda department chief, the school principal, and the responsible cadres, engineering and technical personnel, and worker delegates of the various units concerned, totalling 15 members. Under the auspices of the plant chief, three or four regular meetings are held every year to discuss, study, and solve the important problems of the school, e. g., the scale of the school, the years of study, the expansion plans, the goal of cultivation, the work plans, and the allocation of teachers.

To strengthen the regular guidance of the school, the school principal is required to attend the plant affairs conference and make regular reports of the work of the school. According to the concrete conditions, the plant leadership ceaselessly readjusts the relations between the school and the workshops and handles the conflicts between teaching and labor.

We have also established small teams to guide the work-study program formed by delegates of the party, the state, the workers, the league, the teachers, and the units concerned, to select mentors, formulate cultivation and training plans, and handle the labor, technical training, and ideological education of the students. Special duty training directors are appointed in the workshops to be in charge of the training of basic skills, evaluate the skills, and conduct ideological education. Meanwhile, we have also set up the following systems: (1) Basic skill training system: Sixteen machine units are designated in the workshops as training units. The students are trained in the basic skills with such training units in the second semester, and the training directors teach the basic operation methods. After the students have reached the specified standard, they join the shifts and take part in special labor. Basic skill training generally lasts for one month (actually two weeks). (2) Technical evaluation system: According to the requirements of the various types of work, the training directors make a monthly evaluation, in order to uncover promptly the good and bad points in operation skills, prevent the errors from developing, and encourage the students' study positivity. In addition, the students make a weekly mutual evaluation, in order to supervise and inspect one another mutually. (3) The school-workshop coordination system: The school appoints special persons to attend the monthly workshop guidance small team's conference for the purpose of studying the laboring and ideological conditions of the students. The class chairmen and the training directors keep in regular contact, generally meeting once or twice a week, in order to clarify the conditions promptly for coordinated education.

New Model Laborers Developed in the Ethical, Academic, and Physical Aspects through the Work-Study Education System

After three years of labor and study, the students generally attain a fairly good development in the ethical, academic, and physical aspects. They improve rather rapidly in ideological awareness. Among those of the proper age, one-third of them have successively joined the communist youth league. They are not afraid of dirt, fatigue, or hardship in labor, and they obey the assignments. They are familiar with the systems of the plant and accustomed to the plant life. They possess specific productive skills. Under normal conditions, they can produce with the shifts and at their posts. In certain single operations, some of them even surpass the level of the old workers. Among the 50 young active elements selected in the plant recently, 12 of them were students. Student Teng Yu-fen (6772 2589 5358) originally studied "t'ou-ts'u" (7333 4723) in the north plant and was able to produce with the shift. Due to the need of the work, she was transferred to the coarse yarn single operation in the south plant. The type and functions of the machines in the south plant were different from the north plant, and the operation method learned by her before was not entirely adaptable to the new machines. However, she was not disconcerted by the difficulties. Applying the production knowledge learned by her and following the arrangement of the machines, she changed the rotation line from the original figure "concave" ("yao" 0425) to the figure "8." Her spirit of perseverance in production won the general commendation of the old workers. Student Ts'ao Chao-ti (2580 2156 1717) was assigned to the duct workshop to perform tang-ch'e work. At the beginning, when joining the yarns, she could not locate the position of the duct yarn ends accurately and she was rather slow. Recalling Chairman Mao's teaching that all matters had their specific objective pattern, she thought that locating the duct yarn ends would also have its objective pattern. So, she carefully observed the yarn twisting machine operation, the previous process, and finally discovered that the "steel board" on the machine always remained at the same level when rising and falling, that each group had 250 duct yarns, and that, once the position of one of them was located, the rest would all be found in the same position. Grasping this pattern, she greatly accelerated her work, and the shift output reached the municipal advanced level of the textile industry. She was adjudged a young active element. At present, her operation method is being summarized and expanded.

