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SELECTED TRANSLATIONS ON SOVIET SCIENTIFIC
ACTIVITIES AND ORGANIZATIONS

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FOREWORD

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SELECTED TRANSLATIONS ON SOVIET SCIENTIFIC
ACTIVITIES AND ORGANIZATIONS

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THE PARTY'S CONCERN IS INSPIRING

Following is the translation of a series of speeches by republic academy presidents published in Pravda, 12 June 1961, page 1. /

Speech by I. Fedorchenko, Chief Scientific Secretary of the Academy of Sciences Ukrainian SSR.

The All-Union Conference of Scientific Workers will hear the voices of people in science from all the union republics. The scientists from Soviet Ukraine also have something to say. The Academy of Sciences Ukrainian SSR includes scientific institutes which have won world recognition. Including such institutions as: Institute of Electrical Welding imeni Ye. O. Pattona, the works of the Institute of Ferrous Metallurgy as well as those prepared by a number of specialists from a series of metallurgical enterprises in the development of methods for utilizing natural gas in blast furnace production are also known the world over. The application of that method at tens of blast furnaces raised their production of cast iron by 786 thousand tons in 1960 and saved over two million tons of coke. This amounted to a total saving of over one hundred million rubles in the new currency.

The computing center of the academy developed a machine for remote control of the smelting of steel in the Bessemer converting process. This machine was tested by controlling the smelting of steel at the Bessemer workshop of the Dneprodzerzhynskiy metallurgical plant from the city of Kiev. This experiment was the only one of its kind ever conducted in the world.

Problems concerning the coordination of science will be thoroughly discussed at the conference. Over 50 coordinating councils on the various important scientific problems were created in the Ukraine. Unfortunately those councils, however, do not possess any rights whatever, and therefore their influence usually does not extend beyond the institutes of the academy itself. As far as inter-republican coordination on an all-union scale is concerned, it is obviously not what it should be.

Serious attention is demanded by problems concerning the implementation of completed projects into production. We have a long time ago developed many new metal-ceramic alloys and methods for the manufacture of various products out of them. But the plant for the industrial production of metal-ceramic products is being built at a

very slow rate; it seems that it will never be finished. Our scientific workers created semiconductor thermocouples for measuring molten metal temperatures. They are necessary for the automation of metallurgical production, but their production is not organized.

It is extremely important to establish experimental basis with the scientific research institutes, as well as experimental plants for further scientific development, which could be under the jurisdiction of the sovnarkhozes and state committees. This would accelerate the progress of completed scientific projects from the scientists' laboratories to the industrial enterprises.

Speech by Academician K. Satpayev, President of the Academy of Sciences Kazakh SSR.

The convocation of the All-Union Conference of Scientific Workers is a fresh vivid manifestation of concern by the Central Committee CPSU, by the Soviet government and personally by comrade N.S. Khrushchev for the further scientific progress in our country. That conference will undoubtedly be conducive to the solution of many very important problems attendant to the further expansion of scientific research in all branches of knowledge, to a coordination of the activities of numerous scientific institutions of the Soviet Union, to an elimination of any duplicated efforts in their work, and it will direct the scientific workers towards a solution of the most important scientific-technical problems associated with communist construction.

During the zonal conference of the workers of the Virgin Land Kray N.S. Khrushchev criticized the work being done by scientists-economists; he pointed out the serious backwardness seen in the economic science. We are devoting all our efforts to bring economic research closer to the demands of the national economy.

Many of our scientific workers have a wealth of production experience; they came to the institutes and to the academy directly from the plants, mines, from geological survey crews and are therefore well acquainted with production requirements.

Many aspects of scientific investigations are determined by us in collaboration with practical workers. For that purpose the academy conducts on the spot scientific conferences--in the mining areas of the Altay, at Karaganda, Dzhezhkazgan and at other rayons of the republic. This permits us to exert a more effective influence on the development of the productive forces of Kazakhstan, to discover fresh deposits of useful minerals, and to resolve important scientific-technical problems. It is specifically because of this that our scientists--geologists, petroleum engineers, metallurgical engineers, chemists and representatives from other branches of science and technology have been able to create many new methods for conducting mineral surveys, as well as highly effective technological processes the implementation of which has a tremendous economic effect.

Let me cite an example. The method of a comprehensive mechanization of underground mining work, developed by our scientists and production workers, is yielding great economic advantages; it sharply increases the extraction of useful minerals as well as the productivity of labor of the miners. At the present time this method is being introduced on a large scale not only in the mines of Kazakhstan, but at other union republics as well.

At the same time we attempt not to scatter our energy for the solution of private, frequently petty, scientific-technical problems. They are successfully resolved by the branch scientific-research institutes and plant laboratories, whose role in the progress of technology is constantly growing.

The day to day consolidation of ties between theory and practice remains the main path taken by scientific research conducted at our academy. The scientists of Kazakhstan will welcome the 22nd Congress CPSU with new successes in their work.

Speech by V. Kuprevich, President of the Academy of Sciences
Belorussian SSR.

Quite recently the Central Committee CPSU and the Council of Ministers USSR adopted a resolution concerning measures for improving the coordination of scientific research work in the country and the activities of the Academy of Sciences USSR. This is an outstanding event in the life of Soviet science. The Belorussian scientists received that resolution as one more vivid example of the constant concern shown by the party and the government for the development and blossoming of our science.

The Presidium of the Academy of Sciences of Belorussia already developed its own suggestions pertaining to that. Specifically, it is planned to transfer certain research laboratories, located at the Minsk tractor plant, at the spare parts plant and the watch factory, under the jurisdiction of the sovnarkhoz.

We propose a substantial expansion in the scope of scientific research. It was deemed feasible to reorganize the machine engineering institute into an automation and cybernetics scientific research institute. It is planned to create an institute on semi-conductors on the basis of the department of semi-conductors. Certain large departments of the Academy of Sciences--biophysics, biochemistry, genetics, microbiology and zoology departments, are to be reorganized into scientific research institutes during the current seven year period.

At the present time there are over one hundred scientific research institutions and 24 higher education institutions in Belorussia, which employ approximately seven thousand scientific workers specializing in various fields. In order to unify and to make a concrete plan for the activities of this large army of scientists, we consider it feasible to create a republican committee which would coordinate scientific research work.

Speech by K. Karandev, Corresponding Member of the Academy of Sciences USSR, Director of the Automation and Electrometry Institute of the Siberian Department of the Academy of Sciences USSR.

Comrade N.S. Khrushchev who recently visited the scientific institutions of the Siberian Department of the Academy of Sciences USSR, made a series of important remarks, directed at a further improvement in the work of the Siberian scientists. Using these suggestions as a guide our scientific workers are devoting their energies towards welcoming the 22nd Congress CPSU with new successes.

Our Automation and Electrometry Institute is not only a young, but a youthful scientific organization. The average age of the scientific workers at the institute is 25-26. But we have already acquired a certain amount of experience. We are resolving problems found at the meeting point of two sciences--automation and electrometry.

By the opening of the 22nd Congress of the party the institute will have completed an experimental model of a cybernetic automat-machine with a logic center. That automat is capable of not only making certain measurements, but also of choosing the best method for taking a measurement. It is designed for measurement (quality control) of condensers, used in great numbers by the radio industry. The automat will not only determine their quality, but will logically sort them using a variety of criteria. The principle behind the operation of the automat may be used for the creation of similar machines which could be used in other branches of the national economy.

A Speech by Yu. Matulis, President of the Academy of Sciences Lithuanian SSR.

The Communist Party and the Soviet government are devoting considerable attention to the development of science in the union republics. Our science is developing like a gigantic tree, every branch of which is conducive to its rapid growth. The scientific research institutes of our academy as well as the other scientific institutions have all made a substantial contribution to the development of power engineering, the building materials industry and to the agricultural production of the republic.

The scientists of the republic, however, as aspiring not only to satisfy the pressing needs of their economic rayon, but also to participate in the development of the entire Soviet science and technology. In that respect the scientists of Lithuania have attained certain success. Their work in a number of the newest branches of science extends beyond the borders of the republic in their significance. Such work includes research in the field of the theory of relativity and mathematical statistics, atomic spectroscopy, semi-conductors, electro-chemical processes and other work.

The unified nature of Soviet science, its increased role in

the building of a communist society made it an order of the day to plan and coordinate scientific research on a national scale. Therefore all the scientists of Soviet Latvia are welcoming and expressing their warm approval of the resolution made by the Central Committee CPSU and by the Council of Ministers USSR pertaining to an improvement in the coordination of scientific work in the country. We feel certain that this conference will help the large army of scientific workers of our Homeland to resolve important tasks set by the party with still greater effectiveness.

THE EFFORTS OF SOVIET SCIENCE AND THE GUARANTEE OF ITS
NEWEST SUCCESSSES -- IN CONSTANT TOUCH WITH THE
CREATIVE LABOR OF THE PEOPLE

Following is the translation of an unsigned article
in Pravda (Truth), 14 June 1961, pages 1, 2.

The All-Union Conference of Scientific workers continues at the Large Kremlin Palace.

A report presented by Academician M.V. Keldysh, President of the Academy of Sciences USSR, resulted in an animated discussion. The scientists unanimously approved the measures outlined by the Central Committee CPSU and by the Council of Ministers USSR for an improvement in the coordination of scientific research work, and conducted active discussions about the further development of Soviet science. The speakers express their gratitude to the party, the government and to N.S. Khrushchev for the fraternal concern shown for the further blossoming of Soviet science, which was vividly reiterated in the greetings extended by the Central Committee CPSU and by the Council of Ministers USSR to the conference; they also talked about the tremendous growth in the creative activity of the scientific technical intelligentsia.

All these speeches are threaded with a single idea--not to be satisfied with what has already been achieved, to strive for new, even greater scientific victories, to engage in research in a more active and productive manner, in research designed to resolve tasks involved in the building of communism.

The Morning Session 12 June.

As reported previously by Pravda, Academician L.A. Artsimovich, Academician-Secretary of the Department of Physical Mathematical Sciences of the Academy of Sciences USSR, was the first to be heard during the conference. In his speech he pointed out the successes attained by modern physics and the wide scale possibilities for the utilization of its achievements for further technological development.

He stated, "Among the other substantial contributions made by science to practical work the completely new trends in the utilization of the laws of the atomic world which developed during recent years must be especially noted. It might be called atomic radio engineering (it is sometimes called quantum radio physics).

The meaning of that term is easy to explain. Even at the beginning of our century it became clear that each atom represents a very small radio station, whose entire mechanism is hidden in its outer electron shell. For a long time, however, no one thought of using that peculiarity of the atoms, by making them oscillate together in rhythm and to emit a coordinated flow of radiation. Such an idea occurred comparatively recently; it was developed by Soviet physicists A.M. Prokhorov and N.G. Basov.

"At the present time it is becoming clear that the new atomic radio stations could lead to a true revolution in the technology of communications. With their assistance it will apparently become possible to create very fine (the diameter of a needle) and at the same time exceptionally powerful beams of electromagnetic waves and light rays, with the aid of which it will be possible to transmit signals far beyond the borders of the solar system, over distances of many billions of kilometers. For the lovers of science fiction I would like to note that the needle-like beams produced by the atomic radio stations are a peculiar form of the idea for 'engineer Garin's hyperboloid.' It must be supposed that things will develop faster in this case than with a thermonuclear fusion, and within the next 5-10 years atomic radio stations will become an integral part of practical life.

