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USSR Report

SCIENCE AND TECHNOLOGY POLICY

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USSR REPORT
SCIENCE AND TECHNOLOGY POLICY

No. 11

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CALL FOR IMPROVEMENT IN DISSEMINATION OF SCIENTIFIC INFORMATION TO INDUSTRY

Moscow PRAVDA in Russian 12 Oct 82 p 1

[Editorial: "Scientific Information Service"]

[Text] To achieve new advances in science and technology in all branches of the national economy—this is the task which has been set by the 26th Congress of the CPSU. Its decision devoted a prominent place to the state scientific and technical information system (GSNTI) [SSTIS], whose responsibility it is to provide branches and enterprises with daily information concerning both domestic and foreign advances in science and technology, new thinking and practical innovations. In promoting closer links—economically and organizationally—between scientific research, planning and design and industry it is promoting progress in today's decisive, most critical area: we are referring here to the practical introduction of scientific discoveries and inventions.

The field of this service's activity, of this connecting link between science and industry, between people engaged in creative thought and those engaged in creative labor, is a broad one. Its information and reference resources comprise some 2 billion documents—reports on the results of research and development work, descriptions of inventions, deposited manuscripts, translations of foreign literature and documentation, domestic and foreign standards and materials from scientific conferences, seminars, symposia and congresses. Many millions of scientists, scholars and specialists make use of these resources.

SSTIS is increasing the efficiency with which it functions, expanding the range of its own capabilities and responsibilities and introducing new types of information services. Among other things, the Tenth Five-Year-Plan period saw the appearance of a magnetic tape service, within the framework of which data bases on magnetic carriers are being built. Thousands of enterprises and organizations in different regions already have access to them. In striving to intensify the influence it can bring to bear upon the pace of our progress in science and technology, SSTIS is increasing the amount of recommendatory information selectively put out to groups and scientists engaged in particularly urgent R&D work in accordance with national programs in science and technology. We have seen a quickening of the pace of reequipment—the "information service" is making more extensive use of computers and the

latest microfilming and reproduction equipment. Over the course of the past five-year-plan period, for example, 78 automated information systems were brought into operation both at union-republic level and within leading branches of the national economy. The most important task now is bring these systems up to planned capacity within the shortest possible period of time and to exploit their capabilities to the full in providing information for research, development and industry.

Enhanced technical capacities constitute a reliable foundation upon which further to expand the horizons of the information industry. We are to see them greatly expanded over the course of the Eleventh Five-Year-Plan period. Basic Guidelines for the Economic and Social Development of the USSR for the Years 1981-1985 and the Period Extending to 1990 calls for improvement in the scientific and technical information system and our patent licensing operations. The following examples will give some idea of the scale and complexity of the tasks now ahead of us. Plans call for the development of a distributed data bank with a total capacity of more than three million document descriptions. It will include reports on scientific research and experimental design work, all the world's scientific and technical literature, patent information, information on state standards and technical specifications and information on recent innovative ideas and practices in industry. In addition to official registration and recording of scientific research and development work currently under way and of projects which have been completed within the country, SSTIS is developing a service which will keep records on all equipment manufactured in the country. This will make it possible to provide all interested enterprises and organizations with complete and up-to-date information about it and upon this basis objectively to determine which machines, instruments or components surpass the level of those of foreign manufacture and which are inferior to them. A particularly heavy responsibility here falls upon personnel of the recently created All-Union Equipment Information Center, who will be expected to make their own contribution to successful accomplishment of this effort, enormous in scope, in fulfillment of party directives: when we speak of product quality we must focus exclusively upon measuring up to the best foreign and domestic products—we cannot and must not settle for anything less.

Success in accomplishing these and other no less urgent and difficult tasks will be possible with the employment of up-to-date information technology, extensive utilization of computers and by creating within the country a ramified system of automated scientific-technical information centers. Information personnel will in this instance have to have superior knowledge and skills, to be continually improving their qualifications and to demonstrate practical versatility and intolerance of deficiencies, of which there are still no small number. We have yet to get entirely away from putting emphasis on "quantity", which results in attempts to put out "just a little more" information without regard to who needs what. News frequently reaches consumers late and is not always "sorted" taking planned research subjects into account. Improvements in centralized information distribution are not being supported by any corresponding improvement in local processing, while flows of information frequently do not reach those for whom they are intended. Fundamental improvement is needed in the exchange of practical scientific and technical experience between branches: according to data from experts, only 10 per cent of our enterprises make advances they have achieved available to others.

In taking the initiative in efforts to mobilize the internal potential, the untapped resources, of SSTIS organizations and to improve cooperation between them, the communists and party organizations within the knowledge industry are doing the proper

thing. The problems of providing more complete information more expeditiously, of keeping careful records of user requests and of accelerated introduction of up-to-date methods processing, retrieving and distributing information await daily attention. Particular responsibility is being placed upon personnel of the knowledge industry for providing timely, high-quality information in support of research and development being undertaken within the framework of both specific and integrated state scientific and technical programs as well as of the USSR Food Program. This should now be the focus of its efforts.

The level of production, of the performance of our industry, will today be a function not only of its technical and energy base, but of how well provided with information it is. To continually raise it means to help accelerate the pace of progress in science and technology and shift the economy onto the track of intensive development.

8963

CSO: 1814/29

PRODUCTION EFFICIENCY AND WORK QUALITY BY NOVOSIBIRSK OBLAST DISPLAYED AT
VDNKH USSR

Moscow EKONOMICHESKAYA GAZETA in Russian No 50, Dec 82 p 14

[Article by M. Makhlin: "The Zone of Introduction"]

[Text] The experience of Novosibirsk Oblast to increase production efficiency and work quality on the basis of the 'science-production-efficiency' territorial system was demonstrated at the VDNKh SSSR [Exhibition of achievements of the national economy, USSR].

The exhibition of the Novosibirsk workers was full of information. Full-scale prototypes, mockups and models, special topographic maps and detailed diagrams indicate the content and results of the orderly system of interaction of scientists and producers established in the oblast.

Four levels of the relationship of science and production are distinguished. First, there are development and introduction of innovations directly at enterprises. Second, the direct contacts of the production collectives with the scientific organizations are utilized. Third, there are regional and urban systems of product quality control and production efficiency. And finally, there is implementation of complex and specific programs in the oblast.

The Effect of Interaction

The stand of the Sibsel'mash Plant [Novosibirsk Agricultural Machinery Plant] attracts attention. In cooperation with 30 institutes of the Siberian Department, USSR Academy of Sciences, 77 developments have been realized here during the past few years. These are both development of ASU [automated control system] of all levels, mechanization of processes, introduction of robots and conversion to new technologies.

The Siberian Department of VASKhNIL [All-Union Academy of Agricultural Sciences imeni V. I. Lenin] assisted the enterprise in organizing the production of two new soil-cultivating machines in raising the stability and reducing the energy consumption of the working members of serially-produced agricultural equipment and the important problem of assimilating the floodplain soils of the Siberian and Far Eastern rivers is being resolved jointly. Good contacts have been established at the enterprise with the Siberian Department, USSR

Academy of Medical Sciences. The result is a reduction of the sick rate and accordingly of losses of working time due to illness.

These direct contacts are only one of the forms of the "science-production-efficiency" oblast system. Public scientific research institutes and design offices operate under the aegis of "NPE." The effectiveness of their developments during the past year comprised 8.2 million rubles and made it possible to save more than 1,800 tons of metal and 8.1 million kilowatt-hours of electric energy and to free more than 200 workers from manual labor. The experience of the public scientific research institute of the West Siberian Railroad is remarkable. Over a period of 5 years the public workers have proposed 157 original solutions, of which 139 were introduced. This made it possible to send an additional 102,000 rail cars for freight shipment.

Around Akademgorodok

The high concentration of industry and academic science in Novosibirsk Oblast suggested the idea of creating the so-called "Zone of introduction" here. A network of sector scientific research institutes and design offices, called upon to translate into practical language the results of fundamental and applied research, was organized around the institutes of the Siberian Department, USSR Academy of Sciences. The structure of the "Zone of introduction" is outlined as follows: the presidium, Siberian Department, USSR Academy of Sciences and the institutes of the Siberian Department, USSR Academy of Sciences assume scientific management of the council for coordination of cooperation attached to the Siberian Department, USSR Academy of Sciences. The ministries and agencies coordinate plans with the same council. The special design offices and scientific research institutes of the "Zone of introduction," subordinate to the council, include the SKB Energokhimmash, SKTB [special design and technological office] of catalysts, the SKTB of biologically active substances, the NII Gidrotsetmet, the Siberian Branch of experimental design offices of the NPO [scientific production association] Soyuzgeofizika, the scientific research institute of systems and the Siberian branch of the NPO Tekhnergokhimprom. These SKB and NII are under the administrative management and financing of the ministries and agencies and they participate in organization of serial production. The SKB and NII pass on the technologies of installation, devices, materials and algorithms to the industrial enterprises, who work out problems for and consult with the Institutes of the Siberian Department, USSR Academy of Sciences.

The experimental and production aspects of the sector NII and KB, not being subordinate to the academic institutes, are nevertheless under their scientific supervision. Industry places the problem before science and consults with it. The sector and academic institutes compile joint plans and are concerned with the creation of the required scientific finishing.

The joint efforts of academic and sector science permit solution of the most complex problems within short periods.

The economic effectiveness of the entire "Zone of introduction" is high. More than half of the developments completed here have been protected by inventors' certificates.

Organization of intersector subdivisions included in the structure of NPO and enterprises and involved with bringing the achievements of science to the level of experimental design work has also justified itself. Personnel are trained in these "forges" of advanced experience to work with new technology. The length of the "research-production" cycle was reduced by 6-9 months and the return of funds invested in scientific research and experimental design work increased 6.4-fold.

A model of an explosive welding chamber, demonstrated at the stand of the Sibelektroterm Association, evokes great interest. Only moments are required to weld different materials into a single unit. The consumption of copper alloys is reduced by a factor of 25-30 due to the innovation, the wear resistance of products is increased two- to fourfold, while the laboriousness of manufacture is reduced by a factor of 1.5.

According to Specific Programs

The exhibition also familiarizes one with a form of contact of science and industry such as joint implementation of complex and specific programs. This work is conducted under the supervision of the council for assistance to scientific-technical and socioeconomic development of the oblast attached to the CPSU obkom. It includes nine sections: "Quality," "Machine building and metal working," "Electronics and instrument building," "Construction," "Power engineering," "Transport and communications," "ASU and computer technology," "Labor resources," "Health" and "Ideological support." The council determined more than 30 programs, five of which--"Mechanization and automation of production processes," "New technologies in industry," "Supply," "Consumer goods production," and "Labor and labor resources and health"--are represented at the exhibition.

The secretary of the party obkom V. A. Bokov and the chairman of the Siberian Department, USSR Academy of Sciences, Academician V. A. Koptug, production innovator and Hero of Socialist Labor R. S. Udalaya and chief engineer of the Sibelektroterm Association V. G. Zav'yalov, scientists and producers gave talks at the seminar "The experience of the scientific institutions of Novosibirsk Oblast in increasing production efficiency and work quality on the basis of improving ties with industry," convened within the framework of the exhibition. The deputy chairman of the USSR Council of Ministers, chairman of GKNT [State Committee for Science and Technology], Academician G. I. Marchuk participated in the work of the seminar.

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PROBLEMS OF MANAGEMENT AMONG CEMA MEMBERS DISCUSSED

Moscow EKONOMICHESKAYA GAZETA in Russian No 2, Jan 83 p 20

[Article by Corresponding Member of USSR Academy of Sciences, S. V. Yemel'-yanov, director of the International Scientific Research Institute on Problems of Management]

[Text] The main results of the activity of the International Scientific Research Institute on Problems of Management were considered at the 27th meeting of the CEMA Committee on Scientific and Technical Cooperation, convened recently in Moscow.

The International Scientific Research Institute for Problems of Management (MNIIPU) was created according to an agreement concluded between the governments of the Peoples Republic of Bulgaria, the Hungarian Peoples Republic, the GDR, the Republic of Cuba, the Mongolian Peoples Republic, the Polish Peoples Republic, the USSR and the CSSR in July 1976.

From the very beginning the institute was faced with the problem of imparting the character to its work which, on the one hand, would eliminate duplication of research of national organizations and, on the other hand, would make it a necessary tool in solving timely problems of management of their socioeconomic development, common to the countries.

The institute was called upon to play the role of a center in study, generalization and dissemination of advanced experience of the socialist countries in the field of management. Moreover, the activity of the institute is directed to thorough study of problems of economic and scientific and technical cooperation of CEMA members. And finally, MNIIPU is called upon to determine new ideas in the theory and practice of management and to organize joint research in development of them.

Scientists from all the member countries of MNIIPU work at the institute. Along with this, we are also attempting to recruit a wide circle of the scientific community of the socialist countries to participate in its work.

The plan for multilateral research of the institute for 1981-1985 provides for concentration of efforts in working out large-scale problems in the field of improving the systems of management of the economic and scientific and

technical development of CEMA members, of improving the management of socialist economic integration processes and others.

A number of important theoretical and applied research has been completed during the years that have passed after formation of the institute. For example, methodical recommendations on planning the creation and development of production and economic complexes (PKhK) and in analysis and planning of the organizational structures for managing them were developed. These recommendations have already found broad application in CEMA countries.

The institute has analyzed the organizational and economic mechanisms of management of scientific and technical progress in the socialist countries (on the example of the experience of the Peoples Republic of Bulgaria, the Hungarian Peoples Republic, the GDR, the USSR and the CSSR).

Recommendations to improve the specific program planning and management of the development of multisector national economic complexes of CEMA members (on the example of the fuel and energy complex) were worked out.

Together with the national organizations of CEMA members, MNIIPU has created the TEK-SOPOT man-machine system and the BOND universal data management system. The first system is designed for simulation and optimization of the development of the fuel and energy complexes of CEMA members, while the second is designed to store, accumulate and manage data of an essentially arbitrary structure. The first unit of these systems has been introduced at the computer center of the Ministry of Power Engineering, Peoples Republic of Bulgaria. The developments have also been turned over to a number of Soviet organizations.

The institute has worked out the concept of managing the development of the mineral and raw material base for the long term. Its main feature is the use of regional data banks and man-machine systems, which permits different versions of development strategies to be calculated. The first unit of the REGION man-machine system, designed to forecast the prospects for development of the mineral and raw materials base and to solve the practical problems of analyzing the ore content of territories, has been put into operation.

Based on analysis of the experience of cooperation in construction of the "Soyuz" gas pipeline, of the Ust'-Ilim Pulp and Paper Combine, of the Soviet-Mongolian Mining and Enrichment Combine Erdenet and a number of other integration facilities, proposals have been worked out jointly with the department of summary economic work of the CEMA Secretariat on solution of "Organizational problems of cooperation in construction of facilities through the joint efforts of interested CEMA members." The proposals have gained a positive evaluation.

At the request of the USSR Ministry of Construction of Oil and Gas Industry Enterprises and Establishments, the institute has prepared proposals on problems of management and organization of the material and technical supply and social-service conditions for supporting the participants in construction of the Urengoy-Pomary-Uzhgorod gas pipeline.

Problems of using computer equipment in management systems occupy an important position in the research of the institute.

Important significance is given to dissemination of advanced experience. Two series of booklets are published for this purpose: "From the experience of countries" and "Exchange of experience." The seminars, symposia and other scientific measures, conducted by the institute jointly with national and international organizations, contribute to improvement of this work.

At the same time, much still remains to be done so as to raise the work in exchange of experiments to a higher level. Specifically, the organizational mechanism of study and dissemination of advanced experience needs improvement and methodological problems of comparative analysis of economic mechanisms and the use of the experience of one country under conditions of another should be developed more thoroughly.

The journal PROBLEMY TEORII I PRAKTIKI UPRAVLENIYA will be published quarterly beginning in 1983. Problems of the interaction of the socialist countries in improving the management of national economies, sectors, regions and production-economic organizations will be discussed on its pages. It is planned to inform the readers about advanced experience and progressive forms and methods of management used in the countries of the socialist fraternity. Articles on the experience of the industrially developed capitalist countries and also on timely problems of management in developing countries will also be published in the journal.

Improvement of the organizational-economic and management mechanisms is one of the timely problems in all CEMA members. Therefore, one of the main tasks of the institute in the future remains the investigation and comparative analysis of the development of the economies of the fraternal countries. Problems of bringing the structures of the economic mechanisms closer together must also be worked out.

Conversion to the intensive path of economic development requires a qualitatively new approach to working out the strategy of scientific and technical progress, economic methods of managing it and also universal introduction of the results of scientific research and experimental design work into industry. This topic will be one of the main ones during the forthcoming period.

6521
CSO: 1814/54

6TH CONGRESS OF ARMENIAN SCIENTIFIC AND TECHNICAL SOCIETIES REPORTED

Yerevan KOMMUNIST in Russian 17 Oct 82 p 2 .

[Article: "For Scientific and Technical Progress and Efficiency, The Sixth Congress of Scientific and Technical Societies of the Armenian SSR"]

[Text] The 6th Congress of Scientific and Technical Societies of the Armenian SSR met 15 October in the large hall of the Armenian Trade Union Council's House of Unions. Gathered together here were leading industrial enterprise engineering and technical personnel, professors and lecturers in VUZ technical departments, specialists from scientific and planning and design institutions and scientists and scholars.

To the honorary presidium the congress enthusiastically elects the CPSU Central Committee Politburo headed by Comrade L. I. Brezhnev.

Delegates most warmly received the greetings the Central Committee of the Communist Party of Armenia had extended to the sixth congress of the republic's scientific and technical societies, which were conveyed by V. Megrabyan, head of the industry department of the Armenian Communist Party Central Committee.

S. Mergelyan, academician of the Armenian Academy of Sciences, corresponding member of the USSR Academy of Sciences and chairman of the republic council of scientific and technical societies, delivered the report.

On behalf of congress delegates and all those present he expressed appreciation to the Central Committee of the Communist Party of Armenia for its high evaluation of what had been accomplished by societies and primary organizations, scientists, engineering and technical personnel and production innovators.

Over the period under review, he said, STS organizations had, with daily assistance on the part of party and trade union organizations, intensified their participation in the national effort to increase production efficiency and improve work quality and to implement decisions of the 26th Congress of the CPSU and the 27th Congress of the Communist Party of Armenia.

Mobilization of the efforts of scientists, engineers, technical personnel and innovating workers with the objective of accelerating to the maximum possible extent the introduction and exploitation within the economy of new equipment and technology and the results of scientific advances and of improving creative collaboration between

science and industry. Efforts to economize in the consumption of fuel and energy and material resources, to achieve full mechanization and automation of production processes, to establish a scientific organization of labor and to introduce automated control systems lie at the center of attention of our NTO [STS (scientific and technical societies)].

The board and the councils of STS primary organizations are participating actively in socialist competition for fulfillment and overfulfillment of creative plans. The period under review here saw STS members produce more than 10,000 suggestions and recommendations for the development and introduction of new types of advanced technology and for improving product quality, whose introduction has been responsible for savings of more than 100 million rubles.

The past period also saw the membership of the republic's STS organizations grow by some 22,000, while the 1550 primary organizations now unite in their ranks more than 117,000 scientists, engineers, technicians, agricultural specialists and innovating production personnel. A new scientific-economic society has been created with the STS with concrete tasks and modes and methods of operation.

The rapporteur and other participants in the discussions also pointed out that there are still deficiencies in the work of the republic STS council and the councils of STS primary organizations. Some STS boards are not making use of all opportunities to involve scientific, engineering and technical personnel in the implementation of plans to introduce new equipment and technologies and efforts to solve the most important scientific and technical problems. Some STS organizations are still not rendering energetic enough assistance to ministries and enterprises in accomplishing tasks set by the May (1982) CPSU Central Committee plenum.

Academician V. Ambartsumyan, president of the Armenian SSR Academy of Sciences and twice-honored Hero of Socialist Labor, dealt in his address with the role of science and technology and technical specialists in the development of the national economy.

The congress adopted a resolution aimed at intensifying the activity of Armenia's scientific and technical societies.

