JPRS-UST-91-007
27 AUGUST 1991

Foreign Broadcast Information Service 50 ANNIVERSARY 1941 - 1991

JPRS Report

Science & Technology

USSR: Science & Technology Policy

19981218 124

DTIC QUALITY INSPECTED 3

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA 22161

Science & Technology
USSR: Science & Technology Policy

JPRS-UST-91-007 *27 August 1991*

CONTENTS

Conferences, Expositions

Commission on Reorganizing USSR Academy of Sciences Reports Progress

917A0184A Moscow POISK in Russian No 21 (107), 17-23 May 91 p 3

[Article by Vice President of the USSR Academy of Sciences Academician Vladimir Kudryavtsev and Candidate of Physical Mathematical Sciences Aleksey Zakharov under the rubric "What Is Science To Be Like?": "A Step Toward Agreement"—first two paragraphs are POISK introduction]

[Text] The deep concern about the fate of academic science during the period of the economic crisis makes it incumbent to look in a new way at the organization of the activity of scientific research institutes of the USSR Academy of Sciences. In this connection the presidium of the USSR Academy of Sciences established a commission for legal questions with the participation of representatives of the unions of scientists of Moscow and the USSR, the Club of Inventors attached to the USSR Academy of Sciences, and trade unions. The draft of "The Basic Principles of the Organization and Activity of the Scientific Research Institute of the USSR Academy of Sciences," which was published in full in POISK (No 14, 1991), was the first first result of the activity of the commission.

The goal of this publication is to give a brief survey of the basic innovations that were incorporated in the draft. Its authors—members of the commission—are at substantially different levels of the academic hierarchy and have far from identical experience in life and very different, at times polar political views. Precisely these circumstances contributed to the pointed, but friendly debates and fruitful cooperation when drawing up the draft.

One of the points of view on the USSR Academy of Sciences as a whole is that the Academy is the best scientific institution of the country, which supports the creative contacts of scientists of different fields of knowledge, gives, though few, yet prominent specialists relative independence in their work from the oscillations of the political pendulum, carries out the scientific supervision of institutes, and aids their supply with the necessary resources. However, the organizational structures of the Academy no longer completely correspond to the present level of the development of science and society and need consistent reform. At the same time the maximalism, which is characteristic of our society, could lead to irreversible consequences: the destruction of the scientific environment.

Another point of view; The USSR Academy of Sciences should be as described above, but in reality it rather resembles a ministry of science: the supercentralization of management; the lack of feedback with those who make science; the actual power of officialdom with all its attributes such as black limousines, broad-shouldered civilians at the entrance gate, and stores closed to people who are not registered. Such a colossus will not hold out under the conditions of a common sense economy and will certainly collapse.

However, the Academy of Sciences is still better prepared than other totalitarian structures for reform. First, because the rudiments of democracy, scientific councils, elected positions, and so on always existed here. Second, because not only "respected," but also truly intelligent people have been assembled at the Academy. If the reform peters out here, on what can one rely in other areas? A thought out reform could help the scientific community get through the troubled times of chaos and turmoil.

It is easy to see that for all the dissimilarity of the positions agreement with regard to the necessity of reform and hope for its success exist.

Of course, it would be much easier to begin the work on the draft of "the model charter of the scientific research institute" while having before us laws on intellectual property and on the status of the science worker and institute and an updated charter of the Academy of Sciences. However, it is unknown how long we will have to wait for these documents, for the present the various Supreme Soviets are busy with the clarification of complex relations. And academicians are treating their own charter with much trepidation, preferring to think seven times and to make an amendment once (probably not without reason, taking into account the legal uncertainty of the transition period). Therefore, it seems intelligent to us to introduce elements of novelty "from below," through documents addressed to scientific institutes, in the hope that, having been approved in practice, they will influence subsequent standard acts of a higher level.

Let us emphasize that "The Basic Principles" are not the charter of an institute, but merely a base for its writing. It is hopeless to try to draw up an identical charter for, say, the institutes of the Russian language and nuclear research. Therefore, the draft contains rather a list of recommendations, which it is desirable to take into account when drawing up one's own charter, and a number of provisions of a standard nature. The latter concerns the items, which define the structure of management of the institute and ensure a balance between the day-to-day executive power of the director and the fundamental "legislative" power of the scientific collective. The role of the arbitration court in case of irresoluble differences belongs to the department of the Academy of Sciences.

Now let us turn to the content of the proposed document. We regard as fundamentally important (and, incidentally, new) Points 16 and 17, which record the rights of the scientific associate to:

—the submission of a scientific work for publication (whether or not they will publish it is the affair of the editorial board of the journal, but it is possible to send a work off to the press without "imperial permission,"

which is often accompanied by the appreciable increase of the number of coauthors);

—the submission of a scientific project for the competition of works that are financed (Do you want financial independence?—Dare!);

—the independent examination of a project (Are they oppressing you?—There is a means of protection);

—a job outside the structural subdivision, in accordance with a decision of the scientific council (Does the administrative framework restrict you?—Prove this to the scientific council).

In a large number of fields of science, particularly those involving the use of complex apparatus, small scientific collectives—groups, laboratories—play a special role in the process of creative research. Point 14 grants these collectives independence in the choice of themes and the distribution of the derived assets. But here the themes should not be at variance with the plans that have been approved by the scientific council. Let us emphasize that the opening for laboratories of a financial account (subaccount) is entirely possible. We merely repeat that the individual charter of the institute (Point 15) will establish the specific forms of the interaction of laboratories with each other and with the administration, the distribution of assets, accounting, monitoring, and so on.

The institute, as an independent legal entity, itself plans its own activity, itself implements personnel policy (the number, salaries, the increase of skills), and itself spends its own assets.

Regular checks on the part of the Academy, which, however, should not reduce to the income and expenditure parts agreeing, but should include without fail the scientific examination of the results (Point 8), are called upon to be, according to the intention of our commission, a balancing factor.

The question of who should make the decision to put "The Basic Principles" into effect is one of principle. In our opinion, it would be strange to adopt a document, which is addressed to the scientific research institutes of the Academy, without the participation of the institutes themselves. Therefore, it is necessary to conduct a general meeting of the USSR Academy of Sciences, at which the fate of this document will be decided, with the participation of elected delegates of the scientific organizations of the Academy. The rights of delegates of scientific research institutes at the general meeting and other academywide forums are specified by the charter of the USSR Academy of Sciences.

It is also no less important that the institute in addition to the possessions, which have been transferred to it for use by the Academy, can have property (Point 7).

The largest number of suggestions, true, diametrically opposed ones, during the discussion of the draft (versions of the document on two occasions were examined with regard to the scientific research institute and on two occasions were published in the newspaper POISK) were received with regard to the section "The Management of the Institute."

Let us emphasize the two basic ideas that were incorporated in "The Basic Principles": The broad powers of the institute are exercised by it within the framework of the plans (scientific and financial) and structure, which are approved by the scientific council. In case of differences the department of the Academy of Sciences acts as the arbiter.

The director is elected by the department, but from among the candidates supported by the scientific collective. If there is no agreement, the department appoints an acting director for a term of two years.

One often has occasion to hear that the electivity of the director leads to a decrease of exactingness (the director is forced to be "kind"). It seems that such arguments are dictated by inertia and come from the years, when only orders were in the arsenal of means of management of executives. At the same time the broad independence of the institute also provides today other, more effective levers. For example, financial levers. Moreover, the director is elected for a sufficient term (five years) for the scientific community to be convinced: The drastic organizational steps, which were taken initially, were justified.

Thus, all the most important decisions: the structure of the institute, all its plans, the evaluation of the activity of the director and individual subdivisions, are approved by the scientific council. If the charter of the institute does not stipulate another thing, the director is the chairman of the scientific council. Another thing makes sense, if owing to the complexity and branched nature of the activity of the institute it is useful to elect to the post of director a person with the talent of an organizer. Then it is better for another person—from among leading researchers, who often do not like organizing functions—to head the scientific council.

Among the most important tasks of the scientific council let us also note the election of the managers of scientific subdivisions, which is conducted with allowance made for the opinion of the scientific collective. The form, in which this can be accomplished (a straw vote of scientific associates, a debate with opponents from the scientific collective, and so on), is a matter of the individual charter. It is important that two-way communication exist between the scientific council and the scientific collective.

It is significant that representatives of various kinds of public organizations are now absent in the membership of scientific councils. The scientific council is concerned with scientific and scientific organizational questions, not with politics and social protection, for which other organs of self-management are established at the institute (Point 10).

The contract system of the remuneration of labor, it seems, can change much in the life of institutes. Then, if the scientific council approves the financial plans, the question of what assets can be allocated for the remuneration of labor under contracts is also in its competence. And a second thing: Inasmuch as the scientific council approves the structure of the institute, including temporary subdivisions (Point 12), the organization of completely contractual subdivisions and their plans are also in the competence of the scientific council. There are no other restrictions in the draft, consequently, everything else is the affair of the charter of the institute itself.

Here we would like merely to note: If the director is not granted the right to take risks, it will hardly be possible to expect outstanding results from him. At the same time, if the institute has sufficient assets, why not put a portion of them at the disposal of the managers of laboratories for the remuneration of labor under contracts?

