APPENDIX 3

ON SOME PROBLEMS IN THE FIELDS OF SCIENCE AND TECHNOLOGY

We have been at the Academy of Science for nearly a month, about twenty actual working days. During this time we have reviewed some important historical documents, and have held discussions with a number of comrades, some of whom are from the Academy. Below are some preliminary views on these six questions:

1. **On fully recognizing the achievements on the science and technology front. (deleted)**
2. **On organizational leadership in scientific and technological work. (deleted)**
3. **On striving to understand the concrete line in scientific and technological work as proposed by Chairman Mao.**

The Chairman has formulated our Party's basic line and the General Line in socialist construction for the entire transitional period of socialism. At the same time, he has also formulated the concrete policies for various fields. We have only touched on the policies to be followed in science and technology. Our understanding is only superficial and far from being complete. After preliminary study and investigation, we feel that at the present, there are a number of problems that require clarification.

The first one is the relationship between politics and vocation.

In scientific and technological work, politics must be put in command; we must grasp revolution and promote scientific research. "The line is the key link. Once the key link is grasped, everything becomes clear." If we forget the General Line of the Party, we shall lose our direction. Just to have the General Line is not enough. Under the guidance of the General Line, we must correctly implement the Party's line and its general and specific policies in the fields of science and technology. With an understanding of these policies, we can achieve unity of action.

Our task for the present period is to persist in carrying out the three directives of learning theory to combat and prevent revisionism, promoting unity and stability, and improving the national economy. These three directives must not be separated. If we do not fight and guard

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against revisionism, our concrete work will be led astray. Without unity and stability, production, science and technology will not proceed smoothly. If production, science and technology do not develop, then our material base will be shaky and it will be impossible to consolidate the dictatorship of the proletariat.

Comrades working in the areas of science and technology must be strong in political leadership as well as being capable at giving direction in matters of concrete work. For Party cadres to know a great deal about vocational and technical matters is difficult, but to be ignorant and unconcerned about them is also wrong. We should aim at being both red and expert.

The second problem is one of the relationship between production and scientific experimentation.

Science develops from production and in turn guides and stimulates production. How can we increase production in a faster, better and more economically way? The decisive factor is man. This calls for people with high political consciousness and revolutionary enthusiasm, and a mastery of advanced science and technology. Science and technology are also productive forces. Scientific research takes the lead in furthering production. The great advances in oil industry have proven this.

The Chairman and the Party Central have proposed the great goal of taking two steps in economic development. If we do not make great strides in science and technology, it cannot be achieved. Without modernization in science and technology, there can be no modernization in industry, agriculture or national defense.

Some comrades think that doing scientific research is like "distant water that cannot quench an imminent thirst." Actually, the very purpose of advancing scientific research is to avoid "digging wells only when one is thirsty." Some comrades are worried that advanced technology is still in its experimental stages—not a sure thing, and therefore may hold up production. In the past we did have such experience, however the lesson to be learnt from this is not to abandon scientific research, but to attach more importance to strengthening it. Maturity always grows out of immaturity, and completeness from incompleteness. To increase production, we must promote scientific experimentation and new technology. Not only must we fix quotas for production output, we must also fix technical and economic targets.

The third problem is one of the relationship between technicians and mass movements.

To develop science and technology, we must rely on two forces, one of technicians and one of the masses. In this way, we shall be walking on two legs and making use of two positive factors.

To concentrate only on training a body of technicians, discard the

masses, neglect the mass movement of scientific experimentation, cultivate intellectual aristocrats, disregard and even suppress the creativity of the masses are the capitalist and revisionist ways of doing things.

Without a body of technicians, it is difficult to sustain the mass movement. Hence, without technicians it will be impossible to raise the mass movement of scientific experimentation to a higher level.

The correct policy is to combine the two. The technicians must learn from the workers and peasants, and from the actual experience gained in production. Such integration will certainly not minimize the role of technicians, but rather will better expand their role as the backbone of the mass movement in scientific experimentation. We must popularize scientific knowledge and introduce research results to the masses. The experiences of the masses in production and experimentation should be raised to a theoretical level, so that science can be advanced and at the same time applied to production. The state also has many important problems in science and technology which will require the concentrated effort of a large body of technicians.

At present, both the rank of technicians and the mass movement need to be improved and expanded. A number of science and research bureaus have been closed down in various places. Many of the personnel have been sent down to work in the countryside for long periods of time, while others are substituting in on production. A large number of special bureaus have not been given new people for many years, the average age of personnel being almost forty. This situation must be remedied promptly. We urgently need to plan and absorb science and engineering university graduates who have been sent down to labour for a period of several years, as well as activists with a certain level of scientific knowledge so as to fill and reinforce the ranks of technicians. We must also gradually build up a series of specialized research centres.

Scientific experiment is also a form of social practice. It can't be substituted by production. A lot of research work calls for field experiments. However, be sure to combine outside experimental research with laboratory experimentation. Some research cannot be conducted outside and must be conducted in laboratories. We must not abolish this type of research. We must not demand that all research work "take the factory and the countryside as the base," and indiscriminately shout the slogan: "open the door to conduct scientific research."

Some research requires massive joint effort while other requires only a small group of people, still others demand individual study. To label the work which involves only one or a few people as "small-scale production" is incorrect, and doesn't help to mobilize the people's enthusiasm for socialism.