Congress delegates assured the Central Committee of the Communist Party of Armenia and the government of the republic that the republic's scientific and technical societies will devote their full efforts to implementation of decisions of the 26th CPSU Congress and render a fitting salute to the 60th anniversary of the formation of the USSR.

Participating in the work of the congress were G. Andreyev, second secretary of the Central Committee of the Communist Party of Armenia; L. Saakyan, chairman of the Armenian Trade Union Council; Yu. Tsygulev, deputy chairman of the All-Union Council of Scientific and Technical Societies and I. Grebenshchikov, deputy head of department, AUCCTU.

The newly elected council of scientific and technical societies of the Armenian SSR met in its first plenary session.

As chairman of the council of the republic's scientific and technical societies the plenum elected S. Mergelyan, academician of the Armenian SSR Academy of Sciences and

corresponding member of the USSR Academy of Sciences and D. Sobol' and L. Vardanyan as deputy chairmen. G. Ter-Martirosyan was elected scientific secretary.

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CSO: 1814/29

6TH CONGRESS OF BELORUSSIAN SCIENTIFIC AND TECHNICAL SOCIETIES REPORTED

Minsk SOVETSKAYA BELORUSSIYA in Russian 16 Oct 82 p 3

[Article: "In the Main Direction, From the 6th Congress of Belorussian Scientific and Technical Societies"]

[Text] The 6th Congress of Belorussian scientific and technical societies met 14-15 October in Minsk. Congress delegates, representing a unit of almost 500,000 individuals whose mission it is to look into the future—scientists, scholars, engineers and workers—summed up the results of their creative efforts over the past five years and outlined a concrete program of new work aimed at accomplishing one of our most important economic tasks—stepping up the pace of scientific and technical progress and introducing the fruits of this progress into practical operations.

Congress speakers underlined that fact that republic and oblast councils and the boards of primary and branch STS organizations have seen their primary task to lie in doing everything possible to stimulate creative initiative among scientists and technicians and in mobilizing their efforts to the ends of successful implementation of decisions of the 25th and 26th party congresses and of improving collaboration between science and industry. They have been actively involved in the development and implementation of plans for the introduction of new equipment and advanced technology and a scientific organization of labor, for improving the technical level and quality of manufactured products, for achieving economies in the use of raw materials and fuel, energy and material resources and for implementing the USSR Food Program.

As was pointed out at the congress, all this has contributed to a substantial increase in production efficiency and made possible over the course of the Tenth Five-Year-Plan period a 70 per cent increase in labor productivity. The economic gain derived from introducing measures to raise the technical level of production operations has been computed to be more than 2 billion rubles for the entire period under review. We continue even today to observe a continuous increase in economic potential. All conditions are right for obligations undertaken by republic workers in honor of the 60th anniversary of the formation of the USSR to be successfully fulfilled.

Society activists, L. I. Kiselevskiy, chairman of the republic council of scientific and technical societies, emphasized in his report, have in recent years been devoting their attention primarily to the development and implementation of specifically targeted union and republic scientific and technical programs. Some 300 creative brigades uniting in their ranks approximately 2000 persons have been organized and are now

engaged in successful work. Society specialists from NIilitavtoprom [expansion unknown], for example, have helped introduce 28 units of new models of casting equipment into production operations. A group of institute personnel were awarded the USSR State Prize last year for the development of a series of core-making machines.

The Belorussian republic council of scientific and technical societies has coordinated the efforts of its branch and territorial organizations participating in the implementation of scientific and technical programs, generalized the experience of the best and selected the most interesting and important proposals in these areas for consideration by the republic government. Plans for the Eleventh Five-Year-Plan period call for the implementation of 50 specifically targeted [tselevykh] and scientific and technical programs.

Congress speakers pointed to the importance of the most active participation in efforts to carry out the USSR Food Program on the part of scientists, engineering and technical personnel and all members of the republic's scientific and technical societies. More than 82,000 specialists in this branch of the national economy are now engaged in work on problems associated with accelerating the pace of scientific-technical and social progress in agriculture. Actively involved in this effort as well are specialists in machine building, instrument manufacturing, the chemical industry, construction, transport and processing enterprises and associations.

As was pointed out, however, in the report as well as in speeches at the congress by F. V. Mirochitskiy, chairman of the republic board of agricultural scientific and technical societies and first deputy minister of agriculture of the BSSR [Belorussian SSR], L. P. Metlitskiy, deputy chairman of the republic Gosplan, and other congress delegates, Belorussia's scientific and technical potential and the creative capabilities of its specialists in various branches are far from being utilized to the full. Much still remains to be accomplished in the way of increasing the yields of agricultural crops, raising productivity in livestock-raising operations, providing workers on field and farm with efficient modern equipment and of satisfying the growing demand for cultural and consumer services among the rural population.

Neither are all branch and territorial STS organizations working energetically to exert their influence upon the progress of efforts to implement scientific and technical programs or the practical introduction of the results of scientific research in industrial production operations, particularly in agriculture and the paper and wood-processing, petroleum extracting, timber and the milling, hulling and elevator industries. This was referred to in speeches by N. D. Mizyakin, deputy minister of the food industry of the BSSR; Yu. K. Volchek, chairman of the republic board of municipal and consumer services STS, and other congress delegates.

Recent years have seen ties between scientific research and planning and design organizations on the one hand and industrial enterprises on the other greatly strengthened within the republic. The volume of work scientists are doing under economic contract is continually increasing, while public associations such as MTZ-BPI, Avtofiztek, MAZ-BPI and others are gathering strength. P. I. Yashcheritsyn, chairman of the republic board of machine-building industry STS and academic secretary of the physical and technical sciences division of the BSSR Academy of Sciences, dwelt in some detail upon their efforts in the course of his address at the congress.

One of the primary directions of the efforts of these point men of progress in science and technology lies in work on problems associated with the effort to achieve full

mechanization of manual labor in industry, particularly of secondary and loading and unloading operations. The period under review saw STS organizations directly involved in developing documentation [pasportizatsiya] on work places, holding seminars and organizing relay-type competitions with the objective of identifying the most efficient solutions, putting on review exhibitions and, most importantly, participating in the development and implementation of integrated programs of automating heavy, monotonous physical labor.

With the active participation of scientific and technical society members 102 industrial enterprises in Gomel'skaya Oblast, for example, were able to lighten the work load on almost 3000 workers, while 962 persons were freed up entirely and transferred to more skilled positions. Their jobs are now being done by machines. The economic gain achieved last year from the introduction of these measures was calculated to be 1 million 850 thousand rubles. In his address at the congress A. I. Sviridenok, chairman of the oblast council of scientific and technical societies and director of the BSSR Academy of Sciences' Institute of the Mechanics of Metal-Polymer Systems, described how this program is proceeding in Gomel'skaya Oblast's enterprises.

At the same time, however, both the speaker and others participating in the discussions, among them L. V. Nigmatullina, chairman of the republic board of light industry STS; M. A. Knyazyuk, secretary of the Minskaya Oblast party committee and I. I. Demchenko, chief engineer of the Minsk Tractor Plant imeni V. I. Lenin association, underlined the fact that the number of workers in industry, construction and agriculture involved in manual labor still remains high. And no small effort will be required to solve this problem, which is becoming particularly urgent because of the difficult demographic situation now developing within the country.

Republic scientific and technical societies face great and difficult tasks in consequence of the decree of the CPSU Central Committee and USSR Council of Ministers, "Intensify Efforts to Economize and Insure Efficient Utilization of Fuel, Energy, Raw Materials and Other Resources." In accomplishing these tasks they will be leaning upon their broad aktiv of scientists, engineers, specialists and combined and special-purpose sections and committees. STS organizations include 1380 such groups. They are playing an active role in the documentation [pasportizatsiya] of waste generation and in every possible way are assisting in the introduction of waste-free technologies.

The year 1980 saw the organization of the permanent exhibition "Utilization of Secondary Resources for the Manufacture of Consumer Goods." Speaking at the congress on experience gained in this effort were I. A. Aleksandrovich, chairman of the Mogilevskaya Oblast board of the All-Union Chemical Society imeni D. I. Mendeleev and shop supervisor in the Mogilev Khimvolokno production association, and N. Ya. Barkun, Hero of Socialist Labor and tool maker in the Gorizont production association. At the same time, however, they pointed out that enormous reserves of material resources are far from being utilized in the best possible manner. In machine building, for example, one-fourth of the metal has for many years been going to waste. The figure is double that in machine tool manufacturing. The percentage of production waste going unused in the lumber, wood-processing and other industries is high.

A great deal of attention was devoted at the congress to questions concerning the organization of creative competition among different groups within scientific and technical societies and to participation on the part of society activists in the development and

implementation of measures to improve the quality of manufactured products as well as the organization of labor and protection of the natural environment, to work with young innovators and to strengthening ties with the Znaniye [Knowledge] society, the VOIR [All-Union Society of Inventors and Rationalizers] and other public organizations.

Also speaking at the congress was Academician A. Yu. Ishlinskiy, chairman of the All-Union Council of Scientific and Technical Societies, director of the USSR Academy of Sciences' Institute of Problems in Mechanics, Hero of Socialist Labor and holder of the Lenin and State Prizes.

The congress adopted a resolution orienting the republic's scientific and technical societies toward the task of mobilizing additional creative initiative among engineering and technical personnel, scientists, innovating workers and agricultural specialists to the end of successful fulfillment of five-year-plan plans and targets and implementation of the historic decisions of the 26th Congress of the CPSU.

Congress delegates with great enthusiasm adopted a letter of greeting to the Politburo of the CPSU Central Committee headed by Comrade L. I. Brezhnev, general secretary of the CPSU Central Committee and chairman of the Presidium of the USSR Supreme Soviet.

On 15 October the Belorussian republic council of scientific and technical societies met in plenary session to elect its directing organs. V. A. Pilipovich, academician of the BSSR Academy of Sciences and director of the Belorussian SSR Academy of Sciences' Institute of Electronics, was elected chairman of the BSSR council of scientific and technical societies.

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BSSR SCIENTIFIC-TECHNICAL SOCIETIES CONTRIBUTE TO TECHNICAL PROGRESS

Minsk PROMYSHLENNOST' BELORUSSII in Russian No 10, Oct 82 pp 34-38

[Article by N. Kononenko, deputy chairman of Belorussian Republic Council of Scientific and Technical Societies: "Basic Trend -- Technical Progress"]

[Text] Reinforcing the ties of science with practice, introducing advances of science and engineering into production, accelerating scientific and technical progress, these are the main directions of work of scientific and technical societies. Thanks to constant attention from the Communist Party and the Soviet State, scientific and technical societies have become truly massive.

There is also an undeviating increase in the scales of their activity, there has been an expansion in the range of problems which they are taking the most active part in solving.

Let us take the scientific and technical societies of our republic. The time between the fifth and sixth congresses of scientific and technical societies of Belorussia has been marked by a massive increase in scientific-technical creativity, development of creative initiative and activity of the scientific and engineering-technical intelligentsia, production leaders and innovators. Unselfishly working today in scientific and technical societies of the republic are about 500,000 scientists, engineers, technicians, agricultural specialists, economists, planners, accountants, innovative workers, instructors and students of higher and intermediate institutions of education. In the membership of 21 sectoral societies are 6,800 primary organizations, more than 80 percent of them acting as technical-economic and production engineering councils of industrial enterprises and associations.

The main content of activity of organizations of scientific and technical societies in recent years has been large-scale enlistment of working people in the development and realization of plans for new equipment and advanced technology, scientific organization of labor, elevation of the technical level and quality of goods produced and automation of production processes, conservation of stock, raw materials and fuel-energy resources. In doing this, particular attention has been given to development and realization of Soviet-wide and republic-wide scientific and technical programs.

The organizations of scientific and technical societies have been systematically studying and analyzing progress in programs and plans for new equipment,

introducing many proposals and recommendations in ministries, agencies and planning organizations on implementing quality control systems, reducing material inputs in machines, aggregates, construction items, efficient use of wastes in the chemical, lumber and woodworking industries, increasing durability and reliability of machines and equipment.

For example in 1979 at the suggestion of the Belorussian Republic Council of Scientific and Technical Societies, approval was obtained for the republic-wide program "Development of a Hydrodynamic Method of Cleaning Process Equipment and Tubing, and Introduction of This Method Into Enterprises of the Republic". Realization of this program is currently being concluded. Developments made in accordance with this program are being introduced in enterprises of municipal services, the chemical and food industry, in some central heat and electric power stations and the like. We can already note some results. Let us say that the use of the hydrodynamic method of cleaning enables mechanization of labor-consuming cleaning jobs, shortens the down time of process equipment in preventive maintenance work, and in this way increases the output of goods. For example, at Lida Paint and Varnish Plant, introduction of the hydrodynamic method has reduced the time of cleaning heat-exchange equipment by a factor of 15, giving an extra 570 metric tons of phthalic anhydride per year.

In accordance with proposals of the scientific-technical community to the construction industry, frames of industrial buildings have been developed and introduced on 20 projects that are formed of centrifuged structural components of annular cross section, reducing expenditure of concrete on these items to 35 percent, and steel--to 30 percent. Also being introduced are pyramidal pilings, channel-less installation of heating networks, for which the volumes of introduction in 1980 alone were nearly 200 kilometers, and the economic effect--900,000 rubles. These proposals and others are being used by construction ministries in analyzing the technical-economic bases and projects for construction, modernization and retooling of enterprises, mechanization bases, production bases of building organizations and specialized organizations. For example over the years of the Tenth Five-Year Plan, enterprises of the BSSR Ministry of Millwright and Special Construction Jobs alone have made use of more than two thousand proposals and recommendations of scientific and technical societies of the building industry.

Many enterprises and associations of ministries and agencies of the republic are making extensive use of recommendations of societies on problems of raising the technical level and quality of goods produced, reducing material inputs of items, perfecting organization of labor and production management. In sectors of the national economy, for example, extensive use has been found for procedural recommendations of the Republic Council of Scientific and Technical Societies on analyzing and determining the economic effectiveness of scientific organization of labor, intensification of the role of planning organizations in reducing material inputs on projects being developed, using secondary resources and production wastes in the industry of the republic and others. For example the BSSR Ministry of the Food Industry and the BSSR Ministry of the Meat and Dairy Industry have accepted recommendations of the Republic Board of Scientific and Technical Societies of the Food Industry on ways to further

develop science and engineering in these sectors in the Eleventh Five-Year Plan. At the same time, on the initiative of this board, a number of points have been eliminated from plans that are not innovative and recur from year to year. The proposals of the Board of Scientific and Technical Societies have been approved by Gosplan BSSR.

There are many such examples. For example, by order of the BSSR Ministry of Light Industry, the societal scientific research institute of the sewing industry has developed technological plans for a sewing department for making items from new materials, and a production line with large-scale mechanization for making items of artificial fur based on development and introduction of operation-by-operation normatives. These projects, done on a societal basis, have been included in the plan for new technology of the ministry, and have been introduced in Minsk Industrial Sewing Association imeni N. K. Krupskaya.

Another example. In accordance with proposals of the presidium of the Republic Board of Scientific and Technical Societies of the Power and Electrical Engineering Industry, a decision has been made in Belglavenergo enterprises to build a fuel oil line in the Eleventh Five-Year Plan for transporting fuel from Novopolotskiy Petroleum Refinery to Lukoml' GRES. Upon the initiative of this same board of scientific and technical societies, a two-year study has been done on a societal basis on the problem of heat supply for the city of Minsk. As a result, a proposal has been introduced on the infeasibility of using an open hot water supply system. The USSR Ministry of Power and the Minsk Municipal Executive Committee accepted this proposal for introduction.

Organizations of scientific and technical societies of the republic have emphasized and continue to emphasize solution of a major social problem, that of reducing heavy manual labor. Working with this problem are more than 400 sections, committees, societal design offices and other associations--more than 20,000 scientists, engineering-technical workers, specialists and innovative workers. With their active participation in accordance with experience of leading enterprises of Lithuania, and Chelyabinskaya, Kuybyshevskaya and Zaporozhskaya oblasts, complete specifications are being drawn up in industrial enterprises of the republic on work places where manual labor is used, target comprehensive programs are being drawn up and basically put into practice on reducing manual labor.

The greatest contribution to resolution of problems of mechanizing and automating production and reducing manual labor have been made by organizations of the scientific and technical societies of the Brestskaya, Gomel'skaya and Mogilevskaya oblasts.

Upon the initiative of the Brest, Homel and Mogil'ev councils of scientific and technical societies, decrees were passed in 1978 by the offices of obkoms of the Communist Party of Belorussia, executive committees of oblast councils of people's deputies and oblast councils of trade unions on steps to reduce heavy manual labor in industrial enterprises of these oblasts. In accordance with these decrees, activists of the organizations of scientific and technical societies have organized a number of creative teams, become acquainted in detail with organization of the work of enterprises of Chelyabinskaya, Kuybyshevskaya

and Zaporozhskaya oblasts on reducing manual labor, and developed "Procedural Recommendations on Reducing Manual Labor in Industry". To study these recommendations, the oblast councils in large cities have held scientific-technical seminars. To keep track of the progress of the comprehensive target programs based on specifications for work places, the oblast councils of scientific and technical societies have developed "Specifications on Effectiveness of Work to Reduce Manual Labor". Nor has the Belorussian Republic Council of Scientific and Technical Societies been idle in this work. In particular, this council has organized general societal supervision of the process of drawing up specifications for manual labor, development and realization of comprehensive goal programs on reducing manual labor. These questions have been the object of constant attention of plenary sessions and presidiums of the councils and boards of scientific and technical societies, scientific-technical conferences, meetings and seminars. Mechanization and automation of production processes has been the main topic of contests and reviews held by the organizations of scientific and technical societies. Here are just a few data.

There were 4,457 primary scientific and technical organizations of various sectors of the national economy taking part in a republic societal review on mechanization of manual labor in enterprises and organizations of the republic held by the Belorussian Republic Council of Scientific and Technical Societies in 1981. During the review, 7,345 measures were introduced with an economic effect of about 21 million rubles. The absolute emancipation of workers employed in manual labor was nearly 13,000 persons, and more than 11,000 persons were transferred to mechanized labor.

For example, in enterprises of light industry during the review, large-scale mechanization was introduced in one of the enterprises and 18 departments. In 241 main and auxiliary production sections, heavy and laborious jobs were mechanized, and 1266 units of new technological equipment were installed.

At Minsk Tractor Plant, a job complex has been carried out on mechanizing transport and warehousing work, which has raised the level of mechanization of loading, unloading, hauling and warehousing jobs to 86.5 percent. The best technical ideas on mechanization and automation of production and reduction of manual labor have been demonstrated at exhibitions organized by the republic council and sectoral boards of scientific and technical societies. One such exhibition, for example, was organized by the Belorussian Republic Council of Scientific and Technical Societies in 1978. Its exhibits were shown in 16 cities of the republic. They were well received everywhere by specialists in sectors of the national economy of the republic. The exhibition was attended by about 1.5 million people.

Two years ago, the Belorussian and Lithuanian republic councils of scientific and technical societies organized an inter-republic thematic exhibition "Small Mechanization-80" that has been on tour in large cities of Belorussia since the second quarter of 1981. This exhibition has demonstrated facilities for mechanization of loading-unloading, transport and warehousing jobs.

During the years of the Tenth Five-Year Plan, the scientific-technical community of the republic as a result of comprehensive analysis and investigation

of the state of affairs in local areas organized and introduced more than 34,000 measures on reducing manual labor, enabling relative emancipation of 180,000 people from heavy labor, and replacing manual labor with machines for 84,000 people.

During the report period, organizations of scientific and technical societies of the republic have also particularly stressed improvement of the quality of goods, improvement of durability and reliability based on using comprehensive quality control systems. In particular these organizations, widely supporting the initiative of the scientific-technical community of the Leningrad Elektrosila Production Association, and the production association of Minsk Tractor Plant imeni V. I. Lenin, have undertaken expert evaluation of the technical level of machines, articles and materials being produced, the state of equipment and other technology of the production class, have taken an active part in development and realization of steps on production retooling, and have acted as intermediaries in the conclusion of agreements between enterprises, scientific research institutes and institutions of higher education on creative cooperation in resolving these problems.