Incidentally, the question of the use of the contract system under the conditions of the Academy of Sciences, in our opinion, is the subject of a separate document. At present the compulsory conversion of permanent associates of institutes to contracts is not envisaged by any standard documents of the USSR Academy of Sciences. While lawful acts (instructions, statutes, and so on) of nonacademic origin in conformity with the Ukase of the USSR President "On the Status of the USSR Academy of Sciences" of 23 August 1990 do not have legal force at the USSR Academy of Sciences.

On the labor collective. It elects organs, which carry out social protection, and, if necessary, other organs of self-management. For example, wherever complex economic activity exists, the need to establish a council of the enterprise or a council of the labor collective may arise. The need to establish such organs and their competences are the affair of the charter of the institute.

If the suggestions of the commission of the USSR Academy of Sciences for questions of property, in conformity with which a portion of the property is transferred to the full economic jurisdiction of institutes, are adopted, a council of the enterprise, which consists half of representatives of the owner (the Academy of Sciences) and half of elected representatives of the labor collective, should be established, in conformity with legislation, for the management of this property. There is no or almost no such experience at institutes of the Academy. Nevertheless under the conditions of the lack of state control of property such a means seems a reasonable, if not the only possible one.

Questions of labor safety procedures, the wage, and so on, in accordance with the law on trade unions, the rights and guarantees of their activity, pertain to the sphere of activity of the trade union organization and do not require special provisions in "The Basic Principles." Of course, it is better if it would be possible to establish a single elected organ that represents the interests of the entire labor collective. Then it is easier to conclude a collective contract with the administration. It is noteworthy that the deputy director for administration and management is appointed by the director in consultation with the elected organ of the labor collective (Point 26). This organ approves the charters and other constituent documents of commercial organizations that are established with the participation of the institute, in order to eliminate the uncontrolled flight of property to commercial structures.

In conclusion on behalf of the commission we thank everyone who took (and will still take) part in the discussion of the draft. We understand that the proposed draft cannot be free of shortcomings, if only owing to the imperfection of the legal base, which concerns the labor of the scientists, and to the peculiarities of the Academy of Sciences as a very specific organization. At the same time we hope that this document will aid the writing of charters of scientific research institutes, which are better suited for the rapidly changing conditions, and will aid the emancipation of organizational structures and creative thought, without which the development of science is impossible.

USSR GKNT Balks at Branch Science Funding Decree

917A0172A Moscow RADIKAL in Russian No 23, 19 Jun 91 p 3

[Article by Vladimir Pokrovskiy: "The State Committee for Science and Technology Does Not Want To Perform the Role of a Switchman"]

[Text] On 19 May the USSR Cabinet of Ministers issued Decree No. 268 "On the Financing of General Sectorial and Intersectorial Scientific Research and Experimental Design Work in 1991." And now the USSR State Committee for Science and Technology is trying to find a way out of the situation, in which the Kremlin placed it. The point is that the state committee, for about a year, sought the publication of this document. Now at last the long-awaited moment arrived, but did not bring pleasure to such an extent that even the specialists who prepared it were forced to disown authorship.

To begin with, those who so desire can familiarize themselves with the decree itself:

"For the purpose of ensuring the financing of general sectorial and intersectorial scientific research and experimental design work the USSR Cabinet of Ministers decrees:

"1. To permit ministries and departments of the USSR and other organs, which are authorized to manage possessions that are all-union property, to stipulate in the cost of products (jobs, services), which are produced by enterprises, associations, and organizations of union subordination, which are within their jurisdiction, the expenditures on the financing of general sectorial and intersectorial scientific research and experimental design work and measures on the assimilation of new types of products (jobs, services) with their transfer to the special funds of special-purpose nonbudgetary assets of these organs of management in the following maximum amounts (as a percent of the cost) by national economic complexes: construction, metallurgy, and transportation and communications—0.5, agroindustrial—0.6, fuel and power and machine building—0.9, and defense (including the USSR Ministry of Atomic Power and Industry)—1.1.

"The USSR State Committee for Science and Technology in consultation with the USSR Ministry of Economics and Forecasting and the USSR Ministry of Finance is to specify the procedure of the formation and use of the special funds of special-purpose nonbudgetary assets and the specific amounts of the assets which are transferred to the indicated funds of ministries and departments of the USSR and other organs, which are authorized to manage possessions that are all-union property.

"2. The USSR Ministry of Economics and Forecasting for the compensation of the increase of the cost of products (jobs, services) in connection with the inclusion in it of the expenditures on the financing of general sectorial and intersectorial scientific research and experimental design work and measures on the assimilation of new types of products (jobs, services) is to establish if necessary the corresponding surcharges on the fixed wholesale prices.

"3. To recommend to the governments of the republics to establish an analogous procedure of the financing at the republic level of scientific research and experimental design work and measures on the assimilation of new types of products (jobs, services)."

In brief, sectorial scientific research and experimental design work receives vigorous support from the largest national economic complexes. The spending on science, which today is actually suffocating from the lack of money, will be included in the cost of various types of industrial, construction, and other products, which are produced at fixed prices. Except for good, there is, it would seem, nothing bad in this. Why are the staff members of the state committee unhappy?

In their opinion, the decree, which is noteworthy for its intention, was written in such a way that it is incapable of working, at least in its present form. In order to understand how important this decree is and in order to understand the reasons for its (temporary, we hope) "impotence," we are forced to give the reader if only a rough idea of what has happened in sectorial science in the past year. (A specification: Below it will be a question of that variety of sectorial science, which pertains to production sectors).

"Entry into the market and the laws and other standard acts, which were passed for this purpose, pass like a braid through practically all the sources of financing of applied science," Aleksandr Kazakov, deputy chief of the economic mechanism department of the State Committee for Science and Technology and one of the authors of the decree, believes. "Previously there were five of them: the centralized funds of ministries, the budget, the assets of enterprises, the internal assets of scientific institutions, and bank credits. In the premarket economy this system functioned quite stably, everything was well thought out, all the mechanisms worked objectively. What is there now?

"The **budget** has been depleted, there are no longer hopes for it. It practically does not exist, many republics are refusing to replenish it. Today we are living by means of credits, which the government is getting from banks, and these credits are sufficient for far from everyone. The State Committee for Science and Technology, true, is continuing to carry out the budget financing that is provided for by the Law on the USSR Budget for 1991. But the Ministry of Finance provides money only for monthly financing, which creates for the directors of institutes considerable difficulties when concluding contracts—the stability of this source also interests subcontractors. Moreover, in recent times the talk about the possible decrease of the budget for science has not halted.

"Another source—**the assets of enterprises**—has also decreased significantly. Their economic stimulation funds, from which science was previously sustained, were recently cut soundly—50 percent of the balances of these funds as of 31 December 1990 have been liable to transfer to the economic stabilization fund. And when the USSR Council of Ministers issued Decree No. 1256, which established in science a level of profitability of 30 percent (incidentally, the lowest in the national economy), another source of financing—**the internal assets of institutes**—decreased sharply. Now practically the entire amount, which should be used for the development of science, is going into the budget. As for borrowed assets, for science they have become simply inaccessible, inasmuch as the bank rates for credits have increased tens of fold and today only short-term credits are being issued, which for science, as a rule, is not of particular interest.

"The main trouble is that the main source of financing of sectorial science—**centralized funds**—has dried up. Previously the centralized funds for the development of production, science, and technology (FRPNT), which were formed in the ministries, annually gave science about 4 billion rubles [R]. Every enterprise deducted for these funds a strictly specified share of its profit. When the Law on Taxation was issued, deductions of enterprises for the funds for the development of production, science, and technology turned out not to be envisaged there, and the centralized funds ceased to exist.

"Enterprises themselves under the conditions of the deficit are not interested in spending money on any long-range developments. Any commodity produced by them, whatever its quality is, is immediately swallowed by the empty market. Enterprises also have no concern for the decrease of the product cost—the existing economic mechanism has been formed in such a way that the more the cost is reduced, the more goes to the budget, inasmuch as for each type of product a maximum standard of profitability has been established.

"This entire set of paradoxes had the result that sectorial science during its most difficult, transition period was practically deprived of means of subsistence. The threat of its complete collapse appeared, and we began to seek new sources of financing, which would compensate if only in part for the R4 billion, which evaporated with the elimination of the centralized funds. Although we are trying to this day to get the revision of individual provisions of the Law on Taxation, we very quickly understood that there is little hope for this—our legislators, unfortunately, do not understand the problems of science. Therefore, we decided to compensate at least somehow for the losses of sectorial science by means of the economic stabilization fund, the cost of jobs, which are performed at contract prices, and the surcharge in the price for those products which are produced according to fixed price lists. These are three completely new sources for science and we relied on them very much in the beginning. As it turns out, entirely in vain.

"The **stabilization fund,** which, according to our estimates, could substantially compensate for the losses incurred by science, today practically does not exist—for some reason it is taking a very long time to be collected. And then the R700 million, which are envisaged so far in it for science, are a meager amount as compared with the amount, on which we have the right to count. As for **the cost of jobs and services, which are performed at contract prices,** on paper everything seems to have turned out well. Legally there is already the corresponding fund under the State Committee for Science and Technology, but it is empty—money is being brought together there with enormous difficulty. We practically do not see this money—in the corresponding decision of the Council of Ministers it is written that enterprises can include in the cost of jobs at contract prices a certain amount, which is then withdrawn and transferred to our fund. But they can also not include it.