In cultural and scientific knowledge, the major courses are all of the junior middle school graduation level. Recently, the area education section made a survey of the academic standard of our students and came to the following conclusion: In writing, they were sound in ideology, strong in feeling, broad in thinking, honest in material selection, rich in language, and orderly in reasoning, surpassing the junior middle level of the all-day school system; in mathematics, they were generally inferior to the junior middle students of the all-day school system in the basic concepts, basic knowledge,

and computation ability, but they were comparatively strong in geometric knowledge and practical algebraic problems and in the application of their academic knowledge to practical problems.

As the students regularly participated in labor, their health and physical strength are developed. According to the statistics of one class, their average weight is 98.3 catties, surpassing the standard of middle school students by more than two catties; their average height is 156.76 centimeters, slightly taller than the standard middle school students. They do not suffer from chronic diseases, and there are very few new cases of myopia discovered.

Now, the graduates are distributed in the various workshops of the plant. In the past year, almost 40% of them have been appointed as the planning, quality, labor, material, safety, and propaganda personnel of the workshops and work sections. The cadres and workers all praise them as "little scholars" of the workshops and "little tigers" of production.

All these show the quality of the work-study education. In the students, we see the germs of the new model laborer.

As proved by practice, school operation by the plant has a strong mass foundation. We did not have an adequate understanding of this point at the beginning. The vast workers, especially the old workers, constitute a powerful class strength. Once this strength is activated, the situation of school operation by the plant, under the guidance of the party commissioner and with the cooperation of the workers, cadres, and teachers, appears. The direction of school operation by the plant is completely accurate.

Last year, after the Party Central proposed the trial introduction of the work-study education system, our understanding took a flying leap, advancing from the sensory understanding gained by us to rational understanding. The cadres and teachers have further realized that the work-study education system is a far-reaching revolutionary enterprise connected with the eradication of revisionism, the elimination of the danger of capitalist restoration, and the consolidation of the proletarian dictatorship.

We have followed the right path. Nevertheless, many defects and problems still exist in our work. For examples, the far-reaching significance of the work-study education system has not been truly understood by the masses of the plant; the superiority of school operation by the plant has not been fully developed; teaching reform has not been intensively deployed; the many new aspects in the trial operation of the seven-year intermediate technical school, especially, have not been recognized. All these require our ceaseless search, summation, and improvement in our practice hereafter. We must raise high the red banner of the Mao Tse-tung ideology, adhere to the spirit of courage in revolution and victory, operate the school successfully, and make new achievements in the revolutionary enterprise of the trial introduction of the work-study education system.

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ON EVOLUTION OF LIVING ORGANISMS

/Following is a translation of an article by T'ung Ti-chou (4547 4574 0719) in the Chinese-language periodical, Hung-ch'i (Red Flag), Peiping, No 13, 6 December 1965, pp 41-47./

Comrade Mao Tse-tung has this to point out in "On Contradiction": "Throughout the history of human knowledge, there have been two conceptions concerning the law of development of the universe, the metaphysical conception and the dialectical conception, which form two opposing world outlooks." (Selected Works of Mao Tse-tung, Vol I, People's Publishing House, 2nd edition, 1952, p. 288). In biology, the conceptions concerning the development of living organisms also are precisely the same as what Comrade Mao Tse-tung said.

The metaphysical world outlook holds that living organisms are constant and that all kinds of living organisms have always been the same ever since they came into being. They reproduce living organisms like themselves generation after generation and have never changed. The only change lies in increase or decrease of quantity and not in variation of quality. Therefore, various living organisms have respectively their own ancestors, and there is no affinity between them. This is the conception of the theory of special creation toward living organisms. It has for a long time occupied the dominating position in the history of biology.

The dialectical world outlook holds that living organisms are ever changing (varying) and ever developing (evolving). All living organisms come from primitive living organisms and have their common ancestors and family trees. Consequently they have some distant or closer kinship. This is the theory of evolution in biology. After Darwin's The Origin of Species was published in 1859, this conception has been accepted by most people.

