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SCIENTIFIC DEVELOPMENT IN SLOVAKIA

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## SCIENTIFIC DEVELOPMENT IN SLOVAKIA

[Following are two articles on scientific development in Slovakia published in Vestnik Slovenskej Akademie Vied (Journal of the Slovak Academy of Sciences). Additional bibliographic information accompanies each article.]

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## FIFTEEN YEARS OF SCIENTIFIC DEVELOPMENT IN SLOVAKIA

[Following is the translation of an article by Academician Andrej Siracky in Vestník Slovenskej Akadémie Vied (Journal of the Slovak Academy of Sciences), Vol II, No. 1, Bratislava, 1960, pages 3-8.]

In the jubilee year of 1960, when Czechoslovak working people are celebrating the fifteenth anniversary of the liberation of their country by the glorious Soviet Army, all regions and branches of our public, political, economic, and cultural life join in the evaluation of the up-to-date accomplishments of our society. The year 1960 is a boundary mark in which we are requested to give a full account of and have a close look at our achievements and shortcomings, to pool our experiences, to emphasize the lessons we have learned with regard to the past 15 years of our People's Democracy, and to develop further concrete and perspective tasks which lay ahead of us while we complete the building of socialism and go on to communism.

Our people led by Communist Party of Czechoslovakia accomplished true miracles during the last fifteen years. Thanks to our system in which the people govern themselves without being exploited our industrial production when compared to the highest period of the former republic increased almost four times. The progress of our production forces and socialistic production relations attained a high level, not only in industry, but also in agriculture which is being rapidly changed from small-area privately owned farming into a socialistic cooperative farm with mass production. The material and cultural growth of our society during the past 15 years, is a historical example for all the nations which have not so far started their journey toward socialism.

The main outstanding result of our socialist construction is the industrialization of Slovakia. This multiplied the contributions of the Slovak working people toward the development of the whole national economy, so that even a once very much backward part of our state could share substantially in the fact that within the next few months we will produce six times more energy, twice as much coal, three times more steel, five times more machines, and four times more cement, as we did before the war. In the region of consumers goods and food production, our state is also very successful, and it made possible the lowering of consumers goods prices several times in the interest of the working people.

The advantage of a socialist society as compared to a capitalist society has not been proven from the economic side only. In the process of the development of socialism and new growing economic and social relations, the socialist consciousness of our working class has been

developed and strengthened, too. To speed up this ideological process, the revolutionary changes in social welfare and culture have been realized which helped us, to a certain extent, to do away with prejudice, old carryovers, and the abuse of a capitalist society. It is enough to mention the development of our health, school, cultural, and art programs, in order to be able to complete the picture of our happy life today.

It is understood that with the favorable progress of our socialist society, Czechoslovak science has made progress also. Its progress especially in Slovakia in several branches cannot even be compared with the pre-war situation because some of the branches of science did not exist in Slovakia during the first republic. It was caused by the fact that production in bourgeois Czechoslovakia was based primarily on the results of natural science and technical research from the capitalist states, and was not interested in building its own scientific base. It was during this state of incompleteness (and in Slovakia the almost total lack of scientific research) that the liberation of our people from fascist terror came about.

The tremendous task of reconstruction, rebuilding, and the organization of our economy, which the Communist Party outlined immediately during the first days of our People's Democratic Government, required also the rapid and effective help of scientific workers. It should be emphasized right here that the speedy, even though sometimes elementary, construction of scientific institutes during the post-war years can be accredited to our universities. They re-inforced the already established and founded new centers with their students who, thanks to the excellent tradition of our universities, soon became excellent specialists. We should not forget that many of our university professors and lecturers could fully devote their time to scientific work only after the liberation of our country. As far as Slovakia is concerned, we should bear in mind also the fact that during the first year after liberation, scientific work was concentrated namely at the Komensky University with its honored, (over 40-year) educational activity; we gained most beneficially in biological, medical, and partly in natural and social sciences.

The activities of the first research centers which originated in the years right after liberation were aimed especially at applying the newest invention to our national economy. It is necessary to mention at this point a further important factor in the development of our science, and that is, the help of Soviet science. Even though the organized cooperation between our and Soviet sciences dates from a later era of development of our state, it is necessary to mention at this time and to bear in mind that the political and economic aid of the Soviet Union to our Republic was given on the basis of scientific consultations and through scientific knowledge gained in the USSR. It is also necessary to be aware of the fact that the fruit of the alliance and political cooperation between our Party and the CPSU was

also a rapid development in our thinking and working along the lines of Marxism-Leninism, and along the lines of world scientific thought.

We can boldly say that the majority of scientific centers and scientific research installations which we have in Slovakia today were not founded before February 1948. At that time, the foundations were laid for scientific research in chemical science, medical science, building, machinery, and welding technology, geology, etc. At that time also the centers for pharmaceutical chemistry and food chemistry were founded, and today are a part of the Slovak Academy of Sciences. A Wood Research Institute was created, the Geological Institute of Dionisus Stur, the Cables and Insulators Institute, and others were formed. The Welding Research Institute became not only the Czechoslovakian but also the international center for welding technology.

Research work in social sciences during the first years after the war was concentrated at the Slovak Academy of Sciences and Arts and at the faculties of Komesky University. Even there the beginning was not easy, if we realize that the major part of social science created was burdened with a bourgeois ideology, and even by pseudo-scientific and reactionary thoughts and a clerical-fascistic past. Only some of the works of the past, especially history, literary science, and ethnography could be considered as a source of material. There were very few progressive and even fewer Marxist works in philosophy and economy so our young Marxist science could not start building on a solid tradition. Our present scientific workers in social sciences, with the exception of a few individuals, are mostly the young people who have begun to work in the sciences during the last few years.

After the initial stormy sometimes elementary and quantitative development of our science, a qualitative change came about in the years 1952 and 1953, when in the spirit of a cultural-political program of our Party the Czechoslovak Academy of Sciences, the Slovak Academy of Sciences, and Czechoslovak Academy of Agricultural Sciences were founded. These are academies of a practical type patterned after academies of Science in the USSR; their task is to build a new socialist science in our state. The first task of academies lies in the consolidation of scientific life and also in the expansion of research in those branches which did not exist in our country before. It is true that the situation in Bohemia was different. There, the foundation of an academy meant a promising beginning of concentrated research toward basic theoretical research. The centers for the most modern branches of science for instance, atomic physics, electronics, information theory, etc., could begin their activities, comparatively early, thanks to a larger number of scientists. The foundation of an Academy of Sciences meant for Slovakia a further opportunity for the qualitative growth of science and the beginning of its organization. The centers of the Slovak Academy of Sciences made a gradual change from solving tasks of an applied nature, to solving tasks of basic research. In an effort to extend scientific research to formerly

non-represented branches, several mistakes were made. That is, centers with a small number of scientific workers or with a complete absence of experts were established. The indisputable success of the initial activities of the Slovak Academy of Sciences was due to the fact that in Slovakia for the first time a research program in agricultural science was created and specific tasks of science began to appear, and consideration was given to the building of scientific installations and a planned education for scientific workers. Also the first more important results of scientific research were attained.

The results of scientific work in Czechoslovakia made during the last fifteen years are remarkable, and are only a further proof of the advantages of socialist organization over capitalism. Thanks to the generous support that our science received from the state and our working class, and thanks to our new social relations which free the initiative of all workers and do not know the capitalistic impediments in the development of production forces and democratic freedoms, Czechoslovak science maintained its traditional lead which in many cases was surpassed or matched the most advanced world research. Let us just mention the achievements of the Czechoslovak Polarographic school, represented by the Academician Jaroslav Heyrovsky who was the first citizen of our state to receive the Nobel Prize. We cannot overlook the great success of organic chemistry, especially in the area of organic compounds and the structure of albumen. Czechoslovak mathematics and astronomy and the part we played in the International Geophysical Year enriched the level of international research. The successes in some technical sciences improved our already excellent machine industry, thus making it possible also in our state to build the most modern structures of socialism. Many discoveries originated in the centers of Czechoslovak biological sciences especially Czechoslovak medical science which was the first in the world to undertake the solving of the task known as Research on a Healthy Generation. Last but not least, let us mention the work of the Prague Oriental School which makes accessible especially to the Western world the depth and richness of Eastern cultures, and also the experiments and work of Czechoslovak archeology which while trying to throw some light on European primeval culture is waging a winning battle for strengthening of the materialistic concept of the world.

If we want to make a concise sketch of the results of scientific work in Slovakia, let us start with the scientific projects which contribute to the development of national culture. We have produced the first Marxist History of Slovakia as well as monographs on individual historical periods especially the Slovak National Uprising. Outlines of the History of Slovak Literature and Philosophical Thinking were compiled. In spite of considerable difficulties and shortcomings in our new linguistic science, progress was made in terminology and the first academic dictionary of the Slovak Language is just coming off the presses. Archeological discoveries in Slovakia are a subject

of great attention for the whole expert European public. A political economic work about the industrialization of Slovakia will be a valuable contribution not only to domestic but also to foreign theory and practice in building socialism.

In the area of natural sciences, it is necessary to mention chemistry which helped to develop food branches and solved especially the question of physico-chemical processes of sugar production, and the anorganic branch which concentrates its activities on raw materials of a mineral nature, the chemistry of wood, cellulose and chemical fibers which is ahead in the preparation of cellulose from beech wood, and finally the branch of chemical research of hydrocarbons and oil. Geology in Slovakia concentrated its main effort on the preparation of a new geological map and in addition, also discovered a number of new mineral deposits. Physics and geophysics formed their first centers for basic research and astronomy contributed to research about interplanetary matter on one hand, and to observations of the earth satellites on the other.

In the development of technical sciences in Slovakia, we still feel a lack of tradition and a lack of experienced scientific workers. High levels were attained only in some works which were solving the problems of new building construction, in hydro-technical installations, and also partly in the technology of building materials. Theoretical research in hydrology secured the needed foundation for practice. From among the remainder of the technical sciences in Slovakia, relatively a small branch of machine technology and metals welding reached the world level.

From among the successes of biological, medical, and agricultural sciences in Slovakia, it is necessary to mention primarily the work of the Virological Institute of the CSAV [Czechoslovak Academy of Sciences] in Bratislava; the progress in modern cardiology and cardiosurgery and their excellent application to clinical practice; and research in the area of Pavlovian physiology, neurophysiology and neurosurgery. The Oncological Research Institute occupies a prominent place among the medical sciences. As far as collective and up to a certain extent complex scientific research is concerned, it is necessary to stress the fact that they originated in the biological branches, whether it concerned the research and reduction of natural inflammations, infectious and other epidemiological researches, or the important help rendered to public health by research in endocrinology, and to agriculture and sanitation through research in helminthology. Agricultural science attained some success in the physiology of farm animal nourishment in protection of plant culture, as well as in agricultural management.

From the unprecedented development mentioned above and the wide scope of scientific research in Slovakia, it can be seen that this would not be possible without the substantial help of Czech science, and that goes even more for the future. Therefore, in the years 1957-59 it was quite clear that further development of the entire

scientific life in Czechoslovakia is unthinkable without a uniform plan of scientific research tasks, without just disposition of scientific institutes, installations and teams all over our state and without a plan of education for new scientific workers. The Eleventh Congress of the Communist Party of Czechoslovakia contributed to the solving of these problems of Czechoslovak science in an authoritative manner by outlining its line of evolution in such a way as to concentrate on the most important problems of building socialism and social changes in order to expand theoretical research in the major scientific branches in such a way that they would gain a place in the ideas confronting society which must take part in building the foundations of communism.

Under the leadership of the highest academic institution in the CSR (Czechoslovak Republic), the Czechoslovak Academy of Sciences, the workers of the Slovak Academy of Sciences, universities and research institutes participated in compiling a plan of major scientific tasks which is to be coordinated among the centers of basic, departmental, and enterprise research. A network of scientific research institutes and installations, with concrete perspective plans up to 1965, and with the outlook to 1975, was created. The requirements for new scientific personnel and for individual sectors of science are already known, and these will have to be reached in cooperation with our universities.