Considerable work in this area has been done by organizations of scientific and technical societies of the machine building industry, the construction industry, the All-Union Chemical Society imeni D. I. Mendeleev, power engineering and the electrical engineering industry, the Scientific and Technical Society of Radio Engineering, Electronics and Communications imeni A. S. Popov and other sectoral boards of scientific and technical societies. For example, with participation of the republic section of the board of scientific and technical societies of the construction industry, a technical investigation was undertaken in 1978-1979 on the quality of prefabricated ferroconcrete produced by 120 enterprises of the republic. In doing this, it was established that due to differences in process conditions of formation and heat treatment, the same types of goods do not have sufficiently high technical-economic indices. Besides, many technological lines have become obsolescent and do not produce ferroconcrete items of high quality.

In accordance with the materials of the investigations, steps were developed and implemented that were aimed at improving technological processes, updating and retooling prefabricated ferroconcrete plants. In carrying these out, there is the opportunity to increase the capacity for producing prefabricated ferroconcrete by about a million cubic meters per year and to save about 60 million rubles.

Currently taking part in solving problems of improving the quality of goods produced are more than 500 sections and committees that have been set up in the councils, boards and primary organizations of scientific and technical societies. Members of the sections and committees are taking an active part in the work of consultative stations and commissions on problems of quality and standardization. Besides, the organizations of scientific and technical societies each year hold more than a thousand scientific and technical conferences and convocations on problems of improving the technical level, reliability and durability of machines and devices, more than 900 contests and reviews, about 2,500 courses, seminars and schools of advanced experience on questions

of introducing new progressive methods of quality control, standardization and metrology, and large-scale automation systems. Recommendations on these problems worked out by the scientific-technical community are being widely used by enterprises and organizations in creating new machines, materials, items, introducing large-scale systems for quality control of goods. All this to a certain extent is conducive to increasing the specific weight of goods produced in the higher category of quality.

Considerable work is being done by organizations of scientific and technical societies of the republic on introducing scientific organization of labor. Committees and sections on scientific organization of labor have been set up in republic and oblast councils and sectoral boards, and societal councils on scientific organization of labor have been created in primary organizations. As time has passed, the number of such councils increased past 600. They now number about 4,000. Working on a societal basis in these councils are about 31,700 specialists. In all, they have realized and introduced about 45,000 projects on organizing labor on a scientific basis.

Introduction of steps on scientific organization of labor, which were developed with the active participation of members of committees, sections and councils on the scientific organization of labor, increased labor productivity by more than five percent during the Tenth Five-Year Plan, reduced the additional need for labor resources by 55,300 persons, and saved more than 100 million rubles by reducing production costs.

At the center of attention of the republic council and sectoral boards of scientific and technical societies are questions of economics, rational and efficient use of metals, construction materials, raw materials, fuel and energy resources, creation and introduction of no-waste technological processes. For the purpose of successful resolution of these questions, a committee on rational and efficient use of material resources and a committee on industrial power have been set up. Similar committees have been set up for oblast councils of scientific and technical societies.

What have they already been able to do in practice? The committee of the Belorussian Republic Council of Scientific and Technical Societies on rational and efficient use of material resources has developed recommendations on implementing supervision of normalization, utilization and storage of rolled ferrous goods, introduction of progressive ideas and improvement of normative indices on conservation of material resources in construction, elevation of the role of design organizations in reducing material inputs of items and the like. Recommendations have also been worked out on introducing personal accounts of economy of designers, creation of an interagency board of experts of design developments, use of secondary resources and production wastes. Participation in the All-Union Review of Effectiveness of Utilization of Raw Materials, Stock and Fuel-Energy Resources has become a matter of honor for organizations of scientific and technical societies. Contests and reviews on special themes have been organized in sectors and areas. As a result in the last two years alone about 140,000 proposals have been introduced. Their economic effect has exceeded 180 million rubles. In other words, there has been a savings of about 800 million kWh of electric energy, 2.3 million kcal of thermal energy, 283,000 metric tons of comparison fuel, 105,000 metric tons of ferrous metals, 398,000 metric tons of nonferrous metals and other materials.

Scientific and technical societies of the republic are also doing considerable work on further strengthening the relations between science and production, disseminating advances in science and engineering, studying, propagandizing and introducing advanced production experience, new equipment and progressive technology. Suffice it to say that during the Tenth Five-Year Plan the organizations of scientific and technical societies held about 70,000 seminars, courses and schools of advanced experience attended by more than 1.5 million people. In enterprises and organizations of the republic, members of scientific and technical societies have given about 273,000 lectures to more than 7.3 million people, more than 87,000 engineering-technical workers and scientists have participated in scientific teams, more than 500,000 people have taken part in production excursions.

At the present time in our republic there are 5,403 societal offices of technical information in which more than 44,000 people are employed. OBTI [expansion not given] is selecting and disseminating informational materials on the latest achievements in science, engineering and advanced experience, patents, prospectuses and catalogs published with respect to the profile of one enterprise or another, publishing special sheets and pamphlets, making suggestions on introducing scientific and technical innovations in industry. In addition, boards and councils of scientific and technical societies in conjunction with ministries and agencies have developed a specific system of disseminating and introducing leading production experience. Base enterprises have been defined on investigation of experience in engineering support for raising the technical level and quality of goods, introducing large-scale systems for quality control of goods, large-scale mechanization of laborious processes, conservation and rational use of materials and fuel-energy resources in the national economy and so on.

The slogan of the Institute of Mechanics of Metal-Polymer Systems of the BSSR Academy of Sciences, "Let's Raise Every Scientific Development to the Level of an Invention" has been widely spread among the scientific and technical community of the republic; the same can be said of the experience of Minsk Machine Tool Building Association on meeting State quotas with consideration of deliveries and obligations according to agreements, and Orsha Linen Combine with respect to engineering support for raising the efficiency and quality of work, as well as others. Also receiving wide support is the initiative of the scientific and technical community of the production association of Minsk Tractor Plant imeni V. I. Lenin on expert evaluation of the technical level of machines produced, the state of equipment and other technology in the production class.

A few words about the role of the scientific and technical community, leaders and production innovators in the development of mass creativity and management of technical progress. The organizations of scientific and technical societies have set up societal committees and sections, scientific research institutes and laboratories, offices and groups of economic analysis, councils of scientific organization of labor, creative teams and other associations. Societal creative associations currently employ more than 300,000 scientists, engineers, technicians, production innovators--enthusiasts of scientific and technical progress. During the period between congresses they have implemented and

introduced into production more than 1.7 million measures with an economic effect of more than 2 billion rubles. Also working in organizations of scientific and technical societies of the republic are almost 7,000 sections and committees bringing together about 200,000 scientists and specialists of different sectors of the national economy. Their work program is long-range and yearly programs on acceleration of scientific and technical progress that go into the practice of planning the activity of organizations of scientific and technical societies on various levels. The members of committees and sections are doing research for the purpose of finding production bottlenecks, developing proposals and recommendations on eliminating present deficiencies.

For example, the members of committees of the Belorussian Republic Council of Scientific and Technical Societies on mechanization and automation of production processes have analyzed techniques, defined indices of mechanization and automation of production, and established that in many sectors they have nothing of a general nature, and in some are lacking altogether. Nor are there any unified opinions and requirements for estimating the level of mechanization and automation, there are no indices that sufficiently accurately and objectively reflect the state of this work. Members of the committee in generalizing available materials have developed a system of first-rank indices and procedural recommendations on applying them that will be shortly directed to ministries, enterprises and organizations of the republic.

The problem commissions of the committee of the Belorussian Republic Council of Scientific and Technical Societies on bookkeeping and economic analysis have done studies on the state of mechanization and automation of bookkeeping, effectiveness of managerial information, organization of labor of office and bookkeeping personnel of enterprises and organizations of most ministries and agencies of the republic. Based on research materials, proposals have been worked out and offered for consideration by the Council of Ministers of the republic on further improving the organization of accounting and its mechanization in associations, enterprises and organizations. It would seem that this will advance the cause.

In comprehensively resolving the problem of improving accounting and economic analysis, the Belorussian Republic Council of Scientific and Technical Societies committee on bookkeeping in conjunction with the procedural council of the BSSR Ministry of Finance, the BSSR Central Statistical Administration and other agencies and institutions is holding permanently acting seminars and lectures where, in addition to improving the skill of office workers, specific recommendations are worked out on practical implementation of steps and proposals aimed at improving accounting, increasing the degree of its mechanization and automation, and also organizing the labor of office workers.

Considerable work on development of scientific and technical creativity of science workers and specialists is being done by sectoral societal scientific research institutes and laboratories set up at the initiative of scientific and technical societies on the basis of large industrial enterprises. Rich experience in this work has been accumulated by the republic board of scientific and technical societies of light industry. Ten societal scientific research institutes that have been set up here are having considerable influence on

increasing production efficiency, improving the quality of goods, conservation and efficient use of raw material, organization of workers.

Naturally, there are also deficiencies in the work of scientific and technical societies. One would think that delegates of the Sixth Congress of Scientific and Technical Societies of Belorussia will also concentrate their attention on these.

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6TH CONGRESS OF ESTONIAN SCIENTIFIC-TECHNICAL SOCIETIES REPORTED

Tallinn SOVETSKAYA ESTONIYA in Russian 21 Oct 82 p 1

[Article: "6th Congress of Estonian SSR Scientific and Technical Societies"]

[Text] Scientific and technical societies comprise almost 66,500 scientists, engineers and specialists in all primary branches of the republic economy. Their creative labors are helping to accelerate progress in science and technology, improve work efficiency and quality and intensify efforts to save and conserve.

The scientific and technical societies of the Estonian SSR held their sixth congress in Tallinn on 20 October.

As the honorary presidium for the congress attendees enthusiastically elected the Politburo of the CPSU Central Committee headed by Comrade L. I. Brezhnev.

A. Kudryavtsev, second secretary of the Estonian Communist Party Central Committee, extended the congress the greetings of the Central Committee of the Communist Party of Estonia.

B. Korchemkin, ESNTO [Estonian SSR council of scientific and technical societies] chairman, delivered the report to the congress.

It was pointed out at the congress that the period under review had seen extensive socialist competition for the development of creative original plans and that the economic gain achieved from the adoption of these plans had been calculated at some 30 million rubles per year. In the process of monitoring the execution of plans for new equipment NTO [STS] members offered more than 130,000 suggestions. STS projects include the "Azeriskiy initiative on the mechanization and automation of drainage pipe fabrication", development and introduction of a biotechnology for processing milk whey for feeds, measures to increase the efficiency with which electric power is consumed within the agricultural sector among others.

Efforts to publicize advances in science and technology and innovative ideas and practices and disseminate economic knowledge have been intensified. The period has also seen a larger role for and an increase in the membership of public creative associations attached to the primary organizations of the republic's scientific and technical societies. ECNTO members have expanded their contacts with colleagues from fraternal republics.

Congress participants outlined plans for future implementation of decisions of the 26th Congress of the CPSU, the 18th Congress of the Communist Party of Estonia and the May (1982) plenum of the CPSU Central Committee.

Elections were held to elect a new council and auditing commission for the republic's scientific and technical societies.

The congress adopted a greeting to the Estonian Communist Party Central Committee.

Also speaking at the congress were R. Butel', secretary of the Estonian SSR council of trade unions, and N. Chistyakov, member of the presidium of the All-Union Council of Scientific and Technical Societies.

At its first plenum the Estonian council of scientific and technical societies re-elected B. Korchemkin as chairman,

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ROLE OF GEORGIAN SCIENTIFIC AND TECHNICAL SOCIETY DESCRIBED

Tbilisi ZARYA VOSTOKA in Russian 17 Oct 82 p 2

[Article by Eduard Gersamiya, scientific and technical society chairman, VNIITME: "On a Voluntary Basis, Toward the 6th Congress of Georgian Scientific and Technical Societies"]

[Text] Scientific and technical societies, including the NTO [STS] for power engineering and the electrical equipment industry, which is a voluntary mass organization uniting scientists, engineers, technicians and innovating production personnel, are making their contribution to successful implementation of the integrated program for scientific and technical advancement within the national economy developed by the 26th Congress of the CPSU, to efforts to increase the efficiency of social production and improve work quality and to accelerate the rate of growth of labor productivity.

The scientific and technical society of the All-Union Scientific Research and Planning and Design Institute of Small-Power Electrical Machine Engineering (VNIITME) unites within its ranks more than 650 members, who through their entire program of activities are putting forth vigorous efforts to promote practical introduction within the national economy of advances in science and technology and to raise the technological level and improve the quality of the manufactured product. Great importance is attached to the development of a well-defined program of subject areas in which the institute is to undertake research. As a rule, this will include research and self-initiated work aimed at the establishment of scientific and technical foundations. Special attention is given to the development of production process systems and special production equipment for the manufacture of electric motors for household and general industrial use.

The institute has accomplished a great deal in the way of helping branch facilities introduce new motors and mechanize and automate labor-intensive processes. The past five years, that is the period 1977-1981, have seen scientific research and experimental design work undertaken to the tune of some 20 million rubles and dozens of new production processes developed and introduced into practical production operations. The economic gain derived from the introduction of these processes ran to 28,883,000 rubles.

The plan for the first half of 1982 has been successfully fulfilled as well. The economic gain derived from the introduction of new equipment over the branch as a whole has been calculated at 568,800 rubles.

The role played by members of the regional board of the VNIITME STS in the achievement of high indicators has been an important one. While skillfully directing the creative research and developing the inquiring thinking of STS members and intensifying their creative activity, the regional [rayon] board is at the same time heavily involved in efforts to publicize advances in science and technology and innovative ideas and practices among the masses of the population. Conferences on science and technology are held along with seminars and meetings with precisely this object in view. Many of these are organized at the all-Union level. This is entirely understandable, what with the fact that the VNIITME is the primary organization in the field of low-power electric motor production engineering.

The initiative launched under the slogan "Each STS council a center directing the search for untapped production potential" has been taken up by the STS organization of our institute. Each year since 1980 the VNIITME STS has sent the republic board of the STS for power engineering and the electrical equipment industry a personal accounting of as yet unexploited possibilities for increasing production volumes. Plans for identifying unexploited production potential are being fulfilled to the extent and within the periods indicated in the personal account.

The institute has organized socialist competition among STS members. Suffice it to say that, according to figures for 1981, 1,081 individuals participated in personal and brigade socialist competition. Among them were 400 STS members.

The direct task of the council of a primary STS organization is to assist in the development of new equipment and to provide public supervision of the practical introduction of this equipment. Nothing could contribute any more powerfully to this end than participation in competitions. In 1980, for example, VNIITME STS members took part in competitions held at the level of this STS. Four projects entered in republic-level competition for best new equipment developed and introduced into production operations were awarded prizes.

Primary STS organizations are direct participants in efforts to improve the country's economy. Their life centers around its interests, and they offer concrete suggestions concerning the development of new equipment and the exploitation in production operations of new advances in science and technology. Inventors and rationalizers are making a valuable contribution. The years from 1977 to 1981, for example, saw members of our STS submit 171 applications for proposed inventions to the USSR State Committee on Inventions and Discoveries. They accounted for 109 favorable decisions on the issuance of inventor certificates. The same period saw 255 rationalizing proposals introduced into production operations. STS members among the institute's scientists are also increasing their output of creative works. Ten collections of scientific articles and some 200 individual scientific articles have been published here over the past 5 years.

The republic council of scientific and technical societies is of great practical assistance in the work of the VNIITME STS's regional board. This makes it possible for the regional board to develop solutions to important economic problems quickly and effectively. The State Committee on Science and Technology and USSR Gosplan are currently undertaking to implement some 200 programs involving the advancement of some component of the national economy. Our institute is involved in work on two of these programs: one has the objective of developing new, technically sophisticated consumer goods and then introducing them into production, the other has to do with the development of new unified series of ac electric machines for general industrial use.

As we can see, scientific and technical societies constitute a broadly representative sector of Soviet science and technology and are one of the forms through which we combine the achievements of the scientific-technical revolution with the advantages of the socialist system of economic management. They find themselves in a key position with respect to the party's economic policy; they are helping in every possible way to insure that as yet untapped potential is exploited to the maximum possible extent and striving to see that each labor collective achieve high marks in socialist competition to the end of rendering a worthy salute to the 60th anniversary of the formation of the USSR.

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CSO: 1814/29

ACTIVITIES AND CONGRESS OF MOLDAVIAN SCIENTIFIC-TECHNICAL SOCIETIES

Kishinev SOVETSKAYA MOLDAVIYA in Russian 23 Oct 82 p 3

[Article: "Linking Science and Labor, 6th Congress of Moldavian Scientific and Technical Societies"]

[Text] More than 145,000 scientists, scholars, specialists and leaders in production operations in different branches of the republic economy are members of scientific and technical societies. The results of their work over the past 5 years and tasks involved in intensifying efforts aimed at implementation of decisions of the 26th Congress of the CPSU, the 15th Congress of the Communist Party of Moldavia and plans for the Eleventh Five-Year-Plan period as well as at successful realization of the Food Program were subjects of discussion at the 6th congress of Moldavian scientific and technical societies held 22 October in Kishinev.

As honorary presidium congress participants most enthusiastically elected the Politburo of the CPSU Central Committee headed by Comrade L. I. Brezhnev, general secretary of the CPSU Central Committee.

Attendees applauded the greeting to the congress from the Central Committee of the Communist Party of Moldavia, which was delivered by B. N. Savochko, secretary of the Central Committee of the Communist Party of Moldavia.

Delivering the report to the congress, I. G. Dobynde, chairman of the Moldavian republic council of scientific and technical societies and first deputy chairman of the republic Gosplan, expressed on behalf of congress delegates heartfelt gratitude to the Central Committee of the Communist Party of Moldavia for its highly appreciative evaluation of what the scientific and technical societies have accomplished and assured it that they would continue their vigorous efforts aimed at achieving further progress in science and technology and increasing the efficiency of social production.

The rapporteur and other speakers at the congress pointed out that society members are devoting their attention primarily to the technical improvement of industrial production operations, increasing the efficiency of these operations and forging stronger links between science and practice. More than 60 per cent of the primary organizations are performing the functions of enterprise and organization production engineering councils, which is one way of involving workers in production management. Of great assistance to labor collectives in the fulfillment of plans and obligations are the creative public associations involving NTO [STS (scientific and technical

societies)] and sections, bureaus, groups, economic analysis and technical information-laboratories, councils on scientific labor organization and scientific research institutes.

Organization of socialist competition on the basis of creative personal and collective plans helps stimulate the activity of society members. This competition currently involves some 80,000 people. Over the course of the first year of the five-year-plan period alone they introduced innovations yielding an economic gain of 66 million rubles. These efforts have brought particularly good results in enterprises in the power, furniture and wood-processing, light and electrical equipment industries, where more than 80 per cent of the STS members in engineering and technical positions are involved in socialist competition.

Congress speakers emphasized that, guided by decisions of the 17th Congress of Trade Unions of the USSR, scientific and technical societies need to raise the level of their efforts devoted to publicizing and introducing advancements in science and technology and innovative ideas and practices into practical production operations and to participate more actively in the planning and preparation for and in the realization of integrated problem-oriented programs. Primary organizations and creative associations should involve themselves with a greater sense of purpose in attacking problems involved in improving production and in the adoption of more progressive forms of labor organization, improving product quality, consumer-good quality in particular, and in insuring efficient utilization of fuel and energy, raw material, labor and other resources. Much remains to be done in the way of mechanizing and automating production processes and reducing the amount of manual labor that has to be performed, particularly in secondary loading and unloading operations.

Participation in the implementation of measures called for by the Food Program should constitute a major direction of the efforts of the republic council, the branch boards and primary STS organizations. They should be giving serious attention to the problem of improving the organization of production operations in all areas of the republic's agroindustrial complex, to broadly extending the application of industrial technology to agricultural operations and to the exploitation of advances in science and technology on the part of the processing branches.