The fourth problem is the one of the relationship between self-

reliance and learning from abroad.

Experience shows that under the leadership of the Party, the Chinese people have firmly grasped their own destiny. They are fully capable of relying on their own efforts to develop industry, agriculture, technical innovation, scientific experimentation and so on. Our basic emphasis is on self-reliance.

To speak of self-reliance is not to reject all foreign things and isolate oneself behind closed doors.

Chairman Mao said, "We openly declare, we shall learn from abroad. We shall study all of their advanced and good things, and we shall forever continue to learn from them."

Lenin studied Marxism and led the October Revolution. Chairman Mao studied its universal experience and related it to the Chinese situation, thus leading the Chinese revolution to victory. We study in order to create. Only those who learn well can continue to improve and then surpass other. This is true in the social sciences as well as in the natural sciences.

Our science and technology falls considerably short of world standards. The idea that "everything foreign is good," is incorrect. However, not to introduce foreign achievements and to refuse to face up to the existing gap is also wrong. We admit there is a gap so that more effort will be expended in narrowing it.

In scientific research, we must pay close attention to the developing trends in science and technology all over the world. We must collect, study and analyse foreign materials and documents on this subject, and greatly increase our scientific investigative work. Only by doing this can we really know our position in relation to others. This will enable us to advance on the others' foundation, avoid their mistakes and catch up with them.

In order to gain time and speed, we must import some advanced technology and equipment. We import for the sake of reference, to stimulate our creativity and not to substitute it.

To improve and strengthen international ties in science and technology, we must organize exchanges with the international science community. We must use every opportunity to further our academic knowledge. We can reduce or eliminate general tours. We should learn from Mr. Lu Hsun's "borrowing" motto, borrow advanced foreign technology to serve our own purposes.

In order to learn better from the strong points of foreign countries and to swell the ranks of those engaged in foreign affairs work, we should encourage our young science and technical people to master one or two foreign languages.

The fifth problem is one of the relationship between theoretical and

applied research.

Our Party has always attached importance to theoretical research in natural science. The Chairman and the central leadership made many directives on this subject. We want neither empty theory nor unguided practice.

Many technical problems in production remain unsolved. This is mainly due to the lack of theoretical study and fundamental work.

The bulk of our work in science and technology is copied from abroad, only a small portion is of our own creation. To surpass world standards, to have what others do not, to develop our own innovations, calls for the strengthening of theoretical research.

We have acquired an abundance of practical knowledge from the mass and from experience in production. We also have a rich heritage of science which needs to be analysed and built on. We must recognize the general laws at work, bring our experience to a theoretical level and use this knowledge to direct our further practice.

Another category is theoretical research. Though its utilization is not immediately apparent, it is of great significance to the development of science and to our understanding of nature. Some of it may be crucial to the international political struggle and to the struggle between the two lines in philosophy. This too, must not be overlooked.

Therefore, while we improve our applied research work, we must also emphasize and strengthen our theoretical research. We must not equate theoretical research with "the three divorces"—divorced from production, divorced from politics, and divorced from the workers and peasants. We must not mistakenly believe that only applied research is useful to the state; theoretical research is also needed. Theoretical research often does not yield immediate results, it is therefore vulnerable to attack. Due to this, the support and concern of the leadership at all levels is required, and relevant and concrete arrangements should be made.

The situation varies from ministry to ministry, so we must use discretion. The ministries involved in production, while concentrating their efforts on solving technical problems that arise from production, should also give due attention to theoretical research. Research centres of the Academy of Science and some higher educational institutes with the proper facilities should also share the responsibility for more theoretical research. This should all come under an overall plan.

The sixth problem is one of implementing the policy of letting a hundred flowers blossom and a hundred schools of thought contend.

In the fields of science and technology, we should now be aiming at a great increase in academic activities and launching into academic exchanges. We must encourage debate and discussion of different

scholastic viewpoints so as to bring about a change in the current situation of academic laxity and the settling of academic questions simply by administrative methods.

When faced with differences of opinion in scientific and technical work, we must clearly identify the nature of the problem. Some problems may be a matter of political line, others a matter of world outlook. In many cases, it is a matter of different intellectual viewpoints or method. We must see both the relationship between various questions as well as the major and minor factors involved in them. We must not confuse the nature of these problems.

Debates between different opinions in science and technology are a good thing, and not a bad thing. Right and wrong should be settled by academic discussion and scientific practice. We must not simply force conclusions by administrative order, by supporting one faction and suppressing another. We cannot, moreover, judge on the basis of a majority vote, age, or political performance. We cannot accuse all the academic viewpoints of the scientists in the capitalist and revisionist countries of being capitalist and revisionist, thereby negating everything at will.

We must encourage the study of the philosophical thinking of the Chairman, study natural dialectics, be accurate in our analysis and criticize any idealist or metaphysical trends in the natural sciences. We must establish our own school of thought under the guidance of dialectical materialism and support and encourage socialist new things in scientific research. We must make "Scientia Sinica" a scientific journal of research into natural science based on natural dialectics. The standard of all academic journals must also be raised, so that they may become the true ground for academic discussion and truly reflect our academic situation and standards.

4. **On our policy on intellectuals in the fields of science and technology. (deleted)**

5. **On a preliminary sketch of the ten-year plan for science and technology. (deleted)**

6. **On rectification in the departments of the Academy and its subsidiary units. (deleted)**