Finally, a tremendous job was done in the field of ideological and political education for scientific workers based on the principle that high scientific standards and ideological maturity are for the socialist scientist and his activity inseparable requirements. Connected with this also is the unity of scientific life with all the branches of practical life and with the lives of our people, as well as the effort to speed up the introduction of the results of scientific research into production and educational practice. An extensive amount of progress has been made in respect to the political-organizational activities of our scientists; in the future new formulas which relate science to practice and life will be sought.

During the last years, the international relations and cooperation between our science and the science of the Soviet Union and People's Democracies has made far-reaching progress. This cooperation is already growing into a coordination of scientific research of the whole socialistic camp. Our academies of science each year make an agreement for scientific cooperation with the academies of science of the USSR, Chinese Academy of Sciences, and the academies of sciences of other socialist countries. This close cooperation was brought about by the visit of a delegation from the Presidium of Academy of Sciences of the USSR to Czechoslovakia in 1957.

The 1960 anniversary year and the aggregate of modern results in our scientific work cause us to discuss accordingly also our further prospective scientific tasks and from the viewpoint of the development of the national economy, the realization of a cultural revolution

and the needs of internal development for the individual and not only the preferred branches of science.

A further substantial development of our production forces is essential for the progress of our socialistic society, which ultimately will mean the victory of socialism over capitalism. Therefore, it is a question of all-around expert preparation for automation and later also the complex automation of our production for which our science during the third Five-Year Plan has to gather basic material. It will be a question of further development in nuclear physics and technology so that Czechoslovakia also can use atomic energy for peace and progress. It will be a question of solving a gigantic complex of tasks which concern public health and the protection of the nature against the harmful influence of modern industry, etc.

We realize that these tasks can be solved only by socialist science which consistently develops collective forms of research, and proceeds to solve dialectical and complex problems. At the same time we are quite aware that science in Slovakia cannot cope with the solving of these tasks by itself. Not even all of Czechoslovak science has enough power at times for the fulfillment of great research tasks. It is quite clear that without extensive cooperation, consistent development along the lines of Marxism-Leninism, and along the lines of proletarian internationalism, it is impossible to build the foundations of communism. The thesis of the Twenty-First Congress of the Communist Party of Slovakia that the socialistic states will enter communism jointly along side the USSR is besides primary political-economic conditions, also influenced by the development of joint scientific research of the whole socialist bloc and by the exchange of ideas among individual states of socialism.

The most important job for us here in Slovakia is to seek constantly new forms of cooperation with the science of Bohemia in the spirit of a unified Czechoslovak science. From this point of view it is necessary to secure all of the main tasks of scientific development such as technical and political education of scientific workers in sufficient quantity, building scientific centers and equipping them with the most modern instruments and other equipment, and working out consistent coordination of all research tasks in agreement with the plans of the scientific centers in Bohemia. Only in this way, can we clearly outline the organizational and technical tasks of scientific research in Slovakia, and then fulfill the share of Czechoslovak science in the successful competition of overtaking and surpassing the most developed capitalistic states.

Fifteen years ago at the time of liberation the idea and conviction of the exceptionally important role that science has in marching forward to socialism and communism was not as firmly anchored in the minds of our people as it is today. After fifteen years of development of socialism in our country, we are witnesses to the revolutionary influence of science on the building of a communist society and on the fate of all of mankind. From this there follows a tremendous

responsibility for the future for scientific workers.

Scientific workers can fulfill their enormous tasks only then when they continue in their scientific education, and when they take care of their ideological and political growth. There are important tasks confronting our science in connection with the third Five-Year Plan and in connection with the far-reaching changes of the new territorial organization of our state. Due to the untiring effort of the Soviet Union, the international situation is becoming calmer and the attractive prospects of general and complete disarmament, for which the most powerful state in the world--the USSR--fights so unyieldingly and consistently, opens also for our science and research the possibilities and assumptions which bring us closer to communism.

## TWELFTH PLENARY SESSION OF THE SLOVAK ACADEMY OF SCIENCES

[Following is the translation of an article from Vestník Slovenskej Akadémie Vied (Journal of the Slovak Academy of Sciences), Vol II, No 1, Bratislava, 1960, pages 9-41.]

On Monday, December 7, 1959, the Twelfth Plenary Session of the Slovak Academy of Sciences took place at Bratislava. The delegation of the CSAV (Czechoslovak Academy of Sciences), led by Joseph Novak, was welcomed by the chairman of the SAV (Slovak Academy of Sciences), Academician Andrej Siracky. In addition to Joseph Novak, the following members of the CSAV were present: Corresponding members Karel Horak and Frantisek Link; the delegation of the Czechoslovak Academy of Agricultural Science led by Bratislava branch chairman, Academician Ivan Brauner; workers of the UV KSS [Central Committee of the Slovak Communist Party]; Slovak Cabinet members; representatives of the ZO KSS [Communist Party of Slovakia]; representatives of the workers councils of the ROH [labor unions] from the centers of the Academy and other guests. Before the meeting got under way the Plenary Session of the SAV paid its respects to deceased member, Academician Juraj Hronec.

The main speech about the activities of the SAV and some of its urgent tasks was delivered by its head secretary, Corresponding Member William Thurzo. The report was prepared by nineteen members of the SAV and its foremost workers. The plenary session accepted the resolution which in seven points outlines the main tasks for the organizational and scientific activity of the Academy during the preparatory time for the fulfilling of the third Five-Year Plan for the development of the national economy.

### INTRODUCTORY ADDRESS BY THE CHAIRMAN OF THE SAV, ACADEMICIAN A. SIRACKY

Ladies and Gentlemen,  
Only one year has gone by since the Tenth Plenary Session of the Slovak Academy of Sciences. At that time we worked on the problems and tasks of our science as agreed upon and drawn up at the Eleventh Congress of the Communist Party of Czechoslovakia. During this short time we have had a number of good results in the organization of scientific work and in research itself. We worked under conditions in which, thanks to the democratic forces for peace international tension improved as was shown most expressively by N. S. Khrushchev's journey to the United States of America. With our scientific and research work as an effective aid for the development of the economy

and culture, we fulfill not only our task for building socialism in our country, but at the same time we strengthen the whole socialist bloc led by the Soviet Union and we contribute to the further growth of the democratic and peace forces of the world.

The basis of our work outlined in detail at the Tenth Plenary Session in November 1958 are the decisions from the 11th Party Congress. All of the Party and government decisions and documents published since that time are nothing more than the detailed decisions from that session, and as far as research and science is concerned, the report of the head secretary of the Czechoslovak Academy of Sciences, Comrade Jaroslav Kozesnik, and the resolution from the Tenth Plenary Session of the CSAV from November of this year are also considered an essential contribution in that sense. In the report of the head secretary and also in the suggested resolution will be found the basic instructions for determining needs and development of science in Slovakia.

Since the Tenth Plenary Session we had in the Slovak Academy of Sciences and in the organization of research in Slovakia indisputable success in political, ideological, research, and organizational areas. We can state with satisfaction that during the last year, political work in the Academy improved due to the fact that the leading role of the Party makes itself felt more firmly through activating political groups and party organizations. Also after political investigations of our centers, a majority of the centers were consolidated and many working members of our Academy especially from the social sciences branch became fully active in our public life, and understood correctly the social-political function of science. The ideological level of our Academy workers has been improved; seminars held for members and leading workers have high standards and contribute to correct orientation in scientific work. Significant results were attained also in methodological-philosophical seminars. However, more attention by the managing committee and the sections will have to be given them. Our science is Marxist-socialistic. Every worker of the academy understands today that the inevitable assumption of dialectical-materialistic theory and method is necessary for the correct aim of scientific and research activities. Sections and directors, with increased responsibility see to it today that only politically and ideologically superior and expertly qualified workers come to the centers of the Academy.

The scientific-expert level of our workers is improving too. In the spring of this year, the scientific-expert activities of our workers at the Academy were evaluated. However, individual centers and sections did not succeed in doing a thorough job and so it happens that occasional workers of the Academy have been graduated who do not have qualifications for scientific research. We will have to take care that our workers meet the political and ideological requirements, that they go in step with science, and acquire the characteristics of socialist scientists, that is, Marxist principles, eagerness, devotion,

modesty, and awareness of collectivism.

During the past year we have also had good results in the sectors of organization, planning, and coordination of scientific activities. In the centers of the Academy we have achieved today the collective and complex solving of scientific tasks which are important from the economic, cultural, or scientific-theoretical point of view. The plans and tasks for 1960 already have, to a certain extent, these collectivist characteristics, and individualism is retreating all along the line. In connection with these, as is with the other questions, it is necessary to emphasize that we are able to improve the quality of our work only because of the extensive and improved cooperation of our Academy with the Czechoslovak Academy of Sciences, the foundations of which were laid down at the first meeting of the Presidium of the CSAV and the Board of Directors of the SAV in 1958. Meetings of sections of both academies and meetings of institute councils are proving to be very beneficial. It will be necessary to extend this cooperation to other sectors (institutes of the same type, meetings, editing activities, periodicals, etc.) On this occasion I want to tell you that we have taken steps to improve our cooperation with the Bratislava branch of the Czechoslovak Academy of Agricultural Science.

Ladies and Gentlemen, permit me to mention a few words about the aims of scientific work and the development of basic sectors of science. It is obvious that in the Slovak Academy of Sciences, in closest cooperation with the CSAV, we will have to achieve the development of basic sectors of science, especially with regard to directives for the development of the national economy during the third Five-Year Plan, along with physics, mathematics, chemistry, biochemistry, biology, technical sciences, philosophy, and political economy. Also we will not forget scientific subjects important from the point of view of our national culture. It is obvious that for proportionate and preferred development of scientific sectors (branches) the position of social-political importance is decisive, as is the role of economics and the needs for development of scientific theory. On these bases the sections, in cooperation with scientific committees, have as complex tasks to solve main scientific problems. The main directives of development and collective and complex planned tasks have to be organic members of the state plan for the development for the national economy. Because of these reasons we planned the building of our chemical, physical, and technical centers in Patronka, the first phase of which is supposed to be ready by 1961.

We direct the scientific research in our Academy so, that the results to the maximum degree serve the needs of our production, economy, and culture. From our initiative, on 2 and 3 March 1959, a conference of all Slovak scientific workers was held which dealt with the complex problems of uniting theory and practice. The tasks as outlined at the conference in seven points of resolution cannot be realized without effective help from the State Committee for Technical

Development and the State Planning Commission. We are convinced that the better use of scientific results in practice depends especially on organizational, team, and technical measures which would help to modernize our production in such a manner so that its quality would attain the quality in that particular sector. Let me further say that the Slovak Academy of Sciences takes seriously its task to help production as was shown by the fact that we submitted concrete suggestions as to how the centers of the Academy can help in solving questions connected with the building of iron works in Eastern Slovakia. A prepared meeting of the board of directors of the SAV in Kosice will serve that purpose.

Comrades, it is not the purpose of my speech to talk to you in detail about the tasks our Academy can expect in future years. Our scientific secretary, Corresponding Member Comrade William Thurzo will talk to you in his report about all of these problems such as how to improve the work of the board, sections, chairmen, and scientific advice to institutions; the question of education of scientific workers; and, the question of increased participation by our working class in directing our centers through their unions and about the problems which I touched on in my opening statement.

At the end of my statement, I would like to bring to the attention of this plenary session one important matter. For the attainment of creative scientific work in our institutes, laboratories and studies, we need to improve thoroughly the main functions of all; this is especially true for the leading organs of the Academy. Therefore, in the future we will be faced with a responsible role; to find, with the cooperation of the Czechoslovak Academy of Sciences, the most suitable forms and means for our science and research to get close to production and practice, so that our Academy, as a Socialistic Academy, could solve responsibly and in time all the tasks facing it in connection with finishing the building of socialism and the completion of the cultural revolution.

REPORT OF THE HEAD SECRETARY OF THE SAV,  
CORRESPONDING MEMBER WILLIAM THURZO

Dear members of the Plenary Session, dear guests:  
A little more than a year has passed since the Tenth Plenary Session of the Slovak Academy of Sciences. At the Tenth Plenary Session our Academy outlined for itself some tasks which followed decisions made at the 11th Party Congress. It is possible to say that the Tenth Plenary Session was a boundary mark from which a new, qualitative, scientific project begins here in our state.