G. I. Yeremey, chairman of the Moldavian republic trade union council also spoke at the congress.

Participating in the work of the congress were P. I. Shapa, deputy chairman of the Moldavian SSR council of ministers, V. D. Ponomarev, a senior official of the AUCCTU, and I. M. Yashin, head of department, All-Union Council of Scientific and Technical Societies.

The congress elected members to the Moldavian republic council of scientific and technical societies and the auditing commission.

At the organizational plenum of the Moldavian republic council of scientific and technical societies, L. F. Kulyuk, deputy chairman of the republic Gosplan, was elected chairman of the council.

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CSO: 1814/29

ECONOMIC PROBLEMS OF SCIENTIFIC AND TECHNICAL PROGRESS

Moscow EKONOMICHESKAYA GAZETA in Russian No 47, Oct 82 p 10

[Article: "On the Course of Economic Problems of Scientific and Technical Progress"]

[Text] The course "Economic Problems of Scientific and Technical Progress" includes:

Marxist-leninist study on the significance of science and technology in the development of society and its creative use by the CPSU in the practice of the building of communism.

The advantages of socialism in development of science and technology and introduction of the achievements of the scientific and technical revolution. The forms and methods of their use in the practice of economic construction.

The unified scientific and technical policy of the CPSU and its role in uniform acceleration and use of the achievements of scientific and technical progress.

The effective forms of international scientific and technical cooperation of the USSR. The participation of the sector in scientific and technical cooperation of CEMA member countries and its results.

The 26th CPSU Congress on the basic directions of scientific and technical progress during the 11th Five-Year Plan.

Acceleration of scientific and technical progress as the basis of an increase of production efficiency. New resource-conserving equipment and technology of the sector and their effectiveness of introduction in the sector (associations and at enterprises).

Problems of the use of basic funds and capital investments under conditions of acceleration of scientific and technical progress. Dynamics of the indicators of utilization of basic funds and productive capacities in the sector (association and at the enterprise).

Effect of scientific and technical progress on the quality and variety of products produced. Analysis of the course of fulfilling tasks on increasing the

quality and changing the variety of products in the association and at the enterprise.

Improvement of production management under conditions of the modern scientific and technical revolution. New forms and methods of management in the sector (region, association and enterprise).

Timely problems and methods of improving planning of the development of science and technology in the sector.

Development of a system of planning scientific research and developments in the sector during the 11th 5-Year Plan.

Planning as the most important link of managing scientific research and developments. A system of plans for development of science and technology.

The role of complex scientific and technical programs in planning the development of science and technology. The leading experience of development and implementation of scientific and technical programs.

Specific program methods of planning scientific and technical progress. The effectiveness of their use in the sector (association and enterprise).

The main phases of development and assimilation of new equipment. Methods of reducing the length of the "science-equipment-production" process.

Development of the experimental base of scientific research institutes and design offices and its role in accelerating the introduction of the achievements of science and technology (on the example of the sector and association).

Organization of introduction of scientific research and experimental design developments in the sector (association and enterprise). Analysis of the course of fulfilling the plans and indicators of using scientific achievements in production.

Forms of strengthening the ties of science and production, their efficiency and ways of improving them.

The experience of organizing and functioning of scientific production associations. Ways of improving the work of NPO.

The leading experience of creative cooperation of scientific research organizations and production enterprises.

The effectiveness of scientific and technical progress and methods of increasing it. Analysis of return of investment for scientific research, development and introduction of new technology.

The criteria and indicators of the comparative economic effectiveness of new technology. The relationship of the national economy and cost-accounting effect.

Standards for the effectiveness of using the means of production, maintenance of them and their significance. The order of determining the values of norms under cost-accounting conditions.

Economic analysis of the versions of new technology, its essence and order of use in the association and enterprise.

Analysis of the economy of new technology. Analysis of the economy of new technology and measures to increase it (on the example of the sector, association and enterprise).

Improvement of planning and organization of research at scientific institutions. Experience of development and implementation of plans for development of scientific organizations.

Complex analysis and economic analysis of scientific and technical activity (on the example of the work of the scientific research institutes and design offices of the sector). Analysis of fulfillment of the topical plan of the scientific research organization.

Organization of economic analysis at scientific research institutes and design offices. Economic analysis of the scientific and technical potential of scientific research institutes and design offices and the degree of its utilization.

The effect of the activity of scientific research institutes and design offices on acceleration of scientific and technical progress in the sector.

An increase of the patentability and organization of licensing work at scientific institutions of the sector.

Ways of improving scientific and technical information at sector scientific research institutes and design offices. Leading experience in organization of information support for scientific research and experimental design work.

Party and government measures for further development of cost accounting and intensification of personnel responsibility for the final results of work. The content and features of the cost accounting of scientific research institutes and design offices.

A system of detail-orders and its relationship to the system of economic incentives in the activity of scientific research institutes and design offices. Reserves for improving the effectiveness of the detail-order system.

A unified fund for development of science and technology and the order of its formation and use. Analysis of the effect of a unified fund for acceleration of scientific and technical progress in the sector (association and enterprise).

A system of wages, material and moral incentives for workers of scientific research and planning-design organizations. Analysis of the relationship of the growth of wages and the effectiveness of scientific research and developments.

System of training and raising the qualifications of workers of scientific research institutes and design offices and ways of improving its effectiveness.

Methods of analyzing the work qualities of scientific and engineering and technical personnel. Leading experience of certifying them.

New forms of socialist competition for acceleration of scientific and technical progress. Reserves for increasing the effectiveness of the competition at scientific research and planning-design organizations.

Leading experience of development and implementation of personal creative plans of specialists, directed toward increasing production efficiency.

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COS: 1814/54

PROBLEMS OF SCIENTIFIC ADVANCE AND PRODUCTION EFFICIENCY IN GeSSR

Tbilisi ZARYA VOSTOKA in Russian 10 Nov 82 pp 2-3

[Article, published under the heading "Assistance to Economics Education System Propagandists and Students," by Candidate of Economic Sciences Tamaz Chikvaidze, deputy director of the Georgian SSR Academy of Sciences Institute of Economics and Law: "Scientific and Technological Advance -- Foundation for Intensification of Production"]

[Text] Profound knowledge of current problems of scientific and technological progress is an imperative demand of the day and a reliable foundation for successful accomplishment of the tasks specified at the 26th CPSU Congress. A new course is being extensively offered in the new school year in the specific economics schools in our republic: "Scientific and Technological Advance and Efficiency of production." In connection with this, ZARYA VOSTOKA is commencing publication of theoretical materials to aid propagandists and students studying these problems.

It is essential that the working people economics education councils of the ministries and agencies provide propagandists of enterprises and organizations with concrete analytical material on these topics applicable to their own branch.

At the contemporary stage, scientific and technological advance is a most important factor in economic and social development. "The conditions in which the nation's economy will be developing in the 1980's," noted Comrade L. I. Brezhnev in the Accountability Report to the 26th CPSU Congress, "makes acceleration of scientific and technological progress even more urgent.... Incorporation of scientific discoveries and inventions is becoming today a decisive, most important area."

An enormous scale of production, the need for comprehensive, more balanced development of the nation's economy, a high technological level and rapid pace of economic growth, and intensification of the limiting effect of all types of material and labor resources advance the task of transitioning to an intensive type of reproduction, which is characterized by a decrease in specific expenditures of resources per unit of end product, fuller and more efficient utilization of amassed production potential.

There is still considerable reserve potential in the nation's economy in this area. Our country is better provided with resources than any other country in the world, but the efficiency of their utilization is not yet adequate. The level of production of primary resources per capita in the USSR in comparison with the United States, according to figures for 1979, was as follows: oil (including gas condensate) -- 117, steel -- 98, and cement -- 132 percent. At the same time expenditures of these resources per unit of national income are substantially greater in this country than in the United States: oil by a factor of 2, steel by a factor of 1.7, cement by a factor of 2.4, and capital investment by a factor of 1.5. Labor productivity in USSR industry is approximately 60 percent of the labor productivity level in U.S. industry.

Therefore the materials of the 26th CPSU Congress stress the need for acceleration of scientific and technological advance and strengthening of its influence on accomplishment of economic and social tasks and increasing the efficiency of societal production.

Acceleration of scientific and technological progress is especially important for the Georgian SSR, since it is to be the primary factor in securing a rapid rate of economic growth and increased efficiency of societal production in the 1980's. Proceeding from the decisions of the 26th CPSU Congress and 26th Congress of the Georgian Communist Party, the Sixth Plenum of the Georgian Communist Party Central Committee (May 1982) specified concrete ways to speed up scientific and technological advance.

Speaking at a ceremony dedicated to presentation of the Order of Lenin to the city of Tbilisi, CPSU Central Committee Secretary K. U. Chernenko stressed that the development of Georgia as an organic part of a unified national economic complex has made it possible to establish branches of industry which are totally new for this republic: electric power engineering, ferrous and non-ferrous metallurgy, chemical industry, modern machine building and metalworking. And today there is arising the task of maximally utilizing this republic's growing potential for harmonious development of the entire country.

It is essential to accomplish a strategic basic task in order to achieve the fullest and most comprehensive utilization of the vast potential contained within the socialist economic system -- an organic combining of the achievements of the scientific and technological revolution with the advantages of socialism. Following are the principal directions to take in accomplishing this task: securement of comprehensive management of scientific and technological advance; transition to specific-program planning on basic scientific and technical problems; development of forms of integration of science and production; improvement of the mechanism of dissemination and incorporation of scientific and technical know-how.

The content of comprehensive management of scientific and technological advance proceeds directly from its essence. Scientific and technological advance in conditions of socialism is a process of qualitative development of production, improvement of labor force skills and organization of labor on the basis of new knowledge and development and adoption of new equipment, which is carried out in an orderly manner on a scale of the entire nation's economy for

the purpose of improving the living standards and achieving comprehensive development of each and every member of society. Comprehensive management of scientific and technological advance includes both management of development of science and technology and management of the processes of feedback by the economy and social domain to scientific and technological advance. It presupposes organization of integral planning, financing and incentive to stimulate the "research-adoption" cycle as a whole, in a unity of all its phases, with the aid of a specific-purpose scientific and technical program.

At the national economy level comprehensive management is accomplished with the aid of a 20-year comprehensive scientific and technological progress program, formulated and implemented by 5-year periods. Within the framework of this program, initially basic directions of development of science are determined, and subsequently a long-range technology development program within the branches and sectors of the economy is formulated on the basis of this program; finally, a long-range socioeconomic development program is drawn up for the nation as a whole and the individual republics. The comprehensive scientific and technological progress program for the Georgian SSR, which is presently being drawn up by 5-year periods, is of paramount importance for speeding up scientific-technical and socioeconomic progress in our republic.

In this republic we have amassed valuable experience in devising and implementing specific-purpose scientific and technical programs. Approximately 35 programs were drawn up in 1977-1980, encompassing a broad range of research and development in the area of industry, agriculture, health care and automated management and control systems. In addition, this republic's scientific research organizations are actively participating in the formulation and execution of 20 all-union programs.

Consistent execution of all these programs constitutes the basis for achieving the earliest possible accomplishment of the strategic task of our republic's economic policy for the near term -- elimination of the slight lag in the level of this republic's economic development, achievement of the national average level in the major economic indicators, and transition by the economy to a path of intensive development.

Comrade K. U. Chernenko noted in a conversation with top republic officials that growth in industrial and agricultural production and the level of labor productivity in Georgia in the most recent and current five-year plans are higher than plan targets, but at the same time we have much unutilized reserve potential.

Societal labor productivity should increase by 30.5 percent during the 5-year period, including a 29.3 percent rise in industry and a 48.5 percent increase in agriculture. This factor should account for 86.3 percent of national income growth, 81.3 percent of industrial output growth, and total agricultural growth. The figures for the five-year plan up to this point indicate that considerable work has been accomplished in this area. National income in 1981 was up 4.6 percent over 1980. And the percentage share of national income growth due to increased labor productivity amounted to 81.4 percent. Labor productivity in industry increased by 3.7 percent, and by 3 percent in

agriculture. This factor accounted for 74.01 percent of industrial output growth and total agricultural gross output incremental growth. Labor productivity in industry rose by 2 percent in the first nine months of 1982, accounting for three fourths of production growth. The capital-labor ratio in this republic's industry in 1981 was 5.8 percent greater than that for 1980, and a growth of 10.5 percent is anticipated for 1982.

The tasks of labor productivity growth determine the need for development of labor-conserving directions of technological advance and general implementation of a comprehensive, specific program to reduce manual labor and boost the technological level of production, primarily through technical retooling, renovation, rehabilitation, and modernization.

Capital spending in the amount of 1,592,000,000 rubles is specified in the current five-year plan for retooling-rehabilitation and renovation of existing enterprises, a figure which is 32 percent greater than in the 10th Five-Year Plan. These projects will apply to the Rustavi Metallurgical Plant and Chemical Fiber Plant, the Kutaisi Automotive Plant, the Chiatura mines, machine-building, metalworking, food-processing and light industry enterprises.

For the republic as a whole, capital investment savings in comparison with new construction to be achieved by implementing these programs are anticipated in the amount of 300-350 million rubles.

A course of policy directed toward intensification of societal production means enhancing the role of science, which constitutes the foundation of scientific and technological progress. It was emphasized at the Sixth Plenum of the Georgian Communist Party Central Committee that scientific research in this republic should be concentrated on accomplishing tasks which ensure solving key problems of the national economy.

Much research performed by Georgian scientists has gained world recognition, and the results of Georgian research are extensively utilized in the economy of the republic and the nation. This includes research connected with comprehensive processing of the Chiatura manganese ore, adoption of a hydrometallurgical method of producing high-grade copper powder and active manganese dioxide, which makes it possible to set up their production in this country. Research is being conducted in the field of cybernetics, electronics, and computer technology, aimed at developing elements of a cybernetic system based on new physical principles; automated control systems are being developed for controlling industrial processes in the metallurgical, mining, and chemical industries, as well as specialized computer systems for automating thermal and nuclear electric power stations. The Georgian Academy of Sciences Institute of Control Systems, the USSR Avtomatprom Scientific Research Institute, and the workforce of the Pervouralsk Pipe and Tube Plant have developed the world's first adaptive system to control tube rolling production processes. Major success has been achieved by this republic's scientists and designers in the field of power engineering, machine building, etc.

The tasks of further development of this republic's economy advance the necessity of solving scientific and technical problems, the most important of

which are the following: development of new, efficient industrial processes for utilization of the republic's mineral raw materials, improvement of the technological level of production and product quality in the leading branches of industry, increase in the degree of mechanization of labor in the economy, technical reequipping of the coal industry, mining and beneficiation, metallurgical industry, chemicals, and light industry, development of new and advanced modes of transportation, special equipment for the republic's rapidly developing agriculture, development and adoption into production of materials-conserving industrial processes. Anticipated savings in the 11th Five-Year Plan from the adoption of new equipment measures will total 276 million rubles for the republic as a whole, including 157 million rubles additional profit due to reducing production costs.

The percentage share of top quality-category product in total output volume on products requiring certification will amount to 49.3 percent for the republic as a whole.

In the period 1981-1985 more than 260 products are scheduled to go into production: new high-output machinery, equipment, instruments, apparatus, and other types of industrial products. The USSR Food Program has assigned an important task to the Kutaisi motor vehicle builders -- to establish in the current five-year plan facilities for the manufacture of truck-and-trailer units for agricultural use. Basic renovation and construction of new shops is in progress at the plant. The first batch of engines for a new truck has been built. The Kutaisi Small Tractor Plant is also undergoing renovation; next year production will begin on a 5-7 horsepower motor unit with pulled and tractor-mounted implements. More than 2000 new industrial products have gone into production just in the first 9 months of 1982. A total of 3600 industrial robots have been built, and there has been an increase in the manufacture of numerically-controlled metal-cutting machine tools, machinery and equipment with improved performance figures.

In the food processing industry natural dry and liquid tea concentrates, enriched and aroma-enhanced tea are going into production, as well as new brands of Kakhetinskiye wines and other improved-quality food products.

Special attention will be focused on mechanization of manual jobs in agriculture, food processing and light industry, and in the construction industry. There is to be an increase in the volume of assembly and erection of metal structural components in the construction industry, larger-unit assembly and modular installation of industrial equipment.

Accomplishment of these goals is inconceivable without stepped-up integration between science and production. A uniform scientific and technology policy spells out the principal means and forms of strengthening the linkage between science and production. The Soviet Union has amassed considerable experience in this area. Academy institutes are performing research on the basis of contracts with associations, and a number of scientific-technical complexes have been established, joining together a basic-specialization institute, design offices, experimental and test production. In recent years there has been widespread adoption of such a form of integration of the "research-production" cycle as scientific-production associations (NPO).

A good example in this respect is offered by the Tbilisi Analitpribor Scientific-Production Association, established in 1974. In the last 4 years the association's work effectiveness has tripled, amounting to 5.6 rubles per ruble expended. During the 10th Five-Year Plan the association designed more than 100 types of instruments and control systems, equal to the best Soviet and foreign models. A special cooperation agreement has now been reached between the GSSR Academy of Sciences and the Analitpribor Association, which will promote more efficient utilization of basic research achievements, with the objective of developing the newest high-quality physical instruments and control systems.

Establishment of an NPO shortens by 50-60 percent the time required to design and put new equipment into series production. Their effectiveness has been confirmed by practical experience. This form of integration of science and production is slow in spreading in this republic, however. Few scientific-production associations are being established. This process must be accelerated.

An important factor in speeding up scientific and technological progress is work on improving the economic management mechanism, work which is raising to a new and higher level the system of management and planning of development of new equipment. Of great importance in this regard is the decision reached at the Sixth Plenum of the Georgian Communist Party Central Committee to establish a Republic Coordination Council for Science and Scientific-Technical Progress, which will be the main coordinator of efforts to speed up scientific and technological advance in our republic. It is also essential to step up the operations of counterpart councils at the level of regions, ministries, and enterprises. Each and every ministry, agency, and association should have its own scientific and technical development program. The main thing is to establish a system capable of organizing, monitoring and stimulating work in the area of accelerating scientific and technological progress in all components of this republic's economy.

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CSO: 1814/56

KAZAKH ACADEMY OF SCIENCES ACHIEVEMENTS REVIEWED

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 14 Dec 82 p 2

[KazTAG news report: "Flourishing of Science in Kazakhstan: Jubilee Session of the Kazakh SSR Academy of Sciences General Meeting"]

[Text] Establishment of the Union of Soviet Socialist Republics imparted immense acceleration to the intellectual development of the society born by the Great October Revolution. Extensive opportunities have been created in this country for development of talents and abilities, for flourishing of the culture of all nationalities and ethnic groups, and for creative activity by the masses in the area of science and the arts. The rapid development and flourishing of science in Soviet Kazakhstan constitutes vivid evidence of this.

A jubilee session of the general meeting of the Kazakh SSR Academy of Sciences, dedicated to the 60th anniversary of establishment of the USSR and the 50th anniversary of establishment and development of academy science in Kazakhstan, was held in Alma-Ata on 13 December, at the Political Enlightenment House of the Kazakhstan Communist Party oblast committee. Academician A. M. Kunayev, president of the KaSSR Academy of Sciences, gave the opening address.

Those present elected with great enthusiasm an honorary presidium consisting of the CPSU Central Committee Politburo.

A minute of silence was observed in honor of the memory of L. I. Brezhnev.

USSR Academy of Sciences Corresponding Member B. A. Tulepbayev, vice-president of the KaSSR Academy of Sciences, presented a report entitled "60th Anniversary of the USSR and Triumph of the Leninist Nationalities Policy in Kazakhstan." He emphasized that establishment of the USSR constituted a most important event in the history of the peoples of our country and an important landmark in the history of all mankind. Under the guidance of the Communist Party of the Soviet Union, created on the powerful foundation of Marxist-Leninist theory, it has continuously grown stronger and has developed in conformity with the principles of scientific communism. V. I. Lenin, leader of the party and people, deserves the greatest credit for comprehensive elaboration of the nationalities question and the practical building of a multinational socialist state.