Now, let us discuss the concrete conditions for the development of living organisms, the general laws and the motive forces bringing about such development. Because this problem involves wide range of things and there are an abundance of data and complex concepts, we can only briefly discuss the general situation.

The Basic Status of the Organic Sphere--Variety and Unity

The species of living organisms are many and various. The biologists estimated that about 400 thousand species of plants and more than one million animal species on earth have been known to us. In addition, there are numerous microbes. As to the number of individuals, even the microbes alone cannot be clearly accounted for with astronomical figures.

These countless numbers of living organisms are distributed over every corner of the earth. They have different morphological structures and living habits. Their sizes vary a great deal. The diameter of a "virus" is about several ten to several hundred micro-millimeters long (one micro-millimeter equals one-millionth part of one millimeter). The bacteria are generally several microns in size. A big animal like a whale can be as long as 35 meters. The height of a tall tree can be greater than this figure.

Viruses cannot live independently, and must live within the bodies of bacteria or the cells of other living organisms. Once they are divorced from their hosts, there is no sign of life.

The microbes depend upon membrane to absorb nutrients selectively and can also excrete various kinds of enzymes to dissolve the bigger nutrients for absorption into their bodies.

The plants make use of sunshine, air and water to manufacture their own nutrients.

The animals feed on plants and they themselves cannot manufacture food. They pillage the nutrients manufactured by plants, and turn them into their own constituents through digestion and absorption.

Taking animals for example, the method of propagation is in some cases effected through splitting. The body is split from one into two, and as a consequence, propagation is effected at a very fast rate. In the case of intestinal bacillus, the split can be effected once in every 18-20 minutes.

Some are propagated by spawns which are laid seasonally. For example, a carp can lay as many as 400 to 500 thousands spawns, and a codfish up to ten million.

Some are vivparous and give birth to one or several youngs on each occasion. Therefore their birth rate is very low but their rate of survival is high.

Although living organisms are many and various, yet they also have similarities. Cells constitute the structural foundation of living organisms, and they are structural units as well as functional units. The structure of the cells of various living organisms is basically the same, and each cell is made up of the cell nucleus, cell body and cell membrane. Cells reproduce new cells through cell division.

In regard to functions, all living organisms are sensitive and can react to outside stimulation. They all function metabolically, and are capable of converting foreign matter into their own matter. They also can dissolve such matter, release energy and perform various kinds of activities.

All living organisms are capable of propagating themselves and reproducing their offsprings so that their species can continue in existence. In the process of propagating themselves generation after generation, they preserve their own characteristics on the one hand and also engender various kinds of variation at the same time. This is their heritability and variability.

In short, although the countless living organisms on earth vary a thousand and one way in life, yet their basic character is the same. This is their unity.

The Evolution of Living Organisms As Seen From Their Structures--From Simplicity To Complexity, From Low Class To High Class

The structure is the foundation of biological ecology. When the structure is understood, the basic characters of various living organisms can be known.

It has been stated above that cells constitute the basic units in the structures of living organisms. The smallest and simplest living organisms now known to us are the viruses (to be sure living organisms smaller than they are may also be discovered in the future). All of them have no cellular structure. Their principal component is nuclear protein. The nucleic acid is generally enveloped by the protein. The crystallized viruses are like ordinary chemicals from which the characteristics of living organisms cannot be detected. Once they make their way into a host, they manifest the phenomena of life--such as propagation and reaction. Therefore, the viruses seem to be a matter lying in between living matter and non-living matter. They are also the simplest living organisms now known to us.

Bacteria are from several ten to several hundred times bigger than the viruses. With the exception of a few parasites, most of them can live independently. Their structures are much more complicated than the viruses. They are shaped like cells but are not as complete as the typical cells. Their cell nucleus and cell division are especially not so clear as the typical cells.