The time of preparation for the third Five-Year Plan, is characterized to a certain extent by a changed international situation. Due to the uncompromising peace policies of the Soviet Union, the peace movement in the entire world increased in strength, thus strengthening

democratic forces in the fight for easing international tensions. The historical proposal by the government of the USSR for complete disarmament, as submitted by N. S. Khrushchev to the plenary session of the United Nations, met with the approval of not only all of the working peoples of the world but also of the ruling circles of many capitalist states. Thus, a possibility was created that there will not be another world war, but that economic and cultural cooperation will develop among the states with various types of governments. The continual request of the Soviet Union is not to compete in armaments but rather to build peace and secure prosperity for the working class. The reflection of this sincere effort by the states of the socialistic bloc is their grand plans of economic development.

Czechoslovakia will also play a large and important role in the international competition of socialistic and capitalistic governments in the economic and cultural field. The economic importance of Czechoslovakia will have an unprecedented rise during the third Five-Year Plan. Just recently we became acquainted, not without a thrill, with proposed instructions for the Five-Year Plan which were approved at the September plenum of the UV KSC [Central Committee of the Czechoslovak Communist Party]. According to these instructions, the industrial output of Czechoslovakia in 1965 in comparison with that of 1957 will more than double. That means that at the end of the third Five-Year Plan, our industries will produce five times more than did the Czechoslovak Republic prior to the second World War. It can be said with certainty that in the year 1965, our production in many fields will be ahead of many capitalistic states.

As far as the economic development of Slovakia itself is concerned, we stand confronted with most cheerful prospectives. In Slovakia the development of ferrous and non-ferrous metalurgy, as well as the chemical industry will take place at an especially rapid rate. But the first place in Slovak industry is reserved for the machine industry which requires highly skilled workers and higher skilled technical teams. At the end of the third Five-Year Plan we are going to have as many people working in the machine industries here in Slovakia as in all of the industries combined in the pre-Munich Republic. Let reality speak for itself. Slovak industries in 1965 will reach the same production capacity as did all of the Czechoslovakian industries in 1948. It is therefore clear that in the next few years Slovakia will complete its change from an agricultural land to an industrial one, with the most modern machinery and a highly mechanized form of agriculture. These are the prospectives which must inspire every brave patriot.

The economic and cultural backwardness of Slovakia can be overcome by the Slovak people only through close cooperation with the Czech people. That which took half a century to build anywhere else, we are attaining with the help of the Czech people on the basis of a unified Czechoslovak economy and in an extremely short time. After fulfilling our tasks planned for the third Five-Year Plan, our industry

and agriculture will get considerably closer to the level of industry and agriculture in Czech lands. That way, one of the most acute problems of Slovakia for the past four decades will be solved.

The complete solution of economic questions here in Slovakia is today fully assured. Our Party most emphatically accentuated the need for bringing up the level of industry and agriculture in Slovakia to equal that of the Czech lands. It is obvious that further economic development of Slovakia is in the interest of developing the whole national economy. Without exploiting the sources available for the development of a national economy in Slovakia, the tempo of developing the economy in the CSR as outlined in the instructions for the third Five-Year Plan would not be possible to reach. Slovakia is thus an example of the correctness of the Marxist-Leninist theory for solving the nationality question. Success in the economic development of Slovakia is an important factor for cementing brotherly unity between the Czechs and Slovaks in a common state. This unity is an important factor for fulfilling the tasks of building a socialistic society in our country.

For us and for all the Czechoslovak people who are rapidly and successfully completing the building of socialism and are getting ready for solving the questions of the transition to communism, the experiences of the Soviet people in building a socialistic society and in fighting for communism are of extremely great importance. The thesis of the 21st Congress of the CPSU [Communist Party of the Soviet Union] about a change of all socialistic countries to a communistic society became a great mobilizing power. This congress became an important historical boundary point from the viewpoint of building communism in the USSR and in other countries having a socialist constitution. The Seven-Year Plan for development of the national economy in the USSR is not only a plan for the extensive building of a material-technical base for communism, but at the same time it is a mobilization plan for catching up with and surpassing in production the most developed capitalistic countries. The Soviet Union outlined for itself a concrete task of surpassing the United States of America in the main products of agricultural per-capita production, and by 1970 to surpass the United States in the basic products of industrial production.

Up to the present time the development and the successes of the Soviet people convince us that the Soviet people will fulfill their plans. The Seven-Year Plan for development of the national economy of the USSR belongs to the most important phenomena of today's world, and its fulfillment will unmistakably lead to the quickest disintegration and death of capitalism in the modern world.

The tasks of our third Five-Year Plan give evidence of the fact that our society is highly mature, and has reached an advanced degree of socialistic organization. Now we must take many political and economic precautions that will bring into harmony the development of production forces and social relations for future building stages.

The President of our Republic, Comrade Antonin Novotny (First Secretary of the Central Committee of the Communist Party of Czechoslovakia), spoke about these problems at the September Plenary Session of the Communist Party of Czechoslovakia. From this stem also new assignments for our science which are concerned for example with the building of a network of research institutes in Slovakia in connection with the new territorial organization. Basically, it will concern bringing together science, research and production bases in economic areas. For example, it is impossible to leave such an important production area as is Eastern Slovakia without research centers. It is true that from the point of view of Czechoslovak science, we are not going ahead independently, but in close cooperation with the Czechoslovak Academy of Sciences which is the highest scientific institution in our state, and which makes the final decisions on all questions of Czechoslovak science. We must develop close cooperation with the Czechoslovak Academy of Sciences for a solution of these questions and problems and also because science in Slovakia cannot solve them by itself. We will consult the Presidium of the Czechoslovak Academy of Sciences about the concrete forms of cooperation as they were outlined at the last Plenary Session of the Czechoslovak Academy of Sciences by its head scientific secretary, Corresponding Member of the CSAV, Professor Jaroslav Kozesnik.

Ladies and Gentlemen, science in Slovakia during the past few decades also had good results in the field of organizational development. The network of research institutes spread, scientific centers were created even in those sectors of science for which there was no basis in the past. The founding of the Slovak Academy of Sciences in 1953 marks an even more rapid growth. The results of scientific research are already today helping in the development of many areas of our life. However, that does not mean that we can be completely satisfied with the tempo of the up-to-date development of scientific and research activities here at home.

This tempo and quality of scientific work would not be enough for attaining fulfillment of the tasks outlined at the Eleventh Congress of the Communist Party of Czechoslovakia. The Tenth Plenary Session of the Slovak Academy of Sciences analyzed in detail the situation of science in Slovakia, and on the basis of decisions made at the Eleventh Congress of the Communist Party of Czechoslovakia, it outlined the basic directives for the development of science in Slovakia for the year 1959 and following years. At this session, the main shortages in scientific work were pointed out, and ways for improving quality were defined. From the realization of the conclusions reached at the Tenth Plenary Session of the Slovak Academy of Sciences, we expect proportional progress of individual scientific areas which would be able to achieve the present and prospective needs of our society.

It is a short time since the Tenth Plenary Session of the Slovak Academy of Sciences was held to evaluate the fulfillment of the long-

range tasks. It seems to us that in spite of the many good results, that their fulfillment could proceed at a faster pace, so that the main tasks as outlined by the Eleventh Congress of the Czechoslovak Communist Party which is to achieve the maximum advancement of science for the needs of practice would not be put off.

We can mention the following from last years results. The Slovak Academy of Sciences has a decisive role to play in preparing directives and principles of development for the scientific research bases up to 1965 and 1975. The big concern of this work is the establishment of proper development of individual scientific sectors, as well as proportionate ratio of development between basic and applied research. A further contribution of this work is the total planning of team, financial, and material needs of all research in Czechoslovakia.

The directives and principles of development for research enabled the Academy, to make a proposal for a prospective plan for the education of scientific workers for the entire area of Slovakia. Further, we outlined principles of a new way of drawing up a scientific research plan from which we expect a better use of the whole and individual part of scientific work. Finally, it is necessary to mention that we conducted at the scientific centers philosophical and methodological seminars which contributed to the ideological maturity of scientific workers and experts.

Similar achievements of socialist construction for forming the material and cultural basis for the systematic transition to communism place heavy responsibilities for the development of science. Reaching such a level in the productive forces as is necessary for the transition to communism is dependent upon the unprecedented development of scientific research. On the condition of public ownership of the means of production depends the growth of productivity. The growth of social work depends on the general conditions of science, the degree of development of technology, and the extent to which the achievements of science are being used in production. This clearly demonstrates that science is becoming a direct production force as foreseen by Marx.

The tasks which follow from the decisions adopted at the Eleventh Congress of the Communist Party of Czechoslovakia for our scientific workers can be fulfilled only if we are very critical of the work of our institutions. Only in scientific collectives whose work is conducted according to the principles of Marxist-Leninist ideology/ can jobs be created which will contribute to the development of our society. Ideology and expertness complement each other in our scientific research. Consistent attention to Marxist theory and Marxist-dialectical methods for solving research tasks is the basic requirement not only for the area of social sciences, but also in the area of natural and technical sciences. Unfortunately, even among our foremost older scientists we still can meet with the traces of positivism, objectivism, and schematism. Unsatisfactory superficial knowledge of Marxism leads to the fact that they stand isolated and separated from other branches

of science and from the immense historical tasks which are being solved by our society. If we consider the fact that in addition occasionally in their idea of the world they are prisoners of idealism, then we know that the results of their work are deformed and one-sided. The organs of the Academy are trying to help scientific workers in their mastery of a deeper knowledge of Marxism-Leninism. There are philosophical and methodological seminars being organized in the centers, and the board of the Academy organizes each year in Smolence ideological seminars about important, theoretical, actual, and political questions. Within the system of Party instruction, there are groups in our centers where the questions of Marxist philosophy and political economics are being studied. These studies even though under the leadership of highly qualified experts are not enough. The managers of centers should see to it that well organized and prepared seminars are set up concerning theoretical and ideological questions which they encounter at work and during discussions at the institutes, so that this open problem could be thoroughly discussed, and the participants could get as close to solving the problem as possible. It is necessary now to enlarge and improve this type of training along with the other types of Party training. At first we have to improve the quality of work at ideological seminars. That means to aim our attention to their contents, and to improve the quality of lectures and discussions. It would be only right that these philosophical seminars were attended by workers from the Philosophical Institute, and if these helped not only by giving a methodical advise but also by actively participating in discussions, and helping to analyze the most important philosophical questions of the individual sciences. In this we also see one of the forms for uniting philosophy with the concrete sciences. Nevertheless, the most important way for increasing the ideological level as well as the technical knowledge of scientific workers remains individual study. This involves the study of classical Marxism and Leninism as much as works by the foremost representatives of socialist science.

Active participation in the efforts of our whole society in completing the building of socialism has a tremendous effect on increasing the ideological and political level of our scientific workers. In our society an old type of scientist who lives closely with the problems of his books and scientific concerns and far away from the current of our public life has been surpassed. Scientists should pay full attention to the following Party instructions: to participate in teaching the masses and even more, to learn from the masses.

A very correct decision, is that of the section of social sciences should popularize scientific ideas which are for all workers of the section. It is desirable that the institutes of other sections of science also join in the systematic and organizational popularization of scientific ideas. It is necessary that our workers help in every way the universities in their development of scientific

and pedagogical work. In addition to this, it is necessary to insist that scientific workers know the practice of building socialism so that they can find suitable forms of contact with the activities in our factories, agricultural cooperatives as much as in economic, cultural and other public organs.