"It is also possible to cite other trends which already clearly manifest prospectives for a technological application of the achievements made by modern physics. But in order to make sure that the flow of creative ideas, which science pours into practical work, does not disappear it is necessary to show special concern towards research of a basic nature. Scientific research is not cheap today. That is not surprising, since everything which was easy to discover, has long since been discovered, and at the present time it becomes necessary, graphically speaking, to blast through hard rock at a great depth. It is natural that under such circumstances problems concerning the organization and coordination of scientific investigations on a national scale acquires considerable significance. Up to now we have had extensive inadequacies in that respect. One of them consists of the fact that the funds for scientific investigations are frequently appropriated on a principle of 'an equal share for everyone.' Juggling funds and personnel in order to speed up work in some of the more urgent scientific technical projects is not the answer."

According to the speaker the structure of our scientific institutions is not commensurate with the present day state of science and demands extensive perfection. It is also necessary to improve the method of supplying scientific institutions with equipment and special materials.

A.D. Aleksandrov, Corresponding Member of the Academy of Sciences USSR and the rector of the Leningrad University is on the lecture stage. He devotes his speech to problems involved in the training of cadres and scientific work at the higher schools.

He states: "The main motive force for the development of science is the cadres and their creative work. The basic link in the training of scientific cadres is the higher school. Therefore the level of higher education comprises one of the decisive conditions for future scientific successes.

"The successful training of scientific cadres is impossible without an inseparable contact between education and science, between academic studies and work in the laboratories and scientific institutes. The principle behind the contact of academic studies and labor lies at the basis of the reorganization of the higher school system which is presently being conducted. A successive realization of that principle will perform a decisive role in an improvement of the training given to scientific cadres, in the consolidation of the ties between the higher educational institutions with life and with the practical matter of building communism.

"In order for the educational institution to be a center for the education of scientific youth it must be a center of creative work, where the curriculum is organically combined with research work on urgent problems with modern equipment. At the present time, however, there still is a certain division, even a certain contradiction, between scientific activity and the training of cadres--which is not in favor of the higher school. This is manifested in various forms. Due to the fact that the scientific research institutions have much better conditions for scientific work, the higher educational institutions are abandoned by some of the more skilled and well trained scientists. This is alarming, since it might reflect negatively on the training of the specialists. On the other hand, the higher educational institutions have some great advantages. Contact with young people permits a scientist to recruit fresh work forces and opens up an invaluable possibility to organize his own scientific school, whose influence is disseminated throughout the country by the graduates. The recruiting of students, aspirants and instructors for scientific work permits the development of new trends with a smaller special staff at the higher educational institutions, as well as with lower expenditures and with other similar conditions, therefore yielding a great effect. All these advantages possessed by the higher educational institutions must be used to the fullest extent."

According to the speaker one of the methods for establishing a contact between education and science must be the creation of complex scientific educational centers which combine the training of cadres with extensive research work. Even though the universities and the polytechnical institutes are under the jurisdiction of the Ministry of Higher and Secondary Specialized Education; in essence they are close to academic institutes, than to secondary specialized educational institutions.

How to accomplish a closer contact between science and the training of the cadres--this must be examined in a concrete manner,

but such a contact is mandatory. The higher school workers must intensify their efforts substantially, in order to raise scientific work at the higher educational institutions to an even higher level. The State Committee of the Council of Ministers USSR for the Coordination of Scientific Research Work and the Academy of Sciences USSR are charged with fully evaluating the significance of the training of cadres, of achieving a rise in scientific work in the higher school and of maintaining a contact between education and science. This combination contains one of the principal conditions for a level of scientific development commensurate with the demands set forth by the tasks inherent in the building of a communist society.

I. N. Golikov, Director of the Central Ferrous Metallurgy Scientific Research Institute stated, "The Soviet scientists have attained the highest indices in the world in the intensity of utilization of the metallurgical aggregates. The increase in smelting of metal is accounted for not only by the introduction of new production capacities, but also by a better preparation of the raw material, an intensification of the processes, a perfection of the technology and the construction of the aggregates, as well as by mechanization and automation. Our country surpassed all the other countries, including the USA, by a considerable margin in the volume of natural gas used in blast furnace production. The most powerful industrial installations for the continuous casting of steel were constructed and are being placed into operation.

"During the past several years the scientists in the field of metallurgy made a considerable contribution to the technology of Soviet metallurgy. There are still a number of problems which must be resolved." The speaker stressed that every perfection and innovation must be accompanied by an economic evaluation. There is a clear lag in the economic investigations in metallurgy. With the great successes attained in the quantitative indices of metallurgical production the qualitative indices were somewhat neglected. It is therefore necessary to make a substantial improvement in the quality of the metal and in the variety of the products by providing the plants engaged in the production of high grade metals with new technology, to accomplish a wide scale implementation of vacuum processing of metals, the refining of steel with synthetic slag, the production of multi-layer metals and so on.

The Central Committee of our party, stated comrade Golikov, constantly orients Soviet science towards an intensification in the tempos of research and towards the most rapid implementation of the results yielded by scientific work into the national economy. For that purpose it is necessary to accomplish a further perfection in the planning and coordination of the scientific investigations. Under conditions of an agency system of jurisdiction of the scientific organization the head institute has no rights and is unable to exert an active influence on the various branch and specialized institutes, higher educational institutions and enterprises, which

are the executors, and the sovnarkhozes do not always provide the conditions necessary for the accomplishment of scientific research and especially for experimental work at the plants.

As a result the construction of experimental installations and equipment for semi-industrial testing of new technological processes frequently takes too long a period of time. The State Committee of the Council of Ministers ISST for the Coordination of Scientific-Research Works must clarify all these problems.

The way towards completed research projects as a rule lies through the designing organizations. To attain an organic contact between the design organizations, scientific institutions and industrial enterprises is one of the principal tasks confronting the entire coordinating and planning system.

Further the speaker discussed the tasks facing the central plant laboratories, where large engineering technical forces are concentrated. He suggested a reorganization of the central laboratories of some of the large metallurgical enterprises into scientific research institutes and to transfer a part of the research in the field of production to them.

S.N. Simakov, Director of the All-Union Petroleum Geology Scientific Research Institute is heard. Soviet geologists, he said, fully approve the resolution of the Central Committee CPSU and of the Soviet government concerning measures for improving the coordination in scientific research work in the country. It will extend considerable assistance to the scientists in the attainment of new, even greater successes in science and technology.

The Seven Year Plan for the development of the national economy, which demands a concrete rise in the share of petroleum and gas in the fuel balance of the country, confronted the geologists with a task of finding deposits of gas and petroleum which would not only satisfy the current needs, but would form a reserve for the future increase in the extraction of fuel.

Many tens of scientific institutions, laboratories and production organizations are engaged in the development of the scientific basis for oil prospecting work. The effectiveness of their work is sharply decreased by the fact that they do not coordinate their work. This leads to duplication and a dispersion of the cadres and weakens the laboratory-technical basis. Work in the investigation of the peculiarities in the formation and distribution of petroleum and gas deposits, for instance, includes the participation of 80 scientific collectives. There is, however, no unified research plan for that problem. The speaker suggested that research in the field be concentrated by a few outstanding scientific collectives, that work be organized according to a single plan, and that the collectives be provided with substantial laboratory facilities.

The scientists must develop scientific bases for the survey for petroleum and gas deposits at great depths, to develop a method for searching for such deposits.

The great scope of scientific investigations conducted at Kazakhstan is described by K.I. Satpayev, President of the Academy of Sciences Kazakh SSR. The scientists of the republic still have a lot to do, especially in the field of geology and mining, for Kazakhstan represents an inexhaustible storehouse of natural wealth of the Soviet Union, the assimilation of which is constantly increasing.

The republic is confronted with extensive problems associated with the development of grain farming and animal husbandry. An important role in the solution of these problems must be performed by the scientific institutions of the republic.

All this requires the creation of a series of new scientific-research institutes. This, stated the speaker, will demand considerable assistance from the State Committee of the Council of Ministers USSR in order to achieve a coordination in the scientific research work.

The Evening Session 12 June.

Academician A.P. Aleksandrov, Director of the Atomic Energy Institute imeni I.V. Kurchatova is heard.

"I was fortunate to work in a field where coordination, and a very strict coordination, was introduced from the very start: in the field of atomic science and technology. As you know a very substantial scientific basis was developed there in a very short period of time. A number of completely new institutes were created, the existing ones were expanded, and new branches of industry were developed. As already mentioned by Academician M.V. Keldysh, we assumed first place in the world in a number of branches of that science and are hopeful of preserving first place in the future.

The crux of the matter is that in that field scientific investigations did not become isolated from their technological implementation, which is now the case in a number of other fields of knowledge. During the time when the scientific elaboration was just beginning and the first practical features were barely outlined, at a time when a more or less unanimous opinion was forming that a practical development is necessary in this case and when the engineering work was just beginning. By the time the scientific research was completed, it was possible to start new production facilities, and very often that was done.

Such a coordination in science, when every logical decision by the scientists immediately received a practical development is the necessary style of work. I hope, said the speaker, that with the creation of a Committee for the Coordination it will become possible to make this possible in other branches of science as well.

The subject material of the institutes must be reviewed, leaving some of the more urgent subjects instead of the less urgent and outdated ones. But that does not mean that only highly practical problems instead of theoretical ones should be left. Without a

large amount of research work science is unable to develop. This type of work must be financed in a special manner, for no one will conclude contracts for highly theoretical research. They must be included in the state plan specifically as highly theoretical research. This work will assure a sufficient background for the scientific development of the next several years.

The determination of concrete directions of scientific research are of an exceptional significance in the coordination of scientific work. The institutes must be purged of all projects that are being conducted according to a methodology that has already been developed and the work amounts to an accumulation of facts and measurements. This type of work must be transferred to higher educational institutions and to branch institutes, and sometimes to the plant laboratories. It is possible to learn a lot from such work; they will do a lot of good for science and they must be continued, but not at institutes which must develop new horizons.

Academician A.P. Aleksandrov devotes special attention to the necessity of developing experimental bases at the institutes and state committees, to conduct a decisive substitution of the outdated equipment at the institutes with totally new equipment.

P.I. Abroskin, Deputy Chairman of the Council of Ministers RSFSR for the coordination of scientific research work also delivered a speech. After talking about the rapid development in the network of scientific institutions in the republic, the speaker then shifted to a discussion of problems concerning the implementation of new technology. There are many inadequacies in this field. Plans for the development and implementation of new technology in a number of sovnarkhozes and on the whole for the republic are not fulfilled. The development of the designs for mechanization and automation of production processes at the Magnitogorskiy, Kuznetskiy and Nizhnetagil'skiy metallurgical combines, for example, include the participation of approximately 200 design, construction and scientific research organizations. Despite that, however, this most important assignment is fulfilled in a satisfactory manner. The chief design office "Gipromez" delayed the development and release of the design assignment on this important problem by more than a year. A decisive condition for the further perfection in the planning and coordination of scientific work, stresses the speaker, is a conversion to continuous planning. The sovnarkhozes, enterprises, scientific research and design institutes, guiding themselves by such plans, will considerably improve scientific work and will assure the necessary scientific research background for the subsequent years. A comprehensive planning of the implementation of new technology must be directed at a resolution of the main tasks, which stem from a prospective plan for the development of science and technology in our country.