"That is why we waited with such impatience for May Decree No. 268—it was our last hope. Even if everything were good, this decree (like, strictly speaking, the preceding one—on contract prices) was disastrously late. According to the most optimistic estimates, ministries will be able to collect money in accordance with the decree only toward the beginning of next year. However, there proved to be few grounds for optimism.

"In addition to this there are a large number of other factors that force us to seriously doubt that the decree 'will begin to work.' Begin with the fact that the initial idea itself of the decree—mandatory surcharges on fixed prices—was changed. Precisely this was the core of the ideology of the document that was drafted by the State Committee for Science and Technology with the participation of the USSR State Planning Committee and the USSR Ministry of Finance. In the final document it is a matter of whatever you like, but not of the main thing. It is clear to anyone—if the inclusion of the expenditures on science in the cost is not accompanied by the corresponding increase of the price, the profit of enterprises, which is meager as it is, will become the source of their repayment. I think that labor collectives will quickly uncover this trick and will hardly agree to compensate for the previously made miscalculations of governing organs by means of their own revenues. Therefore, it will be extremely difficult, if it is possible at all, to collect assets in this way. Inasmuch as, following the letter of the decree, the addition to the fixed price is being introduced not as a rule, but as a precedent—'in necessary cases.' Such a little insertion—'in necessary cases'—changes fundamentally the entire meaning of the document and can reduce all our efforts to naught.

"In general, Decree No. 268 is among the governmental documents, which not only are outrageously late, but in addition have been distorted beyond recognition. In it there are a large number of errors, it raises 1,000 questions, to which no intelligible answers are given. And, as always in such cases, the opportunity to settle what has not been completely settled and to say what has not been completely said is kindly granted to three

departments—the State Committee for Science and Technology, the Ministry of Economics and Forecasting, to which the former State Planning Committee and State Committee for Prices belong today, and the USSR Ministry of Finance. All this is extremely awkward as an agreement among the three departments is reached with considerable difficulty. It signifies an additional delay with the putting of the decree into effect, but at the same time offers at least some change to correct or smooth over a number of the errors that exist today in the decree. The greatest difficulty is with this very 'in necessary cases.' In fact, in order to make the decree work, the three departments should come into conflict with the letter of the 'superior' decree.

"The formulation of the procedures is now at its height and, we hope, in a few weeks (it is difficult to indicate more precisely the time) we will be able to understand whether or not sectorial science will receive money from products with fixed prices. But whatever the case there, the Cabinet of Ministers has put our committee is a very awkward position. If the decree does not begin to work, we will find ourselves in the role of a switchman. The matter will appear as if the Cabinet of Ministers issued an extremely important and useful document, while the State Committee for Science and Technology was unable to implement it, people will point a finger at us and say: 'There, because of them sectorial science is being ruined.'"

RADIKAL does not engage too often in the examination of such dry material as official decrees. But in this case it appears that the game is worth the candle—we propose to return to decree "two-six-eight" when the procedure of its implementation has been approved, for it is not ruled out that the fate of thousands of scientific personnel will depend on this decree.

USSR Said To Have Lost 80 Percent of Professional Mathematicians

917A0174A Moscow RADIKAL in Russian No 24, 25 Jun 91 pp 1, 2

[Interview with Academician Viktor Maslov by RADIKAL specialist correspondent Marina Lapina: "'Only Three of Them Remain...."—first paragraph is RADIKAL introduction]

[Text] Eighty percent of the professional mathematicians have left the country. Academician Viktor Maslov discusses the problem of Soviet mathematical science in an interview with our special correspondent Marina Lapina.

[Lapina] I would like to talk with you about the fate of our mathematical science, which is worthy of the most flattering epithets. Now science is not going through the best of times, but mathematics, it seems to me, is being drained right before our eyes.

[Maslov] Soviet mathematics was always a science of the highest level. Even as compared with physics. For example, in our country it is possible to count scientists of such a class as Dirac or Abdus Salam, Hawking, on your fingers or they do not exist at all. And how many Nobel Prizes in Physics do we have? Nearly all our most prominent physicists—Kapitsa, Fok, Landau—received an education abroad. We had the strong school of Ioffe, but he, if I am not mistaken, also studied abroad. But we have our own brilliant mathematical schools: of Kolmogorov, Pontryagin, Vinogradov, and Petrovskiy.

During the war years the continuity in mathematics was broken, although we do have fine mathematicians of the middle generation—Gelfand, Bogolyubov, Shafarevich. But this was no longer the kind of flow as before the war. In recent decades the process, I would say, of the revival of mathematics has begun. New seminars and schools, for example, of Faddeyev (the Leningrad mathematical school was one of the strongest in the country), S. Novikov, and Arnold appeared, the students of Shafarevich had their own strong schools.

[Lapina] Pardon me, I will interrupt you. Since you have begun to talk about Shafarevich, I would like to find out what you, his student, think of the nonmathematical activity of Igor Rostislavovich.

[Maslov] I have not read his works, I know about them only by hearsay. Therefore, I cannot seriously criticize his views. Moreover, I am not an economist and not a philosopher, although I have dealt with economics and simulation, but this was connected with my basic specialty. And in general I disapprove of dilettantism. When a scientist begins to deal not with his own business, this always arouses my suspicion. As to the concepts and views of Shafarevich, about which I have heard, my views, if it is possible to say it this way, are perpendicular.

I would prefer to return to the discussion of the question of mathematics. In recent years a sharp drop has emerged. The mental commodity is also a commodity that requires the corresponding payment and a sales market. I have spoken many times about the fact that as soon as they began to compare the ruble with the dollar and such an absurd ratio resulted, commodities (including the intellectual commodity) would begin to spread abroad. Even the mathematicians, who earn there a low wage (on the order of $2,000-2,500 a month) and whose life is hard, prefer to live there. All the same in a few months you can earn as much as you would not earn in our country in an entire lifetime.

[Lapina] Do such low wages by western standards testify that our mathematicians in the same United States, as they say, are not in demand?

[Maslov] No, this is not the case. Several of our mathematicians receive very high wages, for example, $18,000 a month, one simply does not talk about this. Now simply a flow of mathematicians have rushed to all highly developed countries, particularly the United States. American scientists are very displeased with this. They are afraid of competition. For arriving Soviet mathematicians agree to smaller wages. So long as we have this ridiculous situation, when a dollar is worth 30 rubles, this flow will increase.

[Lapina] What percent of our highly skilled mathematicians, according to your estimates, have already left the country.

[Maslov] I think it is on the order of 80 percent. I do not know whether they have left entirely, but they are not here. Quite recently an international conference on differential equations in memory of Petrovskiy was held in Moscow at Moscow State University. Famous mathematicians and extra high class specialists from various countries came, but none of our mathematicians, who had left, came. It is possible to understand them in part: It is expensive and complicated. But for our mathematics this is a tragedy. People leave, contact is broken. Those who have remained do not have official duties. The seminars of Gelfand, Novikov, Vinogradov, and Arnold have already fallen apart, there are large losses at the Leningrad school of Faddeyev. Those who left are trying to extend contracts. They judge the situation in the country from individual accounts and published works. At a distance it seems even more deplorable than it is in reality. Those remaining in solitude are also beginning to ponder. Perhaps, it is simply a chain reaction. Young people are already departing.

And this is in spite of the fact that the level of education in general, and of mathematical education in particular, for example, America, as a whole is significantly lower than in our country. There are, of course, individual islands, such as Harvard. But at educational institutions of such a level, as I have heard, they reserve for millionaires up to 40 percent of the openings for students.

"Their nomenclature" of sorts. And American undergraduates study with far less zeal. In the end, America is losing on this to Japan and China.

[Lapina] Does it not seem to you that mathematics as a science is now losing its positions? Many of its troubles lie in itself.

[Maslov] In part, perhaps, this is the case. Mathematics, which works only on its own, purely "sportive" problems, of course, will be inferior to other fields, to those that are at a meeting point. It will not forge ahead like physics or biology.

[Lapina] In my opinion, one of the causes of the depletion of our mathematics lies in this. It preferred for the most part "sportive" problems to other, applied problems. And now, when in connection with the development of computer technology priorities have changed, our mathematicians are not always at their best.

[Maslov] There is a grain of truth in this. Academician Vinogradov, for example, always advocated the purity of mathematics and was opposed to contractual work. But now life itself is forcing us to revise our positions. It is necessary to earn money, in which many mathematicians are now also engaged, for the most part, as I have already said, abroad. The only way to halt this rapid process is to change economic conditions in the country. I will now be going to the United States and plan to meet there with Wassily Leontief. He has influence on our leadership. Perhaps, with his help it will somehow be possible to direct attention to the concept of introducing a third currency, which I am also advocating, including from the pages of RADIKAL.