This close relation to the practice of building socialism will help the centers in solving a very difficult problem which is the correct aim of our scientific research. Social awareness and the importance of solving scientific problems belongs among the most vital and the most complex questions of planning and directing of scientific research. The main directions of scientific research are and must be in harmony with the state planning development of the national economy. Our economy which is distinguished by a division of social work and extensive diversification in the main sectors of the national economy presents growing tasks to scientific research. Such complex tasks, for example, as the automation of production processes inevitably requires creative participation by a great number of scientific centers. Scientific and research plans of the institutes of the Academy have to be judged from the point of view of their participation in solving the main tasks stemming from the strengthening and further development of our socialist material production base. In our research and publishing plans there is no place for narrow socially unimportant problems which stem from the personal interest of some of our scientific workers.

In emphasizing the urgency and social importance of problems under research it should not be understood only in such a way that it is necessary only to solve the problems stemming from the contemporary tasks of the development of our national economy. Our society which in the present time of rapid socialistic building, is creating the conditions for the transition to communism; it expects scientific research to look into the future and solve theoretical problems, the practical solution to which, will be required in the near future. In a country like Czechoslovakia with its developed specialized research and extensive network of scientific institutes, the academies have the responsibility for developing basic research. In this system of scientific research, our Academy's part in solving basic theoretical problems in individual disciplines of science, must be steadily increased.

The solution to big and bold problems that face scientific research requires the concentration of the main forces for solving the most important key problems. Taking into consideration our forces and our personal and material potentials for development, it is necessary that our Academy, in close cooperation with the Czechoslovak Academy of Sciences, should advance even with more stress than up to now, the development of such scientific branches which are most important for completing the building of socialism in Czechoslovakia. We should concentrate on such problems which will give us a chance to take a leading place among world sciences. The

fact that we are aware of the unity and the social importance of all the disciplines of science does not mean that we will not have to concentrate on the building and development of centers in the area of physics, chemistry, biology, biochemistry, mathematics, technical sciences, philosophy, political economics and in the area of history, on the most recent history of Slovakia.

The most important problem which we are facing is the quality of work coming from the institutes. Beginning with the working groups, all the way through the institutes and sections to the boards and plenary sessions of the Academy, we have to create in all areas of scientific research an atmosphere of just criticism and not tolerate concessions and defects in the finished work. Only in such surroundings where all work is subjected to the criticism of comrades, can such work be produced that will meet the requirements of our socialist society.

Collectivity and complex analysis have to be the main principles in directing the scientific work of our Academy and our entire research. We discussed these questions many times at plenary sessions of the Academy. We are not going to talk today about their usefulness in practice. We must, however, discuss the reasons why we did not use these principles in our research to the necessary extent.

We have advanced a little in the introduction of collectivity. In 1957, the Academy had in its plan a total of 360 main projects; in 1959, 242 projects; and in the suggested plan for 1960, only 137 projects. To this I must add, that the number of workers is rising all the time. Even though the number of main projects is smaller compared to the number of scientific workers, it is still quite high. For the 137 main projects, we have 220 scientific workers. From this number, only fifty scientific workers have higher scientific degrees. In the suggested plan we still see three or four tasks for each of the workers on the various main projects. This is the most acute problem, especially at the centers of the fourth section.

In spite of these shortcomings, the collective spirit in solving scientific tasks in our centers is reflected especially in planning the projects. However, we cannot say the same thing about scientific centers in various departments and universities. Departmental research institutes and universities are still solving a large number of tasks of various types. Departments still burden their institutes by various tasks and responsibilities not always of a research type such as opinions or tests which waste the capacity of the institutes. It takes its attention away from the long-range needs of the department or branch. Maintaining a correct proportion between immediate and long-range needs of the department is the basic task in the successful development of departmental research and the whole national economy.

One of the responsibilities of the Academy will be to see that the departmental research institutes have enough capable workers and to concentrate their efforts on decisive sectors of activity in the

department or branch which promise good results for the future.

Universities have a considerable number of well qualified scientists. They themselves have to work scientifically, in addition to their pedagogical responsibilities which still remain their main assignment. It is a common thing in Slovakia that in some branches the school has the scientific workers but almost no material bases for scientific work. On the other hand, for example, a department has all of the technical equipment, but a shortage of qualified working teams.

Unfortunately, we don't know how to exploit this so that we might benefit from it. Why can't the professors and the deans of the university work scientifically in the Academy or in the departmental research institutes? Their pedagogical activity would not suffer because of that, and it would really help scientific work in Slovakia considerably. Scientific work organized this way would help us also to educate young scientific workers, especially for departmental research institutes. On the other hand, the schools would profit considerably by solving scientific problems at research centers. It is simply a question of organization. We already have several examples in the Academy where the members of the Academy and university professors are the leaders of various research projects in our centers.

By putting in practice these forms of scientific work, it requires that the university teachers must submit to the working discipline of research institutes. That means that the work is accomplished within a given time. With good cooperation between the Slovak Academy and universities, it would be possible to equip either the centers of the SAV or the university centers. If there are better conditions and if we can avoid the unnecessary splitting of our forces when building our research centers, I think we have all the bases to manage such a form of scientific work and the education of scientific workers. This type of work has proven itself very well in the USSR.

Today we can already see more ways to overcome the complexity of main research projects. It is possible, for example, to form a collective for solving concrete pre-determined projects beginning with basic research all the way through design and construction. Naturally in addition to the possibilities of establishing working centers for special important complex tasks, there has to be a normal network of working centers for basic research which will be the pillar of our science. Further, it is possible to solve complex tasks in such a way that existing scientific research centers are assigned to work out partial problems, while the overall work would be coordinated by a special group or one of the existing expert commissions of the SAV in accordance with the considerations of the section.

In the second group are complex tasks, aimed at one common goal in various scientific branches. Solving of such tasks at

present is being realized through the putting together of partially solved problems. To accomplish this we must have a unified prospective plan which would take into consideration these forms of scientific work. Everyday life gives us many suggestions for complex tasks and for the various fields of science. For instance, the problem of a socialist community is an assignment that philosophers, economists, urban developers, farmers, hygienists, doctors, foundries of Eastern Slovakia (iron works), aluminum works in Ziar on the river Hron, water works (power plants) on the Danube, etc. can participate in. Such a complex problem we solve at the present time only through commissions.

In connection with this it is important that the sections in cooperation with the expert commissions envisage the main scientific problems as complex tasks which stem from the third Five-Year Plan for the development of the national economy, and from the prospective plan up to 1975. The way for solving the complex tasks will be defined by the sections, taking into consideration the specific characteristics of a given task, and the existing network of scientific centers.

We have issued directives for arranging scientific plans which assign to the scientific centers the job of arranging these plans with reference to the intricate solving of some of the main projects. However, the suggested plan for 1960 does not reflect fully these principles even though, as we stated, compared to past years, there has been an improvement in the respect that the centers are growing and the number of projects is getting smaller. This plan was arranged by the centers and sections without mutual agreement. The cooperation was limited only to the exclusion of unwanted duplications among the corresponding centers. Neither within the Academy nor outside it did this cooperation reach beyond the limits of the branch or section. The full use of a complex approach is being hindered also by the uneven technical levels of centers that could participate in solving these tasks. We face such an obstacle also in our Academy. It is therefore necessary to incorporate into the complex solving of projects other scientific installations outside the Academy, and not only in Slovakia but in the whole Republic.

An important measure in linking science with the practice of socialistic building is the fact of the degree to which scientific achievements are being realized in practice and also what contributions they make for the economic and cultural development of society. Even though we had some success in this direction, we cannot be satisfied. Some solved scientific research projects have not been fully used in practice, and by this we deprive society of considerable values. One of the many causes of this is the fact that some tasks were not very important or were aimed at a restricted problem, which they did not solve fully. Sometimes, the scientific research project was solved only theoretically without working out the practical

ramifications of the problem or some theoretical results could not be worked out into such details that would make it possible to use them directly in practice. We must get rid of these shortcomings systematically.

On the other hand, it is necessary to exert more pressure on the workers responsible for solving research tasks, and on the leaders of the centers, and also on production enterprises in which the task should be realized, with the help of the person who solved it and in the introduction of the results into actual practice. In this sense we must use more help from the Slovak Planning Commission and the State Committee for Technical Development. Also the factories have to create all group, technical, and organizational bases so that the quality of the product will be in line with science, and this is especially crucial in those branches where production and technology are of empirical nature. It is essential for the successful fulfilling of scientific tasks which face the SAV and the whole Slovak science that only highly qualified workers work in all of the branches of scientific work.

We stated many times that the present education of scientific workers began at an elementary level. The result of this is that in many branches especially those in which we have been recently established we feel a serious need for qualified, expert and scientific workers.

The board of the SAV worked out a plan for assuring the education of new scientific workers for the years 1965-1975 and for research institutes located in Slovakia. This plan contains a thorough analysis of the situation in the whole of Slovakia up to 1 July 1959. This plan states that at the centers of the SAV, in the Virological Institute of the CSAV [Czechoslovak Academy of Sciences], in the branch of the CSAPV [Czechoslovak Academy of Natural Science], and in all other departmental institutes, with the exception of universities, there are to be 5,845 workers. Of this number, there are 474 scientific workers, and 1,360 expert workers with a university education. From the total number of 1,291 workers working for the SAV, there were 218 scientific workers and 315 expert workers with a university education. In addition there were, as of 1 July 1959, 397 professors and deans (lecturers), and 1,839 expert assistants at Slovak universities.

During the past years we trained at the Academy and at the universities, 200 scientific workers who already successfully obtained the rank of Candidate of Sciences. Unfortunately, during the past two years the number of trainees has been smaller especially in the branches of technical sciences, where there is the greatest need for scientific workers. There seems to be minimal interest in intern candidacy, and only slightly higher in extern candidacy. The workers seem to be more interested in scientific preparation outside the Academy.

A very real and serious estimate of individual sectors in

science, with regard to their preference, shows that up to 1965 we will need in Slovakia about 800 new scientific workers with the rank of Candidate of Sciences. In addition, about 300 workers should improve their qualifications. In the SAV itself, it would be highly desirable if the number of workers would increase by 400 by 1965, so that the total number would be around 600.

How to realize this plan? Naturally, we are going to support intern and extern candidacy (for Candidate of Sciences degree) and assignment of suitable applicants to scientific training. However, this will not be enough as our experience shows. A true scientific worker can grow only in a center where a healthy scientific spirit prevails, where no one has to urge him to work, and where the environment and creative surrounding urges a person to solve new problems. Some of our centers are already fulfilling these conditions, but the number is still small. We exploit completely unsatisfactorily the possibility of training our workers by the means of assigning them for a half year or for one year to the CSAV or to the well-established departmental research institutes in Bohemia. It is the opinion of the Board of the Academy, that it is not advisable to let a worker who is not acquainted with the level and the results of our scientific work at the centers here in Czechoslovakia study abroad. In connection with this, I have to state that it is necessary to plan all trips abroad for the purpose of studying longer (at least six to eight weeks) with the aim of solving or the completing of a concrete project. These trips should be to People's Democracies, the USSR being the first place. Trips abroad to capitalistic states should be aimed first of all at sessions and conferences with active participation in them; only such workers should be sent who are able with satisfactory seriousness to represent our science at an international forum.

The SAV cannot accomplish the education of new scientists in isolation and separated from our universities. A vital condition for the education of our scientific workers is the securing of a university education. Therefore, we are of the opinion that the faculties of the universities must during the year be on the lookout for and lead gifted students to scientific work. Here, I especially stress that in the future our universities must concentrate more on the ideological education of the students and within this, also, emphasize the need of further education after completion of university studies. This was unanimously expressed at the joint session of the SAV and Operational Council of the Ministry of Schools and Culture, enlarged by chancellors of the universities. One feature that would help us very much, especially in mathematical-physical sectors and in technical sciences in general, would be to increase the number of students from Slovakia at Soviet universities.

An exceptionally important means of educating scientific and expert workers of the SAV is also active participation in the production process and in cultural and political work. The book-learning

when separated from practical life cannot educate a socialistic scientist. There is a large number of younger workers in the Slovak Academy of Sciences who came to these scientific jobs directly from the university. It was a normal phenomenon after the founding of the Academy when our aim was to create some institutes in the shortest possible time. However, today after consolidation there appears to be a need for exposing these workers to real life and to production in our factories. Such workers will have to be given a chance of going to work directly in production such as machine factories, departmental institutes, etc., or into cultural, political practice. There they would see how the scientific results from their branch of science are being used in practice. They would help to increase the expert level of scientific workers in practice and they would get inspiration for further scientific activities. For realizing these principles it is necessary to work out in every center long range prospective plans. We should not forget one thing -- that working together in practice, (that is, theory and practice), is an important problem which should not be underestimated, so that the values which were reached in the expert education of workers shall not be lost.