The unicellular living organisms are bigger than the bacteria in size and have a more complete cellular structure. They have a distinct cell nucleus and cell substance, and their internal structures make it possible to implement division of work to varying degrees. For example, the unicellular algae contain chlorophyll like the higher plants and can carry out photosynthesis and manufacture nutrients.

Among the unicellular animals, the miracidium for example has such structures as mouth and anus formed with cell substance. It also possesses a sensitive system--similar to the nerves--formed with fibers.

Most of the living organisms are species with multiple cells, and their bodies are made up of numerous cells. More cells also mean larger in size. The most important thing is that division of work is practiced among various cells. Groups or organs with different functions are formed with different types of cells. The finer is work divided, the more perfect are also the structures of the organs. This leads to the formation of various species of living organisms whose structures are at variance in degree of simplicity and complexity.

For example, the body of an alga is itself a thallus. The mosses are summarily divided into stems and leaves. The fern plants have roots, stems and leaves as well as tubes for conduction. The seed plants are even more complex, and apart from the structures described above, they also have complex structures for reproducing seeds.

The multicellular animals are divided into two major departments--the invertebrata and the vertebrata. The structure of the former is much simpler than the latter. However, there are also some differences in structure among the invertebrates. For example, the bodies of the sponge and the hydra are made up of two layers of cells. The outer layer is the protective and sensory wall, while the inner layer is the cavity for digestion. In the case of other invertebrates, in addition to the outer and inner layers, there is also an intermediate layer which forms a system of blood vessels for the heart, and organs for excretion and reproduction, varying in complexity.

The organic system of a vertebrate is much better developed than that of an invertebrate. For example: In the case of an invertebrate, the internal organs are supported and protected by an outer shell or membrane

formed with a layer of dead matter called the outer skeleton. The skeleton of a vertebrate is grown within the body; it is called the inner skeleton, which is living and can grow.

The nervous system of an invertebrate is made up of nerve joints and nerve cords, and is relatively simple and well dispersed. The nervous system of a vertebrate has become highly "specialized." It is concentrated at the back in the form of a brain and a spinal cord which are protected by bones.

The blood circulation of the invertebrata is generally open and apart from the blood vessels, there are also blood cavities. The blood circulation of the vertebrata is sealed and operates entirely within the blood vessels. Moreover, the haematin is also not dispersed in the plasma as is generally the case with the invertebrates. It is concentrated in the corpuscles to form the red corpuscles.

The structures of the various organic systems among the vertebrates range from simple to complex, and there are also systematic changes. Taking the heart for example, the fish has two cardiac cavities while the amphibians have three (two auricles and one ventricle). The reptiles are similar to the amphibians, but the cavities are more completely partitioned, and the ventricle has been divided into two incomplete parts. The pure and impure blood in the circulatory systems of these three species of animals is mixed to varying degrees. All the hearts of the birds and beasts have four complete cavities (two auricles and two ventricles), and the incoming impure blood and the outgoing pure blood are completely separated. This is a very big progress.

In short, the structures of living organisms are diversified in form. The methodists divide them into different species according to these differences. If we arrange the various species according to their degree of similarity and dissimilarity in structure, we can see a system ranging from the simple to the complex and from the low class to the high class. This shows that they come from the same system but have changed by varying degrees.

This point can be further proved by making a comparison of the four limbs of the vertebrates. The shapes and functions of the four limbs of the vertebrates are different. Some are fit for crawling (the amphibians and the reptiles), some are fit for flying (the birds and the bats) and some are fit for running and galloping (the dogs and the horses). But their skeletal structures are basically of the same type. The upper section of each limb is made up of one long bone while the lower section two long bones. Within the palm there are many smaller bones, and at the extremity the five fingers have each various joints. The changes are principally found in the bones of the palm and the fingers. They either disappear or are combined; they are either elongated or shortened. This gives rise to

various types which can be clearly distinguished in anatomy. In some cases, during the time of the development of embryos, the process of their emergence and changes can also be seen. All these phenomena cannot be explained by the theory of special creation.