A.N. Yefimov, Director of the Scientific Research Economic

Institute of the State Economic Council of the USSR devoted his speech to the problems pertaining to the development of the economic science. He admitted that economic science still develops certain important problems in an inadequate manner and is greatly indebted to the government.

In order to overcome such a lag, it is necessary to concentrate the economists' energies on the development of the most important economic problems promulgated by the practical building of communism, to raise the organizational level and to adjust the coordination among the economic researchers as well as to liquidate some of the outdated methods of work. In connection with that the speaker mentioned the experience accumulated by the work accomplished by the Council of Economic Institutes of the city of Moscow, which was created over two years ago. That Council coordinates the research work conducted in a series of important problems--balanced methods of planning national economy, in the productivity of labor, in an analysis of economic activity and in other problems. Scientific commissions were created for work with those problems, they include the participation of over 200 leading scientists, workers from planning organs, sovnarkhozes and enterprises.

It was possible to coordinate far from all the problems facing economic research, however.

Comrade Yefimov stressed that in the development of the most effective methods for technological progress in the national economy a great role is performed by an organic contact between the technical workers and the economists. The enrichment of theoretical work in the field of economy demands a profound study of the economic life, which in turn presupposes a close contact with practical work and a logically arranged statistical information. In order to raise the quality of concrete economic investigations it is feasible to conduct experimental work, to pick out experimental-demonstration industrial enterprises, kolkhozes and sovkhozes and use them to check new conclusions of the economic science and new forms of labor and production organization. At the sovnarkhozes, as well as at a number of enterprises it is necessary to create economic laboratories, check points for economic institutes, which would work in close cooperation with the scientists-economists.

Academician S.A. Vekshinskiy said that good planning must consist specifically of the establishment of a continuous process--from the revelation of a new scientific truth to its daily practical application. The weakest link in this chain appears to be the stage associated with the implementation of scientific results into practice.

In investing money into science it is necessary to direct part of it for the construction of buildings, where the scientific research work could go through the necessary stages of engineering, design and technological processing, right up to the production stage; they should be sufficiently large so that it would be possible to attend to the design and construction of new plants and

new techniques on the basis of results yielded by the research work.

The party, the government and comrade N.S. Khrushchev attribute much significance to radio electronics and electronic engineering in our country. This is evidence by the fact that for the direction and organization of science in all of these fields central governmental organs have been established.

The speaker dwelled on those basic electronic components which go into the creation of various radio engineering, telemetry, computing machinery, automation and guidance systems, specifically: radio tubes, semi-conductors, condensers, electronic-ray tubes, memory elements, resistors and so on. The quality of those components must be constantly improved.

The present day stage of the development of technology throughout the world, continued Academician Veksinskiy, is characterized by an exceptionally extensive use of electronics. It literally revolutionizes technology, and makes what was impossible yesterday--possible today. There is no cause to have any doubts about our engineers' and scientists' ability to independently develop problems pertaining to electronics. We have more than enough examples of their abilities. But the matter of completing the technological development and bringing technological ideas in electronics to the stage of a mass production of reliable components is still far from satisfactory.

Academician A.A. Trofimuk stated that the embodiment of the concern of the Communist Party and the government for the development of science in Siberia and in the Far East, for bringing the scientific institutions closer to the rayons where a tumultuous assimilation of production forces is taking place, was the creation of the Siberian Department of the Academy of Sciences USSR. Over a short period of time, he continued, the Siberian Department created 14 institutes at Novosibirsk, expanded the scope of scientific research work at its affiliated branches. Very rich deposits of coal, iron ores, magnesite, an especially valuable deposit of diamonds, of non-ferrous and valuable metals were all uncovered in rayons of Siberia and the Far East. Over the great territory of the Western-Siberian lowlands a new very rich oil and gas province of the USSR is developing--a new base for the extraction of oil and gas. The prophetic words of V.I. Lenin are coming true about the inexhaustible nature of the mineral wealth of Siberia and the Far East. All these important discoveries are the result of a close cooperation between science and practical work by a large army of geologists, and drillers who carry out the surveys and the investigation of useful minerals.

The experience acquired by the work done by the Siberian Department indicates that combined and coordinated efforts of many scientific institutions accelerates the investigations, and assures a multilateral study of the problem with most effective results. This experience also serves as evidence that serious scientific

investigations may be successfully conducted not only in capital cities, but in many cities of Siberia and the Far East as well.

In carrying out the directions given by Nikita Sergeevich Khrushchev about the necessity of creating and enlarging the scientific institutions not only in Novosibirsk but in other cities of Siberia and the Far East, the Siberian Department confronted itself with the task of gradually converting the affiliated branches under its jurisdiction into complex institutes and groups which would be capable of carrying out independent research projects; they would be a special type of scientific centers which will not only study the production forces of their own territories, but would resolve general theoretical problems concerning the development of the corresponding sciences.

A.A. Trofimuk continued: "We, the scientists of Siberia, clearly realize that the unprecedented scope of scientific research that is taking place in the eastern part of our country could not have been possible without the day to day attention devoted to it by the party and the government and personally by N.S. Khrushchev. During all the stages of the organization and development of the Siberian Department we felt and are feeling this tremendous assistance."

B. Ye. Paton, Director of the Institute of Electric Welding of the Academy of Sciences Ukrainian SSR stated that Soviet welding science and technology achieved considerable success during the past several years. Welding permitted the introduction of revolutionary changes into a number of branches of industry and construction. In 1960 millions of welded products were manufactured in the Soviet Union. The level of mechanization in welding work was raised sharply through the introduction of new methods of welding and the development of the existing methods. A considerable economic effect was achieved, estimated in millions of rubles in the new currency.

Achievements in this field could have been greater had there been a more rational organization of scientific research, a better coordination and a closer contact with industry. The speaker considers it feasible for the State Committee of the Council of Ministers USSR for the Coordination of Scientific Research Work to rely on a network of head institutes in some of the most important branches of science and technology. Coordination in a certain branch of science or technology must be achieved through their offices.

The head institutes, in coordinating scientific research, must at the same time develop recommendations for the development of a given branch of technology, and for the production of a certain type of equipment and materials, necessary for implementing the results yielded by research. Coordinating councils staffed by workers from the state planning organ and by scientists with the appropriate background must be established at the head institutes.

In order that the decisions of the coordinating council would not remain on paper, it must be made mandatory for the executors. For that purpose it would be feasible to transfer a part of the functions performed by the State Committee for Coordination, those pertaining to the financing of scientific-research work, to the coordinating councils.

The head institutes must become centers for a close creative collaboration between the scientists and the production workers; they must be responsible for conducting the technological policy in a given branch of industry.

The State Committee for Coordination will be responsible for coordinating some of the more important projects that are on the border line between various branches of science. It would also be feasible to create temporary coordinating commissions for the solution of various important problems. The State Committee must pick problems which are of a decisive significance for the development of the national economy of our country and exercise special control of the solution of such problems.

The Morning Session 13 June.

N.N. Blokhin, President of the Medical Academy of Sciences USSR in his speech stated that the development of Soviet science is closely associated with the preservation of public health and with medical tasks, and that extensive success was attained in that field.

The speaker stressed that the report delivered by Academician M.V. Keldysh, President of the Academy of Sciences USSR correctly defined the tasks confronting medicine and biology. In part they consist of a study of the micro structures of the cell, the relationship of the virus to the cell and of various other profound problems pertaining to the structure of the living organism. On that basis it is necessary to achieve an amalgamation of medical workers, biologists, physicists and various other scientific specialists. The creation of a State Committee for the Coordination of Scientific Research projects opens up great possibilities for that work, said the scientist.

There are serious complaints against the medical industry which fails to adequately handle the production of new drugs, developed by the scientific institutions and of new equipment. A series of exceptionally important drugs, created by the chemists in collaboration with the biologists and medical workers, are not being manufactured because the sovnarkhozes consider it too much trouble and too unprofitable to undertake the production of new drugs.

"In the course of the recently conducted session organized by our academy," continued N.N. Blokhin, "we discussed problems concerning the coordination in medical science. In our opinion the Academy of Medical Sciences must concentrate its efforts primarily on the development of basic medical problems. Special attention should be devoted to a more comprehensive development of scientific research at the higher medical educational institutions."

A speech was delivered by V.A. Ambartsumyan, President of the Academy of Sciences Armenia. Science, he said, is the basis for a continuous progress for all branches of the national economy. Important scientific centers have now been established in all of the republics. Coordination in the work of the republican academies is necessary so that they would not duplicate each other's work, but would supplement each other.

Academician V.A. Ambartsumyan then discussed certain other problems pertaining to an improvement in the training of cadres and in the organization of the efforts of the scientific workers. He expressed an opinion in favor of granting the directors of research institutes the power to determine wages depending on the type of research work being done, which would be conducive to a development of creative initiative among the scientists, and to an increase in the productivity of labor.

The speaker supported the suggestion made by comrade Aleksandrov, rector of the Leningrad University, regarding a closer contact between the higher educational institutions and the scientific institutes. Such a close relationship was recently established between the Yerevan University and the republican academy. The scientists of the academy are drawn into reading lectures along with the staff instructors and lecturers from the university. The scientific councils of the university now include representatives from institutes or from the various branches of the academy. The university students work in the laboratories of the institutes of the academy.

The system of supplying the institutes with equipment is still inadequate. It must be taken into consideration that many of the requirements of the scientific institutions come about not in accordance with the lists drawn up by the supplying organizations and even by the State Planning Commission.

Academician V.A. Kargin spoke about important problems involved in the development of scientific research in the field of synthetic materials. During the period of time since the May (1958) Plenum of the Central Committee CPSU, the situation in the field of polymer chemistry underwent some radical changes. We made considerable progress in our research in the problem concerning polymers. We already have premises to start creating new polymers with the necessary qualities.

We are being confronted with new tasks associated with a re-working of polymer matter. Polymers must be converted into products by means of effective methods which would assure their durability. It will be necessary to resolve problems concerning an improvement in the quality of natural polymers, for example in the modification of lumber and natural fiber. Finally, a scientific study of the biological activity of polymers is of the utmost importance. That is necessary in order to clarify the processes which form them and lead to their destruction, and to obtain a possibility to exert an active influence on the life processes. It is quite

possible that within the next several years that task will become one of the most important ones.

The speaker discussed a number of organizational problems pertaining to scientific development and pointed out the necessity of improving the system of supplying the scientific institutions with various equipment and tools. In criticizing the lack of coordination Academician V.A. Kargin stressed that in order to achieve successful coordination the distribution of scientific forces must be improved, it is also necessary to concentrate work on urgent problems in some of the largest and best qualified collectives.

Academician A.V. Palladin stated: "The scientists of Ukraine, just as the scientists of the entire country warmly approve the resolution made by the Central Committee CPSU and by the Council of Ministers USSR 'Regarding measures designed to improve the coordination of scientific research work in the country and at the Academy of Sciences USSR,' regarding it as a new expression of the concern of the Communist Party and the Soviet government for the development of Soviet science."