It is known to everyone that we have certain sectors of science to which we give preference as far as material and workers is concerned. However, this preference does not mean that we are not going to support development of other sectors of science.

Even the centers which at the present time cannot hire new workers have a possibility of increasing their level by sending teams to periodic courses which we will have to start sooner or later. The same thing is true at the CSAV. In addition, the highest state and party circles assured the board of the Academy that there will always be replacements for excellent workers, so that these can go and work at the centers of the SAV.

In the spring of 1959, the scientific activity of scientific and higher experts of the SAV was evaluated. This evaluation confirmed the above stated facts. In spite of the clearness of the directives, all commissions did not maintain the same strictness. Even so, the board of the Academy had a possibility to see that in spite of the improved situation, we still have many workers and centers which must be improved in the future. These evaluations, which we will repeat from time to time, are primarily of a mobilizational character, the aim of which is to get the scientific life at our centers into full swing.

For the SAV the same thing stands that was emphasized in the resolution of the Plenary Session of the CSAV in May of this year that every worker will be doing his job only if he will, in addition to his creative scientific work, fully and actively participate in the life of our people. That means that he will not stand on the sidelines while revolutionary changes in our industry and in our villages, where the constant solving of problems of our socialist

culture and education of the people is going on. Rather he will take an active part in it and will react with a vigor to all these problems.

The evaluation of the activity of individual workers at the beginning of 1959, showed a very unfavorable and unpardonable situation. There are very few scientific workers in the majority of institutes (and even in the institutes of social sciences), who understood their roles and what was required of them. There are many cases where our devoted workers are being disproportionately overburdened by public, social, and political functions, while three fourths of all other workers try to live, tooth and nail, without being disturbed in their pastoral solitude. We consider this situation important enough to discuss it at the Plenary Session. This is the direct responsibility of the directors of the individual institutes. We expect that in the shortest time the directors of the institutes will see to it that this situation is corrected. An energetic step in this direction will alleviate the work of the directors themselves.

This is what we have to say on questions of education. Even though the task of providing an education for new scientific workers, as outlined in instructions for the development of a scientific research base in Czechoslovakia is tremendous, it is real and conquerable. The basic requirement, however, is the correct ideological leadership of the younger generation which will succeed us, and to whom it must be quite clear from the very beginning just exactly what scientific work means for the development of our economy and cultural life. We must teach our co-workers, especially the younger ones, to be modest. A true scientific worker who has a clear picture about the results of world science and knows how to judge his contributions is a very modest person. A true scientific worker rejoices upon hearing of the successes of science, no matter where achieved. This is even more so for socialist scientists living in the same state. All of our scientific and expert workers have to see and examine their relations to other workers in other parts of our Republic from this point of view. We must admit openly that there have been some indications of immodesty which do not give us any honor. We have in mind minimizing the tasks of the Academy and the exaggerated claims for need of travels abroad.

I would like to direct the following remarks to our leading workers: The mutual constructive criticism of scientific creations is as much a part of improving and increasing their level as is the scientific qualification of individuals. It is obvious that from these we expect more persistency, toughness and fighting spirit when evaluating their own work than in work of younger subordinate workers. Benevolence and familiarity never helped anybody. On the contrary, it not only harms the workers, but also hinders scientific progress.

Our Party organizations play a decisive role in the life of the SAV. The leading role of the party is not only an acknowledged

principle in the relation of the central organs of the Party to the individual organs of the SAV, but also to the individual institutes. The Party organizations play an active role in the life of our Academy. We have to create such conditions that the leading role of the Party will be felt everywhere. This of course does not mean that we want to take the responsibility away from the directors of the centers and other leading workers for fulfilling scientific research plans and the educational level of the politico-ideological work at the centers. The leading worker will work satisfactorily only when he cooperates with the party organization and follows its directives which guide the activities of the centers.

The unions and other social organizations also play a decisive role in the SAV. We must create the best of working conditions for these organizations. Several days ago, the principles for increased participation of the working class in directing the work of centers through the unions were discussed by the Board of the SAV. The directors and responsible workers of course must familiarize themselves with these principles and continue their work in full cooperation with the union organizations.

We must do away with all shortcomings, whether in maintaining working or state discipline, or locating the working centers and improving the living conditions of the workers.

The aim of all these precautions is to increase the participation of all our workers in directing scientific research work, and by this to attain a rapid growth of our science.

One of the primary questions for the successful functioning of our Academy is the constant increase in the interest of scientific and other workers of the Academy in directing and organizing the scientific research work in all its sectors and making the best use of the principles of decentralization in directing activities. Excellent workers have been assigned to special supervisory jobs lately either in research itself or in special coordination commissions, and we intend to give them the most responsible jobs such as section leaders or on the Board of the Academy itself. We intend to carry this out in the very near future. We came to this conclusion for the following reasons: The number of members in all our sections, with the exception of the biological and medical sciences, is very small. There are not enough members in the sections to cover all of the sectors assigned to individual sections. It is obvious that the work of such a section cannot be very successful.

We know that the sections invite the directors or other scientific workers from institutes to special sessions only when they discuss already formulated scientific plans or the control for fulfilling these plans. However, it seems that this is not enough. The directors and other scientific workers are not being fully informed throughout the year on directing the work of the sections. Therefore, we propose the following plan: Some directors and possibly some excellent workers of the SAV will become full-fledged voting

members of the sections. This will concern mostly those sections which do not have at the present time an elected member. We plan to enlarge the Board of the Academy the same way. This will require a change in the law in regard to the SAV and the organization of the Academy.

This is not the only way to increase the participation of scientific workers in the directing and organization of scientific research work. Decentralization of directing sections is the fastest way for achieving the fulfillment of the tasks which face the SAV. The foundations for this were given in the organizational directives approved at the end of 1958. According to these directives many problems which had to be solved by the Board before were transferred to competent sections and the directors of the centers. I may point out here that the sections and the directors do not sufficiently use the principles of jurisdiction and the duties contained in the organizational directives. The causes of this are twofold. First, we still do not know how to apply these principles, and second, the sections and the directors do not want to bear the burden of responsibility. Also it is a mistake that the higher organs solve the problems forwarded to them by the sections, and do not return them to the sections for final decisions. As a result, the main sections are sidetracked in their work of solving the basic questions.

The leadership of the Academy knows and has pointed out several times that the sections do not do their work satisfactorily. Very often they are solving the problems presented by everyday life, and they do this very often without thorough investigation and without substantiating material. These problems come up during the sessions and the solutions are being worked out during these same sessions. The Board has pointed out to the sections several times that a detailed plan of work for each section is the only correct aim of the activities of the section. In spite of this we have not seen a single plan thus far.

This means that the work of the boards and the sections will have to be reorganized. The activities within the sections will have to follow a worked-out plan. Two or more sections will have to join one session within the framework of the SAV and also invite the sections of the CSAV and the experts from research institutes and factories. We must attain a consistent fulfillment of all duties in all the functions of all scientific sectors. The sections will have to learn how to control and channel the scientific work in the directing of science in Slovakia. This will require the increase of activities of all the members of the section and also the more important workers from scientific centers. The Board of the Academy had the same shortcomings as can be seen in the work of the sections. The Board was solving and occasionally still solves the problems which are within the competence of the sections, and for which the sections do not want to assume responsibility. In this way attention is shifted from the principle problems. In the future the Board

will assume a position that will enable it to dedicate or devote itself to the directing of principle questions of research and their formulation. That is, the outlining of the main tasks of science, ideological questions, the proportionate development of the branches of science in Slovakia, the thorough control of important scientific tasks, the overall level of scientific work in Slovakia, the principles of relations with scientific workers abroad, and to the principles of building scientific centers and similar tasks. We will aim the activities of the Board toward this objective which should give maximum support to the sections and working centers in securing the most ideal conditions for scientific work. This will be necessary especially since the sections, as elected organs, do not have as an aid an economic administrative apparatus. Therefore, it is extremely difficult for them to debate and make a decision on even the most basic economic questions that concern the centers. It will be the responsibility of the Board to make certain that the sections are given only the basic economic questions for their solution. That is: the increase in the number of workers for the current year, the distribution of quotas of overall investment, quotas for foreign relations, and items of a similar nature. The Board, through the economic and administrative aid of the institutes, must find a solution to the economic questions confronting the working centers to the extent that the directors, their representatives, and the scientific workers in general, would not overburden themselves with questions of economy and thus be sidetracked from their prime functions.

Since we are discussing the working principles of individual organs of the Academy, we should also mention the work of scientific councils of the centers which form the foundation of successful scientific research.

We are quite aware that a scientific council is an auxiliary organ of the director. It seems to us nevertheless that the directors are failing to motivate the members of scientific councils as far as scientific tasks are concerned. The directors must use much more extensively the scientific councils formed from experts in the particular branch of science in question. The scientific councils must analyze, much more deeply and from the very beginning the scientific working plan of the center, as proposed by the directors and scientific workers. Also they must control more thoroughly the fulfillment of the said scientific working plan. It is not sufficient for the director or scientific worker to merely announce at the session of the council the degree of progress attained in his particular assignment. It is desirable that every member of the scientific council personally ascertains the degree of completion of the assigned task and what end result and precautionary measures will stem from its completion. Such an activity of the council is possible only if the directors will not burden the council with trifling questions which they are supposed to solve themselves.

For instance, some councils debated on the increase of salary for some of the workers. The mission of the council is to direct the scientific work of the centers from the viewpoint of the needs of the society and a deeper control of this work.

Esteemed Delegates to the Plenary Session, Comrades:

In conclusion, let me state once more that the basic directives for our future work in the Academy are, and will remain for a long time, the materials and decisions as set forth at the Tenth Plenary Session of the Slovak Academy of Sciences prepared in accordance with the decisions made at the Eleventh Congress of our Party. In fulfilling our future tasks we must follow the resolution of the Tenth Plenary Session of the CSAV which took place not long ago. The basic principles of that resolution were included in this report.

It is obvious that the fulfillment of the Academy's primary tasks are carried out in the scientific centers, institutes and laboratories. The supplementary measures of a political, ideological, and organizational character, mentioned in the report, should contribute to the strengthening of ties between the organs of the Academy and of the centers for an increase in the scientific achievements for production.

Even though we support the plan of scientific work, inasmuch as its realization is formed and fulfilled directly in the scientific centers, we must emphasize that the scientific sections must feel more responsibility towards it than they have up to now. The scientific sections must not merely approve the plans for scientific tasks, but must also check and complete them from the point of view of the key tasks of economic importance and the theoretical development of individual branches of science. When formulating the plans for scientific projects, care should be taken by the sections and the centers that a greater number of workers be employed in their solution and that in the future, projects stemming only from the individual interests of workers will disappear.

It is further necessary to remind you that the future of our research especially its quality will depend, first of all, on the ideological, and expert maturity of all scientific workers, the number of whom should be considerably increased during the third Five-Year Plan. We appeal, therefore, to all the members of the Academy -- professors, university lecturers, and the leading scientific workers -- that it is their honored and duty-bound responsibility to educate new scientists along the Marxist-Leninist line and the most modern discoveries of the scientific sectors concerned. The questions of ideological and expert education of all scientific workers are our constant duty and in this field of activity it is necessary to seek in addition to individual study by each worker new collective forms of work.

A good tradition of cooperation has already been established between ours and the Czechoslovak Academy of Sciences, not only at the level of scientific centers, but also at the level of scientific

and administrative organs. In addition to joint sessions of the Presidium of the CSAV and the Board of the SAV which are held and will continue to be held with pre-determined regularity, some sections and scientific councils of the centers of both academies should also hold joint sessions for the purpose of solving important problems of a scientific nature. There should be regularity in the cooperation into biological, technical and social sections or scientific councils, in such a form as was suggested at the last plenary session of the CSAV by the Chief Scientific Secretary of the CSAV, Corresponding Member Jaroslav Kozesnik.