We can see from the above simple narration that living organisms come from the same family tree. Their differences in form and structure are the outcome of continuous changes. Changes lead to evolution, and the living organisms evolve from simple things into complex things, and from a lower class to a higher class. The various species of living organism now existing in the world represent the scene of prolonged evolution up to the moment.

The Development Of Living Organisms As Seen From The Skeletal Remains In The Strata

Since living organism live on earth, there should be their skeletal remains in the strata. This is really the case, for there are buried in various strata the fossils of the living organisms of various geological periods. Therefore, the various strata of the various periods marking the history of the development of the earth and the fossils of the living organisms of the various geological periods buried therin are the most honest records of the development of living organisms.

According to general estimation, the earth is at least four to five billion years old. Some people call the first half the "antegeological period" or the "astronomical period," and the second half is generally described as the "geological period" in geology. The geologists have further demarcated the "geological period" into the following five major areas:

the Cenozoic era--beginning at about 70 million years ago;
the Mesozoic era--beginning at about 230 million years ago;
the Palaeozoic era--beginning at about 570 million years ago;
the Proterozoic era--beginning at about 1.8 billion years ago;
the Archaeozoic era--beginning at about 2.8 billion years ago.

By comparing the fossils of the living organisms of the various eras--which we have discovered--we can see two basic phenomena of significance:

(1) The various living organisms did not appear in the same period --some earlier, some later; the earlier ones were simple, and the later ones complex.

(2) After the appearance of the various living organisms, they often prospered over a period of time. After that, they gradually degenerated and became extinct.

We may cite animals to illustrate such phenomena.

Toward the end of the Archaeozoic era, the earliest unicellular living organisms of the earth appeared in the sea. By the Proterozoic era (about one billion years ago) the animals evolved from unicellular species into multicellular species, and the ocean became the world of the lowly invertebrates. The most important species were the "Protozoa," the "Poifera Schwammtiere," and the "Coelenterata." Because they were small in size and lived long ago, they were not easy to be preserved. Therefore, there are not many such fossils.

In the strata of the Palaezoic era, there were plenty of animal fossils. At the early stage of the Palaezoic era, there were already many invertebrates, and the "tribolite" was the master in the ocean at that time. At a later stage, about 400 million years from now, there emerged the "Placodermi" which was the earliest vertebrate. The "tribolite" had degenerated by that time. The middle stage of the Palaeozoic era was the culminating period of the fish, because they were the dominating creature at that time. During the same period--about 300 million years from now--the vertebrates began to land, and there appeared the primitive amphibians. The late stage of the Palaeozoic era was the culminating period of the amphibians, and there appeared "the reptiles" at the same period.

The earth of the Mesozoic era was the world of the dinosaurs. During the period between 150 and 70 million years from now, they were the masters of the world. At the middle stage of the Mesozoic era--about 150 million years from now--there appeared the birds and the mammals, both of which were evolved from the reptiles.

The Cenozoic era was the period in which the modern species of living organisms appeared. The dinosaurs had become extinct after the Cenozoic era, and the mammals and birds rose in their place. About one million years from now, a branch of the ancient apes evolved toward mankind and there appeared the pithecanthropus. From that era onward, the history of the earth gradually entered the era of mankind.

The basic phenomena described above are also noted in the evolution of plants.

The lowly plants could be the earliest living organisms which appeared on the earth. By the Proterozoic era and especially at the late stage of that era, the algae were widely distributed, and their fossils are well preserved in the strata.

At the middle stage of the Palaeozoic era about four hundred millions years from now, the most primitive vegetation on land--the gymnosperms and the ferns--appeared. Later, there appeared the primitive true ferns and the primitive club-mosses. About 300 million years from now, the ferns grew

in abundance, and quite a number of coal deposits in the world were formed at the late stage of the Palaeozoic era. During the same period, the earliest gymnosperms also began to develop.