The speaker noted that during the very first years of Soviet rule the Communist Party, under the guidance of V. I. Lenin, proceeded to establish formal nationhood for the peoples of this country. The historic All-Russian Central Executive Committee and RSFSR Council of People's Commissars decree on formation of an Autonomous Kazakh Socialist Soviet Republic was promulgated on 26 August 1920; this signified realization of one of the innermost aspirations of the Kazakh people. A big job was accomplished in establishing and strengthening party organizations in the outlying regions of former czarist Russia, organizations which played a decisive role in uniting peoples into the Union of Soviet Socialist Republics.

Unswervingly implementing a Leninist nationalities policy, the Communist Party and Soviet Government achieved in a historically short period of time world-historic success in building socialism. In Kazakhstan, just as in the other union republics, there developed powerful industry, sovkhozes and kolkhozes, indigenous worker class cadres and a people's intelligentsia were formed, and a culture which was national in form and socialist in content experienced comprehensive development. Of decisive significance in all this was fraternal assistance by the Russian Federation and the other republics. The indestructible friendship and monolithic unity of Soviet citizens of different nationalities was shown to be an exceptional force during the years of the Great Patriotic War. Standing shoulder to shoulder with all the peoples of the USSR, the sons and daughters of the Kazakh people fought heroically against the fascist invaders and worked selflessly on the home front, making a substantial contribution toward victory over the enemy.

In the postwar years, the speaker stated, the pace of progress by the Kazakh SSR picked up to an even greater extent. Soon it had the third greatest industrial potential in the USSR. The virgin lands epic played a special role in the subsequent upsurge of this republic's productive resources. Opening up of the vast virgin lands not only boosted agriculture to a qualitatively new level but also fostered the growth of a multibranch industry, science and culture, and constituted another convincing embodiment of the unity of all the peoples of this country, their indissoluble friendship, unity and mutual assistance.

Kazakhstan, an equal among equals in the constellation of union republics, surpassed a number of countries of the East in output of many industrial products and was the equal of industrially highly developed countries throughout the world. A highly developed socialist agriculture has been established. The material and cultural living standards of the working people of this republic have risen substantially. Virtually one out of every four persons is presently enrolled in a course of study; there are twice as many students per 10,000 population here as in Great Britain and the FRG.

The speaker further noted that the CPSU, consistently developing genuinely democratic principles of political organizational development, displays great concern for the further comprehensive socioeconomic growth of each of the republics of the USSR. Nationwide discussion and adoption of the new USSR Constitution and, subsequently, on the basis of this constitution -- the constitutions of the union and autonomous republics -- became a concentrated expression of success in Soviet national political organizational development as

well as of all the socialial, economic and intellectual affairs of the nation of developed socialism.

Honoring the glorious jubilee of the Soviet Union in a worthy manner, our scientists, together with all the working people of this republic, are uniting even more firmly behind our Communist Party and are exerting even greater effort to carry out its plans.

The people present at the session heard a report by A. M. Kunayev, president of the KaSSR Academy of Sciences, entitled "50th Anniversary of the Establishment and Development of Academy Science in Kazakhstan." Noting the exceptional importance of the 60th anniversary of establishment of the USSR and the 250th anniversary of Kazakhstan's voluntary annexation to Russia, he spoke of the important role of science in the transformations which have taken place. The flourishing of scientific research in Kazakhstan, just as throughout the country, is inseparably linked with the victory of the Great October Revolution and with the socialist system.

Organized study of the natural resources of this republic began in the very first years of Soviet rule. By 1930 the republic contained five scientific research institutes and more than 20 experimental stations. At the same time substantial results were obtained in studies of the Karaganda coal basin, and the Boshchekulskoye and Kounradskiy copper ore deposits had been discovered and recommended for commercial exploitation. The Kazakhstan base of the USSR Academy of Sciences was established in 1932. Its first session was held a year later; the results accomplished by this organization were highly praised by the country's leading scientific establishments.

The speaker stressed that from the very beginning academy science in Kazakhstan had concentrated its efforts on practical problems of geology, chemistry, zoology, botany, and public education which were closely linked with the republic's socioeconomic and cultural development. This work became expanded to an even greater degree with establishment several years later of a Kazakhstan affiliate of the USSR Academy of Sciences, which promoted the growth of a network of research establishments, their coordination, and upgrading the qualifications of scientific personnel. Soil science and geography sectors were soon established in this affiliate, as were institutes of language and literature, geological sciences, astronomy and physics.

During the years of the Great Patriotic War the Kazakhstan affiliate of the USSR Academy of Sciences concentrated efforts on problems of rapid, more effective utilization of the republic's rich natural resources and production capabilities, with the aim of better providing for the needs of the battle front. Particular attention was focused on improving processes of ore beneficiation and metals smelting, production of refractories and building materials. Engaged in joint effort with workers and practical experts, scientists adopted dozens of proposals of significance for defense and the nation's economy.

A rapid increase in the volume and improvement in the quality of scientific research in this republic dictated establishment of the Kazakh SSR Academy of

Sciences. This took place in 1946. Much credit in the establishment and development of science in Kazakhstan goes to the USSR Academy of Sciences, outstanding Soviet scientists V. L. Komarov, S. I. Vavilov, I. P. Bardin, G. M. Krzhizhanovskiy, A. A. Baykov, V. A. Obruchev and other representatives of many scientific establishments in Moscow, Leningrad, the Ukraine, Belorussia, and other brother republics.

The speaker stated that at the present time more than 11,000 persons are employed in the republic academy system, including 206 doctors of sciences and 1527 candidates of sciences. In recent decades there has been a substantial broadening of the research conducted by them, and new areas of scientific inquiry have formed, such as in the field of radiation materials science, high-molecular compounds, petrochemistry, catalysis, etc. The depth and significance of research have increased. In the 10th Five-Year Plan the KaSSR Academy of Sciences, one of the country's largest scientific centers, accomplished a great deal toward development of promising basic and applied research, increasing research effectiveness and improving its quality, strengthening links between scientific innovation and production, and concentration of manpower and resources on accomplishing such tasks as comprehensive utilization of natural resources and accelerated development of production potential.

The republic academy coordinates through its scientific councils on major problems more than 300 topics being worked on by higher educational institutions and establishments of various ministries and agencies. The role of the academy as a productive resource has become particularly enhanced in recent years due to the planning and execution of joint projects, scientific-technical and social programs. For example, a study has been made of the geologic structure, metallogeny and fossil fuels of the Turgay trough, and a process of comprehensive recovery of the principal components of spent vanadium catalysts and leaching of various ores has been developed and adopted. The consequences of a drop in the level of the Sea of Aral have been investigated and measures to correct them have been proposed. A land reclamation appraisal has been presented for a certain area in connection with the problem of diverting into Kazakhstan a portion of the flow of Siberian rivers. More patent applications have been submitted than in the past, and there have been issued a greater number of certificates of invention, patents, and license agreements. Relations between the Kazakhstan Academy and the scientists of the brother Soviet republics and foreign countries are continuously developing and growing stronger. All this has made it possible substantially to increase the contribution of academy science to the development of nonferrous and ferrous metallurgy, chemicals and other branches of industry, agriculture, to produce a number of new works on history, literature, art, and to enhance the role of this republic's scientists in the ideological-ethical, internationalist, patriotic indoctrination of the people.

The speaker noted the achievements of scientists at higher educational institutions, establishments of the system of the Eastern Department of the All-Union Academy of Agricultural Sciences imeni Lenin, as well as other workforces. The Kazakh SSR Academy of Sciences and all this republic's scientific centers are faced with the task of achieving new levels of performance in the development of basic and applied research as specified by the decisions of the 26th CPSU Congress and the 15th Congress of the Kazakhstan Communist Party.

The great historic significance of establishment of the USSR for strengthening the economic and defense might of the Soviet State, the friendship and brotherhood of peoples, increasing the prosperity of working people, for the socio-economic and cultural flourishing of Kazakhstan, just as for all our country's republics, the successes of science, and the endeavor by scientists to achieve new advances for the benefit of the multinational socialist homeland were discussed in the statements made by the following: KaSSR Academy of Sciences Academician S. K. Kenesbayev; KaSSR Academy of Sciences Academician N. U. Bazanov, director of the Institute of Physiology; KaSSR Academy of Sciences Academician Zh. S. Yerzhanov, director of the Institute of Seismology; KaSSR Academy of Sciences Academician B. A. Zhubanov, director of the Institute of Chemical Sciences; Doctor of Physical-Mathematical Sciences I. Ya. Chasnikov, director of the Institute of High-Energy Physics.

Participants in the jubilee session of the general meeting of the KaSSR Academy of Sciences enthusiastically sent a letter of greeting to the CPSU Central Committee. In this letter they expressed heartfelt gratitude for the constant concern and attention shown toward Soviet science, fervent support for the Communist Party's Leninist course of policy in domestic and foreign affairs, and stressed the exceptional importance of the measures being taken by the party to speed up intensification of production, implementation of the USSR Food Programs, and the plans for 1983 and the 11th Five-Year Plan as a whole.

The session unanimously approved the decisions of the November (1982) CPSU Central Committee Plenum, the points and conclusions contained in the speech at this plenum by CPSU Central Committee General Secretary Comrade Yu. V. Andropov, and gave assurances on behalf of the republic's scientists that everything would be done to achieve a further increase in the contribution made by Kazakhstan science toward building communism.

The following took part in the proceedings of the jubilee session of the General Meeting of the KaSSR Academy of Sciences: N. A. Nazarbayev, secretary of the Kazakhstan Communist Party Central Committee; K. M. Aukhadiyev, first secretary of the Alma-Atinskaya Oblast Committee of the KazCP; S. S. Dzhiyenbayev, deputy chairman of the KaSSR Council of Ministers; S. T. Temirbekov, head of the Science and Educational Institutions Department of the KazCP Central Committee; officials of unions of creative artists, a number of republic ministries and agencies.

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CSO: 1814/56

EFFECTIVELY UTILIZING PRODUCTION POTENTIAL IN GeSSR

Tbilisi ZARYA VOSTOKA in Russian 18 Dec 82 pp 2-3

[Article, published under the heading "Assistance to Economics Education System Propagandists and Students," by Candidate of Economic Sciences Vakhtang Burduli, head of the laboratory of economic problems of management at the GSSR Academy of Sciences Institute of Economics and Law: "Important Factor in Effective Utilization of Production Potential"]

[Text] In present-day conditions scientific and technological progress constitutes the main factor in economic development. In his address at the November (1982) CPSU Central Committee Plenum, CPSU Central Committee General Secretary Yuriy Vladimirovich Andropov stressed that the nation's economy contains considerable reserve potential and that "this reserve potential must be sought in accelerating scientific and technological progress, in extensive and rapid incorporation into production of the achievements of science, technology, and advanced know-how."

A steady, rapid rate of economic growth should be secured primarily by means of intensification of production and all-out increase in efficiency of utilization of production potential. This defines the directions of scientific and technological progress which are predominant at the present stage; such advances should be labor-conserving, capital-conserving, and materials-conserving.

The **LABOR-CONSERVING** [in boldface] effect of scientific and technological advance is reflected in the labor productivity indicator, measured by quantity of product produced per unit of work time or by expenditures of labor per unit of product.

Effective directions to take to boost labor productivity include mechanization and automation of production, adoption of new industrial processes, computer hardware, and modernization of existing equipment. The improvement of these factors is accompanied by a decrease in the percentage share of heavy and low-skill labor. Approximately 40 percent of industrial workers are engaged in manual labor in the country as a whole.

Of the eight most important economic, social, territorial and scientific-technical specific-purpose combined programs to be carried out in this republic

pursuant to the 1981-1985 economic and social development plan, four specify solving major technical problems, and all of them will have an influence in one way or another on reducing expenditures of manual labor. They include a specific-purpose combined program for mechanization of manual labor, which specifies 1325 measures.

Implementation of the planned measures will make it possible to increase by 6600 persons the number of workers involved with industrial robots, automated machinery and equipment, while the number of production workers performing their job in a mechanized manner with the aid of machine tools and mechanisms will increase by 64,000 persons. At the same time there will be a reduction of 160,000 in the number of workers performing manual-labor jobs. As a result of adoption of a large quantity of technical means for increasing the degree of mechanization of labor, the relative freeing of manpower in industry alone will exceed 15,000 persons.

A specific-purpose combined program to develop and install special overhead cableways and cableway automation systems for agriculture will also have a labor-saving effect. This program calls for the construction of experimental overhead cableways for hauling hay and fertilizer, a site-movable overhead cableway for hauling tea, citrus crops and fertilizer, and a lightweight man-portable overhead cableway for carrying grapes and fruit.

The importance of pneumatic and container transport, and particularly equipment such as the Lilo-1 and Lilo-2 was noted at the Spetstrans-82 conference recently held in Tbilisi. They have made it possible to eliminate labor-intensive operations in hauling inert materials from surface mining and quarrying operations, operations employing 1300 persons and with daily requirements of 200 large-load trucks.

The draft state plan of development of the economy of the Georgian SSR, which was discussed at the 11th Plenum of the Georgian Communist Party Central Committee, calls for enhancing the role of specific-purpose combined scientific-technical, economic, social and regional programs in carrying out all economic and social reforms in conformity with the guidelines of the November (1982) CPSU Central Committee Plenum. In particular, the following was stated at the plenum: "Annual savings from utilization of scientific and technological advances will total approximately 90 million rubles, which is 38 percent more than this year. Scientific and technological progress will ensure a 2.5 percent growth in societal labor productivity. Twenty-four industrial robots and manipulators will be installed. The percentage share of workers employed in manual labor will decline from 50 to 43.5 percent."

The **CAPITAL-CONSERVING** [in boldface] thrust of scientific and technological advance is one of the most important in conditions of vast scale of production and a rapid rate of production growth. It is achieved by means of renovation and technical retooling of production, by adoption of new high-output equipment and processes, and improved utilization of production facilities.

The 26th CPSU Congress once again stressed the importance of technical retooling and rehabilitation for intensification of production on the basis of all-out

utilization of the achievements of scientific and technological progress. The Basic Directions state: "Substantially increase the scale of technical retooling and rehabilitation of existing enterprises, equip them with new, highly efficient equipment, adopt advanced processes, scientific organization of labor and production."

Decreasing the capital-intensiveness of production is connected first and foremost with intensive utilization of fixed assets, which is expressed in boosting equipment productivity or reducing equipment operating time per unit of product. At the same time a decrease in capital-intensiveness of production is possible on the basis of adoption of new types of equipment which differ fundamentally from previously used equipment, connected with new manufacturing processes. The machine-building industry is faced with tasks of developing and putting into mass production equipment which embodies the latest discoveries in leading fields of science.

Another important directional thrust in development of hardware is acceleration of the rate of replacement of the industrial equipment inventory, by consolidating equipment and increasing its unit power and output capacity.

Implementation of a great many measures in both indicated areas is scheduled in the Georgian SSR in the current five-year plan. For example, plans specify bringing into production numerically-controlled screw-cutting lathes, a family of tube cutoff machines with adaptive control, and series manufacture of tea-harvesting and trimming equipment with improved performance. A modernized processing system will be installed at the Chiatura Mining Combine, and a process for producing ammonia with modernized, high-output equipment will be installed at the Rustavi Chemical Plant. New automated fruit juice bottling lines and mechanized winemaking lines will be installed in the food processing industry.

Improvement in utilization of production facilities is also an important factor in increasing production efficiency. Special attention should be focused on observing standard timetables for bringing new facilities on-line.

The **MATERIALS-CONSERVING** [in boldface] directional thrust of scientific and technological progress should provide further economy and increased efficiency of utilization of all resources. The 26th CPSU Congress specified ways to achieve the stated objectives -- development of highly efficient power equipment, low-waste and no-waste technologies, and more complete recovery and processing of raw materials. Comrade Yu. V. Andropov noted in his speech at the November (1982) CPSU Central Committee Plenum that today the question of economizing in material resources should be considered differently, not as "savings achieved -- fine, no savings achieved -- that's all right also."

The principle of more production with smaller expenditures of material resources is being vigorously implemented in our republic. As was noted at the enlarged meeting of the Georgian Communist Party Central Committee Bureau this past September, approximately 50,000 cubic meters of lumber, almost 200 million kilowatt hours of electricity, more than 10,000 tons of diesel fuel, and 8600 tons of rolled ferrous metals were saved in the first 8 months of this year.

Continued identification of reserve potential is essential, however. "It is high time to conduct a search for new reserve potential in the area of efficient utilization of raw materials and supplies, in EVERY [in boldface] branch, in EVERY [in boldface] city, town and rayon, at EVERY [in boldface] enterprise, on EVERY [in boldface] farm, and at EVERY [in boldface] work station," it was noted at the 11th Plenum of the Georgian Communist Party Central Committee. "The November CPSU Central Committee Plenum states the task in this manner. We must ensure that EVERY [in boldface] worker perceives this as his own personal task."

One effective direction to take in scientific and technological progress to achieve economy in materials is development of methods of utilizing secondary material resources, as well as reduction of losses of all types. Comrade Yu. V. Andropov pointed to the necessity of extensive adoption of energy-conserving equipment and technology, improvement of material and moral incentives utilization standards in the campaign for economy, and more severe penalties for overconsumption and for exceeding consumption standards and limits. It is essential to revise natural and allowable loss standard figures. The majority of these standards have been in operation for a great many years and frequently fail to correspond to new conditions of production, transportation, and storage.

Considerable work is being done toward this end in the city of Poti, where the principle of maximum possible utilization of secondary resources is being applied, within the framework of an economic experiment at the Poti Territorial-Interbranch Association established under the executive committee of the Poti city soviet. The ultimate objective is to achieve no-waste technology, and where that is impossible, to ensure strict record keeping and monitoring of waste material which forms and, on the basis of this waste material, establishment of a multibranch production operation for processing and manufacture of consumer goods. Construction has already begun on a combine which will utilize as raw material waste generated at enterprises in the town of Poti and adjacent areas.

One can cite a number of examples of utilization of technological advances for the purpose of utilizing secondary resources. At the Batumi Woodworking Combine utilization of raw materials has been boosted to 98 percent. Articles in mass demand, representing a total value of 240,000 rubles, are manufactured from waste materials. Thanks to the adoption of a new, no-waste citrus processing operation, the Adzhar Canning Industry Combine will produce 7 million rubles worth of above-target output in the second half of this year.

Thus the need for accelerated adoption of scientific and technological advances into production is determined at the present stage by prevailing conditions of reproduction. The limited nature of raw material, material and labor resources which society has at its disposal for achieving its socioeconomic goals is becoming increasingly more appreciable, and an increasingly greater volume of resources is being drawn into development of the nonproduction domain. Therefore priority should be given to equipment and technologies which produce a sharp reduction in expenditures of manual, heavy, monotonous labor, a great increase in labor productivity, conservation of energy, comprehensive processing of natural raw materials, and prevention of environmental pollution.

The CPSU Central Committee and USSR Council of Ministers decree entitled "On Improving Planning and Strengthening the Effect of the Economic Management Mechanism on Improving Production Efficiency and Work Quality" points to ways to improve the system of management of scientific and technological progress with the aim of strengthening its influence on boosting effectiveness of utilization of production potential. First and foremost it is necessary to focus on the purposive nature of management of scientific and technological advance, involving all components and instruments of management in the implementation of specific-purpose combined programs aimed at adoption of new, highly-efficient generations of machinery and industrial processes which ensure efficient utilization of all types of production resources.

The tasks of future acceleration of scientific and technological advance in the republic's economy were formulated at the Sixth Plenum of the Georgian Communist Party Central Committee, which in particular pointed to the necessity of ensuring an integral systems approach to management of science and scientific-technical progress, overcoming interministerial obstacles, and efficient distribution and development of this republic's scientific and technological potential.

The economic mechanism of management of the development of science and technology should to an ever increasing degree strengthen orientation toward accelerated adoption of the most advanced technology, ensuring optimal conditions for increasing effectiveness of utilization of production potential. This is a most important prerequisite for successful implementation of the party's long-range economic and social strategy formulated at the 26th CPSU Congress.