For the development of science in Slovakia during the third Five-Year Plan and for the development of our economy and society it is unavoidable that cooperation between the SAV and the CSAV as the highest scientific institutions in the state be deepened and thereby become a constant example for the other sectors of our lives.

We have all the assumptions for the fulfillment of scientific tasks in Slovakia. We have the complete support of the Czechoslovak working people who look to our work with confidence and a hope that it will be of much use in the building of their socialist society.

#### DISCUSSION

Academician Josef Novak greeted the Plenary Session of the SAV on behalf of the Presidium of the CSAV and the workers of this our highest scientific institution. He mentioned that the last Plenary Session of the CSAV also stressed the successful cooperation between both academies. The foundations for this cooperation were laid at joint sessions of the Presidium of the CSAV and the Board of the SAV in SMOLINICE and Liblice. With regard to the future tasks of Czechoslovak science, it is highly desirable to continue this present cooperation in every form.

The main source of scientific work here at home and also the most important place for the realization of this cooperation of science in Slovakia with Czech science are the scientific centers and institutes. The main criteria for judging the degree of cooperation by both academies will be the degree of understanding of it by the scientific centers and individual scientists. Academician Novak used the cooperation of the Czech and Slovak scientific centers during the International Geophysical Year as an example of common successes in scientific research. We would like to witness the same cooperation also among the centers of technical, social, and other sciences. From this will come other successes for Czechoslovak scientific work.

Academician Igor Hrusovsky, informed the delegates about the joint session of the sections of social science, which was held prior to the Plenary Session in Smolenice. He explained the principles of collectivity and complexity in the social sciences and pointed out some urgent research tasks. (Separate article in this

number of Vestnik SAV).

Academician Josef Cabelka in his discussion touched on the problems of how to attain the widest technical development of our industry and how to educate new cadres for research and production. He analyzed the progress made in mining technology, as outlined in the directives for the third Five-Year Plan for development of the national economy in the CSR.

Corresponding Member of the SAV, Mikulas Koncek, commented on some of the problems facing the centers of the mathematics and natural sciences section of the SAV (with the exception of the Chemical Institute).

It is very important that we erect a new building for the Astronomical Institute in Tatranska Lomnica during this third Five-Year Plan. That will be the only possible way for the evaluation and the use of results of the astronomical, physical, geophysical and meteorological observations made at the new Lomnický štít Observatory. We should not forget that a lot of useful work with the cooperation of scientists from other countries had been accomplished under the most unfavorable conditions. Since we decided to erect the observatory on top of Lomnický štít, we must also decide to erect the no-less important part of this institution, the building in Tatranska Lomnica. There is no possibility of extending working facilities to the other branches of science at Skalnaté Pleso, since this building is crowded with workers from the Astronomical Observatory who evaluate the results of the measurements and observations at Lomnický štít.

It is also very important that we erect at Srobarov an observatory for a Geophysical Laboratory of international importance, where scientists from the Soviet Union, Hungary, and other countries will work on special seismographical research. Due to the electrification of the Bratislava-Budapest Railroad, we have to relocate the present Hurbanovo observatory to another suitable place where it will be able to operate undisturbed and have better contact with the central offices and the universities in Bratislava.

The only urgent problem that remains to be dealt with, is the establishment of research in meteorology and climatology. Because the working centers of this branch of science are widely scattered (at the university, in the resort institute, at the Academy, in the climatological section of the geographical institute) we want to establish for this reason one center. This was discussed and approved at the joint session of both academies at Smolenice in May 1959. This joint session dealt with the organization of research in the CSR during the third Five-Year Plan with a view to 1975. Meteorology is now solving the research tasks of primary importance for the state. Therefore, it is highly desirable to realize the reorganization and rationalization of this branch of science during 1960, and not to wait for the beginning of the third Five-Year Plan.

New research tasks are appearing for meteorology in connection

with the intensified building effort such as building of factories, living quarters, water works etc. There are many theoretical questions to be solved such as the balance of energy in the lower parts of the atmosphere in the various conditions of relief. This is to be done with international cooperation especially with the centers of the Academy of Sciences of the USSR.

In addition to the above-mentioned questions which concern mostly the organization of research, we must point out the difficulties which cannot be easily overcome. I have in mind the production of the small quantities of instruments which are needed for research work in these centers. The factories are doing everything possible to prevent the manufacture of these instruments. The production of small numbers of instruments and apparatuses hinders their fulfillment of quotas and lowers their production. We pointed out this fact many times, but even so it is quite clear where the error lies. Thus far there has not been anything done about it. From my conversations with the Comrades from the GDR, I learned that they happened to solve this problem. Their Academy built mechanical workshops which are utilized for research and evolution of technical sciences and are also capable of producing small numbers of instruments and apparatus for the other institutes of the Academy.

This would be one possible way to solve our problem also. Many a branch of science especially the natural sciences which depend solely on tests and measurements would be able to carry out successful activities.

SAV Corresponding Member, Frantisek Kozmal, spoke about the tasks of basic research in the SAV with regard to the development of chemical production of wood, cellulose and chemical fibers. He mentioned the fact that beginning on 1 January 1960, the new independent research institute for wood, cellulose and chemical fibers (Chemical Institute of the SAV) will be in operation.

Professor Kozmal spoke about the basic problems of this institute. He also spoke about the tasks concerning wood raw materials for the wood industry and the cellulose-paper industry and added--

"According to the resolution of the Eleventh Party Congress, paper production should be increased by one-third over the present production by 1965. Our production of chemical fibers will increase within that time by 105,000 tons. Twenty percent of this total will be synthetic fiber. The wood of coniferous trees which until recently was the basic raw material for manufacturing paper and chemical fibers is uneconomical for production. This fact places before the chemical industry which uses wood as raw material the fact that an economical planning of wood consumption for the industry must be considered one of the most important requirements. We must look for raw material other than pine for the manufacture of fiber. Also in other sectors of our economy we must replace wood with other materials.

We will increase the common denominator for all the tasks of the third Five-Year Plan, that is, the growth of productive capacity and economy of manufacture, only by improving the technical process of making fiber out of wood; by improving the finishing process of cellulose after cooking; regeneration by chemicals, and finally, by a more economical way of getting by-products during the sulphite and sulphate manufacture of cellulose.

The highly developed textile industry lacks the basic raw materials such as wool and cotton. Our chemical industry should be able to provide a sufficient quantity and variety of raw materials for the textile industry. However, the quality of domestically produced cellulose as a raw material for chemical fibers does not meet the required standards. Therefore, we are lagging behind other countries. We must solve the problems of producing cellulose from other suitable materials such as deciduous trees and perennial plants.

The other components of wood, hemicellulose and lignin have not been used fully in the past. We must find a way to prevent the loss of these valuable materials. When we solve this problem we will probably solve the problem of stream pollution by cellulose by-products.

Research at the SAV is ahead of production in the use of other components of wood and wood waste in our industry. Our researchers do not consider as satisfactory the present use of sawdust and other waste materials for the manufacture of composition-board, briquet, wood-concrete, etc. Our chemical institute of the SAV in the wood-cellulose and chemical fibers department, attempted to solve this problem and applied a fluidization technique in the process of breaking down the sawdust and other organic waste material by heat. From the first stage we obtained some valuable products especially active coal. The advantages of this new use of sawdust rests in the fact that it is a simple process, and the regulation of this process can easily be made fully automatic. The equipment for which we already have a patent is very simple and economical and permits the production of active coal at a cost which represents only a fraction of the cost of active coal made by the old method. We have prepared, together with the Chair of chemical equipment and instruments of the SVST, a model of these installations which will be built and tested in 1960. Twelve nationalized industries in the CSR which have at their disposal a great quantity of sawdust show considerable interest in using this sawdust. This equipment will be capable of being used in the production processes of other organic materials such as peat moss, and for similar chemical reactions."

Corresponding Member of the SAV, Frantisek Kozmal, spoke further about the need for research of new materials derived from the manufacture of synthetic fibers. The CSR has a little tradition in this sector, but we already have gained success. In the future workers of the SAV will work on the individual technological stages in fiber production, thus contributing to a higher quality of chemical

viscose fibers and especially cord fibers.

He further mentioned the important role of the Czechoslovak national economy in the production of synthetic polymers. By 1965, we should produce more than 12 kilograms of plastic materials per capita, which is approximately the present production rate of the USA. The use of plastic materials means a gigantic savings in the production of construction members in the auto industry, in cable production, tracks and belts, freight cars and coaches, and in various machines where a ton of plastic materials will replace four tons of imported non-ferrous metals. Production using plastic materials is three to four times cheaper and five to ten times less strenuous than production using non-ferrous metals. Professor Kozmal continued:

"In the stormy development of plastic materials our Academy does not play as important a role as it should. The working center for this which will solve research tasks for the support of rapidly developing industry in macromolecular materials was founded only recently. The synthetic polymer laboratory of the wood, cellulose and chemical fibers branch of the SAV Chemical Institute has a plan for research projects which we prepared in agreement with the Research Institute of Macromolecular Chemistry and the national enterprise, SLOVNAFT, plus the CSAV. The research work of the center is connected with polypropylene research which within the Council for Mutual Economic Assistance, is being coordinated by the CSR.

Up to now, in spite of the constantly repeated requests from our industry, a center for basic research on paper has not been founded in the SAV. The cause is a lack of experienced personnel and a lack of space. The future task of such a center should be the theoretical study of the entire paper production process, and in improving the economy of production. It should introduce the production of new types of papers especially graphic, refined and technical papers.

In conclusion Professor Kozmal said that the Chemical Institute is building a center for research in the area of mechanical uses of wood materials. This is in agreement with the third Five-Year Plan and the directives of the UV KSC [Central Committee of the Czechoslovak Communist Party], and with the government of the Czechoslovak Republic.

Doctor Frantisek Kralik from the Institute of Machinery and Mining Technology of the SAV discussed the physics of metal. He pointed out that this young branch of science is a central point of scientific research in all industrial states, and further stated:

"In the machine and mining industry we are among the leading states of Europe and we have many years of tradition in this field. Therefore, it is paradoxical that we neglected for so long a time the physics of metals which concerns establishing the laws and relations of complicated processes taking place in the atomic structure of metals and alloys, and which by gaining scientific bases gives us very useful data for a new and better technology of metal materials.

As far as I know, up to 1945, there was nothing done in the branch of physics of metals (with the exception of some of the works of Professor Strouhal, Professor Valouch, and University Lecturer Kochanovsky etc.)

With the education of new expert workers within the training program of the Machinery and Mining Research Institutes, and by founding the Chair of the Physics of Solids at the Faculty of Natural Sciences at Charles University six years ago, the situation has improved considerably.

The Institute of Technical Physics of the CSAV in Prague has a well-developed team of workers in the branch of semi-conductors. With the exception of a small group of workers employed in the Institutes of the CSAV, we do not have a similar team that would concern itself with the physical characteristics of metals and alloys.

At the present time we place higher and higher demands on metal materials. We require highly pure metals, and the missing laws in the process of preparing these pure metals are being substituted for by empiric knowledge. This means that it costs much more and that the process is much longer.

We will briefly explain how physics aids in metal technology. First of all, it defines the atomic structure of metals and alloys by determining the thermo-dynamic constants in complicated systems, the mechanics of diffusion of metals on metals, and of non-metallic materials on non-metallic materials, by discovering the laws of atom-regrouping in the metals during thermal processes; by measuring the force of attraction among in metals and alloys; by discovering the relation of magnetic characteristics on structure and other factors of metals and alloys; by defining the physical characteristics of metals under deformation speeds, or under high hydro-static pressure; by watching the structure of liquid metals and finding the laws of crystalization of metals, etc. Therefore, the subject of physics of metals is the work of basic research and not just the mere technology of metal materials, as some people think.