USSR Academy of Sciences Builds Food Processing Plants

917A0178A Moscow POISK in Russian No 17 (103), 19-25 Apr 91 p 5

[Interview with Administrator of Affairs of the USSR Academy of Sciences Vyacheslav Volkov by POISK correspondent Vladimir Shlemin under the rubric "Details for POISK"; date and place not given: "These Here Affairs"—first three paragraphs are POISK introduction]

[Text] The fact that in our cheerless days the aged, the disabled, and...scientists have it worst of all, has already been stated more than once. However, the situation is not changing because of this: State assistance is not keeping up with the worsening of the economy.

What is the USSR Academy of Sciences and its organizations, which depend entirely on the state budget and its failures and debts, to do in this situation? On whom, more precisely, on what is it to rely?

"The social development of science is turning literally before our eyes into the social impoverishment of science," Administrator of Affairs of the USSR Academy of Sciences Vyacheslav Volkov tells our correspondent. "We are trying to do everything possible to check the fundamental deterioration of the standard of living of scientific personnel, but the overall deficit and indifference are turning this struggle for the future into a battle line."

[Shlemin] Do you mean the very "sour cream for the presidium," about which ARGUMENTY I FAKTY wrote?

[Volkov] Sour cream indeed! Our snack bars, like everywhere, have become empty. However, in my opinion, to consider the food orders of scientists something shameful is absolutely nonsense. Why, they exist at plants and factories. And this is not in the least a new vogue. The status of the Academy in Russia was high from time immemorial. In wages, for example, an academician was equal to a secretary of state or a minister. What is more, in those times they provided scientists of such a rank with orders. And they gave them out—I recently learned this myself—precisely in the building where the House of Scientists is located today. Why? In order to save their time and strength for scientific pursuits. I consider this absolutely normal.

Judge for yourself.

In the room, where a large computer operates, they install spring-mounted, antivibration floors, systems for removing dust from the air, and air conditioners, which ensure a steady temperature. An entire set of equipment guarantees the maintenance of the necessary parameters. Or the most ordinary robot. They make a special hydraulic fluid for it, sweep the dust from it, and keep an eye on the voltage in the network. In general, they take care of it. And this does not surprise any of the surrounding people: It is well known—the equipment is delicate, otherwise it will not work.

But as soon as the conversation turns to an even more delicate tool—man—the tone of speech immediately changes. Why on earth, they say, do they create for the scientist the conditions for living? Because intensive intellectual labor in purely physiological terms requires special support. The observation of its own "parameters." They understood this in the most ancient times. While sparing neither money nor, if one may say so, "sour cream"!

[Shlemin] But how is it in our country?

[Volkov] With every day it is worse.... Last year alone more than 5,500 scientists went abroad. First-rate, good minds. They left because they had become tired of standing in lines: for an experiment, for a pilot plant, for money for a job, for money for work, for housing, for premises. Lines take up all the time. None of it remains, even for work. But the years are going by. In science this is not simply aging—this is the missed opportunity to express one's weighty opinion in getting to know the truth!

[Shlemin] In short, is the situation of the Academy of Sciences hopeless?

[Volkov] No, there are, I think, no hopeless situations. We, at any rate, are seeking a solution of the problem. I just want you to correctly understand: The worries of our administration concern not just academicians and corresponding members. Its sphere of activity encompasses all those who work in the system of the Academy of Sciences.

After all, the scientist does not need that much. Take, for example, the shortage of food products. Even a small order—costing 15-20 rubles—which consists of a piece of meat and a piece of sausage, would save the situation. But where is one to get them?

So we decided to build ourselves a meat processing plant based on imported equipment. We concluded a contract with one of the suburban Moscow farms. It allocates land and resources. We build and sell the products. We divide the money in accordance with the investments. A society with limited liability.

[Shlemin] And what is the benefit from this for the sovkhoz?

[Volkov] While it drives a cow to the slaughter house, it loses a quintal of live weight from each one. We will accept cattle directly on the spot. The profit, thus, is greater. Moreover, the farm will provide daily five tons of sausages, wieners, legs of lamb, ham, and so forth, in all 32 items. The farm and its people will get something. There are also other preliminary plans: We signed a contract with a fish-raising farm. We are helping it to build roads and to strengthen the infrastructure and will erect a shop for the production of feed. In return we will receive—and starting in April will deliver to our food combine and dining rooms—live fish. We will make the waste products of fish breeding into fertilizers for the hothouse farm, which we are establishing next to the fish-raising farm. Vegetables will come from there.

[Shlemin] Well, you will alleviate one problem, but what about the others? One of the longest lines at the Academy is for housing, is it not?

[Volkov] Certainly! Until recently the Academy of Sciences allocated assets—several million annually—and on the principles of proportionate participation received housing. Approximately five year ago everything changed abruptly. We have been allocating money, as before, but in return have not received anything for a long time. Today the Moscow City Soviet owns the Academy 68,000 square meters of housing.

In order to get an idea of the size of the debt, suffice it to say that, if we were to receive the space due, we would eliminate the line. And today there are 10,000 people in it. It is they, whom we should first of all provide with apartments. Not bureaucrats from science, like myself, for example, but scientists. If we are not able to, a tragedy awaits us. There will be no one to create!

Late year we did not receive a single (!) state apartment. About 150 from housing construction cooperations and a little more than 100 from housing cooperatives. The difference between them is that for space in a housing construction cooperation a person directly pays himself, while the housing cooperative transfers apartments to the jurisdiction of the Academy of Sciences. They are distributed among institutes. They buy back housing and sell it to associates. Either on installment or at favorable prices or in general at the expense of the institute. But this version is acceptable wherever there are social development funds. But what is one to do where they do not exist? We have one solution—to develop our own construction. And the first steps have been taken.

By a decision of the presidium of the USSR Academy of Sciences the Central Construction Administration of the USSR Academy of Sciences has been reoriented toward housing construction. This year we are putting into operation a base of modular construction and are conducting talks on the acquisition of equipment for the building of brick factory. So that things are bad and here we hope to get on our feet.

[Shlemin] It is well known that the Academy of Sciences is inconceivable without the constant exchange of ideas and research results. That is why an important place is being allotted to personal contacts. And it is necessary to house somewhere everyone who comes to Moscow—be it a Siberian or a Briton....

[Volkov] Frankly speaking, we proved to be unprepared for the commenced boom of international contacts. Whereas in 1987 fewer than 14,000 foreign scientists visited our country, in 1990, 22,500 did. Add here Soviet specialists. But we have hotels to accommodate 1,537. Moreover, the majority of them are located in converted buildings and due to long use are in a depressing state. But they are always filled...to 120 percent capacity! This is not a joke, but reality: Between vacating and occupancy they do not have time even to get the room ready.

True, here several steps have also already been taken. We built a hotel in Uzkoye. We are carrying out the renovation of the Yakor. Now there will be room for 450 there instead of 240. In accordance with an agreement with the Austrian ABV firm we are building there a five-star hotel. We plan to erect on Gagarin Square and on Ulitsa Vavilova another two modern hotels. And then we will undertake the renovation of old hotels so that we have enough work.

[Shlemin] You and the Administration of Affairs of the Academy are for that!

Leskov Report on Moscow International Computer Forum

917A0165A Moscow IZVESTIYA (Union edition) in Russian 24 Jun 91 p 2

[Article by S. Leskov: "The Computer: A Luxury or a Panacea? Notes From the International Computer Forum That Was Held in Moscow"]

[Text] In recent times more has been written about computerization and information science than about any other area of scientific and technical progress. Vivid descriptions of how computers have changed drastically the most conservative areas of life in developed countries, have already become customary. And the conclusion from this is obvious: We must computerize a little more quickly, we will also begin to live in wealth. I also wrote something of the sort a year ago in the noted from the first International Computer Forum.

And here a year has passed. The West is switching to superpowerful computers of the next generation, the investments in this sector have increased even more, it has left far behind the power complex, which knows no equals in the USSR. While in our country the crisis, into which the national economy has sunk, is so deep that even a blind person would be horrified by it. Meanwhile, there are more and more computers in the USSR, although they have increased thoughtlessly the tax on their importation to the country, there are scads of enterprises and joint ventures of all sorts in this area, a portion of the Soviet specialists are already appearing on the international computer network. But for the national economy computers have not become child's play. But the point is, as it turns out, that informatization actually is a powerful factor of acceleration, but for an economy of the open market type. If the supply of institutions with computers does not yield a gain, it is a true sign that the economy is based on bureaucratic command methods which by their nature are incompatible with an informatized society.

And still the year was not a waste for the sector. In the opinion of L. Amdilyan, president of the International Computer Club, for Soviet specialists it was a time of the dispelling of illusions. While our programmers, electronics experts, and systems specialists were shut off from the world by the curtain of secrecy, the hope was still cherished that some sort of thing, from which the eyes of western specialists would pop out, was being produced in their own mail boxes. The curtain was raised a little, contacts and reciprocal trips became more frequent, the exchange of information become more regular—and it turned out that there was no reason for us to brag of our own achievements. We had fallen behind, and hopelessly, in all directions. We are also no longer dreaming about our own computers. Cooperation with western firms in the area of software is forming with a creak: The vogue for perestroyka, though it keeps on losing, is going around. Now, like before, just the smell of success attracts. But we often scare off serious partners: Computer piracy in the USSR has reached a phantasmagorical scale, the commercial dissemination of other people's software has become a custom.