During the Mesozoic era, the seed ferns before this era evolved into two species--the "t'iehsu species" and the "isu species". At that time the "t'iehsu species" enjoyed extraordinary luxuriant growth, and hence, the name of the "t'iehsu era." Other gymnosperms--for example, the maidenhair-trees and the pine and cypress trees--also constituted important members of the vegetation of the Mesozoic era.

At the Cenozoic era beginning from the "cretaceous system," the ferns which thrived for a time in the past receded to the secondary place, and the angiosperms of the highest class rose to occupy the principal place. They were capable of adapting themselves to various environments. Their numerous varieties grew luxuriantly and made up more than half of the plants then grown on the earth.

The above is a summary account of the development of animals and plants on the earth. The animals and plants which appeared at various periods were not brought into being all of a sudden. They all had their ancestors and processes of evolution.

In short, the history of the earth tells us that the living organisms have their common ancestors. They lived from generation to generation, and went through changes and gradual development. The tendency of development was from small to big, from simple to complex and from low class to high class. In the process of development, old things became extinct and new things were brought into being. After a long history that stretches back hundreds of millions of years, the variform scene of the organic sphere of the present day has come into shape on the earth.

The Progress of Development--Inheritance And Irreversibility

Since the living organisms have their common ancestors and have changed and developed from low class to high class, why is it that after a history that lasts hundreds of millions of years, the contemporary living organisms still bear some resemblance to the lowly living organisms of several hundred million years ago? There are numerous causes.

One possibility is that the living organisms' frequencies of changes are at variance--some high and some low. The ranges of changes may also be different--some big and some small. The changes may also vary in quality--some important and some unimportant. Because of this the progress of development may be faster or slower.

Nonetheless, all of them are developing in a direction favorable to their existence and toward greater complexity. Therefore, the contemporary species of the lowly living organisms are more complex than those of similar types in the past and are of a higher grade.

Changes are based upon matter. New things are born on the basis of old things. The process of development must go through the process of accumulation--the greater number of new characteristics is accumulated, the greater is the difference from the old characteristics. The old characteristics are wiped out gradually and not at one stroke, Therefore, in the new species there are often the vestiges of the characteristics of the old species.

The ancestors of Man fed of plants. They had long verminform appendixes which were useful for digestion. In the process of evolution, mankind gradually changed their living habits. The plants no longer constituted their staple foodstuffs, and the appendix also lost its digestive function. But in our bodies, although the appendix has shortened, there is still a vestige of it.

Similar phenomena are also noticed in the development of embryos. The ancestors of the vertebrates lived in the water and breathed with gills. After they took to land, they breathed with their lungs instead and had no gills. But in the development of their embryos, gill splits have appeared, and the human beings are also of no exception.

Therefore, one theory holds that the process of evolution must be repeated in the development of embryos.

These phenomena shows that of the characteristics of the ancestors are found in the bodies of their offsprings. Their vestiges can still be found before they are completely wiped out.

However, historical development will not repeat itself. All changes must be based upon matter, and the things based upon new matter will not be the same as those based upon old matter. Therefore, in the long historical journey, we have not seen any reversion of living organisms to the primitive species, although such living organisms may return to the environments of life of their ancestors.

For example, the whale--a mammal whose ancestor lived in the sea--has returned once again to the sea. But it is not a fish but a mammal. This is because although its structure has changed, yet it has not reverted to the fish species as its ancestor because of such change.

Therefore, we can deduce that if the degenerated reptiles could develop once again to become giant animals, they would not be the same as the dinosaurs of the Mesozoic era, but would become a new species.

From these facts, we can come to the conclusion that there is inheritance as well as irreversibility in the development of living organisms. There may be vestiges of historical deeds, but historical progress will not repeat itself.