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UKRAINE SCIENCE RESEARCH POTENTIAL NOT FULLY EXPLOITED

Moscow PRAVDA in Russian 28 Dec 82 p 2

/Article by V. Pereloma, First Deputy Chief, Department of Science and Education Institutions, Ukrainian Communist Party Central Committee: "A Measure of Creativity"/

/Excerpt/ It would seem that quite a bit is being done to increase the effectiveness with which the scientific potential of VUZes in the republic is utilized. So far, however, far from all collectives at universities and institutes are working fruitfully, frequently research plans duplicate one another, and are overloaded with secondary, petty subjects. A localistic orientation towards covering as large a number of research areas as possible has still not been completely overcome. As a result, research groups are splintered, and do not have sufficient numbers of qualified personnel and the necessary material bases. Rarely is it possible to combine the efforts of single profile departments at different VUZes for the joint solution of pressing problems in science and technology.

It is obvious that the very organizational structure of managing science at advanced schools is incomplete. Only the first steps have been made in the transition to the sectorial management of research, and the creation of inter-VUZ centers for servicing scientific projects.

The solution, it appears, should be sought in the strengthening of VUZes' ties with academic and sectorial scientific research institutes, and first of all with production operations, basing this on the development of a network of problem and sector laboratories. After all, it is right here that there is the most direct path from ideas to embodiment.

In recent years branches of technical VUZ departments have appeared at large enterprises. Such units have been organized between, for example, the Voroshilovgradteplovoy [Voroshilovgrad Diesel Locomotive] Association, and the Voroshilovgrad Machinery Building Institute; Kiev University and the Production Association imeni S. P. Korolev; and the Khar'kov Institute for Municipal Construction Engineers and the Tram-Trolley Bus Administration. The advantages of such cooperation are indisputable: Modern equipment and progressive technology are used to improve the professional training of students, and it is possible to make the transition to real course and diploma earning design work, as well as to strengthen the practical directedness of research.

One hundred and forty scientific-educational production associations have been created here in the republic. Many of them are very effective, while others are clearly not making use of their potential. What is the problem? The legal foundations for the formation and organization of association operation and financing have not been completely elaborated. When every participating organization begins to misinterpret its rights and obligations, then the operation is the first to suffer.

Unfortunately, frequently enough the suggestions of specialists are not put into practice because of problems in the introduction mechanism. I will give just one example. Five years ago at the Zhdanov Metallurgical Institute an experimental-operational model of a crane using a permanent magnet for safely transporting steel products was developed. It was calculated that the use of this innovation just at the Azovstal' Plant alone would save up to 7 million kilowatt-hours of electrical energy annually, and free strap rigging workers engaged in this laborious work. During this time the endeavors of the VUZ and republic ministries to get the Ministry of Instrument Making, Automation Equipment, and Control Systems (A-U) to decide to series manufacture this device have still not met with success.

Much still must be done to increase the efficiency of using VUZes' scientific potential, and increasing their output. These questions should always be at the center of attention of party committees, and primary party organizations at higher educational institutions.

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CSO: 1800/463

ECONOMICS OF ORGANIZING SCIENCE DISCUSSED

Moscow EKONOMICHESKIYE NAUKI in Russian No 11, Nov 82 pp 13-18

[Article by V. Dolgov and A. Soshnev, candidates of economic sciences (Leningrad): "Forms for Organizing Science in the USSR: Experience and Urgent Problems"]

[Text] V. I. Lenin attributed a great role to science in the construction of the new society. He pointed out that socialism frees "science from the bourgeois path, from its enslavement to capital, from its servitude to the interests of dirty capitalist self-interest."¹ During the 60 years of the USSR's development, V. I. Lenin's ideas have been genuinely embodied in all spheres of life of socialist society. The people, having joined themselves into the single multiple-nationality Soviet state, have created highly developed material-production facilities, which meet the most modern demands of the branches of the nonproduction sphere--education, public health, cultural and instructional institutions, and so on. An advanced science, a product of the enormous creative activity of the Soviet people, which, under the leadership of the CPSU, is now playing a leading role in the development of the whole world's science, has occupied a firm position in all areas of our life. The CPSU Central Committee decree, "On the 60th Anniversary of the Forming of the Union of Soviet Socialist Republics," noted that, "The Soviet Union is a mighty industrial power with a highly mechanized agriculture and advanced science and culture."² The level that science has achieved and its modern potential are the result of the constant attention of the CPSU and the Soviet Government to all aspects of science's development, including constant improvement of its organization and creation of the economic prerequisites for the more complete realization of its potential.

The forms for organizing science and its interrelationships with production have traveled a substantial path of development. The requirements for the development of the national economy have always been a leading factor in determining concrete forms for organizing science. Back during the first years of the existence of Soviet power (1918-1919), 33 scientific-research institutes were created in our country.³ The Program of the RKP(b) [Russian Communist Party (of Bolsheviks)] that was adopted by the 8th Party Congress pointed out: "Soviet power has already adopted a specific series of measures aimed at developing science and bringing it closer to production: the creation of an entire network of new applied-sciences institutes, laboratories, testing centers, and experimental production facilities for checking new technical methods, improvements and inventions, the inventorying and organization of all scientific forces and resources, and so on. The RKP, supporting all

these measures, strives to further their development and to create more favorable conditions for scientific work connected with an uplifting of the country's productive forces."⁴

The forming of the USSR and the uniting of its fraternal peoples into a single multiple-nationality state gave science a multitude of new tasks that were majestic in scale: the development, as quickly as possible, of a network of scientific institutions, not only in the central regions but also in the republics that were lagging in level of the productive forces, and the creation of scientific cadres among the nationalities, based upon the goals of creating the most favorable conditions for realizing scientific achievements.

One of the first organs for controlling science was the Scientific and Technical Department (NTD) under the VSNKh [All-Russian Council of the National Economy], the basic task of which was "to bring domestic science closer to the requirements for technology, and, on that basis, to give a push to the development of science in the directions that are necessary for the proletarian state."⁵ It created and supervised the activity of a number of scientific-research institutes that worked on questions of developing various branches of industry (the electrical-equipment industry, microbiology, pharmacology, aeronautics, the silica industry, applied chemistry, and so on). Indications of the institutes' work at this time were: participation in the restoration of branches of production; the number of material products that were created in these branches, which previously either were not produced at all or the facilities that had produced them had been destroyed, or the requirement for these products was satisfied by means of imports; and its contribution to the study and development of new methods of production.

The work of the Institute of Pharmaceutical Chemicals in particular is an example of the activity of the first Soviet scientific institutions. Thanks to its production work, a multitude of chemical preparations began to be based exclusively on domestic raw materials, replacing preparations introduced from abroad. This small experimental production alone saved 154,273 rubles in currency. Another example: use by the industry of arsenic-compound methods that the Institute of Applied Chemistry developed freed the country from importing 1.2 million rubles' worth of products from abroad. The annual budget of the Institute of Pharmaceutical Chemicals for 1923-1924 was 30,000 rubles, while the budget of the Institute for Pure Chemical Reagents was 48,000 rubles. In all, expenditures from the country's state budget on the NTD institutes' work were only 0.04 percent of industry's gross output during 1923-1924. Industry paid for its orders above the budget from so-called special funds. The ratio of the latter to state-budget funds for developing science was 21.17 percent in 1923, and in 1924 it was 43.82 percent.⁶

Significant changes occurred in the activity of scientific-research organizations in the USSR after the 4th Congress of the Soviets of the USSR and the 15th VKP(b) [All-Union Communist Party (of Bolsheviks)] Congress, which met in 1927. At the Congress of the Soviets the question about strengthening the factory's link with science was posed for the first time. V. V. Kuybyshev pointed out in his speech that it was necessary to regularize the functions of science and to apportion research: "...scientific-technical institutions work on technical questions that are of long-term significance; factory laboratories, on those questions that are important in terms of development for today."⁷ The 15th VKP(b) Congress resolution, "On Directives for Making up the Five-Year for the National Economy for 1928-1933," paid special attention to bringing scientific work closer to production.⁸

The First All-Union Conference on Planning Scientific Research made a considerable contribution toward improving the organization of science and strengthening its ties with production. Those who initiated the conference were the USSR Academy of Sciences and Gosplan. It was noted at the conference that organizational measures alone for the successful development of science and for the improvement of science's servicing of production had proved to be inadequate and science's development should be directly connected with enterprise production plans and be a component part of them. N. N. Vavilov said in a speech at the conference that branch scientific-research institutes should be directly associated with production work and be formed on the basis of the budgets of economic organizations.⁹ It was this principle that predominated during forming of the network and development of the activity of branch scientific institutes. Its realization in practice was reflected in the abolition of small and ineffective scientific institutes and a strengthening of existing institutes and the creation of new ones for the most important areas of scientific and technical progress. As a result, by 1939 the number of scientific-research institutes and their branches numbered 757 in the USSR, and scientific worker manpower reached 98,300 by 1940.¹⁰ By this time, practically all the Union republics had their own highly qualified nationality cadres, and the mutual help of fraternal peoples played an enormous role here.

The rapid rise of the country's science base served as one of the most important factors that enabled the country to cope successfully with the first five-year plans. Science also became a powerful support for strengthening our motherland's defensive might, a fact that was completely and clearly manifested during the difficult years of the Great Patriotic War. Despite the great damage inflicted on our country, the number of scientific institutions continued to increase, and by 1945 research institutions and branches thereof numbered 914.¹¹

The postwar period was marked by a rapid pace of scientific and technical progress and considerable qualitative changes in organizational forms of science's ties with production. However, while, during the first five-year plans, branch scientific institutes functioned basically through industrial-enterprise funds, in the postwar period the number of NII's financed from the state budget increased.

The transfer of branch NII's to the subordination of the sovnarkhozy [national economy councils], with retention of the budget base for their activity and separation from the makeup of industrial enterprises, adversely affected functioning of the system of scientific-research institutes. This made difficult the conversion of the NII's and KB's to cost accounting, which state decisions called for in 1961. Then, in this brief period, a weakening of the economic ties of science with production began to appear, a fact that could not help but be reflected in the pace of scientific and technical progress.¹²

The September 1965 CPSU Central Committee Plenum restored the branch principle for control of the national economy, and scientific institutions were transferred anew to the jurisdiction of the branch ministries and agencies, which delegated supervision of them to the appropriate administrations. New forms for organizing scientific institutions--the creation of science-and-production associations and of production associations with their own scientific bases--played an important role in improving the activity of scientific institutions and in strengthening their ties with production. The development of these forms was oriented toward improvement of economic conditions for the functioning of science.

Organizational forms for scientific activity were further improved during the entire ensuing period, right up to 1979, enabling a new branch of economic knowledge--the economics of science--to be formed on the basis of a study of this process. The

place of science in socialism's economic system and the operation of economic laws and principles in this specific sphere began to be studied increasingly widely. At the same time--and this was natural for a newly emerging scientific area--not by far was it always possible to find a quick and clear answer to questions. Lack of development of the theoretical and methodological aspects of the economic foundations of the functioning of science's production facilities compelled the practice in scientific activity of defining the form of its economic organization in no small measure by the empirical method, which, it stands to reason, does not promote a high pace of progress in science.

Evaluations of scientific work still have not achieved the required clarity from the standpoint of fundamental methodology. Some authors declare that science's output (that is, knowledge and information) is a commodity that is an independent bearer of value and of consumer value.¹³ From this arises an orientation of scientific institutions toward obtaining "their own" profit. We suggest that such an approach can only brake scientific and technical progress. Economic evaluations of scientific-organization activity constructed on this theoretical base will give distorted information about the functioning of science's sphere. Thus, according to various estimates, profit from funds invested in science varied from 1 ruble and 45 kopecks to 7 rubles and 50 kopecks per 1 ruble of expenditure,¹⁴ and the conclusion was often drawn from this that science is a most profitable branch of social production. It is not difficult to surmise that such a starting position can lead to the absurd conclusion that science must be expanded in every possible way at the expense of less profitable material production.

The existing system for evaluating scientific-research organization activity by the magnitude of resources expended not only was not oriented to a reduction of expenditures during operations, but, on the contrary, it compelled as much as possible to be spent, since, if there was a saving, the organization became one of the laggards, even if its project plans had been carried out completely. A situation was created wherein the fact itself of the "assimilation" of funds, that is, the absorption thereof by some scientific institution prevailed over the final result of its activity.

There are no bases for taking exception to the use itself of cost indicators for the economic study and for determination of the results achieved in the scientific sphere. However, it is necessary, in so doing, to keep in mind that scientific development, the information itself, is not a commodity, and, consequently, does not possess value. There is a difference: scientific work for the production of scientific and technical information is materialized in finished products that are created in material production, and it participates in the forming of their value, and, what is more, as NTR [scientific and technical work] progresses, it becomes an ever-increasing component of this value as an element of the work of the composite production worker.¹⁵ Only from such standpoints is there an excuse or can there be a rationalization for applying value assessments in the sphere of scientific activity, including those cases where scientific and technical information itself is being realized (the sale of licenses and scientific and technical papers).

The assessments of value play an extremely important role in determining expenditures for science and their effectiveness. Such expenditures, as is known, are growing constantly. Thus, while their share was 0.99 percent of national income in 1940, it is far more at present. It is natural that the accounting therefor and reimbursement thereof are extraordinarily important in a planned economy. One cannot help but recall that Engels paid attention to this circumstance. He said that,

with a wise system, expenditures on the intellectual factor will find their place in production outlays.¹⁶

The accounting for expenditures for science that is now being made by planning organs and in state statistics do not actually reflect the ties of these expenditures with production results. This situation has been occasioned to a great extent by the specifics themselves of scientific work, the expenditures for which cannot find direct expression in some certain value. Moreover, expenditures for scientific work usually are not compared with the results that are embodied in the form of consumer value. On this basis it can be said that scientific work has the property of nonequivalence, and the special characteristics of science that determines its exceptional role in developing material production and its special functioning as a direct production force consist of the latter.

Solution of the task of executing the policy of intensifying production and accelerating scientific and technical progress that the 26th CPSU Congress set requires further improvement of the economic forms for organizing science and its interrelationships with production. "Scientific-research and design-development operations," Comrade L. I. Brezhnev emphasized at the 26th CPSU Congress, "should be coupled more closely--economically and organizationally--with production."¹⁷ Practical searches are now being made for forms that will strengthen science's ties with production, and definite successes have been achieved here. For example, the experience of the USSR Ministry of Electrical Equipment Industry, which used the order-and-job authorization organization for scientific research and experimental-design work for the first time, can be noted. The 12 July 1979 decree of the CPSU Central Committee and the USSR Council of Ministers, "On the Improvement of Planning and Strengthening of the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality," has great significance as a landmark in realization of the assigned goals. A number of documents that lend specificity to the indicated decree help to improve scientific-research organization activity qualitatively. In particular, the procedure for settlements by scientific institutions with clients for completely fulfilled and accepted work, sources for financing expenditures on science, and so on, have been defined.

At the same time, expenditures for scientific developments still are not reflected in enterprise outlays, since they are covered to a great extent through special funds (the single fund for the development of science and technology and the fund for assimilating new equipment). The prime cost of the product is actually devoid of the effect of the expenditures connected with scientific research.

The creation of science-and-production associations and of production enterprises with their own scientific bases has enabled a number of contradictions between science and production to be resolved, primarily those of an organizational nature. The activity of such bodies enables a considerable shortening of the research-to-production cycle and growth in labor productivity and production profitability. However, the economic bases themselves for science and production interrelationships still have not undergone the proper changes. In the NPO [science-and-production association], science and production formerly were separated economically, and the corresponding subunits had independent plans and balance sheets, which were oriented to their own cost-accounting indicators. Only 5-6 percent of the scientific expenditures for the NPO's were charged to the prime production cost of the output produced.

An orientation of socialist production and its scientific and technical progress to the creation of consumer values that is clearly defined in economic forms should, in our view, help to resolve still-existing contradictions between science and production. However, here we encounter the fact that currently existing attempts to develop and introduce in-kind indicators for planning often are based upon a physical and technological conception of consumer value and a reduction of the latter to the purely technical values and characteristics of the product. The consumer's value of the equipment, for example, is not depleted by the capability of the latter just to produce output with definite quality characteristics, but it consists primarily in a substitution by it, in the release of live labor.¹⁸ Such an approach to the conception of customer value with its successive realization in forms appropriate for planning and accounting indisputably would help to strengthen science's ties with production.

The orientation of production to the creation of consumer value presupposes the necessity to introduce scientific and technical progress as one of the main prerequisites for increasing the amount of output and improving its quality. In its turn, this will mean a rise in the role of labor in the sphere of science as a part of the labor of the composite socialist production worker.

FOOTNOTES

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2. "The 60th Anniversary of the Forming of the Union of Soviet Socialistic Republics." Decree of the CPSU Central Committee of 19 February 1982. Moscow, 1982, page 8.
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5. P. Bogdanov. Foreword to Yu. I. Flakserman's book, "Promyshlennost' i nauchno-tekhnicheskiye instituty" [Industry and the Scientific and Technical Institutes]. Moscow, 1925, page 4.
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7. "IV s"yezd Sovetov SSSR. Stenograficheskiy otchet" [The 4th Congress of Soviets of the USSR. A Stenographic Report]. Moscow, 1927, page 396.
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11. See: Sovetskiy Soyuz v gody Velikoy Otechestvennoy voyny, 1941-1945" [The Soviet Union During the Great Patriotic War. 1941-1945]. Moscow, 1978, page 586.
12. See: V. Trapeznikov. "Management and Scientific and Technical Progress." PRAVDA, 7 May 1982.
13. See: L. S. Rozhneva. "Osobennosti tsenoobrazovaniya na produktsiyu prikladnykh issledovaniy i razrabotok" [Peculiarities of Price-Setting for the Output of Applied Research and Development]. Leningrad, 1974, page 18;
M. L. Bashin. "Effektivnost' fundamental'nykh issledovaniya" [The Effectiveness of Basic Research]. Moscow, 1974, page 128; and
G. K. Yuzufovich. "Nauka pri sotsializme: politiko-ekonomicheskiye problemy" [Science under Socialism: Political and Economic Problems]. Leningrad, 1980, pages 106-110, and others
14. See: "Sotsial'no-ekonomicheskiye i organizatsionnyye voprosy nauki v SSSR" [Socio-Economic and Organizational Questions of Science in the USSR]. Moscow, 1970, Issue No 1, page 47; and
G. A. Dolgoshey. "Nauchno-proizvodstvennyye ob'yedineniya--novaya forma organicheskogo soyedineniya nauki i proizvodstva" [The Science-and-Production Association--a New Form for the Organic Union of Science and Production]. In the collection, "Mezhkhozaystvennaya kooperatsiya i agropromyshlennaya integratsiya v sel'skom khozyaystve" [Interkolkhoz Cooperation and Agro-Industrial Integration in Agriculture]. Moscow, 1978, page 266.
15. See: Ye. Borisov. "The Process of Transforming Science into a Direct Production Force." EKONOMICHEFSKIYE NAUKI [The Economic Sciences], 1978, No 5, page 12.
16. See: K. Marx and F. Engels. "Soch. 2-e izd" [Works. 2d Edition], Vol I, page 555.
17. "Materialy XXVI s"yezda KPSS" [Papers of the 26th CPSU Congress]. Moscow, 1981, page 43.
18. See: K. Marks and F. Engels. "Soch. 2-e izd." Vol 46, Part I, pages 363 and 407; and Vol 47, page 439.

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KIEV REGION SCIENCE-INDUSTRY COOPERATION PRAISED

Kiev VISNYK AKADEMIYI NAUK UKRAYINS'KOYI RSR in Ukrainian No 8, Aug 82 pp 71-75

[Article, published under the heading "UkSSR Academy of Sciences Scientific Centers: Experience and Problems," by Academician I. M. Fedorchenko, UkSSR Academy of Sciences, designated representative of the Presidium of the UkSSR Academy of Sciences for the Kiev Region: "Regional Combined Programs -- Efficient Way to Utilize Scientific Potential"]

[Text] One of the most important traits of developed socialism is a steady growth in the role of science and its transformation into a direct productive force.