The myth, which is flattering for us, of the great demand that our clever programmers enjoy abroad, it would appear, is also being dispelled. No, they are not pressing them to come to the West, at best they conclude short-term contracts for the Russification of programs being delivered to the USSR. It is also understandable, a high brow and brilliant ideas are not enough for a modern programmer, he need to find his bearings easily in the most complex equipment, in the hardware of computers. It is hard to grasp this science in the USSR. If I am to be frank, western businessmen value Soviet programmers for the fact that even the most skilled ones of them work according to world standards for next to nothing. For example, in Australia, and this for computer specialists is far from a Mecca, one hour of work of a programmer of average class costs $30. Given such a spread of the wage any order for Soviet specialists pays for itself many times over.

Incidentally, aside from all else, the struggle for the future market is also moving such software giants as Borland, Zeos, and Nantucket. And this is gratifying, for it means that against the background of our disorders the largest business operators still see in the USSR abundant prospects. I remember that at the latest international forum P. Kahn, president of the Borland association, said: "I know that our products are being disseminated in the USSR via piracy. But better they steal from me and not from competitors. They will become accustomed to my software, and when everything settles down, they will begin to buy it."

I do not know whether P. Kahn would repeat these words today. According to the appraisals of experts, the time, when western businessmen turned a blind eye to computer piracy in the USSR, is passing. The demands to join the Bern Convention on copyright protection are being heard more and more persistently. The consequences of the refusal to sell in the USSR western-made software would be simply disastrous. Even if the cinema suffered, computers would stop—it is an awful thought.

The illusions are departing, but what does a cold analysis suggest? A number of prominent experts believe that, in spite of all the burdens, the present conditions on the computer market are extremely favorable for us. Today in the world due to the significant increase of the power of computers a fundamental change of software is emerging. Fundamentally new ideas, new mathematics, and fresh algorithms are required—a chance is appearing for Soviet computer experts to find a place in the largest world industry.

USSR State Committee for Patents Replaces Committee for Inventions

917A0170A Moscow RABOCHAYA TRIBUNA in Russian 12 Jul 91 p 2

[Interview with Viktor Torbenko, deputy chairman of the USSR State Committee for Patents, by Valeriy Krasnovskiy; date and place not given: "You Have Reinvented the Wheel. Where Are You Going To Gain Access With It?"—first paragraph is RABOCHAYA TRIBUNA introduction]

[Text] Forget about the State Committee for Inventions and Discoveries—now this is the State Committee for Patents. What will the new name change? What goals and tasks will come to the forefront? Will the inventor remain the former petitioner? Viktor Torbenko, deputy chairman of the USSR State Committee for Patents, answers these and other questions.

[Torbenko] The passed Law "On Inventions in the USSR" and the status of the former State Committee for Inventions and Discoveries, to put it mildly, are incompatible. Fundamentally new approaches on the scale of the entire country are needed. Hence, too, our main goal: to make inventors the basic active participants in the innovation process. And if you put it more simply, it is not they who are for us, but we who are for them.

[Krasnovskiy] Must we assume that the range of your activity will be a little broader than that of foreign patent departments?

[Torbenko] Of course. Therefore, let not the name confuse anyone. In addition to the organization and carrying out of the state examination of domestic and foreign applications for objects of industrial property and the legal protection of inventions, industrial prototypes, and trademarks, our department also performs a large number of other tasks. We determine the means of developing invention and patent and licensing work, improve the legal base of invention, and train specialists of the national economy. The legal basis has already been incorporated in the law that was passed at the session of the USSR Supreme Soviet. Drafts of the laws on trademarks and industrial prototypes and on the USSR Patent Court, the Statute on Patent Agents, the Charter of the USSR State Fund of Inventions, and others have been submitted for consideration. In all in the immediate future we have to prepare and submit to the government more than 30 drafts of laws, lawful acts, and decrees.

Moreover, we provide state, joint stock, and cooperative enterprises and individual citizens with all information about inventions in our country and abroad. We also supply information about the trends of development of some directions or others in science and technology.

While in the role of just a patent department we establish contact with foreign state and international organizations, defend state interests in the legal protection of Soviet inventions, industrial prototypes, and trademarks abroad....

[Krasnovskiy] But today our science and technology are lagging in many respects. For example, we are consuming natural resources at a catastrophic rate. When comparing the expenditures per unit of national income their consumption increased by 15-20 percent. While in the United States, Japan, and the FRG it increased by only 1-5 percent. In the West they are already using third or else fourth generations of technologies—our industry "is getting by" with 20-year-old inventions. What are we to protect abroad?

[Torbenko] Yes, of the roughly 100,000 inventions registered annually in the country there are not very many developments that are capable of being licensed. Only one-tenth of them can be conditionally compared with the world level. Last year our staff members participated in a check of the scientific and technical activity of 15 organizations. And the result turned out to be deplorable: The invention level of the objects of new equipment and technology, which are being introduced there, is extremely low. While new developments are aimed for the most part at the improvement of already existing equipment. The reason, in my opinion, lies in the absence of a real market. Add here the nearly complete absence of checking of the promise of scientific and technical operations and the lack of patent purity. Thus, at one of these organizations a machine tool based on six inventions, which they judged there to be close to the world level, was developed. An analysis showed that only one of them conforms to these parameters, while the other five correspond to the level of development of science and technology of the...1960's.

Therefore, the USSR State Committee for Patents today is relying on the quick introduction of precisely promising inventions, without which one cannot stimulate technical progress and, consequently, the economy. An assistance fund for inventors has been established here.

But a full-fledged market of scientific and technical products is necessary so that the economic mechanism, which stimulates the innovation process, would begin to work more actively. The system of patents, which the passed Law "On Inventions in the USSR" introduces, should, in essence, engender it.

[Krasnovskiy] Thus, is there reliance only on the market?

[Torbenko] Not only it. Today we are recommending, as before, to take under state care particularly promising developments in the priority directions of scientific and technical development. Soon the USSR State Fund of Inventions and the appropriate complexes of the USSR State Committee for Science and Technology will select and implement them in plans.

And I will again repeat, do pardon me, a truism: It is possible to develop new equipment and technology only on the basis of advanced ideas, that is, basic research and inventions. The USSR State Committee for Patents will try to support this process at all stages: from planning to use. And for this at the stage of the scientific and technical assignment we want to formulate a kind of

prediction of the promise of research in one field or another. To act as if as experts of the government in the evaluation of the invention level of the programs being adopted and the decisions being elaborated.

[Krasnovskiy] But the "expert" should bear responsibility for his verdict on equal terms with the performer. But until recently the critical salvo of inventors was aimed first of all at the examination of authors' applications, which the All-Union Scientific Research Institute of State Patent Examination conducts. At times there they turned out applicants purely on formal grounds, which testified to the imperfection of the system of patent examination....

[Torbenko] There were many sins here. But today we are changing radically the ideology of examination. Previously the refusals to register an idea were predetermined by formalism, which is inherent in the entire administrative command system. Today the economy is switching over to market relations, the country is raising its hand at the international market—you will agree, it would be simply criminal to squander one's energies on priorities. The patent examination will help to obtain and defend them.

But for this, in addition to the holding of all kinds of consultations on the drawing up of applications and specific assistance to applicants in the patenting of their developments both in the country and abroad, we began the establishment of the new social institution of what is called "critical" science. After the approval by the parliament of the country of the law on the USSR Patent Court and other legal acts and the completion of the reorganization of the USSR State Committee for Patents the entire newly established system of development of invention activity will make it possible to switch from administrative methods of dispute or legal methods. It will react sensitively to financial, organizational, purely scientific, and moral miscalculations in patent work, so that no one could become a hostage of his own errors, illusions, myths....

Austria, USSR Sign Science Cooperation Agreements

917A0179A Moscow RADIKAL in Russian No 26, 9 Jul 91 p 1

[Article: "The 'Austrian Mark' in Soviet Science"]

[Text] Moscow—At the end of June a discussion between USSR Deputy Prime Minister Academician N. Laverov and Viennese Burgomaster Helmut Zilk took place.

The Days of Soviet Science and Technology, which were held in October of last year in Vienna, gave Soviet-Austrian scientific and technical cooperation a new quality. Direct contacts are being established, business relations are being developed. Within the framework of the Austromir Project alone it is planned to conduct more than 20 experiment aboard the Mir orbital station. In October 1991 a joint Soviet-Austrian mission is also planned.

The scientific ties of Soviet and Austrian machine builders are being extended. In particular, the USSR Association of Machine Building Process Engineers and the Isosport GmbH and Huberweckzeuge AG firms are jointly developing high-strength composite materials for the aircraft industry and machine building.

In February 1991 an agreement with the Daru Handels GmbH firm on cooperation in the development of processes and equipment of membrane electrolysis, the production of semiconductor silicon, and the processing of scraps of semiconductor compounds was signed.

Thus, the state scientific and technical programs "Resource-Saving and Ecologically Clean Processes in Metallurgy and Chemistry" and "Promising Materials" received substantial technological and scientific support of Austrian businessmen.