For a description of atomic processes in metals a wide application of the laws of physics from all branches of physics is needed. To get a qualified scientific force for the branch is a rather difficult problem. In other countries this problem is being solved by additional post-graduate studies at the universities.

During the last five years, we have established at the Laboratory of Machinery and Mining Technology in Bratislava, a physics of metals branch. In the beginning it concerned itself with the kinetics of phase changes in solid solutions and observed plastic characteristics of metals under extremely high deformation speeds. Today this center is equipped with modern instruments, and it can also use a number of instruments of the well-equipped Welding Research Institute. It has two sections. The first section is solving the tasks of state importance. Its achievements have a direct applied significance for the technology of materials under

high temperatures or pressures. The second section studies the characteristics of plastic deformation of metals under extremely high deformation speeds. The solution of the problem in its present stage requires the definition of the basic physical quantity responsible for plasticising metals in its relation to time. The whole process takes less than  $10^{-4}$  seconds. As far as I know this is the first measuring of this type that has ever been done here at home. The purpose of this measuring, besides establishing the valid laws of plastic deformation is to define characteristic constants for the materials which under normal deformation speeds plasticize with difficulty, or cannot plasticize at all.

From the above-mentioned fact, we can assume that acquiring the necessary data on the changes in atomic structure of metals requires special, complicated and expensive equipment and installations. This is closely connected with the fact that processes under observation always take place in micro-objects of metal and in a period of 10-100 seconds.

It is obvious that the physics of metals needs excellent instruments and excellent personnel to man them. We have very good conditions in our laboratories for this and therefore we appeal to this Plenary Session to support us in developing our center."

The Corresponding Member of the SAV, Mikulas Gregor, discussed the part of inorganic chemistry in fulfilling the tasks of the third Five-Year Plan. There have been three conferences here in the CSR since 1955 where a detailed plan of research for inorganic chemistry was worked out. Inorganic chemistry research has clear perspectives about its tasks which was proven at the third conference on inorganic chemistry held in Bratislava in June 1959, by the Slovak Academy of Sciences. Professor Gregor said that beginning 1 January 1960, an independent Institute of Inorganic Chemistry of the SAV will be established. This is in compliance with decisions of the UV KSC from the year 1956 on the development of science in the CSR.

Engineer Juraj Bolf, head of the measuring equipment laboratory of the SAV, referred to that part of the main report which concerns the development of technical sciences. A communist society pays a high degree of attention to the education of a person under the conditions of development of complex mechanization and automation. The main part of his report dealt with the questions of measuring and of measuring equipment. Up to now little attention was paid to measuring equipment even though the advancement of all branches of science and technology depends on its quality.

The theory of measurement and the theory of measuring instruments is formulated as an independent branch of science called "metrology." This will be taught as a special subject in our schools. He further outlined the tasks of theoretical metrology and also the direction of its research for industry, because measuring technique is becoming a component of production which most uses the achievements of science. This we must stress if we want to see

automation in its widest scope complexity.

In the automation of measuring, a theory of probability and mathematical statistics is being employed; technological processes as much as the individual control rest on measuring. The theory of probability and mathematical statistics can effectively help especially in improving the various technological processes in revealing and correcting defects in the most delicate and sensitive spots of production processes and in the systematic calculations and analysis of the accuracy of making out the basic details of production machinery itself and also production details. Further, it can help in the analysis of rejects, in increasing quality, etc.

During the session of the Subcommittee for machinery of the CSAV on 1 December 1959, the building of an Institute of Measuring and Measuring Instruments was emphasized. There is not a single institute of this type in the CSR, and this has an effect on our industry and research. Engineer Bolf, therefore, acquainted the members of the session with the present and future work of the Laboratory of Measuring Instruments, and emphasized that with the important tasks involved in mechanizing and automating our industry, full support for developing this center is very necessary.

The Corresponding Member of the SAV, Jan Hovorka, Director of the Helminthological Institute of the SAV in Kosice acquainted the members with the present and future work of this center. Helminthology plays an important role in medicine and agriculture. Theoretical research has to be deepened and a net of regional centers for applied research must be established.

During the seven years of its work, this institute has had excellent results. The achievements of this institute enriched the basic fund of biological research, and recorded the status of helminthoses of human beings and animals in the early stages of socialization. The workers of the institute devoted a great deal of attention to the complex study of one of the most serious zoonoses--fascioliasis. The achievements in the Epizootological studies of liver worms [Motolice Pecenovej] are becoming a base for revising the existing scientific knowledge. They worked out solutions to a sheep-deworming method and also a cattle deworming method which are very effective and are now being practiced. They save our national economy a lot of money in their fight against the loss of domestic animals and for their better utilization.

The achievements in the work of the Helminthological Institute of the SAV demonstrated that good conditions exist in the CSR for the scientific development of helminthology. The proof of this is an even stronger voice of veterinary medical and agricultural practice, which points out the problems of epidemics and asks for a concentrated fight against them.

Academician Karol Siska discussed that part of the main report which outlined the activities and responsibilities of scientific

councils. Scientific councils check on the expertness of working centers. A scientific council is supposed to help the director in improving the quality of the scientific workers we are lacking.

The lack of scientific workers can be prevented by the education of gifted young workers of good morals and of good political character. We educate such people every year at our clinics, but because they do not have any experience they often go to small country hospitals, where they are lost for scientific work. Therefore, the Institutes must more often than up to now admit such workers and educate them. This is very important because the working centers do not release any experienced workers. Therefore, this educational program has to be planned in cooperation with the universities and the various departments of science.

Ludovit Holotik, Candidate of Historical Sciences and Director of the Historical Institute of the SAV, stressed the importance of making new history books on our nation covering the time since the liberation in 1945 to the present time. (See a special article in the next number of the Vestnik SAV).

Academician Dimitrij Andrusov discussed the mission and tasks of geological research in the SAV. Within its limited possibilities, the Geological Laboratory will concentrate on the fact that its scientific workers will prepare and publish monographs about the problems of the individual branches of Geology.

Academician Dionyz Ilkovic Head of the SAV Physics Laboratory gave a short resume on the present condition of this center which as of now has 15 employees. Three of them are scientists. The increasing tasks of physics demand naturally an increase in the number of employees. There are many obstacles to be overcome, especially that of sufficient space and above all the need for ideologically up-to-date scientific workers.

The workers of the SAV Physics Laboratory have already published 17 original scientific works, and have made 10 trips abroad for study. They have established working relations with similar centers of the CSAV, the Polish Academy of Sciences, the Hungarian Academy of Sciences and also with Physiological Institute Imeni I. P. Pavlov of the Academies of Sciences of the USSR in Leningrad.

The center develops a planned scientific program. Good results which have been acknowledged abroad were reached in the research of heat conduction in systems of solid matter. Internationally recognized also are the results of research in the sector (branch) of physiological acoustics.

Academician Ilkov mentioned at the end of the report the center atop Lomnický štít [in the High Tatras], which is in the process of construction, but nevertheless already has had good results in research on cosmic radiation.

Doctor Miroslav Bazany, Head of the SAV Psychological Laboratory said, "Technical development including the process of mechanization and automation is not only a question of new discoveries and

a question of the research on natural and technical sciences. It is not only a question of construction of new factories and solving of more economical technological processes, but it brings at the same time a change in working habits of the people assigned to work in it.

The evolution of the present technology shows that in a short time there will not be much need for common labor in many sectors of our production, but there will be a great demand for more educated workers with better perception, attentiveness, a sensitive reaction, etc. Therefore, psychological research has to become an inseparable part of the overall plan of research for the development of our economy. This research must be ahead of the construction of new factories.

A great number of psychological problems is connected with the introduction of new techniques of mechanization and automation. Also the organization of working centers has psychological problems with regard to economizing working activities and new forms of personnel cooperation. A greater part of the problems of psychological research is also the increased requirements for expertly qualified workers, the worker mans more complicated machinery. There we face the problem of a new form of preparation and training for such a job. The selection and placing of workers in such a manner that we create the conditions in which the highest qualifications can be achieved also presents a problem. With the introduction of new technology come also the problems of life and health protection of workers. The possibilities of endangering the lives of workers not only bodily but also spiritually, must be reduced. The noise, vibration and other dangerous elements have a tremendous effect on a worker's concentration. They can objectively or subjectively increase or decrease fatigue and interrupt the normal current of psychological processes.

A brief summary of these problems clearly indicates that their solution requires a complex approach. Psychology, especially its new branch, Engineering Psychology, represents only one link of research which has to be solved in cooperation with the experts in economy, technology, physiology and other medical sciences. As it was pointed out by Comrade Academician Thurzo in his main report in order to be able to solve these problems we will have to prepare intricate plans, not only for individual sections, but also introduce new forms of cooperation among more sections or into working centers outside the SAV. The Psychological Laboratory of the SAV made an advance in this direction when it entered into close cooperation with other research centers, such as the Research Institute for Mechanization and Automation, the Research Institute of Air Navigation Medicine, and with the Research Department of the V. I. Lenin works at Pilsen, the Jiskra works at Tabor, etc. However, research in the Slovak Academy of Sciences must be more closely coordinated.

The present practice of the Psychological Laboratory has shown that the small centers with a small number of workers, cannot have a polythematic research plan if their work is to be internationally recognized. For the past two years the Psychological Laboratory has been engaged in monothematic research problems of human sensory and perception processes. This work we share as previously agreed with Czech centers of research. By concentrating all the workers in one area of research an increase in theoretical knowledge and deeper research was brought about. This is noticeable in the introduction of the results of research on manning the electric locomotives on the Kosice and Prague railroads in the year 1958. Hundreds of thousands of crowns were saved. Monothematization of laboratory research led further to the deepening of collective work in solving partial tasks of the plan.

The problematic research of the Psychological Laboratory presents us with other problems of organization of scientific work and the cooperation of more regions of science. Problems in the research on sensory and perception processes are becoming of crucial importance in our industrial production, and require close cooperation with some sectors of science which do not develop with sufficient speed and extent. At this time, I want to point out the need for wider development of research in the area of physiology of the sensory organs, and in the area of the theory of probability and mathematico-statistical methods and their application in the biological sciences and in psychology. The present psychological research of sensory and perception processes leads to an understanding of perception process as a probability process and requires deeper elucidation and research in the psychological research on hypothesized neuro-physiological mechanisms. I presume that within the framework of the Biological Institute and the Cabinet of Mathematics we should give our attention to these problems. Finally, I would like to touch on the question of economy in research and especially experimental work. We all share the same point of view, that is, that the use of materials and production processes should be most economical. I think that this point of view should be the same as far as research is concerned. We often encounter research experimental work in which we still even today maintain the point of view of variation of one variable, while a constancy of conditions is being maintained. It is a so-called classical type of experiment which is now being replaced by the so-called representative type of experiment. The plan of this experiment makes possible the use of fewer workers or samples of material to vary more variables and maintains the principle of contingency. This process substantially economizes scientific research, and it would be suitable for workers from the mathematics branch to acquaint the workers from other branches with this experimental plan. We assume that this symposium could substantially contribute to an increase in the level of know-how of our research.

Doctor Stefan Peciar, Director of the Institute of the Slovak Language of the SAV, discussed at the Plenary Session the problems of linguistic science in Slovakia.

Academician Dionyz Blaskovic, Director of the Virological Institute of the CSAV in Bratislava, said "The Comrade Head Scientific Secretary outlined in detail in his report the need for cooperation among the institutes, departments and the institutes of the various university departments. The guarantee of cooperation among the scientific institutes now and in the future is the recruiting and education of scientific workers. For this, we have several recommendations:

The document of the UV KSC which stresses the close ties of school with real life and the resolution of the Biologico-Medical Section of the CSAV (special session 27 April 1959) emphasizes the necessity for mutual cooperation between the universities, departmental institutes and the institutes of the Academy. The aid of these institutes to industry will speed up the building of socialism in Czechoslovakia. The isolated policy of some scientific research institutes which disregard the network of scientific institutes in Czechoslovakia is very harmful.

The field of activity of each institute must be much broader:

It must solve the tasks with the help of additional research centers and also in close cooperation with the production forces and public administration; it has to become a place that is willing to school the experts according to its own specializations.