The 26th CPSU Congress specified for the 11th Five-Year Plan an ambitious program of further development of our country's economy and improved living standards for Soviet citizens. Implementation of this program requires new methods of management of scientific and technological advance and a certain restructuring of mutual relations between scientific establishments and industry.

For many years the Presidium of the UkSSR Academy of Sciences has been purposefully seeking ways to increase the effectiveness of utilization of the scientific potential of academy establishments in the nation's economy. UkSSR Academy of Sciences scientific centers were established for this purpose; they have assumed a vanguard role in the development of combined programs directed toward covering the principal directions of economic and social progress in all the regions of this republic.

Similar programs have also been established for the capital of the Soviet Ukraine -- Kiev -- one of this country's largest administrative, industrial, scientific, and cultural centers. More than 1,400,000 workers are employed here: a large percentage of these work at industrial enterprises, more than half of which fall within the branches of machine building and instrument engineering.

More than 300 industrial enterprises are concentrated in this city; total production in terms of sales amounts to 6.4 billion rubles annually. Production and scientific-production associations account for two thirds of total output.

Kiev enterprises build seagoing fishing trawlers and river vessels, airplanes, automatic machine tools, including numerically-controlled, motorcycles, excavators, various equipment for the chemical industry, light industry, the food processing industry, the printing industry and the other branches of industry, spare parts for agricultural machinery, cable, synthetic diamonds, semiconductors, electrical testing instruments and equipment, radioelectronic and optical equipment, automation equipment, etc.

Production volume is targeted to increase by 21.7 percent during the 11th Five-Year Plan. By the end of 1985 one fourth of all products will bear the state Seal of Quality.

An important contribution toward accomplishing the targets of the 11th Five-Year Plan is being made by personnel at Kiev academy, scientific research, design, and engineering design establishments.

In the 10th Five-Year Plan Kiev accounted for a total of 375 million rubles worth of scientific research, while enterprises became enriched with the results of more than 3000 scientific research projects.

A big job of organizing integration of science and production is being accomplished by the Kiev City Committee of the Ukrainian Communist Party; it has a council to promote scientific and technological advances, which unites the activities of 23 committees specializing in various branches and sectors of the economy. Council and committee members include leading scientist-academicians, corresponding members of the UkSSR Academy of Sciences, doctors and candidates of sciences, including staff personnel at academy institutes, specialists, party and economic officials.

Seven specific-purpose combined scientific and technical programs were established in Kiev pursuant to a CPSU Central Committee and USSR Council of Ministers decree dated 12 July 1979 entitled "Improving Planning and Increasing the Influence of the Economic Mechanism on Improving Efficiency of Production and Work Quality," which specifies specific-purpose combined programs as the most important component part of long-range state plans.

They are directed toward resolving important problems pertaining to development of the city's economy in the 11th Five-Year Plan. More than 30 organizations of various national and republic ministries and agencies are taking part in these programs.

An agreement on scientific and technical cooperation has been signed between the Kiev city party committee, the city executive committee, and the Presidium of the UkSSR Academy of Sciences, according to which establishments of the UkSSR Academy of Sciences, enterprises and organizations have drawn up a combined plan of joint efforts for the 11th Five-Year Plan on the most important scientific-technical and socioeconomic problems. The combined plan includes the following specific-purpose programs: achieving metal savings in production (lead organization is the Electric Welding Institute imeni Ye. O. Paton; program directors -- M. V. Novikov, UkSSR Academy of Sciences

corresponding member, director of the Institute of Superhard Materials, and O. A. Kazymirov, deputy director of the Electric Welding Institute); environmental protection and improvement (lead organization -- Institute of Colloidal Chemistry and Chemistry of Water; program director -- deputy director N. A. Klymenko); improvement of conditions of storing and transporting agricultural commodities (lead organization -- Institute of Applied Thermal Physics; program director -- UkSSR Academy of Sciences Academician O. O. Kremnev); development of automated management systems for various sectors of the municipal economy (lead organization -- Institute of Cybernetics; program director -- UkSSR Academy of Sciences Corresponding Member A. O. Stohniy); improving reliability and extending service life of machinery and reducing machinery metal requirements (lead organization -- Institute of Mechanics; program director -- UkSSR Academy of Sciences Corresponding Member Ya. M. Hryhorenko); future topics (lead organization -- Institute of Problems of Materials Science; program director -- institute deputy director V. M. Klymenko).

The UkSSR Academy of Sciences council to study the productive resources of the Ukrainian SSR, jointly with academy institutes, working in coordination with branch scientific research institutes and design organizations, is completing the job of drafting the "Basic Directions of Kiev's Economic and Sociocultural Development up to 1990."

The specific-purpose programs drawn up by the UkSSR Academy of Sciences are a component part of seven specific-purpose combined programs for the city of Kiev which have been ratified by the city committee of the Ukrainian Communist Party. They include 169 projects being carried out by 17 Academy institutes with the participation of Kiev industrial enterprises. All research projects covered by specific-purpose programs have been included in institute adoption plans by decree of the presidium of the UkSSR Academy of Sciences, which guarantees that they will definitely be carried out.

In addition, contractual agreements for each project have been signed with enterprises, or else cooperative agreements, which increases the financial liability of the production enterprises for their implementation.

Institute projects included in specific-purpose programs are guaranteed scientific direction by the Academy.

Execution of regional scientific and technical programs ratified by the city committee of the Ukrainian Communist Party and the Presidium of the UkSSR Academy of Sciences guarantees that the city's workforces will implement the economic and social development plans for enterprises and organizations for the period 1981-1985.

For example, one of the combined programs specifies changing over more than 29,000 persons from manual to mechanized and automated labor by 1985, as well as making easier the jobs of 61,000 persons. The number of workers who will be performing various operations by totally mechanized and automated methods will increase by 4.7 percent in the 11th Five-Year Plan. An important aspect of this problem from a social perspective is the total elimination of heavy manual labor for women. A total of 18 fully mechanized enterprises, 88 totally

mechanized shops and 608 sections will come on-line in the new five-year plan. Expenditures on implementing the combined program to reduce manual labor for the 11th Five-Year Plan will be recovered in 2.8 years.

The program for reducing product materials requirements by optimizing design and employing advanced technologies specifies savings of not less than 18-20 percent of rolled stock, 10-12 percent of steel pipe, as well as implementation of an aggregate of measures to reduce the metal requirements of machinery and equipment, to reduce waste and loss from metal consumption, replacement of cutting with economical forming methods, adoption of nonoxidizing heating, and rehabilitation of worn-out parts.

Model tool, foundry and press forging shops and departments will be established at a number of Kiev machine-building enterprises.

A large number of measures have been specified by the combined program entitled "Environmental Protection and Improvement in the City of Kiev," which include development and adoption of no-waste industrial processes at chemical enterprises and foundries, improved water treatment and air cleaning, planting trees and shrubs in the city, and reducing vehicle fumes and traffic noise.

As a result there will be a 10-fold decrease in discharge of particulates and carbon monoxide into the atmosphere from the smelting shops at the Plant imeni Lepshe and the Bolshevik Plant; there will be a 60 percent decrease in discharge of caprolactam into the atmosphere at the Khimvolokno Production Association, there will be a decrease in discharge of toxic effluent by this association into the Dnieper, etc. Increasing the planting of trees and shrubs around industrial enterprises and along highways will reduce gas pollution of the air by 10-35 percent and particulate pollution by 20-65 percent in the vicinity of industrial plants and roads.

Implementation of a combined specific-purpose program to improve storage and processing of agricultural products will make it possible to convert over to an industrial basis processing operations at Kiev's fruit and vegetable handling facilities, to ensure high quality of processing of fruits and vegetables, and will foster a substantial improvement in the quality of trade operations. This will be achieved first and foremost as a result of better preparation of facilities prior to harvest, automated control of ventilation and refrigeration processes, and employment of advanced methods of storage.

Development and adoption of an automated management system by the city's fruit and vegetable association will make it possible to boost the level of management of this branch, to reduce labor outlays in management and administrative activities, and to provide reliable information for making management decisions. Savings targeted for the period up to 1985 from utilization of the principal results generated by the program should total 2 million rubles.

Implementation of construction programs will make it possible to improve efficiency and performance quality in this sector by 4-6 percent, to boost labor productivity by 15-17 percent, to achieve a 7-9 percent savings in rolled ferrous metals, a 6-8 percent savings in cement, 9-11 percent savings in local materials,

to reduce consumption of fuel and energy resources, and to increase by a factor of 1.5 production of advanced structural members and components of prefabricated reinforced concrete, high-strength and lightweight concretes, alloys and polymers.

The program for developing automated management systems for municipal services specifies optimizing production and distribution of fuel and energy resources and making improvements in the area of public services. Adoption of these systems will save an estimated 9-13 percent of thermal energy for residential and municipal deeds, 1.5 percent of electric power, up to 10 million cubic meters of water, and a substantial amount of gasoline. Automation of management of trade facilities, services to the public, public food service, urban transit, and medical services means an improvement in serving the public and increased labor productivity in these areas.

A distinctive feature of combined specific-purpose programs for the 11th Five-Year Plan is the fact that the projects specified in the programs have been linked both with the plans of scientific research institutes and with measures pertaining to adoption of new equipment at industrial enterprises, and have been coordinated with the ministries and agencies as well as republic Gosplan.

A high degree of organizational support in coordinating programs at all levels is an important factor, which guarantees their reliable implementation.

A check on progress in carrying out these projects has revealed that they are being successfully implemented. The UkSSR Academy of Sciences Institute of Superhard Materials, for example, has developed hard alloy burnishing disks and has handed them over for testing to the Kievtraktorodetal' Production Association. Hard-alloy burnishing disks have also been designed for the Promzv'yasok Plant. The institute developed a metal-diamond composite material, Impregnit, and delivered a batch of diamond drilling and milling tools for machining glassceramic and other brittle materials to the Arsenal Plant imeni V. I. Lenin Production Association.

The UkSSR Academy of Sciences Institute of Problems of Materials Science, jointly with the Scientific-Production Association imeni S. P. Korolev, has developed new hard-alloy materials for electrospark alloying at the Automatic Machine Tool Plant imeni Gor'kiy. Scientists proposed a process of plasma application of chromium oxide coatings on drawing dies and rutile concentrate on measuring drums of pneumatic looms, etc.

The Institute of Chemistry of High-Molecular Compounds has developed a new process for dispersion of aqueous polyurethanes based on simple polyesters, which is extremely durable and when drying out forms a pellicular coating with excellent physicochemical and mechanical properties. The results of this research have been handed over for practical development at an experimental production facility. Institute scientists have proven the technical feasibility of employing the glue "Styk-1" for performing electrical installation work in construction and, turning out an experimental batch of the adhesive, have turned it over for testing in the field.

The UkSSR Academy of Sciences Institute of Cybernetics has drafted proposals on improving the city's transportation system, as well as establishment of centers for group utilization of computer hardware.

The heat and mass exchange processes and equipment sector of the UkSSR Academy of Sciences Institute for Applied Thermal Physics has completed an experiment in storing 800 tons of potatoes at the Dnieper Fruit and Vegetable Warehouse employing an ozonization process. An experimental model of the Ozon-1500 generator was designed and built. Storage facilities and quantity of potatoes and cabbage which will be stored with the new process in 1981-1985 were designated.

An experiment on storing onions and garlic in conditions of reduced humidity created by an adsorption unit was successfully completed. Automated systems for reducing or increasing humidity in vegetable storage rooms are being developed. Utilization of methods proposed by the institute will minimize spoilage of vegetables during storage.

The UkSSR Academy of Sciences Institute of General and Inorganic Chemistry has synthesized new lubricant additives, which increases by a factor of 2 to 8 the resistance of friction surfaces to wear.

The list of such factors could go on and on.

In order to ensure a high organizational level of research activities, the Presidium of the UkSSR Academy of Sciences approved a designated member of the Presidium for the Kiev region and established a special department to work on regional problems of management of scientific and technological progress in the city's economy. This department, jointly with Academy institutes, drafts joint research schedules on specific-purpose programs, monitors progress in carrying out these programs by the institutes, and is formulating methods of managing scientific and technological progress in this region.

The Kiev city executive committee has set up a special group under the city planning commission to ensure that measures in the new equipment and technology adoption plan are incorporated into the plans of the enterprises.

Thus unity of administrative and organizational principles in implementing specific-purpose programs is being achieved.

In conclusion we can state that a new, advanced form of cooperation between science and industry has crystallized. A characteristic feature is concentration of the efforts of scientists on solving specific problems which are of the greatest importance for development of the economy of Kiev and other regions.

Certain experience in organizing preparation for and execution of programs has been amassed.

Each year the plan which has been ratified for 1981-1985 by the Presidium of the UkSSR Academy of Sciences will be supplemented with new institute projects.

In the future a similar plan for the next five-year plan will be drawn up on the basis of amassed experience.

Implementation of specific-purpose programs will greatly help industry in the city of Kiev as well as other regions in accomplishing the tasks assigned to the nation's economy in the 11th Five-Year Plan.

New and substantial opportunities for increasing scientific potential were revealed in the course of the republic review of adoption of scientific advances into production. As Academician B. Ye. Paton, president of the UkSSR Academy of Sciences, stressed in his 27 January 1982 report at a meeting of activist personnel of UkSSR Academy of Sciences institutes, scientific research and design organizations, higher educational institutions and production workforces in the Ukrainian capital, "it should be viewed from the position of analysis of amassed know-how, elaboration of new points of reference, and designation of performance levels to achieve."

The ideas and suggestions presented by B. Ye. Paton on accelerating the pace of scientific and technological advance in Kiev's industry by concentration and specialization of enterprises in the various economic sectors and branches, strengthening of the experimental-industrial facilities of scientific research institutes, reducing migration of labor resources as a result of locating appropriate production subdivisions outside the city, as well as his analysis of the forms and methods of cooperation between scientists and production people in the past and current five-year plans, and experience in organizing large-scale research projects for industry are now being successfully implemented in the course of performance of the above-mentioned city combined scientific-technical programs and preparation of a master plan for development of industry in the Ukrainian capital up to 1990.

During the review there took place get-togethers between prominent scientists of this republic and people from industry, scientific research institutes, design offices, "open house" days at scientific research institutes, and accountability reports by scientific workforces to production people.

All this unquestionably will foster further strengthening of the alliance between innovative thought and productive labor, and therefore will also help solve key economic problems.

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POOLING ACADEMY, UNIVERSITY SCIENCE RESOURCES URGED

Kiev VISNYK AKADEMIYI NAUK UKRAYINS'KOYI RSR in Ukrainian No 8, Aug 82 pp 89-91

[Article by Academician O. V. Bohats'kyy, UkSSR Academy of Sciences: "Concentration of Academy and Higher Educational Institution Potential for Solving Problems of Scientific and Technological Advance"]

[Text] The problem of concentrating academy, higher educational institution, and industrial branch potential for accomplishing the tasks of scientific and technological advance is one of our most pressing problems. One possible form of such concentration is the creation of interministerial scientific-production associations and academy-higher educational institution scientific complexes. Such a complex (now an association) has been operating with success in Odessa since 1972. In this article we shall examine the most important aspects of the activities of this association during the last 9 years.

At the end of the 1960's and beginning of the 1970's research in the field of organic and bioorganic chemistry was extensively initiated in Odessa. Such research was being intensively conducted in the department of organic chemistry at the state university. In October 1971 a scientific-research problem laboratory for chemistry of psychotropic preparations was established at the university to accelerate the pace of this research and, a year later, a department of chemistry of nitrogen heterocyclic compounds at the UkSSR Academy of Sciences Institute of Organic Chemistry. It was perfectly natural to consolidate the three organizations at an interministerial level, particularly since they had a single scientific director, combined scientific subject matter, and were staffed by experts from the university's department of organic chemistry.

The academy-university complex for problems of organic and bioorganic chemistry (AUNK-OBKh) included the department of organic chemistry and the scientific research problem laboratory for chemistry of psychotropic preparations at Odessa State University, and the department of chemistry of nitrogen heterocyclic compounds at the UkSSR Academy of Sciences Institute of Organic Chemistry. The charter of this complex was ratified by the Bureau of the UkSSR Academy of Sciences Southern Scientific Center.

Following are the principal scientific tasks assigned to the complex: development of basic research in the area of stereochemistry of heterocyclic compounds and chemistry of psychotropic preparations; development and practical adoption

of new biologically active substances and medicines. Specialists with a higher degree in organic chemistry are trained at the complex's laboratory facilities; a new area of specialization has been established -- chemistry of natural synthetic biologically active compounds.

Training of advanced-qualifications personnel was also stepped up. At the first stage of the complex's existence, the department of organic chemistry was the center of its scientific activities. The problem laboratory and the department of chemistry of nitrogen heterocyclic compounds were then taking the first steps in their development.

Extensive research was conducted in the area of stereochemistry of heterocyclic compounds and solving fundamental problems of conformational analysis of heterocyclic compounds (it was this work which formed the basis for awarding such research the Prize imeni L. V. Pisarzhevskiy); expanded activities included synthesis and study of ways of directed search for psychotropic preparations. Savings achieved from the scientific research results obtained at AUNK-OBKh totaled approximately 2 million rubles. During this period two doctors of sciences and 12 candidates of sciences were trained, as well as 100 specialists with a higher education.

In 1974 the department of chemistry of nitrogen heterocyclic compounds consolidated with the Odessa laboratories of the UkSSR Academy of Sciences Institute of General and Inorganic Chemistry. The laboratories proceeded to establish, on the basis of their facilities, the UkSSR Academy of Sciences Physicochemical Institute. Leading specialists of the complex took up permanent staff positions with the UkSSR Academy of Sciences. At that time there were three departments operating in the complex: bioorganic chemistry, chemistry of biologically active compounds, and molecular structure and spectroscopy.

The state university's problem laboratory of chemistry of psychotropic preparations also developed further and became a solid scientific research organization. The complex's new component parts were staffed primarily by specialists with a higher education, who received training there. We should note that students whose course research papers and senior theses involved the research problems being addressed by the complex were actively recruited for employment at the laboratory.

As a result of reorganization of the laboratories of the UkSSR Academy of Sciences Institute of General and Inorganic Chemistry, concentration of research efforts on theoretical and practical problems of development of the small-tonnage chemical industry, and thanks to the enormous job done under the guidance of the party organization, the UkSSR Academy of Sciences Physicochemical Institute was established in 1977. The following were designated as its principal areas of research: study of the structure of molecules, relationship between structure, mechanism of reactions and properties of matter and development of methods of directed obtaining of low-tonnage chemical products; employment of physical methods of investigating the structure and spatial arrangement of substances; development of catalysts and catalytic processes for obtaining low-tonnage chemical products.

These tasks were also in conformity with the line of development of the academy-university scientific complex pertaining to problems of organic and bioorganic chemistry. But the new system also created new conditions for the existence of AUNK. First of all, the complex's scientific center was moved to the UkSSR Academy of Sciences Physicochemical Institute (FKhI). Secondly, organization of the UkSSR Academy of Sciences FKhI made it possible to improve research facilities at the university subdivisions of the complex. Thirdly, these facilities and the institute's first-class laboratories helped improve the training of highly-skilled specialists. This is why the period 1976-1980 can be viewed as the second period of development of AUNK. A joint order was issued for the UkSSR Academy of Sciences Physicochemical Institute and Odessa State University, which contained regulations pertaining to the activities of the complex; it was renamed: Academy-University Scientific Complex for Physicochemical Problems and Problems of Organic and Bioorganic Chemistry (AUNK FIKhOB).

During the past five-year plan the complex consisted of four departments of the UkSSR Academy of Sciences Physicochemical Institute: bioorganic chemistry; chemistry of biologically active compounds; molecular structure and spectroscopy; catalysis; scientific research problem laboratory for synthesis of psychotropic preparations and department of organic chemistry of Odessa State University. Development of the complex helped strengthen its academy and university subdivisions. For example, thanks to the assistance of the Physicochemical Institute, facilities of the scientific research problem laboratory for synthesis of psychotropic preparations were expanded, and the scientific subject matter of the department of organic chemistry was brought up to date. This created conditions for training specialists with a higher education at the university's chemistry faculty in the biochemistry specialization, using the facilities of AUNK FIKhOB. Thus specialists were now being trained in three areas of specialization: organic chemistry, chemistry of natural and synthetic biologically active compounds, and biochemistry, as well as in organic chemistry at the evening division of that same faculty. In other words, approximately 50 upper-division students from the chemistry faculty were receiving training at the complex, representing almost 40 percent of the total; they were also engaged in senior and course research projects.