The speaker talked about the significant successes which were attained by the scientists of the Ukrainian Academy of Sciences and about the strengthening ties between the academy and production. He also pointed out certain serious inadequacies evident in the work of the Academy. Not infrequently it is possible to encounter petty subjects, of a branch nature, which belong in the plant laboratories or the branch institutes, being studied at the academy.

At the present time the presidium of the academy is conducting a review of the subject material occupying its institutes in order to make the necessary corrections. If it turns out that the work at some of the institutes is really of a branch nature, it will be transferred to the appropriate agencies.

The coordination of the most important complex scientific research projects on a national scale is delegated to the State Committee of the Council of Ministers USSR. At the same time a coordination of work conducted at the republics is also important. For that purpose, and particularly in the Ukraine, according to the speaker, it is necessary to organize a republican committee for coordination of science with the Council of Ministers Ukrainian SSR.

Further, Academician A.V. Palladin talked about the necessity for a more comprehensive system of training the young cadres, who are badly needed at the Ukrainian Academy of Sciences, and mentioned the necessity of providing the scientific institutions with modern equipment and of developing further the instrument building industry supplying the scientific institutions.

D.D. Brezhnev, Vice-President of the All-Union Academy of Agricultural Sciences imeni V.I. Lenina in his speech stated that the January Plenum of the Central Committee CPSU confronted our science with a task to develop measures that would assure high yield harvests of agricultural crops under any climatic or weather

conditions. The successful resolution of this important task is possible only with an active participation of scientists from various specialized fields, and of entire groups of researchers.

It is known that in our large country with its great variety of climatic conditions there are instances of winter killing of winter grain crops, droughts, damage by agricultural pests and plant diseases. Science must mount a widescale attack against these phenomena. The struggle against the winter killing of winter grain crops is impossible without the participation of chemistry, biochemistry and genetics. There are no special physiological, biochemical, biophysical, genetical, cytological or other special institutes in the system of agricultural scientific institutions.

The interests of agricultural production demand that we learn how to control the processes taking place within the cells of plant organisms. It is quite clear that without an active participation of "the big science" these problems cannot be resolved quickly and successfully.

D.D. Brezhnev then said that agriculture needs new types of mineral fertilizers. The most common fertilizer that we use is superphosphate. It contains a considerable amount of inert substances. The chemists must give agriculture more economic, highly concentrated fertilizers.

Every year agriculture suffers extensive damage from pests and plant diseases as well as from weeds. Unfortunately at the present time there are very few new weed killers and toxic chemicals. If the scientist-chemists extend their assistance in the solution of this problem, they will thereby provide a possibility to considerably increase the production of grain.

A great reserve for increasing the production of meat and other livestock products lies in an increased digestibility of the feed.

D.D. Brezhnev supports the suggestion made by M.V. Keldysh, President of the Academy of Sciences USSR directed at a consolidation of the ties between biological sciences and agricultural production.

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Academician P.N. Fedoseyev; Academician N.M. Sisakyan; A.K. Vorob'yev, the Director of the Tomsk Polytechnical Institute; N.A. Shumilova, Deputy Director of the Institute of Electrochemistry of the Academy of Sciences USSR; A.G. Iosif'yan, Director of the All-Union Electromechanical Scientific Research Institute and I.I. Grivkov, Chairman of the Central Committee of the Trade Union of the Higher School Educational Workers all delivered speeches during the morning session.

The evening session included the participation of Academician V.A. Trapeznikov; F.D. Voronov, Chairman of the Chelyabinskiy sovnrarkhoz; Academician M.B. Mitin; Yu. Yu. Matulis, President of

the Academy of Sciences Uzbek SSR; Doctor of Physical Mathematical Sciences N.G. Basov; Deputy Director of the Physical Institute imeni P.N. Lebedeva; A.V. Sidorenko, Chairman of the Presidium of the Kol'skiy Affiliate of the Academy of Sciences USSR, and a corresponding member of the Academy of Sciences USSR; K.N. Plotnikov, Director of the Institute of Economics of the Academy of Sciences USSR, and a corresponding member of the Academy of Sciences USSR.

The conference of scientific workers is continuing today.

NATURAL SCIENCES ARE THE SOURCE OF TECHNOLOGICAL IDEAS

✓ Following is the translation of a speech by Academician L.A. Artsimovich in Ekonomicheskaya Gazeta (Economic Gazette), 14 June 1961, page 2. ✓

Soviet science and the new branches of technology that are developing on its basis have attained considerable success. Satellites and cosmic ships, created by the genius and determined work of the Soviet people, were first to overcome the pull of gravity and penetrate into the silent depth of interplanetary space.

Voyages by the famous navigators of the past—Columbus and Magellan, will be forgotten before the first flight around the moon or man's first venture into the cosmos will be.

We also have a number of important successes in other branches of sciences, even though perhaps not as spectacular, such as those in the matter of the application of atomic technology. In the stage, however, in which our great country presently finds itself, the Soviet people have a right to confront the scientists with new, more substantial demands. During the period of the building of communism, during the decisive phase of the competition with the capitalist system, our science must reach first place not only in the assimilation of the boundless space of the cosmos, but also in other main directions in the study of nature.

At the present time the basic sources of new scientific ideas are the latest victories of science and primarily, those victories which apply to the precise sciences—mathematics, physics, and chemistry, sciences that form a foundation for present day knowledge of nature. Therefore in order to be first in the field of industrial production and to have the highest technological potential in the world, we must assume first place specifically in those fields of science, on which depends our future technological progress.

The most important source of ideas, which brings radical technological transformations, is present day physics. As a result of an unusually rapid development of physics, we are now facing the amazing world of atoms; while the investigation of the laws governing atomic phenomena granted man mastery of gigantic sources of energy.

The process of physics' penetration into the depths of the atom was naturally followed by a process of practical application

of the new discoveries. Present day radio electronics and television came about in this manner, as well as atomic engines and radioactive isotopes. At the present time, however, we are still only starting to use this gigantic store of new knowledge, which was accumulated by physics in the study of atomic structure, hard bodies, gases, liquids and so on.

Even though it is impossible to foresee the numerous applications which will become possible with time on this fertile soil, some of them are even now becoming crystallized.

One of the foremost ones among them is the great task of achieving control over thermonuclear fusion. Its solution must provide man the key to the utilization of the inexhaustible supply of atomic energy, which is contained in ordinary water. This is an exceptionally complex task. In order to be able to start a placid thermonuclear reaction, it is necessary to maintain a super-stellar temperature of several hundred million degrees. This is what presents the main difficulty, since the heated matter (the so-called hot plasma) strives to counteract the high temperature it is subjected to by all possible means. The plasma locked in the nuclear reactor is a most unstable object, which is hard to maintain in balance and to prevent it from touching the walls. Therefore the scientists who start working in the field of thermonuclear fusion and encounter this instability, are approximately in the same situation that is encountered by a man who attempts to ride a unicycle for the first time, never having seen even a two wheel bicycle.

Work in the development of methods for achieving controlled thermonuclear reactions is already going on for some 10 years in the Soviet Union. Despite a number of successes that were attained we are still far from our goal, which is also the case with our colleagues working abroad. There is no doubt however that in the end this task will be resolved, and we shall devote all our energies to make sure that Soviet science is in the forefront in this field.

Among some of the other significant contributions to practical work, the completely new trends in the application of the laws governing the atomic world should be pointed out. They may be called atomic radio technology (it is sometimes called quantum radio physics). The meaning of that term is easy to explain. Even at the beginning of our century it became clear that each atom represents a very small radio station which is entirely hidden in an external electronic shell. For a long period of time no one thought of using that peculiarity of the atoms, by making them oscillate in rhythm and to transmit a flow of radiation. This idea originated comparatively recently; in our country it was evolved by two young Soviet physicists Prokhorov and Basov.

At the present time it is becoming quite clear that the new atomic radio stations are capable of bringing about a true revolution in the science of communication. With their assistance, it will apparently be possible to create very fine needle sharp and at

the same time exceptionally powerful beams of electromagnetic waves and light rays; by using them it will be possible to transmit signals far beyond the borders of the solar system, over distances of many millions of kilometers. For science fiction fans I would like to point out that the needle sharp beams emitted by the atomic radio stations are a peculiar realization of the idea of "hyperboloid of engineer Garin." It must be supposed that things will move faster here than with thermonuclear fusion, and within the next 5-10 years atomic radio stations will assume their appropriate position in practical life.

It is also possible to point out many other directions taken by modern physics which already show many potential practical applications. Extensive investigations in the field of the physics of metals lay a path for significant progress in the acquisition of metals of extraordinary durability.

High pressure physics resolved the problem of creating artificial diamonds and is moving towards the creation of new, super hard materials with a high temperature resistance.

The physics of plasma, which became developed in connection with the problem of controlled thermonuclear reactions, penetrates from various directions into the field of different practical applications and presents possibilities for developing various methods of transforming heat directly into electricity. The flow of ideas which pass from physics into technology is growing with every year, and at the present time it is really possible to say that present day physics is the technology of tomorrow.

At the present time the number of possible applications may not even be guessed, since a significant part of them will be completely unexpected. It must be stressed that the golden apple of success frequently appears on the most obscure little branch of the mighty tree of science. It is therefore necessary to pay attention not only to the various branches, but to the main trunk as well from which the various branches of science are attached. At the present time in physics such a trunk is the study of the characteristics of the elementary particles of matter and of the laws governing their interaction. These investigations in themselves do not yet have any practical applications, but they are associated with a most profound penetration into the structure of matter and with an expansion of the general scientific foundation, which serves to support our outlook, and in the future will serve as a basis for still unknown branches of technology of the communist society.

In order to make certain that the flow of fruitful ideas which science supplies to practical work, does not dehydrate, it is necessary to devote special attention to research of a basic nature, which stems from the iron logic of the internal development of science, since such basic research in the end serves as the true source for all practical applications.

At the present time science, and in particular the study of

nature, is becoming one of the basic forms of man's activity. After several decades there will be more mathematicians and physicists than lathe and milling machine operators, and many more chemists than railway engineers.

The very nature of scientific research is also changing. Science is becoming industrialized. A large number of scientists, engineers and skilled workers of various specialties are working together at very large installations, such as the modern accelerators; they form unified groups where everyone makes a contribution to the overall successful development of science.

The financing of science is becoming a concrete element of the state budget. It is necessary to state directly that scientific research today is not cheap. That is not surprising, since everything that could be discovered without too much difficulty was discovered long ago, and at the present time it is necessary, so to speak, to blast through very hard rock at great depths. It is natural that under such conditions as these problems concerning organization of scientific research and their coordination on a national scale acquire considerable significance. Up to the present time we have had considerable inadequacies in that respect. One of them is contained in the principle of "an equal share for everyone," which is practiced in appropriating funds for scientific projects. Juggling funds and cadres in order to accelerate work on some of the more important projects is usually not done.

The structure of various scientific institutions does not correspond to the present day state of science.

Certain institutes consist of a number of poorly coordinated laboratories, each one of which aspires to isolate itself from the others and becomes transformed into a petty-property holding with permanent buildings and equipment. Under such conditions it is very difficult to change the subject material and to confront them with new tasks. People acquire tenacious habits and are caught in work which has frequently lost its significance and become specialists in some very narrow field.

It seems to me that it is necessary to give some serious thought to organizational measures, which must liquidate this ossification of the organism of the large scientific institutions and will make them more mobile. This applies both to the Academy of Sciences of the Union as well as to the scientific institutions under other jurisdictions.