The expansion of cooperation of the All-Union Association for the Support of Small Innovation Enterprises with the Austrian association of innovation centers and a number of agricultural innovation and technological centers of Austria was discussed at the meeting.

The work on the establishment in Vienna of the International Scientific and Technical Information Center, which could help interested enterprises and firms of both countries find their bearings in the sea of scientific developments and advanced technologies, which are of mutual interests, is being completed. The foreign cofounding partners and the status and form of organization of the center have been specified, premises have been selected, and the drafting of constituent documents is being completed. It should be noted that the establishment of such a center jointly with the USSR thus far does not have analogs in the practice of international scientific and technical cooperation.

In concluding the meeting N. Laverov and H. Zilk signed a protocol on the intentions to conclude between the USSR State Committee for Science and Technology and Vienna an agreement on cooperation in science and technology.

New Regulations on Import/Export of Copyrights

917A0159A Moscow BIZNES I BANKI in Russian No 2 (14), Jan 91 p 3

[Article under the rubric "In the File of the Businessman": "The Regulation of the Export and Import of

[Text] As of 1 January of this year the functions of the All-Union Copyright Agency (VAAP), which are connected with the conclusion of contracts on the ceding of the rights to the use of works of Soviet authors abroad and on the acquisition of the rights to the use of works of foreign authors in the USSR, were changed by Decree No. 1095 of the USSR Council of Ministers of 26 October 1990, "On Measures on Demonopolization in the Area of the Export and Import of Copyrights." In adopting this decree, the USSR Council of Ministers proceeded from the fact that: Soviet authors (their successors) in conformity with prevailing legislation have the right to dispose of the copyrights belonging to them and can conclude contracts on the use abroad of works independently or through the All-Union Copyright Agency, publishing houses, specialized agencies, and other organizations, which act on the basis of the instructions of the authors (their successors) and have the right to conclude the corresponding deals;

in the sphere of publishing and other activity, which involves the acquisition of copyrights directly from foreign authors (their successors), Soviet organizations acquire the rights to the use of works of foreign authors independently or through the All-Union Copyright Agency or other organizations authorized to do this;

Soviet organizations, which participate as intermediaries in the conclusion of export and import contracts in the area of copyrights, receive a commission, the amount of which is specified in the contracts with the authors, the owners of the rights, and the users of the rights;

the settlements, which are connected with export and import organizations in the area of copyrights, are made through the corresponding banking institutions of the USSR. The opening of the corresponding currency accounts is carried out in accordance with established procedure.

With allowance made for these provisions the USSR Council of Ministers approved the amendments published below, which are being made in the decision of the USSR Government on questions of the regulation of the export and import of copyrights.

In Decree No. 588 of the USSR Council of Ministers of 16 August 1973, "On the All-Union Copyright Agency," it was decided to recognize Subparagraph "n" of Paragraph 1 and Paragraphs 2, 3, 5, 6, and 10 as invalid; to

set forth Subparagraphs "a"-"f," "j," and "k" of Paragraph 1 in the following wording:

"a) the rendering on a contractual basis of legal assistance in the protection of the copyrights of Soviet and foreign authors (their successors) in the USSR and Soviet authors (their successors) abroad, as well as the representation of the legal rights and interests of authors (their successors).

"The rendering of legal assistance in the protection of the copyrights of Soviet authors (their successors) abroad is carried out by the Agency in case of the use of works under contracts with the participation of the All-Union Copyright Agency by means of the currency assets of the Agency; under contracts on the use of works of Soviet authors (their successors) abroad without the participation of the All-Union Copyright Agency legal assistance is rendered by the Agency at the expense of the authors (their successors);

"b) the conclusion of agency agreements on the advancement of works of Soviet authors abroad and of foreign authors in the USSR, the conclusion of agreements (contracts) with foreign legal and natural persons on the use of works of Soviet authors abroad on the basis of the powers granted by the authors (their successors); mediation in case of the conclusion of contracts between Soviet authors (their successors) and foreign legal and natural persons on the use of works of Soviet authors abroad; the conclusion of contracts with Soviet and foreign legal and physical persons and the carrying out of mediation in case of the conclusion of contracts between Soviet and foreign legal and physical persons on the rendering of services, which are connected with the ceding and acquisition of the rights to the use of works of science, literature, and art (editing, reviewing, preparation or rental of sheet music and illustrative materials, including slides, color-set photographic film, photographs); mediation in case of the conclusion of contracts on the use in the USSR by Soviet organizations of works of Soviet authors;

"c) mediation in case of the conclusion of contracts between Soviet organizations and foreign owners of copyrights on the use in the USSR of works of science, literature, and art;

"d) the administration of the rights of authors on a collective basis in case of the public performance of their works, including on television and radio, in video showrooms, in case of sound-on-disk recording and other types of mechanical and magnetic recording, in case of the duplication of works of applied decorative art, in case of the use in industrial items of works of graphic art, in case of reprographic reproduction, on the basis of the membership of the authors (their successors);

"e) the receipt and payment of the author's fee, which is due under agency agreements and under contracts with the participation of the All-Union Copyright Agency on the use of works of Soviet authors abroad and of foreign authors in the USSR, as well as the receipt and payment of the fee, which is due under contracts concluded with the participation of the All-Union Copyright Agency, on the rendering of services that are directly connected with the ceding and acquisition of the rights to the use of works; the receipt and payment of the author's fee, which is due as a result of the carrying out of the administration of the rights of authors on a collective basis; the receipt and payment of the amounts, which are paid by the user organizations in case of the rendering by the Agency of legal assistance to the owners of the rights to works;

"f) the receipt on the instructions of the authors (their successors) and the payment to them of the fee, which is due under production, publishing, scenario, and other author's contracts, which are concluded between Soviet authors and Soviet organizations; the receipt and payment of the author's fee, which is due under contracts between Soviet authors and Soviet organizations, which are concluded through the All-Union Copyright Agency;

"j) the provision on a contractual basis of Soviet entertainment enterprises with information on new dramatic works and their supply with these works;

"k) the collection and payment on a contractual basis of the deductions for funds of creative unions, which are established by legislation."

Paragraph 8 is set forth in the following reading: "The All-Union Copyright Agency makes settlements in foreign currency for the amounts of the fee, which are due as a result of the carrying out of the administration of the rights of authors on a collective basis, both with foreign copyright organizations and with Soviet authors (successors)";

the sixth and seventh paragraphs are set forth in the following reading: "The Statute on the Fund of the Board of the All-Union Copyright Agency is approved by the board of the All-Union Copyright Agency."

To set forth Paragraph 11 of Decree No. 574 of the USSR Council of Ministers of 14 August 1973, "On the Rates and the Procedure of the Payment of Royalties for the Publication, Public Performance, and Other Types of Use of Works of Science, Literature, and Art," in the following wording:

"11. Settlements, which are connected with the payment of the author's fee, which is received for Soviet authors (the heirs of Soviet authors) for the use of their works abroad, are made in accordance with established procedure."

By the decree "On Measures on Demonopolization in the Area of the Export and Import of Copyrights" it is also established that, as a rule, the principle of currency cost recovery should be in effect in activity that is connected with the acquisition of copyrights directly from foreign owners of the rights under separate contracts.

Republics Said To Support All-Union Science Policy

917A0175A Moscow IZVESTIYA (Union edition) in Russian 16 Jul 91 p 2

[Interview with Ivan Mikhaylovich Bortnik, first deputy chairman of the USSR State Committee for Science and Technology, by IZVESTIYA science commentator B. Konovalov; date and place not given: "Science During the Troubled Times"—first paragraph is IZVESTIYA introduction]

[Text] "The republics are coming out in favor of a unified science policy in the country," says I.M. Bortnik, first deputy chairman of the USSR State Committee for Science and Technology.

[Konovalov] Ivan Mikhaylovich, the anticrisis program of the USSR Cabinet of Ministers has been published, in it, in particular, there is a section that is devoted to the speeding up of the transition of our science and technology to market relations. What seems to you to be the main thing in this process today?

[Bortnik] The main thing is the development of mechanisms of the economic stimulation of scientific and technical progress (NTP) in the country. Now our domestic industry is absolutely not interested in science and technology. The hungry market is devouring everything that is being produced. There is practically no competition, because the real competitor—the foreign product—is simply beyond our means. Perhaps, only the producers of domestic personal computers have felt keenly that consumers do not want to take their product, preferring to pay through the nose for foreign, but reliable equipment.

How our enterprises are to be made to assimilate the achievements of domestic and world science and technology is for the present an open question. It is clear that this should be economic stimulation. In the Law on State Science and Technology Policy it is declared that the state will engage in this, but the specific mechanisms are not revealed.

Apparently, they should appear in other, more narrow laws on individual directions, as, for example, was done in the Law on Invention in the USSR. Local self-government should also play a large role. For example, in Novosibirsk they decided that they would exempt the technology park, at which new technologies are being conceived, from taxes within the framework of local taxation. In Leningrad the technology park is being exempted from the land tax.