Research activities in student scientific groups continued to develop. Synthetic assignments connected with the complex's subject matter, mandatory for every student, were specified for the general practical training course in organic synthesis in the third year of study and in special practical training courses. Students in these areas of specialization receive practical production experience at the UkSSR Academy of Sciences Physicochemical Institute, particularly at the institute's experimental plant. One important initiative was organization of research work by lower-division students in all of the complex's subdivisions, that is, establishment of scientific groups in the departments of the Physicochemical Institute, the problem laboratory and department. This made it possible to involve 20-30 lower-division students in innovative activities. More than 100 students from the university's chemistry faculty are working full-time at the complex. This has had a positive effect on the quality of training specialists, preparing students for graduate study (both at the university and at the Physicochemical Institute), and training personnel for the complex.

The concentration of academy and university potential has helped intensify research. Research in a new area of organic and bioorganic chemistry -- macrocyclic complexons and their analogs -- was advancing at a rapid pace. Considerable success was achieved in chemistry of psychotropic preparations: a unique tranquilizer, Fenazepam -- was developed and put into production; this is the first Soviet preparation of its type, which is superior in all indices to its foreign counterparts; new methods have been developed for synthesizing certain chemical reagents; an effective defumigant against methyl bromide has been commercially marketed, for accelerated treatment of the holds of fishing vessels, etc. Research has commenced in the area of metallocomplex and enzyme catalysis.

In 1979 the Presidium of the USSR Academy of Sciences designated the UkSSR Academy of Sciences Physicochemical Institute as the lead organization in implementing the USSR Academy of Sciences all-union basic research program on macrocyclic complexons and their analogs. The AUNK headed this program at the institute. In general the contribution made by the complex's university subdivisions to our achievements is fairly substantial. For example, while in the departments of the UkSSR Academy of Sciences Physicochemical Institute research is being conducted on synthesis of crown-esters, cryptands and other important macrocyclic complexons, and they are studying the capability of these compounds to complex, the university's scientific research problem laboratory for synthesis of psychotropic preparations is investigating their influence on biological and synthetic membranes. The department of organic chemistry is working on problems of utilization of macrocyclic compounds in synthesis, and the problem laboratory is working on synthesis of the properties of porphyrins and cyclopolypeptides.

Both the UkSSR Academy of Sciences Physicochemical Institute and the problem laboratory were working on the development of Fenazepam, while pharmacological research, without which practical adoption of this preparation into medicine would be impossible, was being conducted at the USSR Academy of Medical Sciences Institute of Pharmacology and at the problem laboratory for synthesis of psychotropic preparations. In particular, the laboratory studied the metabolism of psychotropic preparations, including Fenazepam.

Methods of synthesizing chemical reagents were developed jointly with the department of organic chemistry: they were adopted at enterprises of the Soyuzreaktiv Main Administration of the Ministry of Chemical Industry.

Thus concentration of academy and university scientific potential promoted an improvement in the level of basic research. In the period 1976-1980 two doctoral dissertations were completed, 16 candidate's dissertations were defended, and more than 150 specialists with a higher education were trained at AUNK. Two people from the Physicochemical Institute and the complex were awarded a USSR State Prize. Savings to the economy from research results total several million rubles.

A joint order issued by the President of the UkSSR Academy of Sciences and the USSR Minister of Chemical Industry called for establishment in Odessa at the beginning of 1981 of a branch laboratory of the USSR Ministry of Chemical

Industry and a laboratory of chemistry and technology of macroheterocyclic compounds (LKhTM) of the All-Union Scientific Research and Design Institute for Monomers. Scientific direction of the latter was assigned to the UkSSR Academy of Sciences Physicochemical Institute. The institute was designated co-director of the UkSSR Academy of Sciences and Ministry of Chemical Industry program on chemistry and technology of macroheterocyclic compounds.

Ratification for the 11th Five-Year Plan of a USSR Academy of Sciences All-Union Basic Research Program on Chemistry of Macrocyclic Complexons, a branch scientific and technical program on the chemistry and technology of macrocyclic compounds of the UkSSR Academy of Sciences and USSR Ministry of Chemical Industry, and program tasks in the area of catalysis and development of chemistry of mesomorphogens, medicinal and biologically active substances (programs of the USSR State Committee for Science and Technology, USSR Gosplan, and the UkSSR Academy of Sciences) has opened up new prospects for scientific and scientific-organizational growth of AUNK.

The 26th CPSU Congress and the 26th Congress of the Ukrainian Communist Party assigned this republic's scientists the task of developing new and efficient technologies grounded on basic research. This has placed on the agenda the question of organizing, in place of AUNK, an interministerial scientific-production association for organic and bioorganic chemistry and catalysis, ORBIKhIM. The ORBIKhim Interministerial Scientific-Production Association began operating in 1981 under the UkSSR Academy of Sciences Physicochemical Institute. ORBIKhIM is the successor of AUNK, but it is an improved form of interministerial cooperation.

Six of the 12 scientific departments of the UkSSR Academy of Sciences Physicochemical Institute were incorporated into the ORBIKhIM Interministerial Scientific-Production Association (the departments of bioorganic and theoretical chemistry, chemistry of macrocyclic complexons, chemical thermodynamics, molecular structure and spectroscopy, chemistry of biologically active substances, and catalysis), as well as the experimental plant of the UkSSR Academy of Sciences Physicochemical Institute, the department of organic chemistry and the scientific research problem laboratory for synthesis of psychotropic preparations of Odessa State University, and the laboratory of chemistry and technology of macroheterocyclic compounds of the All-Union Scientific Research and Design Institute of Monomers.

The Interministerial Scientific-Production Association is to carry out the above-enumerated programs and specific-program tasks at the all-union, republic, and regional levels, and is to train personnel with a higher education and advanced level of qualifications. Accomplishment of these tasks will be of great significance to our country's economy. For example, adoption of a new commercial process for producing lysine -- a valuable protein additive -- is needed for animal husbandry. This process is to be based on utilization of macroheterocyclic compounds.

The principal goal of the All-Union Macrocyclic Compounds Scientific Research Program and a technical program of cooperation between the UkSSR Academy of Sciences and the Ministry of Chemical Industry on this problem is establishment

during the current five-year plan of a Soviet industry for the production of macrocyclic complexons and their analogs, and extensive utilization of these substances in the nation's economy.

Of no less importance are plans and programs in the area of catalysis, development and adoption of new medicines, mesomorphogens, and many other new reagents and materials for today's technology.

Unification of the efforts of academy, university and branch organizations for the most efficient development of research in chemistry of macrocyclic compounds is essential for accelerated development of modern chemistry. We are confident that the ORBIKhIM Interministerial Scientific-Production Association will be an example of successful organization of interministerial cooperation and surmounting of ministerial barriers. We do not consider our experience to be universally adoptable. We do believe, however, that it merits attention and can be utilized innovatively, applicable to specific conditions and circumstances.

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SCIENTIFIC AND TECHNICAL COOPERATION BETWEEN USSR AND CUBA

Moscow EKONOMICHESKAYA GAZETA in Russian No 42, Oct 82 p 20

[Article: "The USSR and Cuba on a Course of Scientific and Technical Progress"]

[Text] Twenty years have passed since the beginning of scientific and technical cooperation between the USSR and the Republic of Cuba. The gathering of the public in Moscow was devoted to this remarkable date. It was noted that the continuous development of fraternal friendship and close ties meets the fundamental interests of the peoples of both countries.

The chief of administration of the USSR State Committee for Science and Technology V. A. Konyushko, in a conversation with our correspondent, talked about the results and prospects for development of scientific and technical ties of the Soviet Union and Cuba.

Soviet and Cuban specialists have implemented a number of scientific and technical developments in the past which have found application in the national economy of both countries. Here are the most important of them.

It is known that the leading sector of the Cuban national economy is the sugar industry. And it is natural that during the first years of Soviet and Cuban scientific and technical cooperation, the topic of investigations in sugar production occupied the basic position. Primary attention was devoted to the important problem of mechanization of the sugar cane harvest. Soviet specialists designed a combine for harvesting the sugar cane. Since July 1977, a plant for production of sugar cane harvesting combines imeni 60-th Anniversary of the October Revolution, built with the assistance of the Soviet Union, has begun to manufacture this model in Cuba. By the end of 1981, more than 1,500 machines had come off the plant conveyor. Soviet and Cuban designers and technicians are continuing to improve the units and assemblies of the combine and to improve the production technology. The first prototypes of a new model of the KTP-2 combine with more powerful engine, improved cutting mechanism and the driver's cab equipped with an air conditioner have been developed through joint efforts.

The nickel industry is one of the important fields of Soviet and Cuban cooperation. Joint research at an experimental installation for separation of nickel and cobalt yielded positive results and was used in design of shops for separation of cobalt at Punta Gorda and Las Camariocas plants under construction. It is planned to introduce this method at the Nicaro plant as well. The saving from using the invention at a plant with annual capacity of 30,000 tons will comprise approximately 400,000 pesos.

A state geological service has been created on Cuba with the assistance of Soviet specialists. The results of joint scientific research work have been reflected in such titles as "A geological map of Cuba," "A mineral chart of Cuba," "A hydrological map of Cuba" and the book "The geology of Cuba." Existing, constructed or planned new mining enterprises and enrichment factories and plants have been expanded on the basis of known reserves. Collectives of specialists from both countries have conducted geological prospecting work for oil and gas for several years and there are already promising results.

The cooperation of Soviet and Cuban oil refiners has yielded a discernible effect. Specifically, investigations to replace oil additives purchased in western countries with Soviet additives have permitted Cuba to do away with importation of them and to save up to two million dollars annually.

The significant success of Cuban specialists in development and introduction of computer technology should be noted. Models of SID-300 minicomputer processors and SID-702 alphanumeric displays were developed in cooperation with Soviet scientists. Based on accumulated experience, the collective of the Cuban research center for computer technology has developed a model of the SID-7220 alphanumeric display. These models successfully passed intergovernmental trials and were included in the peripheral devices of the minicomputer system used in CEMA member countries. It is planned to manufacture these displays in Cuba using production equipment and a component base of Soviet manufacture. Agreements on export of the given products to the USSR and to the other socialist countries were reached during coordination of the national economic plans of both countries for 1981-1985.

The direct scientific and technical ties between the government organizations for standardization and metrology of the Soviet Union and Cuba, established in 1973, are being developed successfully. Services of this important state organization both in the center and in the provinces and leading sectors of the national economy were organized within a short period with the assistance of Soviet specialists on Cuba. A number of standards, including the unified designed documentation system (YeSKD) which makes it possible to guarantee the compatibility of planning and design developments conducted on Cuba and in the Soviet Union, has been worked out and put into practice.

The USSR Academy of Sciences is assisting Cuban scientists in organization of research in different fields. Joint work has been conducted for many years in the field of biology, geophysics, geology, geography, oceanology, mathematics, astronomy, scientific information and the social sciences. Regular observations of the magnetic field of sun spots are made. A set of equipment for recording natural radiation of thunderstorm foci has been developed.

The plan for scientific cooperation between the USSR and Cuban Academies of Sciences for 1981-1985 provides for cooperation in 56 problems, including 88 topics in the natural sciences. Special attention is devoted to problems of computer technology, automated control systems, theoretical physics, nuclear research, problems of microbiology, biology, kinetics and the molecular mechanisms of tumors, geology, physics of the earth and scientific information.

Talking about the training of Cuban scientific personnel and specialists with higher and secondary specialized education in the USSR, it should be noted that it is being planned with regard to the needs of the Cuban national economy and the future plans for development of the economy, education and culture. Approximately 7,000 Cuban specialists with higher and secondary specialized education are presently being trained in the USSR for different fields of science, technology and Cuban culture.

The joint space flight of USSR pilot-cosmonaut Yu. V. Romanenko and Republic of Cuba research cosmonaut Arnaldo Tamaio Mendes in September 1980 was a bright page in the manuscript of Soviet and Cuban cooperation. The flight yielded valuable scientific results.

A total of 140 problems and topics in 23 different directions, including the field of the sugar, food, chemical and petrochemical industry, electric power engineering, ferrous metallurgy, agriculture, forestry and fisheries, construction, transport and computer technology, has been selected for the current 5-year plan for current work. More than half of them is related to realization of problems ensuing from the plan for accelerated development of the science and technology of the republic of Cuba up to 1990. Among the new problems and topics of cooperation are creation of a complex of stone-harvesting machines, restoration of salinized soils, development of means of mechanization and production equipment for the sugar industry and the use of solar energy.

The Soviet-Cuban intergovernmental agreement on cooperation in the development of the science and technology of the Republic of Cuba during the period 1981-1985 is of important significance for successful fulfillment of the planned topics. It provides for making credits available to Cuba at favorable rates, which is directed toward recovery of the expenses with regard to scientific research, experimental design and planning work and outfitting the scientific research centers, institutes and laboratories of Cuba with equipment, instruments and materials.

Appearing at the Second Congress of the Communist Party of Cuba, comrade Fidel Castro emphasized the importance of strengthening economic and scientific and technical integration of the Republic of Cuba with CEMA member countries and especially with the Soviet Union. This course is being clearly reflected in the continued development of the scientific and technical ties of the USSR and Cuba.

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"ACCOUNTING FOR NEW TECHNOLOGY IN AN ASSOCIATION" REVIEWED

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 7, Jul 82 pp 91-92

[Review by Professor A. Gritsay, Doctor of Economic Sciences and Professor V. Levin, Candidate of Economic Sciences, Kharkov, of book "Uchetnovoy tekhniki v ob'yedinenii" ["Accounting for New Technology in an Association"] by A. S. Borodkin, Kiev, "Tekhnika", 1981, 160 pages]

[Text] The reviewed monograph is devoted to the investigation of methodological and organizational questions of accounting in the administration of scientific and technical progress. Up to now insufficient attention has been given to these questions in the special literature, by which the urgency of the present work is also determined.

In it the contemporary state of the accounting of various objects of new technology is examined, correctly included in it are inadequacies and paths of improvement, among which are: the creation of a local accounting information system, expansion of the plan of bookkeeping accounts by increasing the number of them in which expenditures on the creation of new technology are reflected; the introduction of a systematic recording of the economic effect of new technology; the introduction of changes in statistical responsibility, etc. The author proposes ways to solve the set tasks.

In organizing the accounting of new technology, great importance is attributed to modelling the processes of accounting for objects of new technology by levels of administration of the national economy. In that aspect the author examines the content of the models and shows the informational connection between separate blocks, and also the connection between the accounting model and other subsystems, which permits obtaining operative and reliable accounting information about all the economic processes occurring in the administration of a scientific-technical process.

In a special chapter are examined questions of the planning and recording of measures of new technology, where considerable attention is devoted to improvement of the methodology of the planning and organization of accounting. In it is presented a list of objects of accounting, necessary primary documents, a procedure for organizing operative accounting for execution of the plan of measures and the formation of expenditures on new technology. Of great value are the proposals and recommendations on organization of operative recording of the obtained economic effect resulting from introduction of new technology and the compilation of reports.

In the book light is shed upon the recording of expenditures on the creation and introduction of new technology. The author shows the economic nature of the expenditures on scientific and technical progress, their content and classification on the level of the entire national economy and separate enterprises, and also on the sources of financing.

A. Borodkin described in detail the recording of expenditures on the preparation, mastering and introduction of new technology. Their classification according to different attributes is examined and a new nomenclature of articles and a synthetic and analytic recording of those expenditures is worked out. To further improve the recording of expenditures on the preparation and mastering of new technology and the mechanism of compensation for expenditures it is proposed to make a systematic separate recording of those expenditures. For this purpose it is recommended that the accounting of "Expenditures on the preparation and mastering of new production and production facilities" be introduced into the bookkeeping plan. According to the author, it is advisable to introduce analytical accounting for new technology according to types of articles, expenditures and revenue sources.

In the reviewed book one of the urgent problems of accounting for new technology is investigated--recording expenditures on its introduction. The complexity of this recording consists in this, that it depends on many factors, the most important of which are a multiplicity of objects, variety of their technical use and economic substantiation, the degree of importance of the plan, the large number of sources and users, and also the balance sheets to which they belong.

Practice shows that the recording of actual expenditures on the construction, reconstruction and introduction of new technology are done, as a rule, by the indicated method, according to an abbreviated list of articles, and the expenditures are not localized in the most important direction.

On the basis of generalization of the leading practice, the author proposed a new method of organizing the synthetic and analytic accounting for those expenditures. The stated recommendations will contribute to more reliable determination of expenditures on the preparation, mastering and introduction of new technology, both as a whole and for separate objects and directions of scientific and technical progress, and also the implementation of careful control of the economic and rational use of media.

One of the tasks of the financial credit mechanism is assuring complex planning, financing and stimulation of scientific and technical progress. Hence a special chapter is devoted to the organization of accounting in the system of its economic stimulation. In it a detailed account is given of the procedure of formation and use of resources from a single fund for the development of science and technology, a fund for development of production and a fund of material incentive for the creation, mastering and introduction of new technology, a procedure and technique are given for the organization of synthetic and analytic accounting, the compilation of responsibility for funds, and also ways to improve the mechanism of expenditure repayments.

The influence of scientific and technical progress on increase of the efficiency of social production and contemporary conditions cannot be reliably determined due to absence of a procedure and practical experience in measuring the actual economic efficiency of new technology. Hence, as at both a separate enterprise and for a branch as a whole, considerable divergences are observed between the statistical data on reduction of the cost of production due to introduction of new technology

and the actual results of its activity. One of the merits of the monograph is that in it an elegant system for measuring the economic effectiveness of new technology and its systematic accounting, developed by the author, are described.

The reviewed work also has deficiencies. It sheds no light on questions of the organization of the accounting information system, its structure, the composition of the input and output information and its interconnection with other automated control subsystems. Consequently it would be clearer to trace the interconnection of the economic effect with reduction of the cost of production and the results of intraeconomic calculations with the balance sheet of the enterprise. Little attention was given to the operative recording of expenditures and the economic effect resulting from new technology.

The noted inadequacies have a particular nature, in our opinion. The book is written on a high theoretical and methodological level, contains recommendations on the organization of accounting and control and is of use because it concerns itself with economic problems of scientific and technical progress.

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CONFERENCE "PATENT-82"

Tallinn MOLODEZH ESTONII in Russian 17 Nov 82 p 1.

[Article by V. Fridlyand]

[Text] Today the Ninth Conference of Patent Specialists of the Baltic Countries, "Patent 82", is being opened at Yormala near Riga. Such forums are conducted every other year. At them the best patent specialists of Latvia, Lithuania and Estonia discuss urgent problems of patent affairs and designate paths of the development of patent protection of inventions.

The patent specialists are called together by leaders of the innovative creativity of workers and engineers. Their main task is to help inventors and efficiency experts to assure the novelty of developments, formulate inventions in a technically literate manner and patent them. That requires highly qualified engineering and legal preparation.

At the conference our republic is represented by 25 of the best patent specialists. Among them are specialists of the Tallinn Polytechnic Institute, the "Mistra" and "Slantsekhim" Production Organizations and the Kolkhoz imeni S. M. Kirov.

Success of kolkhoz inventions was also assured by the patent service created at that farm. By the way, in the Soviet Union there are only two kolkhozes with their own patent specialists--the Kolkhoz imeni S. M. Kirov and the Kolkhoz "Kuusalu" of Kar'yuskiy Rayon, Estonian SSR.

For active participation in invention and the development of patent science the Estonian republican council of the VOIR (Vsesoyuznoye Obshchestvo izobretateley i ratsionalizatorov--All Union Society of Inventors and Efficiency Experts) has been awarded 7 times the Challenge Red Banner of the USSR State Committee for Inventions and Discoveries and the Central Council of the VOIR.

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