One of the sore subjects for Soviet physics is the supply of scientific equipment, apparatus and special materials. I will not dwell on this at length, since that problem will undoubtedly be mentioned by many comrades. I will only say that in my opinion the solution of the problem demands the creation of a special branch of industry under centralized control, and, in addition to that, of a production basis with the Academy of Sciences of the Union and directly with the various institutes that would manufacture special

material required for various research projects.

The newly created Committee for Coordinating Scientific Research will have to solve some complex problems. The most important one that demands early attention is the selection of those sectors of research on the most pressing problems, which is now being conducted by the great variety of scientific research institutions in our country, and to assure that such research is carried out as quickly as possible.

Conditions conducive to the development of science have now been evolved in the Soviet Union to an extent undreamt of several decades ago. In essence we have everything that is necessary to lead Soviet science to a position of world leadership within the next 5-10 years in all the main directions which determine the tempos of the building of a communist society and on which depends our competition with the capitalist system.

No one has any doubts that this is our principal common goal at the present time.

With the extensive and continued assistance extended to Soviet science by the Communist Party, by the government and by the entire great Soviet people, that goal will be attained.
(Applause.)

THE TRAINING OF PERSONNEL IS A MATTER OF UTMOST
IMPORTANCE

Following is the translation of a speech by
corresponding member of the Academy of Sciences
USSR A.D. Aleksandrov in Ekonomicheskaya Gazeta
(Economic Gazette), 14 June 1961, page 2. /

Among the problems pertaining to the coordination and planning of scientific work, the training of personnel and scientific work in the higher schools is a matter of considerable importance. The principal motive force in the development of science is specifically the scientific personnel, their work and their creative efforts. Therefore, in thinking about the future of science, we must show special concern for the training of scientific personnel and expand the influx of talented young people into science, perfect their scientific education as well as create the best possible conditions for their scientific development.

In talking about basic research it is necessary to keep in view the fact that we are laying a path towards something that is still unknown. Such research is difficult to plan. Therefore it is necessary that we show concern for the establishment of conditions that would assure the most rapid progress in that field.

One of the most important, and it may be said, decisive conditions is the education of scientific youth, which will be charged with the task of delving into the unknown of the scientific future.

In his report M.V. Keldysh stated that the development of heavy industry must be ahead of the development of the production of consumer goods, just as the development of heavy industry itself must be somewhat behind the development of technology, and the development of technology, in turn, must be behind the development of the precise sciences. It must also be added that the development of science itself must be a step behind the numerical and qualitative expansion in the training of the scientific personnel.

The relationship between scientific work and the training of personnel is in a way analogous to the relationship of the production of consumer goods to the production of the means of production: if the specialized scientific institutes provide the scientific products of today, then the future of scientific production will be determined to a large degree by those personnel which we are now training.

A basic link in the training of scientific personnel, producing not only average but outstanding scientists, is the higher school. Therefore the level of higher education comprises one of the decisive conditions for future success in science.

The most progressive science must be taught at the higher educational institutions; they must be especially oriented towards the future, since it is the students of today who will develop the science of tomorrow. If a capable young man fails to obtain modern scientific knowledge or creative incentive while attending the higher educational institutions, after becoming a member of an academic institute he will have to continue his studies, thereby losing precious time and energy of youth.

The scientific worker of the future must be educated from his very first year at a higher educational institution. Otherwise the task outlined in the report concerning the availability of more doctors of science, cannot be carried out. In speaking about the development of higher education and of science, I would like to stress the role of the universities, since its graduates form a pool not only for the selection of scientific workers for various fields of knowledge, beginning with mathematics and physics and ending with semantics and history, but which also serves as a source for the selection of teachers of the basic theoretical disciplines for all of the higher educational institutions of the country. Therefore a rise in the level of university education is the most important element in the development of higher education as a whole. The basic condition for a successful training of scientific personnel is a continuous tie between education and science.

In the first place it is only the contact with practical work, in this case with scientific work, that will permit the development of a specialist who will not only be familiar with the subject matter, but, and this is very important, will be able to work. This principle of a contact between education and work is at the foundation of the reorganization of the higher school, and therefore that reorganization will perform a decisive role in improving the training of the scientific personnel.

In the second place, it is only the instructor who himself is actively engaged in science, who is capable of teaching it to a student in its true form, to arouse scientific interests in him, and to develop the desire and the ability to think and work independently.

In order to be the center of education for creative young people, the higher educational institution must be the center of creative work where the teaching is organically combined with scientific research, with an aspiration to attract students to scientific work on urgent problems with modern equipment.

Therefore the rise in the level of scientific work in the higher school is of a decisive significance, and it must be stated that in that field much was done and is being done. We at the Leningrad University clearly feel how, due to the concern shown by

the party and the government, the matter of scientific work has shown a considerable improvement. It must be said, however, that the historic differentiation and even a contradiction between science and the training of personnel still exists, which is not in favor of the higher school. This is manifested in various forms. The work of a scientist is, for example, appraised exclusively on the basis of his personal scientific achievements, whereas the accomplishments of his students are of no less importance, nor is the scientific school which he created.

The staff system of the institutes observes a separation of the scientific and the teaching personnel, and the size of the teaching staff is determined only on the basis of the number of students without consideration for the content and scope of the scientific and even educational work and training of the post-graduate students. Such a system is not conducive to the development of scientific work and leads to the overburdening of the instructors.

A comprehensively democratic approach is needed in scientific research and in the evaluation of the work, which opens the way into science for everyone according to his abilities and the results that are obtained.

The withdrawal of some of the leading scientists from the higher educational institutions causes serious concern. After the practice of holding several academic appointments by any one person was liquidated many of the leading scientists left the higher educational institutions, even when they were engaged in basic research there, for work with the scientific institutes. For example, a significantly large group of professors withdrew from the mathematical departments of the Khar'kov and Leningrad Universities. And if a university scientist attains a level where he is elected to the Academy, it is a virtual certainty that he will transfer most of his work there or that he will leave the university altogether.

By luring away the best talents from the universities, the Academy jeopardizes its own source of talent, for it will recruit its young cadres from the higher educational institutions, and if they no longer have any outstanding scientists left it will reflect negatively on the educational level of the young graduates.

Why does this happen? Because the working conditions at the Academy are much better. Compare the scientific assignments at the Academy with those at a university for each worker and you will find that at the Academy they are of a much greater scope. There are more possibilities at the Academy to attract young workers, and there is no "academic" load. It is apparently not enough to point out that it is to the advantage of the Academy itself for the outstanding scientists to remain at the higher educational institutions; it is necessary if not to equate the working conditions at the Academy with those at the Institutes at least to diminish the existing differences, which are particularly striking at the provincial higher educational institutions.

The variety of a higher educational institution which includes all the branches of a single science in a single department which in turn is a part of a number of departments devoted to various sciences is very fruitful for scientific communication, and for a contact among the various branches of science. Such a comprehensive nature and a variety of trends is not enjoyed by any specialized scientific institute.

This advantage is particularly apparent at the universities: every full scale university resembles an entire academy, even though perhaps it is smaller in size. I would particularly like to stress the combination of letters and sciences there. This combination acquires a constantly increasing significance. At the Leningrad University, for example, it permitted us to start training specialists in the mathematical methods of economy and allowed us to organize groups engaged in the study of mathematical linguistics and of its practical application, all for the first time in the Union.

An invaluable advantage of work in a higher educational institution is contact with young people: for the scientist it creates a refreshing atmosphere and allows him to constantly attract fresh forces to science and opens up an invaluable possibility to create his own scientific school, whose influence is disseminated throughout the country by the graduates of the higher educational institution. The attraction of students, aspirants and instructors to scientific work permits the development of new directions at the higher educational institutions with a smaller specialized staff, with fewer expenses, and with other similar conditions it yields a considerable effect; all these advantages of the higher educational institutions must be utilized.

The Academy of Sciences appears as a predominantly closed organization, whereas it would have that much more significance if it amalgamated the scientists, working at various locations, thereby conducting an active coordination and influence on scientific work.

It is not necessary to attempt to concentrate scientific efforts and funds in a single agency, breaking ties with practical work and with the training of personnel. Instead of electing a professor from a higher educational institution to the Academy, it would be better to leave him where he is and given him additional funds and opportunities for scientific work.

The various institutes of the Academy must not be closed. Its leading workers must leave the center to deliver lectures, engage in consultations and conduct seminars. At the same time such institutes should accept people from other institutes and higher educational institutions for temporary work, so as to give them an opportunity to work in an atmosphere of an intensely scientific center. Such a lively exchange, an active coordination will only serve to expand the Academy's role and will have a concrete effect on the level of scientific work everywhere as well as on the training of the highly skilled scientific cadres.

One of the methods for amalgamating science with education must be the creation of complex scientific-educational centers, which combine the training of the cadres with extensive scientific research. This is particularly important for the so-called peripheral area, in order to decrease the lag between it and the center.

It also should be noted that even though the universities and the politechnical institutes are under the jurisdiction of the Ministry of Higher and Specialized Secondary Education, they in essence resemble the institutes of the academy more than they do the secondary educational institutions.

These methods for bringing about a closer contact between science and the training of personnel must be regarded individually in the light of each particular situation, but on the whole they are necessary. The State Committee for Coordinating Scientific Research Work and the Academy of Sciences must make a full appraisal of the significance of the training of personnel and of the significance of a rise of the level of scientific work at the higher educational institutions, as well as the significance of a contact between education and science.

Such a contact is one of the most important conditions for the development of science to a level commensurate with the tasks involved in building a communist society! (Applause.)

DECISIVELY IMPROVE THE COORDINATION OF RESEARCH WORK

Following is the translation of a speech by Academician S.A. Vekshinskiy in Ekonomicheskaya Gazeta (Economic Gazette), 14 June 1961, page 2. ✓

A great role in the development of our country, its culture, technology and production is performed by Soviet science, whose progress was and is continually receiving attention from the party and the government.

There is no need for me to dwell on an enumeration of the achievements made by our Soviet science, which we are proud of and which have brought it to one of the leading positions in the world.

I would like to talk about one general task pertaining to the development of science, which, it seems to me, is a great limiting factor in the effective utilization of scientific achievements and in a further rise of our national economy.

That task may be called the task of implementing scientific results into practice.

For every one of us science appears as a continuous process: study of nature, the application of the results of such studies to a solution of economic and technological problems and, finally, a day to day application of the scientific and technological achievements to attain a more effective and higher quality production of various valuable items.

In our country science was and is enjoying our party's and government's boundless faith. It is held in great esteem by the people. But in order for science to be effective and to yield rapid returns to the government in payment for the credit so generously extended to it, it must be a continuous process from the moment of the discovery of new natural phenomena, their generalization and the formularization of the natural laws, right up to the last phase, i.e. up to its implementation into production, the creation of new processes, materials, products and so on.

The task of good scientific planning must consist of achieving such a continuous process--from the incubation of a new scientific truth to its day to day utilization in practice.

Any break introduced into this natural process of scientific development, be it conscious or unconscious, results in a loss of time and consequently acts as a hindrance to further scientific development, and to the acquisition of new economic and social results.

As shown by practice, the weakest link in the consecutive stages of scientific development is the stage associated with the implementation of scientific results into practice. It frequently happens that precisely at the moment when scientific work reaches a stage where it is ready for practical utilization in industry, we suddenly show a lack of faith and foresight and the natural process of development is interrupted.