The Motive Forces of Development--Internal Contradictions Are The Main Factors, and External Factors Are the Conditions

The uninterrupted transformation and development of living organisms cannot be contested because there are plenty of concrete facts. However, there are still basically different views over the mechanisms and motive forces responsible for such transformation and development.

The Lamarckian theory holds that the transformation or development of living organisms is due to the use or disuse of organs--organs which are constantly used will continue to develop while those which are not used will gradually degenerate. For example, the giraffes have long necks because they are required to stretch their necks to feed on the tender leaves on the trees in the forests generation after generation. This is the theory of "improvement through use and degeneration through disuse."

The Darwinian theory holds that living organisms propagate themselves at a fast rate and vary continuously. In order to fight for food and space, they must struggle. Because favorable variation can play a positive role in the struggle, those which are unfit are eliminated and destroyed, while those which are fit are preserved and developed. "Struggle for existence" and "natural selection" are the basic concepts in the Darwinian theory.

The Lamarckian and Darwinian theories have been revised and supplemented by the viewpoints of geneticists. Many geneticists have integrated the "natural selection" concept in the Darwinian theory with the "gene" theory to explain the evolution of living organisms. They hold that heredity has its material foundation. The "chromosomes" within the nuclei of the living organisms are the basic matter bearing on heredity. The genes which form the chromosomes are the units with hereditary functions. The effects of various conditions may lead to the mutation of genes according to the laws of chemistry and physics. The genes also can be recombined through hybridization. The variation of living organisms caused by the mutation or recombination of genes may be inherited by the next generation, and the direction of evolution or development of the living organisms is then determined again through natural selection. The variation which is not caused by the mutation or recombination of genes cannot be inherited by the next generation--such variation dies with the individual.

Some other geneticists hold that metabolism is the foundation of heredity. If variation occurs in a metabolic type because of external conditions, its heredity will be changed. They emphasize the unity of living

organisms and living conditions. Living conditions lead to the variation of living organisms in a fixed direction, and consequently the development of living organisms.

There is in the above theories a basic problem: Can "the acquired character" be inherited? The acquired character refers to the variation which an individual living organism acquires over the course of its life--that is what is generally called "acquired change."

The Lamarkian theory, the Darwinian theory and the theory of unity of living organisms and living conditions all hold that the acquired character can be inherited. To be sure, in the days of Lamarck and Darwin, genetics had not been established, and the scientific basis of their arguments in this connection was inadequate.

The advocates of the gene theory are of the opinion that the acquired character cannot be inherited. This is because partial changes in the body cannot directly affect the heritable matter within the reproductive cells of the living organisms, and as a consequence, such changes can only die with the individual.

The generation of hereditary characters should be the outcome of the function of matter. If there is not a definite material foundation, there is no way for characters to realize. Therefore, the advancement of the material foundation is materialistic and scientific. But what is after all the material foundation of heredity?

As mentioned above, the advocates of the gene theory are of the opinion that it is principally the chromosome and gene within the reproductive cell. There is plenty of conclusive evidence to show the concrete hereditary role of the chromosome and the gene. But is the hereditary matter only confined to the cell nucleus? Is the cell substance around the nucleus controlled only by the nucleus, or has it its own functions? This is a problem which is worthy of bringing up for discussion. I feel that all matter in existence will have its role to play to each other--both the active phase and the passive phase. Although there is as yet not much evidence to show the hereditary role of cell substance, yet the outcome still depends on future scientific experiments.

Let us discuss no more, for the time being, whether or not the acquired character can be inherited and what is the material foundation of heredity. Although their involvement of the mechanisms of hereditary variation is a basic problem, yet as far as the development of living organisms is concerned, the most important problem is the motive force responsible for the variation, in other words, the cause of variation.

Comrade Mao Tse-tung has this to point out in "On Contradiction": "According to materialist dialectics, changes in nature are due chiefly to

the development of the internal contradictions in nature." (Selected Works of Mao Tse-tung, Vol. I, p. 290.)