It has to release expert workers to jobs at a higher level when these can aid in building socialism more rapidly. It is the duty of all centers which train scientific personnel to educate ideologically mature, expertly capable and ardent builders of socialism. This can be accomplished in this way:

1. Establish scientific circles at the universities, as an instrument for preparing and selecting young people having a talent for scientific work.

2. The universities will seek talented young people suited for scientific work at the research institutes. Special attention will be given to ideological education for such talented students during their stay at the university. The rosters of talented students during their last two years study at the universities would then be given to the Board of the SAV.

3. The universities should have direct contact with the scientific institutes of the departments and academies in Slovakia, and ask them for permission to establish scientific centers for the students directly on the premises of the departmental institute or the Academy.

4. The Departmental Research Institutes must make summer practice possible for the university students.

5. The scientific institutes of the departments and academies should organize special summer practice for all of the university

candidates. Each such candidate should have a recommendation for such summer practice from his university.

6. The institutes of the Academy should accept as scholarship students for one-half to two years study such university graduates who will be recommended for these studies by the university, Party organization and the Board of the university. The Departmental Institute and the Academy Institutes should promise that they will train university scientific workers and that they will place such workers in one of the institutes (long-term association). This type of scholarship was announced for the CSAV by the Head Scientific Secretary, Corresponding Member Kozesnik, at the Plenary Session of the CSAV on 17 November 1959.

7. Highly qualified scientific workers of the research institutes should be given an opportunity of lecturing at the universities. Such admittance by the universities for those scientific workers who are morally desirable and politically reliable is highly desirable. Such lecturers could still be retained by the institutes, the departments and the academies. In order to be able to improve the quality of pedagogical and research activities, we must see to it that the best qualified occupy the most important jobs. The university workers and the departmental research institute workers should be given an opportunity of working at institutes of the academies and vice-versa."

Doctor Ivan Ruttkay-Nedecky M.D., Vice Director of the Institute of Experimental Medicine of the SAV, spoke about the future problems of the Institute.

He said: "We will have to deepen the research on the physiology of the nervous system with an emphasis on the examination of mutual dependence of muscle activities and the activities of the internal organs on one hand and the activities of the central and peripheral nervous system on the other hand. We will examine closely the functions of the cardio-vascular circulatory organs.

The selection of this research stems from the present developing condition of its organic composition; from familiarization of workers with the work; from the instruments needed especially from the situation of physiological science in the world and from the future need for practice.

The present evolution of the physiology of individual organs and systems has advanced to such an extent that the whole world feels a need of more intensive research on integrated systems which require the cooperation of individual organ systems. Such an integrated system is the glandular complex with its internal secretion and especially the nervous system. This evolution of physiology is reflected in the latest world physiological conventions. The number of lectures on neurophysiology and nervous regulations by far surpasses the number of lectures on other sectors of physiology. It has growing tendencies by itself. International renown in this field has been gained by Soviet physiology which is based on the

works of I. P. Pavlov and his followers. This progress in physiology is in harmony with the evolution in the technical branches which advance in the direction of automation and the evolution of technically integrated systems. This direction of development is outlined in the directives of the UV KSC for the third Five-Year Plan. For bringing out this relationship it is enough to mention that cybernetics which is the base of these complex controls originated in the studies of characteristics of the nervous system in duplicating its regulatory mechanism, based on the principle of the feedback which in organism is fully utilized. It was not the first nor the last time that the human mind took an example from nature. Research on the nervous regulatory system is not only of theoretical importance. In this research we must keep ahead of the needs of society. In the future more complicated production processes will require more use of brains and less use of mechanical operations. The failure of the worker directing an automatic production line has more serious consequences than the failures of a worker who works on partial assemblage. A higher sense of responsibility and a higher political and class loyalty put more demands on the nervous system.

Aiming of research in the direction of neurophysiology and nervous regulation is based upon not only the point of view of the general evolution of physiology as such, but especially from the future needs in practice.

Research on basic questions of nervous and neurohumoral regulation of the circulatory system stems from the combination of muscle work with circulatory adaptations. Even though in the future exhausting physical work will be eliminated, it will be replaced by various muscle exercises, and also by other recreational exercises. Therefore, this question will remain a pressing one. This direction of research makes it possible for us to solve the questions on how the vascular system reacts and eventually the reactions of the heart itself and changes in perception of this system in reaction to phenomena which bring about arteriosclerosis. This concerns the question of history of the vascular system in the same sense as technicians use the concept of history of material.

The heart-lung machine invented in 1958 also opens new possibilities since it permits us to solve many physiological problems of the heart kept in the organism stopped and started arbitrarily (of course in animals only.)

This type of research will of course be based on the cooperation of our and foreign institutes, and the centers of the academies, schools (universities) and medical science. This cooperation is fully outlined in our plans. Delimitation of some problems among our institutes and institutes of the same type at other locations in the CSR was realized. In the area of cortico-visceral problems our institute is the coordinating center for basic problems of cortico-visceral physiology. A very fruitful cooperation has been arranged with the East German Academy of Sciences, while cooperation

with similar centers of the USSR has already been realized. To summarize: It can be said that the institute is evolving in the direction of a thematic unification in the area of such basic research which in the future will be very important for creating healthy working conditions and also for preventing and as the treating certain diseases. This effort, however, is being greatly impeded by the small allocations for the purchase of needed materials which have been pre-planned for us. This will impede the hiring of new (especially scientific) workers and it will place us in a very unfavorable light as compared with the analogous centers of the German Academy of Sciences. Our center and theirs was founded at the same time, but they have much more space and definitely much more and better equipment."

Doctor Ladislav Kosta, Head of the Cabinet of Legal Sciences of the SAV, spoke about the problems of scientific research in the scientific area of the state and the law. There is no question today that law serves the interest of the whole society, and that the evolutionary change began with the state and its socialist laws which permit and support the development of production forces for the level of constantly developing working forces is keeping with the character of a socialist economic base. The center of the Academy has passed its consolidation period and can now start working on the more complex tasks of a compiling and synthesizing character which will examine the complete use of the Marxist-Leninist theory of the state and the law under our conditions and compare the results of theoretical research with the needs of the legal practice. The plans for the work of the Legal Cabinet of the SAV, stem from the needs of the practice of socialist construction, and that is especially true in the area of developing production forces. In conclusion Doctor Kosta emphasized the need for good cooperation among the Slovak and Czech research centers which are working together on all of the main scientific tasks.

Doctor Julian Podoba, the Director of the Endocrinological Institute of the SAV, spoke about the experiences of the German Academy of Sciences which can aid us in strengthening the relations among the scientific centers and among the administrative organs of the Academy.

The closing statement was made by the Head Scientific Secretary of the SAV, Corresponding Member Viliam Thurzo. He stated that the speakers understood their tasks correctly and that the Academy will do everything in its power to fulfill these tasks before the beginning of the third Five-Year Plan. He pointed out that the Board of the Academy will consider the suggestions for the selection and education of scientific workers with the cooperation of the universities. It is also necessary to focus the attention of research on the questions of psychology and physiology of labor so that science in this area will be sufficiently ahead of the practical building of modern industry. Finally, he emphasized that giving preference to

certain branches of science does not mean that the organs of the Academy did not take notice of the development of other branches of science and their centers.

#### RESOLUTION

The peaceful and democratic forces of the world led by the thoughts and acts of the traditionally peaceful politics of the Soviet Union attained during the last year new victories and successes. The suggestion made by the government of the USSR for complete and permanent disarmament which was proposed by the Chairman of the Council of Ministers USSR, Nikita S. Khrushchev, at the Plenary Session of the UN was met with approval not only by the workers, but also with the approval of the capitalist countries. International tension has lessened, the hopes for averting the catastrophe of war, and a permanent peace among the nations is the real future of the people. In this light the intense international, economic and cultural competition between capitalist and socialist systems for a better standard of living for humanity becomes very immediate.

Our certainty in the victory of the socialist system leans on the future of the wide economic plans for all socialist countries. The realization of these plans depends on constant development in science. Science in Slovakia has great and responsible tasks to solve in the future. These tasks were outlined at the 11th Congress of the Communist Party of Czechoslovakia and prepared by the Tenth Plenary Session of the Slovak Academy of Sciences. We must realize these tasks sufficiently ahead of the actual need of society.

The third Five-Year Plan for the development of the Czechoslovak economy summons our workers to take an active part in it, and it also mobilizes our scientists. The role of our science in the development of our productive forces will continue to grow, and we will have to take a more active part in the building of socialism than in the past. Our Twelfth Plenary Session appeals to all scientific workers of the Academy and to other Slovak scientific centers to join in with more intensive work and cooperation.

The first job of the scientific research centers will be the analysis and discussion of the third Five-Year Plan directives on the basis of the analysis and in accordance with the directives for working out the scientific research plans for the year 1960, and further to prepare scientific research plans for the period of the third Five-Year Plan. We will have to concentrate our scientific personnel and materials on realizing the most rapid growth in the most important branches of science, for example, mathematics, physics, chemical sciences, the whole sector of technical sciences, biochemistry, philosophy, economy, and the recent period of history.

The tasks of completing the cultural revolution in our country

require the social sciences to contribute to our culture with their results in research. The social sciences must help solve the problems of building socialism and of compiling the material and cultural elements for the gradual transition to communism. All scientific workers must carry out their scientific activities on the basis of world scientific principles and take an active part in combating all manifestations of hostile ideologies.

In order to fulfill the resolutions of the Eleventh Congress of the Communist Party of Czechoslovakia, science in Slovakia must grow. We have to provide an ideological and expert education for our scientific workers. For this, we will utilize the following forms:

Participation of scientific workers in production, cultural and political practice, educational trips to the scientific centers in Bohemia, and to the states of the socialist bloc, especially the USSR. We in the Slovak Academy of Sciences must adapt our activities to the forecoming changes in the structure of state administration, and we must focus our activities on helping the political, economic and cultural development of individual areas in the state. The forms of organization of the Academy must be in agreement with our tasks so that we can create better working conditions and increased initiative and activity on the part of our workers in directing their scientific research activities. The development of science in Slovakia is unthinkable without the close cooperation of our Academy with the highest scientific institution in Czechoslovakia, (the Czechoslovak Academy of Sciences), and without the concrete help of Czech scientists to our Academy. We must see to it that the working plan of the Slovak scientific centers is an organic part of the overall state scientific plan.

In order to guarantee the further advance of scientific research activity in Slovakia, the Twelfth Plenary Session of the SAV has adopted the following resolutions:

1. All Slovak scientific research centers and the organs of the Slovak Academy of Sciences will discuss the directives for the third Five-Year Plan for the development of our national economy. When preparing scientific research plans for rebuilding and increasing the net of scientific research centers, they must take into consideration the future needs for developing our national economy as well as the political, cultural and economic needs of the future areas.

2. When preparing scientific research plans, they must make through better scientific use and work the principle of complexity and collectivity the basis of their work. Scientific research work must be concentrated on the most important problems of economic and scientific importance. The sections must actively influence the creation of a scientific plan.

3. They must realize and deepen the coordination activities of the SAV in the sciences with the cooperation of the CSAV and the State Committee for Technical Development.

4. They must see to it that scientific work is distinguished

by high Marxist ideological content and expert and mature development. The criticism of shortcomings and high standards in scientific creation must become inseparable parts of work and life at the centers of the Academy. They will have to improve experimental forms and look for new forms of political, ideological and technical education of all workers of the Slovak Academy of Sciences!

5. They must increase the initiative and participation of all workers of the SAV in directing scientific research work at the Academy. Measures will have to be taken that will strengthen the unity of the elected organs of the Academy with the centers, scientific workers, party organizations and the union organizations.

6. They must further extend the cooperation of the organs and centers of the SAV with the organs and centers of the CSAV, and not limit this to present forms of cooperation. They must hold joint meetings of sections, scientific councils, and administrative organs. They must increase the worker exchange program among individual centers of both Academies etc.

7. They must re-examine the present legal regulations concerning the SAV, and suggest changes in them, so that they can better ensure the fulfillment of the tasks that confront the Academy.

- END -

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