The government extends credit amounting to many millions to science. This is credit for scientific sowing. How wisely that credit is used and how soon the scientific expenditures will bear fruit depends on us, the scientific and economic workers.

In investing funds in science it is necessary to direct part of them for the construction of buildings where the fruits of scientific research that are not yet ripe for industrial application could ripen to maturity, where they could go through the necessary stages of engineering, design and technological processing and be molded into experimental products, large enough to make it possible to design new plants and new technology based on results yielded by them.

Unfortunately at the present time these last stages of scientific process are not stipulated in our plans.

It is true that in a planned economy there cannot be and there are no cases of industrial enterprises working at less than full capacity, and any attempts to implement something new at the operating plants, in essence means the exclusion of a portion of some production process that is still needed.

In the worst case, when it is impossible to find room at a plant we begin searching for a geographical point, conducting geological surveys, designing industrial buildings and finally end up spending years on the construction of those buildings which should have been ready by the time the research project was completed.

We must demand that our planning organizations appropriate funds for the preparation of those bases which will be invariably needed (experimental plants, experimental workshops, design bureaus, technological laboratories, testing stations, proving grounds) and the creation of which must not be a day late, using the usual excuse that it is not known what the end requirements will be for equipment and apparatus.

There is no reason to fear the freezing of funds in this case, since even now there is a large backlog accumulated at the scientific research organizations, which is getting old in the archives, due to an absence of bases which could successfully conduct the technological and engineering processing and could organize experimental production, without interfering with the normal activities of the existing enterprises.

It is hardly possible to approve a thesis which is being promulgated by some of the comrades, that the production of any material valuables must be constantly rejuvenated and reorganized on a basis of new scientific discoveries and achievements.

If such a point of view is assumed without an argument it is then possible to fall prey to an incongruity which is brought about by a complete rejection of a standardization of the manufactured products, of an even improvement in the quality of the products, of an increase in the productivity of labor and of a decrease in the cost of production. By manufacturing some single type of product for a sufficiently long period of time the plant itself comes to resemble a research organization developing scientific and economic bases for a more effective production of that particular product. The elimination of a process which it has become use to, which was used to train specialists and was progressively developed, and its replacement with some new type of production only leads to increased costs involved in eliminating the old processes and in the reconstruction required to accommodate the changes. It would be much more economical to evolve new production processes by developing and expanding those experimental bases which must be created in science and which would serve as a basis for completing the final stages of scientific projects, instead of "pouring fresh wine into old skins."

S.A. Vekshenskiy devoted the remaining part of his speech to problems pertaining to the development of electronics.

The speaker pointed out that the failure to fully evaluate the need for a much more comprehensive and broader front for scientific research and technological design work in the field of electronic instrument building by the planning organizations and state committees leads to a situation where many elements of electronics are implemented into mass production long before they are technologically ripe, because funds were not appropriated for their full development, for the organization, equipment and distribution of specialized technological laboratories, institutes and design bureaus. At the same time the development of new electronic elements demands the creation of radically new machines, automatic machinery, units and installations which must be built with the participation of specialists who work with those elements.

The savings derived by the government by increasing the reliability, durability and technological soundness of basic electronic devices, even with considerable expenditures for the organization of new laboratories and institutes, will very quickly justify any such expenditures.

TO NEW HEIGHTS OF SCIENCE

Following is the translation of an unsigned article in Izvestiya (News), 15 June 1961, pages 1 and 4.

It is morning, 13 June. People are walking towards the Large Kremlin Palace, ordinary Soviet people, whom we meet every day, every hour. Are they really ordinary? No, we know that these are people who built the satellite ship which carried the first cosmonaut around the earth, whose creativity lives in the reactors of the atomic ship "Lenin"; these are people who study the mysterious birth of galactic systems and the laws governing cell life; these are people whose activities are a source of pride for the Soviet people and for all of their friends throughout the world.

The All-Union Conference of Scientific Workers is continuing at the Large Kremlin Palace. A report delivered by the President of the Academy of Sciences USSR, M.V. Keldysh, is under discussion.

Academician V.A. Ambartsumyan, President of the Armenian Academy of Sciences is heard. Frequently, he said, it is difficult at first to fully evaluate the significance of a fresh project. For instance studies of the change in the light intensity of the dim stars, which did not stipulate any discoveries, led to the discovery of a new type of explosion, which over a period of several seconds releases billions of times more energy than is released during the explosion of a hydrogen bomb.

Academician Ambartsumyan stated that the development of the republican academies of sciences must be closely associated with national economic interests of the republic. At the same time we must strive to have original and individual research trends in each republican academy.

The scientist then talked about the great harm caused by an attitude of complacency among the research workers, and about the necessity to keep improving the productivity of scientific work. In connection with that it is necessary to expand the rights of the management sections at the scientific institutions. In addition to the regular staff other scientists should be invited to work on a temporary basis at certain individual projects. That would be of benefit to the young people and would create a turnover among cadres at the scientific institutions.

Academician V.A. Kargin, at the beginning of his report pointed out the achievements made by polymer chemistry. The current

scientific task is the search for methods of processing polymer substances. So far we are still at the initial point in this respect, he said. Polymer chemistry in its rate of development is now second only to nuclear physics and chemistry. Then he dwelled on the further development of polymer chemistry and its relationship to methods of planning, which at the present time are rather inadequate. It is necessary to change the bulky forms of accounting for completed research projects. The true index of an institute's work is completed work and not voluminous reports.

Academician V.A. Kargin is against the dissemination of work on important problems among numerous scientific institutions. Research projects that lack perspective must be discontinued, he said.

Academician A.V. Palladin was also heard; he is the President of the Academy of Sciences Ukrainian SSR.

He reported the significant successes attained by the scientists of the Ukrainian Academy, and the Academy's strengthening ties with production. At the same time he pointed out the inadequacies in the work conducted by the institutes.

Coordination of the most important complex of scientific research work on a national scope was delegated to the recently established State Committee of the Council of Ministers USSR. Coordination of less important projects conducted at the various republics is also important. Academician A.V. Palladin is of the opinion that for that purpose it is necessary to organize a republican commission with the Council of Ministers Ukrainian SSR.

The scientists working in agriculture, along with personnel from the kolkhozes and sovkhoses are struggling for a resolution of the tasks set by the January Plenum of the Central Committee CPSU, said D.D. Brezhnev, Vice-President of the All-Union Academy of Agricultural Sciences imeni V.I. Lenina, in his speech at the conference.

Comrade Brezhnev mentioned some of the most important tasks which must be resolved by scientific workers. In order to resolve all the complex and numerous theoretical and practical problems pertaining to agriculture, the speaker said that it is necessary to unify the efforts of the scientists.

P.N. Fedoseyev, Director of the Institute of Philosophy of the Academy of Sciences USSR is heard next.

The forthcoming 22nd Congress CPSU, he said, will be an outstanding landmark in the development of problems dealing with scientific communism. The economists, philosophers and historians must demonstrate Leninism in action; they must create works about the Leninist stage in the development of Marxism, about its role in world history, about the tremendous contribution made by the Soviet Union and by the fraternal parties to the creative development of Marxism-Leninism.

In his speech Academician N.M. Sisakyan, secretary of the section of biological sciences, told about the great perspectives

that exist for the further study of the phenomena of life, which are opening up before biology in connection with the large scale creative utilization of the achievements of physics and chemistry. Exceptional significance for further progress in biology is acquired by the provision of research work with modern equipment, as well as with specialists in biology trained in new, fine and precise methods of research.

Of no less significance is the role of biology in the assimilation of cosmic space.

A decisive stage in such research was man's first flight into the cosmos accomplished by a heroic son of our Homeland--Yuriy Alekseyevich Gagarin.

The results yielded by research that was conducted led to the acquisition of not only numerous new and important scientific facts, but it also made possible an outline of the prospectives for the solution of biological questions pertaining to future interplanetary ventures.

The role performed by scientific centers in Siberia in the general upsurge of industry and agriculture in the eastern rayons of the country was the subject discussed by A.K. Vorob'yev, Director of the Tomsk Polytechnical Institute. Citing a series of examples he demonstrated how the demands of the national economy of Siberia molded the trends in scientific research at that higher educational institution--one of the largest in the country. Approximately 500 instructors, 186 aspirants and over two thousand students are engaged in research work there. The results of their research are used in practice.

The speaker pointed out a number of organizational problems, on the resolution of which depends the effective utilization of creative interrelationships among the higher educational institutions and service to production.

N.A. Shumilova, Deputy Director of the Institute of Electrochemistry of the Academy of Sciences USSR was heard next. Her speech was devoted to problems concerning the influence of the party on the scientific activities of the institutes of the Academy of Sciences.

A.G. Iosif'yan, member of the Academy of Sciences Armenian SSR talked about the importance of the problem of determining the tasks for science and technology, about the importance of the search for methods for organizing scientific work, for planning and coordinating it. He discussed ways to improve methods designed to improve coordination in scientific research work.

I.V. Grivkov, Chairman of the Central Committee of the Trade Union of Educational Workers of the Higher School and the Educational Institutions also delivered a speech.

The speaker pointed out that the movement for the title of a collective of communist labor developed on a wide scale among the scientific workers as it did among the industrial workers. The personnel from 18 laboratories at the Institute of Radio Technology

and Electronics at the Academy of Sciences USSR are striving to earn this high title. The trade union organizations feel that their task is to support his movement by all possible means.

Academician V.A. Trapeznikov, Director of the Institute of Automation and Telemetry of the Academy of Sciences USSR devoted his speech to problems of automation.

Academician V.A. Trapeznikov pointed out that the basis for the creation of the enterprises of the future must be the automation of production, progressive technology and a well adjusted system of power supply. Then he talked about the prospectives which are being opened up by the automation of industry; he also talked about the problems faced by science in the field of automatic control.

F.D. Voronov, Chairman of the Chelyabinskiy Sovnarkhoz talked about new events in the relationship between science and practice which was originated by the metallurgical workers of the economic rayon. An idea originated to create amalgamated research groups. They consist of specialized laboratories staffed by institute and enterprises workers. Such collaboration promoted many new interesting subjects.

Academician M.B. Mitin, editor of the magazine called "Problems of Philosophy," at the start of his speech pointed out the radically different role performed by science under capitalism as compared with socialism.

Our society's trend towards communism will continually increase the spiritual requirements of the people. Fields of knowledge which have come to the forefront only recently, such as cybernetics and the developing process of mathematical sciences demand a profound philosophical interpretation. Our philosophers devote considerable attention to all these problems at the present time.

A speech by Yu. Yu. Matulis, President of the Academy of Sciences Lithuanian SSR is heard. His speech is devoted to the problem of implementation. For a more rapid implementation, he points out, a bridge must be built between the research laboratories and production. Many scientific projects may be implemented into production only after they undergo tests at a semi-industrial installation under production conditions. But, said comrade Matulis, the Lithuanian institutes do not have such installations.

A speech is delivered by Academician A.A. Blagonravov, Academician-Secretary of the Department of Technological Sciences of the Academy of Sciences USSR.

The role of a varied nature of the personnel is not manifested anywhere as much as in the technical sciences. We should not rely on the fruitful work of a few talented individuals exclusively. Therefore problems of proper coordination are of great significance in technological sciences.