The system of stimulation should be formed from regional and statewide decisions, and, apparently, a dialog is necessary in order to determine the spheres of effect of privileges. We have not yet learned, in essence, to use the tool of economic stimulation. And now in the majority of cases the attempts to develop it reduce to appeals "to exempt from the tax." But it is clear that under the conditions of the crisis this is unrealistic. Apparently, more flexible and diverse measures are needed. In Estonia, for example, they reduce the tax for enterprises by 5 percent, if they channel assets into various kinds of funds of scientific and technical progress. This is a direction, in which it is necessary to experiment intensively in the provinces and to select the best solutions. But the main thing is that it is necessary to decide more quickly: Will we have a federal tax, from which the all-union budget of centralized funds of scientific and technical development can be formed, or not?

[Konovalov] But in the anticrisis program it is clearly recorded: "To complete in 1991 the establishment of the union-republic basic research fund."

[Bortnik] Money for this fund was allocated for 1991 from the budget of the country, and considerable money—3 billion rubles. A portion of the fund has already been used for supporting the operation of institutes and laboratories, which are conducting basic research. But the second part, which should be used for grants for the most important research, has not been put fully to use. Thus far neither the chairman of the fund nor the executive director has been appointed, there is also no uniform opinion on how it should be spent. Very many people are coming out against this fund being used only for the financing of the USSR Academy of Sciences. We have already seen from the example of the past that this led to sad consequences, when the mighty potential of higher educational institution (VUZ) science is not used, while dragging out a wretched existence. The Republic of Lithuania agreed to an extreme step and reorganized its Academy of Sciences, having turned it into a kind of association or, if you wish, club of scientists.

This decision is controversial. But it is clear that the USSR Academy of Sciences should not have a monopoly of basic research. Grants should be allocated to all talented scientists regardless of departmental affiliation and place of residence. For this it is necessary to solve first of all the organizational problems. For it is not bureaucrats of the State Committee for Science and Technology, who should distribute grants, but the council of the Basic Research Fund, which includes representatives of all the republics, on the basis of the conclusions of independent experts, the institution of whom has thus far not been established in the country. But it is already necessary to think about next year.

[Konovalov] What do the republics think today about the prospects of the development of science in our country?

[Bortnik] A few days ago a conference of the people, who are responsible for science and technology policy in their republics, was held in the State Committee for Science and Technology. It was conducted, if we use the now fashionable terminology, according to the 15+1 formula (true, the representatives of two republics were unable to come for objective reasons, and talks were conducted

with them individually). Our State Committee represented the Center at this conference. And I should emphasize that all the republics spoke in favor of preserving the unified scientific domain in the country, in spite of the nuances of opinions.

Everyone acknowledges that all-union priorities of the development of science and technology are necessary. The existing 19 State Scientific and Technical Programs are not being sharply criticized, but many people believe that their new joint consideration, additions, and specifications are necessary. For example, the republics are sensing an inadequacy of information links. The Baltic republics are talking about the necessity to intensify the common work in the area of patent studies.

There were quite a large number of contradictory opinions on the system of financing. Now in the country as a whole more than 5 million people are employed in the sphere "Science and Scientific Service." One point of view is to allocate to each republic from a common budget a share in conformity with the number of people who work in this sphere. Another point of view: It is necessary to proceed from the gross product that is produced by the republic. A third point of view is the financing of science from the republic budgets and the financing from the federal budget only of projects, which are of all-union importance and which combine the efforts of several republics, in order to stimulate the progress of integration.

In many republics the process of departing from the former system of the awarding of scientific degrees has begun, the titles of masters and bachelors, for example, are being introduced. Some are following European models, others are following American models. Many do not want the Higher Certification Commission to determine whether a scientist, to whom a degree has been given by one or another republic university, is worthy of it. But everyone agrees that some monitoring of the maintenance of the level of the demands on scientific degrees is necessary. Now there is also no uniform approach to the programs of higher education. In many republics the merging of organs of the management of science and higher education has occurred. And, what is more, everyone believes that the formulation of a common policy in this area is necessary. For life is life, people move from one republic to another, and it is necessary that the diplomas and scientific degrees of one would be recognized in the other. Thus, a constant dialog of the republics is necessary. The Ukraine acted as the initiator and offered its services as organizer of an interrepublic conference on science and technology policy.

Even the first meeting showed that the republics are now intensively acquiring new experience, unexpected problems and the need for cooperation are arising.

In the republics of the Baltic region, for example, they decided for the time being to abandon the system of allocating grants. It turned out that within small republics it is practically impossible to organize a system of independent examination. In Armenia this succeeded, although the "independent" experts awarded a quite large share of the grants to their own collectives. And here a proposal arose: Why not enlist representatives of the 1,000-man detachment of experts of Armenia in the evaluation of projects in the Baltic region? The representatives of Moldova believe that Azerbaijan colleagues will help them to establish ties with scientists of Iran and Turkey, with whom permanent contacts have already been established here.

The republics have common interests. The desire for reasonable integration, while preserving sovereignty, is appearing distinctly. And it is a matter now of forming a mechanism of permanent dialog and the formulation of common decisions. It is clear that there will not be a return to the previous dictation of the imposition of decisions of the Center on the republics. And at the same time it is clear that all-union decisions, which are acceptable to all, can be formulated. Thus, a dialog on a permanent regular basis is needed. It is necessary to move persistently along this path. But, as is known, the traveler masters the road.

Latvian Scientists Organization Increases Expatriate Contacts

917A0177A Riga SOVETSKAYA LATVIYA in Russian 13 Jul 91 p 2

[Article: "The Congress of Latvian Scientists Has Opened"]

[Text] Riga, 12 Jul (TASS)—The first congress of Latvian scientists, which will last six days, opened here today. Its basic goal is the establishment of contacts between scientists of Latvia and their compatriots and colleagues, who live in various countries. At the congress it is planned to establish joint research programs and to organize the exchange of specialists and business cooperation, LETA reports.

"Latvia does not have reserves of mineral resources and like valuables and could appear on the world market with its scientific achievements," says Andrejs Kreslins, one of the organizers of the congress. "And here the help of foreign Latvians is invaluable for us."

Such congresses of Latvian scientists will henceforth be traditional and will be convened every three years.

Report on Activities of Estonian Academy of Sciences Presidium

917A0177B Tallinn VECHERNIY TALLINN in Russian 29 Jun 91 p 3

[Article by Villi Ehatamm: "In the Presidium of the Academy of Sciences of Estonia"]

[Text] **New Doctors of Sciences.**

Problems of Studying the Marine Environment.

How Is the Placement of Unfinished Facilities Into Operation To Be Expedited?

The International Cosmology Center Has Been Established.

Academy President Arno Keerna ran yesterday's meeting of the Presidium of the Academy of Sciences of Estonia. He presented diplomas to the newly fledged doctors of scientists. Lead specialists of the Institute of Physics Piret Kuusk and Henn Kaarme received certificates of doctors of physical mathematical sciences. Scientist Secretary Helle Martinson of the Institute of Economic Development and Mihkel Kaljurand, chief of a laboratory of the Institute of Chemistry, became doctors of chemical sciences. They presented the certificate of doctor of philosophy to Aleksander Uibo, senior scientific associate of the Institute of Philosophy, Sociology, and Law.

Evald Oaveer, director for science of the Institute of Ecology and Marine Research, and Rein Tamsalu, chief of the department of the marine ecosystem of the same institute, gave a report that evoked an intense discussion. It was a matter of the problems of the environment of the Baltic Sea. Observations of changes in the Gulf of Finland have been made for 110 years. Academicians M. Veiderma and O. Kalo, as well as Prof. A. Aitsam, who spoke, directed attention to many questions that are connected with the ascertainment of the content of phosphorites in sea water. It was noted that marine research is needed in new directions and, first of all, in the area of microbiological research. The question of the joining by Estonia of the International Marine Research Council was also discussed.

The presidium of the academy heard construction adviser Verner Lootsmann, who reported on the progress of the construction of facilities of the academy. There are many difficulties here with the completion of several facilities—the building of the special design bureau of the Institute of Cybernetics, the addition to the Institute of Chemistry and Biological Physics, as well as to Tartu Institute of Literature. The need to complete the construction of the hotel was also discussed pointedly. The 8.8 million rubles, which were allocated for this year, are obviously insufficient.

The presidium specified the titles of periodicals of the academy. The establishment of the Aret service enterprise was postponed. As before the relations of future ownership in the area of the buildings, which are on the balance sheet of the academy, are unclear.

On the basis of the proposals, which were formulated by Academician Jaan Einasto, the decision was made to establish on the basis of the organization, which now operates in Tyraver, the International Cosmology Center.

At the next meeting of the presidium the charter of the new organization will be approved.

Decree Gives Independent Status of Azerbaijan Academy of Sciences

917A0182A Baku BAKINSKIY RABOCHIY in Russian 16 May 91 p 1

[Ukase of President of the Azerbaijan Republic A. Mutalibov of 15 May 1991 "On the Status of the Academy of Sciences of the Azerbaijan Republic"]

[Text] Ukase of the President of the Azerbaijan Republic

On the Status of the Academy of Sciences of the Azerbaijan Republic

For the purposes of the further strengthening of the state sovereignty of the Azerbaijan Republic, on the basis of the necessity of the utmost increase of its intellectual potential and the creation of favorable conditions for the intensive development of science and the enhancement of its role in the solution of the problems of increasing the material well-being and culture of the Azerbaijan people, **I resolve:**

1. To establish that the Academy of Sciences of the Azerbaijan Republic is a self-managed republic organization, which operates on the basis of laws of the USSR, laws of the Azerbaijan Republic, and the Charter of the Academy of Sciences of the Azerbaijan Republic.