Living organisms change precisely in this way. The contradictions within the living organisms are the motive forces which bring about changes in the living organisms.

Numerous facts tell us that different kinds of matter in the living organisms are not isolated from and unrelated with each other, but react on, are connected with, and affect each other.

Speaking of the cells, the chromosome within the cell nucleus can affect the development of the whole cell. When the chromosome is defective, development will cease or become abnormal. The gene of the chromosome can bring various kinds of characteristics to the cell substance. This can be described as the function of the cell substance on the cell nucleus. Within the cell nucleus, matter is likewise interrelated.

Speaking of genes, there are adjusting genes, structural genes and manipulating genes. They are not isolated from each other, but act on and are connected with each other. The cell substance around the cell nucleus has also a conspicuous influence on the nucleus. It can destroy the chromosome matter, promote or restrain the activity of genes, and affect changes in the cell nucleus.

The above deals with the interrelationship of matter within the cell. Interaction also exists between one cell and another, one organ and another, and one system and another. For example, one kind of cell may affect another kind and change its character. An organ or system can promote or restrain the functions of another organ or system.

The phenomena of mutual promotion, restraint or adjustment between various systems of matter within the living organisms are essentially manifestations of contradictions. If the development of a contradiction is too sharp or has attained a certain altitude, it can affect the basic structure of matter--for example, the molecular structure--and bring about changes of varying degrees which lead to individual variation. Especially is the case of material structure bearing on heredity, its changes directly affect the variation of the next generation. This is to say, the mutation of hereditary matter can be brought about due to various causes.

The above deals with the internal contradictions of individual living organisms, and this is fundamental. However, living organisms cannot live away from their environments; therefore, they are inseparably related with the environmental conditions around them.

However, the role of these external conditions can only be manifested through internal factors. For example, certain functions are promoted or

restrained so as to make changes in contradictions favorable to the development of a certain aspect.

The change in sex is a very good example. The differentiation of the male or female sex of an individual is a contradiction. When the female side triumphs, the female character is developed. When the male side triumphs, the male character is developed.

The external conditions can affect the development of this contradiction. For example, when the sexual differentiation of a frog has not been determined, by raising the temperature, the male side can be strengthened and the female side repressed, and the individual will become a male frog. Conversely, by lowering the temperature, the female side is strengthened and the male side repressed, and a female frog is brought into being.

This shows that the external factors are the conditions for changes, while the internal factors constitute the basis of changes. Therefore, because the internal factors are different, the living organisms under the same environmental conditions--for example, the plants on the same piece of land and the microbes in the same drop of water--also grow and change in different ways. Some people emphasize the role of external factors and neglect the importance of internal factors. This is nondialectical.

In short, the development of living organisms is first due to the variation of living organisms, and the motive force responsible for the variation comes principally from the internal contradictions of the living organisms. With the old contradiction solved, new contradictions are born. The living organisms are continuously in motion and are continuously developed in this way.

Conclusion

Up to the present, the living organisms on the earth have a history of hundreds of millions of years. By comparing the skeletal remains of living organisms excavated from the strata with the species still existing on the earth, we have come to know clearly that living organisms are continuously changing and developing. This has energetically proved that the world outlook of materialistic dialectics--the view that nature is continuously developing and will never stop at one level--is entirely correct.

The history of biology is the history of ideological struggle. With the metaphysical world outlook as the guide, the progress of biological work will be hampered; with the world outlook of materialistic dialectics as the guide, biological work will be quickly developed. In order to accelerate the development of biology and to make biology render better service to socialism it is necessary to guide our work with materialsitic dialectics and the thought of Mao Tse-tung.

CSO: 3530-D

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[Following is a translation of a table of contents in the Chinese-language periodical, Hung Ch'i (Red Flag), Peiping, No. 13, 6 December 1965]

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