The establishment of scientific technical councils, which

would coordinated some of the most important national economic problems on a centralized basis with consideration for all the inter-branch divisions of the problems, will be a measure which will regulate their purposeful resolution. It is quite imperative, however, for such councils to have powers that would permit them to exert a real influence on the organization of the world.

In conclusion Academician Blagonravov dwelled on problems dealing with the productivity of labor of the scientific workers.

The Chairman of the Conference introduced Kh. M. Abdullayev, President of the Uzbekistan Academy of Sciences and a corresponding member of the Academy of Sciences USSR. The speaker mentioned the successes attained by the scientists of Uzbekistan.

Kh. M. Abdulayev pointed out that contact with production is a problem of problems. Such a contact must be strengthened by both sides. He stated--we condemn the scientists on many occasions. But the industrial workers must also show an interest towards the new scientific projects, and help to implement them into production.

N.G. Basov, Deputy Director of the Institute of Physics imeni Lebedeva, devoted his speech to the successes and the possibilities of a new branch of science--quantum electronics.

Quantum electronics has now penetrated into the visible portion of the electromagnetic spectrum. Light generators were created which make it possible to maintain communication over distances of several light years. The introduction of new methods into television will permit conducting tens of thousands of television programs in the visible portion of the spectrum. The electromagnetic beam will resemble a powerful probe at the end of which great pressure is developed.

A.V. Sidorenko, Chairman of the Presidium of the Kol'skiy affiliate of the Academy of Sciences USSR is heard next.

He talked about the work accomplished by scientists beyond the polar circle, about their contribution to the discovery and the assimilation of the natural wealth of the Kol'skiy Peninsula.

The affiliates of the Academy of Sciences are complex scientific-research centers. They have proven themselves and must be further developed. For that purpose it is necessary to strengthen their material-technical basis.

K.N. Plotnikov, a corresponding member of the Academy of Sciences USSR and Director of the Institute of Economics of the Academy of Sciences USSR was the last speaker to be heard during the June 13 evening session.

The 14th of June was the third day of the All-Union Conference of Scientific Workers.

The morning session included the participation of: G.I. Khimich, Deputy Director of the Heavy Machine Building Scientific Research Institute of the "Uralsmashzavod" plant; V.A. Kucherenko, President of the Academy of Building and Architecture; V.F. Kuprevich, President of the Belorussian Academy of Sciences and a corresponding member of the Academy of Sciences USSR; K.N. Rudnev,

K.N. Rudnev, Chairman of the conference introduced comrade A.N. Kosygin, member of the Presidium of the Central Committee CPSU, and First Deputy Chairman of the Council of Ministers USSR. His speech was interrupted several times by tumultuous applause. (Comrade Kosygin's speech is published in this issue.)

After a recess the conference adopted a resolution to publish an address directed to all the scientific workers of the Soviet Union. (The text of that address is published in this issue.)

Academician S.L. Sobolev read a letter from the participants of the conference to the Central Committee CPSU and to the Council of Ministers USSR to the accompaniment of applause. This concluded the All-Union Conference of Scientific Workers at the Kremlin.

TOWARDS NEW ACHIEVEMENTS, TOWARDS NEW DISCOVERIES

Following is the translation of an unsigned article in Pravda (Truth), 15 June 1961, page 1.

Discussion of a report on the reorganization in the work of the scientific institutions of the country, delivered by M.V. Keldysh, President of the Academy of Sciences USSR, continued yesterday at the All-Union Conference of Scientific Workers which took place at the Large Kremlin Palace.

G.L. Khimich, Deputy Director of the Scientific Research Institute of the "Uralsmazhstav" plant spoke about the experience gained by this first scientific institution of the new type. The plant institute, forming a part of the enterprise, works on the solution of important problems pertaining to technical progress in heavy machine building. The speaker told about the first major investigations and projects which included the participation of the institute. It designed new machines, which are now in production, and some that were in production earlier; this will lead to lower operational expenses in the national economy, amounting to a saving of more than 20 million rubles.

G.L. Khimich also pointed out the need for clear cut coordination in the work of the various institutes which, along with "Uralsmazhstav" plant, are participating in the creation of new technology. Sometimes it takes months and even years to resolve problems associated with the recruitment of institutes and for them to develop the necessary units and equipment. The plant sometimes has sufficient time to design, manufacture and supply the necessary equipment to whoever ordered it. The organization that ordered the equipment places it in operation, even though some of the necessary instruments have not been produced by the other organizations. As a result the equipment that is placed in operation does not function at the planned level of efficiency and does not serve to increase the mechanization and automation of technological processes to the stipulated degree.

Comrade Khimich said: "We consider that the Committee for Coordination of Scientific-Research Work must introduce a specialization of the scientific research and design organization. Experience shows that the activity of institutes having many branches is least fruitful."

V.A. Kucherenko, President of the Building and Architectural Academy stated: "Our country spends tremendously large sums of money on capital construction. The principal sources for economy in industrial construction are decreases in the floor area and in the volume of the industrial buildings, as well as compactness of the overall enterprise plans. This problem may be fully resolved only with the cooperation of construction and technological, scientific and design organizations.

"At the present time reinforced concrete is the basic building material. It is time, however, to change the quality of the reinforced concrete by using the latest achievements made in physics and chemistry.

"Some of the new materials are of special interest, such as the plastic concrete, reinforced plastic concrete and certain types of plastics. Those in the building science and in practical work are called upon to study the properties of the new materials in a more comprehensive manner, and to evaluate their durability in a more thorough manner." In conclusion comrade Kucherenko talked about the tasks confronting science in the matter of city building.

V.F. Kuprevich, President of the Academy of Sciences Belorussian SSR and a corresponding member of the Academy of Sciences USSR reported on scientific development in the republic and the research being conducted by the scientists of Belorussia. He pointed out certain concrete inadequacies in the training of scientific personnel--doctors and candidates of science.

A.N. Kosygin, member of the Presidium of the Central Committee CPSU and the First Deputy Chairman of the Council of Ministers USSR, was warmly welcomed by those present and delivered a speech. (Comrade Kosygin's speech is published in today's issue on pages 2 and 3.)

The final session of the conference adopted an address to all the scientific workers of the Soviet Union.

The members of the conference with great enthusiasm dispatched a letter to the Central Committee CPSU and to the Council of Ministers USSR. (The letter to the Central Committee CPSU and to the Council of Ministers USSR and the address by the participants of the conference to all the scientific workers is published in today's Pravda.)

TO THE CENTRAL COMMITTEE OF THE COMMUNIST PARTY OF THE
SOVIET UNION AND TO THE COUNCIL OF MINISTERS USSR

Following is the translation of an item from Pravda
(Truth), 15 June 1961, page 1.

The participants of the All-Union Conference of Scientific Workers in the name of all the scientists of the Soviet Union are conveying their warmest and most cordial regards to the Leninist Central Committee of the Communist Party of the Soviet Union and to the Council of Ministers USSR!

With profound feelings we heard the greetings from the Central Committee of the Communist Party and from the Council of Ministers USSR addressed to the participants of our conference and to all scientists of the country. We extend our heartiest thanks to the Central Committee and to the Soviet government for their warm words and a high regard for the scientists.

The great successes attained by our science and technology were possible due to the unlimited possibilities that are made available by the socialist state for the creative activity of the scientists, and industrial and agricultural specialists, and due to the great concern shown them in our country.

The achievements of the Soviet scientists bring universal recognition because people of labor everywhere in the world know that under socialism science develops in the name of life and happiness, peace and friendship among the peoples because of the triumph of man's scientific genius.

The Soviet Union, utilizing the achievements of science and technology on a wide scale for the development of economy and culture, by relying on the great advantages of the socialist order, continues to win new victories in its economic competition with capitalism.

Soviet scientists along with the entire people are enthusiastically working towards the execution of a grandiose program designed to build a communist society. The greatest achievement is the creation of large cadres of scientists in all the union republics.

Each day of creative activity by the Soviet people is saturated with great events, bringing us close to the eventual victory of communism. The summit of creative daring of our people was the unprecedented voyage by a Soviet man into the cosmos. We are happy

that through the labors of the scientists, engineers, technicians and workmen the Soviet country gained a leading position in the conquest of cosmic space.

At the present time when our Homeland has entered a decisive phase in its struggle for the creation of a material-technical basis for communism, the role and significance of science and technology is constantly becoming more significant. "The creation of a material-technical basis for communism," said N.S. Khrushchev, "demands the full blossoming of science, an active participation of the scientists in the solution of problems, associated with the further multilateral development of the productive forces of our country."

We assure the Central Committee of the Communist Party and the government that the scientists will devote their entire energy in order to assure that our science achieves even greater victories in all decisive fields of human knowledge.

We will continually increase the role of scientific research in the solution of problems, which will be conducive to the further upsurge in the national economy and culture; we will assist in the development of the technological preparedness of industry in every possible way, in the mechanization and automation of production; we will help to raise the productivity of labor and the efficiency of new technology and of new materials.

The Soviet scientists will devote more attention to the resolution of basic problems pertaining to the further development of agriculture--to the implementation of progressive agrotechnical methods, to the development of more effective means for increasing the crop yield on the farms and the productivity of the animal husbandry industry, to the generalization and dissemination of experience acquired by the leading kolkhozes and sovkhozes.

We still have material inadequacies in the organization of scientific work; there is still a certain lack of contact between scientific research and the requirements of life. These inadequacies can be and must be eliminated within the immediate future.

The All-Union Conference of Scientific Workers unanimously approves the resolution of the Central Committee CPSU and of the Council of Ministers USSR "Concerning Measures to Improve the Coordination of Scientific Research Work Within the Country and of the Activities of the Academy of Sciences USSR." This resolution serves as a vivid example of the great concern shown by the Communist Party, by the Soviet government and by comrade N.S. Khrushchev for the development of Soviet science. An improvement in the planning and coordination of scientific research on a national scale will liquidate duplication in the work performed by scientific institutions; it will concentrate the attention and efforts of the scientists on the resolution of some of the principal and prospective problems; it will provide the possibility for the most rational utilization of funds appropriated by the government

for the development of science. The high level and effectiveness of the scientific investigations are impossible without a very close contact with production, or without the active participation of the scientists in the solution of important national economic problems.

The scientists will consolidate the beneficial ties between science and the practical work of building communism. Along with the further development of scientific research in all branches of science and technology, we consider it our primary task to attain a closer contact between science and production, as well as the most rapid application of the results yielded by research in the national economy of the USSR.

During the present time when the Soviet country is resolving a great historical task of building communism, great significance is acquired by problems of a communist education of the people and of an ideological-political work among the masses. Profoundly realizing the grandiose nature of these tasks the scientific workers consider it their honored duty to engage in the most active participation in the propagandization of political and scientific knowledge among the workers, and in the formation of man with communist features. We will conduct a decisive struggle against bourgeois ideology, against revisionism and dogmatism, for a high revolutionary ideology and for the purity of Marxist-Leninist theory.

Grasping the great importance of international contacts and of a creative collaboration with progressive scientists from various countries, we consider it necessary to consolidate and expand scientific contacts with foreign scientists in order to resolve cardinal scientific problems of the present day, and to amalgamate the forces engaged in a struggle for peace and progress.

Together with the entire people the Soviet scientists, filled with determination and the will to attain new labor victories, are moving towards the 22nd Congress CPSU, which will generalize the great victories attained by our country and will adopt a new program of the party--a program designed to build a communist society in the USSR.

We assure the Central Committee of our party and the Soviet government that the scientists will devote their entire energy and knowledge towards a successful execution of that historic program.

We are inspired by the awareness that science and technology in the country of socialism is being used for the benefit of the working man, in the name of peace and progress.

Long live our powerful socialist Homeland!

Glory to our Communist Party, which is leading the Soviet people towards a triumph of Communism!

SOVIET SCIENCE SERVES THE HOMELAND

Following is the translation of an unsigned article in Izvestiya (News), 16 June 1961, page 1.

Science and life. These probably are the words that best describe the speeches and talks which took place at the Large Kremlin Palace during the past three days. Some of the most outstanding scientists were heard there--representatives from all branches of science and technology. They spoke about how best to carry out the resolution adopted by the Central Committee CPSU and by the Council of Ministers USSR pertaining to measures for coordinating scientific research work in the country and the activities of the Academy of Sciences USSR. All the speeches were threaded with a single main thought asserting that people of science must dedicate their life and their labors to the service of the people and to our great socialist Homeland.

This spirit also permeated a reception held by the government of the USSR on 14 June in honor of the participants of the recently concluded conference of scientific workers. Never before was the color of Soviet science, its glory and its future represented in such monolithic unity at the Large Kremlin Palace as today.

Workers of Soviet science meet in the festive and elated atmosphere of the Palace. Bursts of friendly applause and exclamations of greeting are heard. Comrades L.I. Berzhnev, N.G. Ignatov, F.R. Kozlov, A.N. Kosygin, O.V. Kuusinen, N.A. Mukhitdinov, N.S. Khrushchev, N.M. Shvernik, P.N. Pospelov, and G.I. Voronov are all seen at the Georgievskiy Hall. Friendly handshakes with old friends--well known scientists, and first acquaintances with young specialists. A close circle forms; there are unconstrained discussions.

Those present are addressed by M.V. Keldysh, President of the Academy of Sciences USSR.

"Our first All-Union Conference," he said, "discussed problems pertaining to organization and to the development of scientific research in our country.

"All the scientists with great enthusiasm welcomed the resolution of the Central Committee CPSU and of the Council of Ministers USSR pertaining to methods designed to improve the coordination of scientific research work in the country and the activities of the Academy of Sciences USSR. It creates premises for an even greater

upsurge in theoretical research, which opens up the way towards a multilateral development of the national economy and culture. The Party has shown great faith in us," continued the President, "and confronted us with grandiose tasks. Intense, selfless work by all scientists will be required, in order to justify that faith. In the name of all those present I would like to express profound gratitude to the Central Committee of our Party, to the government, and to you personally, Nikita Sergeyeovich, for your constant concern for the development of the sciences, and for their role in the matter of building a communist society in our country."

Academician Keldysh proclaimed a toast for the Leninist Central Committee of the Communist Party, and for the health of Nikita Sergeyeovich--a fighter for peace and happiness of mankind.

N.N. Blokhin, President of the Academy of Medical Sciences USSR said: "There is no doubt that all the scientific workers attending the reception are most enthusiastic. If we talk from a viewpoint of the medical sciences," continued the President with a smile, "about the reception which we are attending and about the conference which just ended, we must say that they inspired us and will undoubtedly influence our nervous system and will be conducive to further productive work."

Academician Blokhin toasted the health of all those present, and the hope that this memorable conference would serve as a great stimulus for further successful work.

Academician K.I. Satpayev, a noted Kazakh scientist, shared his thoughts. "Our first conference," he said, "will perform an important role in increasing the influence of science on life. It successfully demonstrated how science has blossomed in all the republics of our Homeland."

The gathering was also addressed by Academician M.A. Lavrent'yev; Academician A.P. Aleksandrov, Director of the Atomic Energy Institute imeni I.V. Kurchatova; Academician A.V. Palladin; V.S. Yemel'yanov, a corresponding member of the Academy of Sciences USSR and by Academician M.B. Mitin.

N.S. Khrushchev received a warm welcome as he approached the speaker's rostrum. As usual he spoke simply, vividly and graphically. Nikita Sergeyeovich congratulated the Soviet scientists for the achievements made in our science and greeted them in the name of the Central Committee of the Party and the Council of Ministers USSR.

N.S. Khrushchev proposed a toast for the bright future of humanity, for the people of science, who through their labor and knowledge must assist in our successful progress towards communism.

A special concert was given for those attending the reception.

ON MEASURES FOR IMPROVING THE TRAINING OF SCIENTIFIC AND
SCIENTIFIC-PEDAGOGIC PERSONNEL

Following is the translation of an unsigned article
in Pravda (Truth), 17 June 1961, page 1.

The Central Committee CPSU and the Council of Ministers USSR adopted a resolution "On measures for improving the training of scientific and scientific-pedagogic personnel." The resolution points out that there are certain achievements in our country in the matter of training scientific and scientific-pedagogic personnel. Over the past 10 years the number of scientific workers increased more than twofold.

But the execution of tasks inherent in building communism in the USSR demands a further development and a rise in the quality of scientific research, and an expansion and improvement in the training of the scientific and scientific-pedagogic personnel.

At a number of scientific organizations and higher educational institutions, however, the development of scientific research work lags behind the demands made by life; there are serious inadequacies in the training and in raising the skill level of scientific and scientific-pedagogic personnel. The scientists at many of the scientific research organizations and higher educational institutions still conduct too few scientific investigations in problems, brought out by industry and agriculture; and in conducting their scientific research work they fail to devote sufficient attention to their economic justification.

The scientific organizations and higher educational institutions do not have enough doctors of science and professors. Outstanding industrial and agricultural specialists are not drawn into educational work on a large enough scale.

Most of those completing their post graduate work fail to defend their thesis within the prescribed time limit, which serves as evidence that serious deficiencies exist in the organization of the studies of post graduate students.

The higher educational institutions do not devote sufficient attention to the matter of raising the scientific skill levels of specialists working directly at enterprises, sovkhoses and kolkhozes, and they do not participate to a sufficient degree in the selection of the best specialists for further training as doctors and candidates of science.

There are still deficiencies in the system of awarding academic degrees and titles.

The Central Committee CPSU and the Council of Ministers USSR obligated the Academy of Sciences USSR, the branch and republican academies, the Ministry of Higher and Secondary Specialized Education USSR, the Ministry of Agriculture USSR as well as other ministries and agencies, which include scientific research institutions and higher educational institutions, to eliminate the noted inadequacies in the organization of scientific research work, in the training of the scientific and scientific-pedagogical personnel, and in raising their skill levels. To carry out a significant expansion and an improvement in the quality of the scientific investigations, which are of the utmost importance in the development of theory and practice, which assure further development of science and technology, generalize experience acquired in communist construction in our country and are conducive to the resolution of other pressing scientific problems. On that basis to systematically carry out an expansion and improvement in the training of scientific and scientific-pedagogical personnel, to further raise their skill levels in accordance with the requirements of the national economy.

The resolution points out that the scientists' most important duty is the education of properly trained scientific replacements.

The Central Committee CPSU and the Council of Ministers USSR obligated the State Planning Commission to stipulate an additional increase in the number of scientific positions at the higher educational institutions in number of up to 1,000 personnel units for every year starting with 1962, in the national economic plans, to be filled with instructors who are working on their doctoral dissertations dealing with pressing national economic or theoretical problems; they are to be assigned by the Ministry of Higher and Secondary Specialized Education USSR in the various republics, ministries and agencies, which include higher educational institutions.

The higher educational institutions are permitted to relieve candidates of sciences from their pedagogical duties, providing their research yields serious results and their plans for scientific research in important national economic or creative problems are approved by the councils of the higher educational institutions. The higher educational institutions are also permitted to transfer such candidates to positions of senior or junior scientific research workers for periods of up to two years for the preparation of doctoral dissertations.

Instructors, transferred to a position of a scientific research worker, after a period of one year must present a scientific report to the council of the higher educational institution, which is used by the council to determine whether they are eligible to remain in the position of a scientific research period and continue work on their doctoral dissertation, or whether they should return to their pedagogical duties.

The higher educational institutions have been granted the right to commandeer scientific-pedagogical personnel, by coordinating with the appropriate ministries and agencies, to other higher educational institutions, scientific institutions, enterprises and organizations for the conduct of scientific investigations, for generalizing progressive experience and for the implementation of completed scientific projects for a period of up to six months with pay.

The Central Committee CPSU and the Council of Ministers USSR obligated the Ministry of Higher and Secondary Specialized Education as well as the Academy of Sciences USSR, to adopt annual plans outlining post graduate admissions according to specialties, by relying on the necessity to satisfy the requirements of the higher educational institutions, scientific institutions, industrial and agricultural enterprises and other organizations in scientific and scientific-pedagogical personnel, and by keeping in view the expansion in the training of scientific and scientific-pedagogical personnel for the national economy and especially in some of the new branches of science and technology.

The resolution stipulates, in addition to the existing favorable terms, one day off a week from their basic work with half pay for post graduate correspondence students if requested by them, for a period of up to four years. In addition to that the directors of enterprises and institutions were authorized to give the post graduate students an additional day or two off a week without pay during the students' fourth year of studies, if requested.

The Central Committee CPSU and the Council of Ministers USSR have authorized the acceptance of persons, recommended by higher educational institutions, industrial enterprises, sovkhozes, kolkhozes, scientific research institutions and by other organizations to resident post graduate work. Persons recommended for resident post graduate work must have a minimum of two years practical experience. Specialists who have completed their post graduate work return to the organizations which recommended them for the post graduate work.

The resolution obligates the Ministry of Higher and Secondary Specialized Education USSR and the Academy of Sciences USSR to develop measures which would lead to an improvement in the training of scientific personnel by means of post graduate work, so that most of the post graduate students would complete their post graduate work and complete their thesis within the established period of time.

Persons who passed their candidate's examination, stipulated for a given specialty are exempted from taking the entrance examinations for post graduate work with a mandatory research paper on the chosen specialty.

The Higher Certifying Commission was given the right to permit the councils of the higher educational institutions and of the scientific research institutions to accept published works on new original machines implemented into production, on original

structures, already constructed and those on any radical changes introduced into technological production processes in satisfaction of requirements for a doctor of sciences dissertation.

It was permitted to introduce a title of professor-consultant at the higher educational institutions. These positions are to be occupied by doctors of science and retired professors, whose job it is to assist in the training of scientific-pedagogical personnel.

The Central Committee CPSU and the Council of Ministers USSR obligated the Higher Certifying Commission to intensify its control over the activities of the councils of higher educational institutions and scientific research institutes on questions concerning the certification of scientific and scientific-pedagogical personnel. The Higher Certifying Commission was given permission was given permission to establish amalgamated councils of higher educational institutions and scientific research institutions when necessary to examine candidate and doctoral dissertations on request from the interested organizations and agencies, and to include some of the highly specialized scientific and scientific-pedagogical workers on these councils.

The Higher Certifying Commission was authorized, in unusual cases, to exempt certain persons, predominantly workers in production, who submit scientific works on some of the problems of pressing importance to the national economy in lieu of the dissertation, from all or part of the candidate's examination.