2. To commission the Cabinet of Ministers of the Azerbaijan Republic within three months to formulate a set of measures on the changeover of the Academy of Sciences of the Azerbaijan Republic to the new conditions of activity.

[Signed] President of the Azerbaijan Republic A. Mutalibov

Baku, 15 May 1991

Report on Azerbaijan Academy of Sciences Annual Meeting

917A0182B Baku BAKINSKIY RABOCHIY in Russian 18 May 91 p 3

[Article (AZERINFORM): "Scientific Research Under the New Conditions. The Annual General Meeting of the Academy of Sciences of the Azerbaijan Republic"]

[Text] The increase of the level and effectiveness of research work, the concentration of efforts on the key directions of the development of the economy of the republic, the strengthening of the contact of science with production, the development of the priority directions of scientific research, the strengthening of the material and technical base—such are the steps that were taken by the Academy of Sciences of the Azerbaijan Republic last year in the direction of the democratization of the management of academic science. And although it was

not possible to accomplish as contemplated everything in this large amount of work, it can be safely asserted that today Azerbaijan scientists have coped with their task. This was spoken about at the annual general meeting, which was held on 15 May at the republic Academy of Sciences and discussed the results of the work of scientists during the past year and the prospects of the further development of science in the republic.

Those who had gathered greeted with satisfaction the report on the Ukase on the Status of the Republic Academy of Sciences, which was signed this day by the President of Azerbaijan and which the entire scientific community had long waited for. Academician B.A. Nabiyev of the Academy of Sciences of the republic read the text of the Ukase.

Those who had gathered honored with a minute of silence the memory of the scientists who had died during the past year.

E.Yu. Salayev, president of the republic Academy of Sciences, opened the meeting with an opening speech.

The accountability report of A.A. Nadirov, academician secretary of the republic Academy of Sciences, was filled with concern for the present and future of Azerbaijan science.

Corresponding Member of the USSR Academy of Sciences M.T. Abasov and Academicians U.K. Alekperov, E.Sh. Shikhalibeyli, T.M. Aliyev, and G.B. Abdullayev spoke about the participation of scientists of the republic in the radical modernization of all spheres of life of our society and the necessity of increasing their contribution to the development of the economy of the republic and the increase of the efficiency of scientific research.

At the meeting it was noted that, in spite of the existing difficulties, during the past year research was conducted over a broad front and a number of interesting results were obtained. Among them just according to the results of the year 16 works were included among the most important achievements of Soviet science.

The choice of priorities in science and technology policy should be made on the basis of a comprehensive forecast of the socioeconomic development of the republic with allowance made for the ecological consequences. In the opinion of Academician of the republic Academy of Sciences D.A. Aliyev and Corresponding Members of the Academy of Sciences of Azerbaijan A.G. Kasymov and B.A. Dadashev, in our republic research, which could serve as the basis of such a comprehensive forecast, is not being conducted at the proper level.

In modern scientific knowledge, when humanitarian trends and ideas are decisive in social development, the role of the humanities and social sciences is increasing. In connection with this, Academicians B.A. Nabiyev and Z.M. Buniyatov, People's Writer of Azerbaijan Mirza Ibragimov, and Corresponding Members of the republic Academy of Sciences K.D. Kerimov and A.K. Aleskerov noted in their statements, it is necessary to use more completely the potential of our scientists and specialists in the area of the social sciences and the humanities. It is also necessary to expand research in the area of history, economics, literature, language, folklore, and art.

Those who spoke at the meeting also talked about the need for making changes in a number of provisions of the charter of the Academy of Sciences. In the prevailing charter many democratic principles, which are characteristic of both science itself and the Academy of Sciences in particular, are not taken into account. Moreover, many provisions were borrowed from the charter of the union Academy and, of course, do not reflect the peculiarities of the development of Azerbaijan and the traditions of the scientific thought, history, and culture of our people, the most important conceptual principles of the development of republic science are absent. In the new version of the charter the tasks of the Academy of Sciences, which are governed by the new status, and its place in present-day social development should find reflection. It is necessary to review the rights and duties of full members and corresponding members and to bring them in line with the new democratic principles.

The meeting approved the report on the activity of the republic Academy of Sciences during 1990.

In connection with the issuing of the Ukase of the President of Azerbaijan on the Status of the Academy of Sciences commissions for the elaboration of recommendations on the most important directions of the activity of the Academy of Sciences of the Azerbaijan Republic were established.

At the meeting Academician Sh.K. Tagiyev, academician secretary of the Biological Sciences Department of the Academy of Sciences of Azerbaijan, was approved.

The meeting participants adopted an appeal to the President of the republic, in which gratitude for the concern about the development of Azerbaijan science and support of the policy being pursued by him on the stabilization of the situation in the republic were expressed.

USSR People's Deputy and Academician of the republic Academy of Sciences P.A. Azizbekova gave a report on the recent discussion in the USSR Supreme Soviet of the conflict between Armenia and Azerbaijan.

Having adopted the proposal of Academician M.G. Shakhtakhtinskiy, the meeting decided to transfer a month's sum, which is received by members of the Academy of Sciences for titles, to the fund for assistance to fighters of OMON.

Chairman of the Republic Society for Knowledge E.G. Kuliyev present President of the Academy of Sciences of Azerbaijan E.Yu. Salayev and Corresponding Member of the republic Academy of Sciences Ya.D. Mamedov with the S.N. Vavilov Prize of the All-Union Society for Knowledge.

Secretaries of the Central Committee of the Communist Party of Azerbaijan F.G. Muradaliyev and A.F. Dashdamrov, Chief of the Socioeconomic Policy Department of the Central Committee of the Communist Party of Azerbaijan Z.A. Samed-zade, and Corresponding Member of the republic Academy of Sciences F.F. Kasim-zade and Doctor of Economic Sciences A.D. Dzhakhangirov, advisers of the President of the Azerbaijan Republic, attended the meeting.

Kazakh Decree on Independence of Republic Academy of Sciences

917A0175B Moscow POISK in Russian No 15 (101), 5-11 Apr 91 p 2

[Article by POISK correspondent Svetlana Krymova under the rubric "Panorama": "A Rejection for the Ukase"—first paragraph is POISK introduction]

[Text] President of Kazakhstan N. Nazarbayev decided not to adopt the Ukase on the Status of the Republic Academy of Sciences. Instead of this the Cabinet of Ministers adopted the corresponding decree.

In contrast to the Ukase on the Status of the USSR Academy of Sciences, here there is no point about the fact that the academy operates "without any intervention of state structures," but independence in determining the directions of basic research is assigned to it. It is also independent in questions of the transformation of structural subdivisions and institutes and the determination of salaries and wage rates. But it can establish and eliminate scientific institutions only "in accordance with established procedure."

"This is a document of the transition period," U. Sultangazin, president of the republic Academy of Sciences, described the decree. "It is only too easy to grant complete independence, but what will it provide given our meager material and technical base and the lack of solution of social problems? Now there are half as many instruments and equipment per scientific associate in the republic than for the country as a whole. The Academy of Sciences of the Ukraine has 80 plants and pilot works, our Uzbek colleagues have 22 of them, while we have only two.

"Was it worth in this situation copying the union ukase? Incidentally, in contrast to the 'big' Academy, not only fixed capital and state property were transferred to us by the republic decree. Now without the consent of the republic Academy of Sciences attached property also cannot be taken from it. While the question of the status of the academy, I think, will be included in the law on scientific and technical progress, which is being prepared."

So, after a while it will be possible to see what kind of independence will be of greater benefit to scientific associates and institutes—the independence given by the ukases of presidents on the status of the academy of science, as, for example, in Kyrgyzstan and Uzbekistan, or the decree of the transition period, as in Kazakhstan.

Committee Prepares Legislation To 'Save' Applied Sciences

917A0176A Moscow ROSSIYSKAYA GAZETA in Russian 17 Jul 91 p 3

[Interview with Aleksandr Iosifovich Moukh, executive of the All-Union Scientific Research, Planning, and Design Institute of Metallurgical Machine Building and head of a working group of the USSR Scientific-Industrial Union, by Sergey Brusin; date and place not given: "The SOS Signals From the Sinking Ship Are More and More Desperate"—first two paragraphs are ROSSIYSKAYA GAZETA introduction]

[Text] An avalanche—the mass departure abroad of Soviet scientists and specialists, many of whom have already found from our reserves intellectual property in the form of a formula, technology, invention, which is poorly protected in the USSR—is expected. And they have already come to an agreement for what "there" they will exchange it with a firm—for a position, housing, a car, furniture, a fee....

But this is just one aspect of the collapse of domestic science, the most obvious aspect. Specialists will name tens of other factors, owing to which the total collapse of the building of science is simultaneously occurring today. Today we are talking with one of the executives of the All-Union Scientific Research, Planning, and Design Institute of Metallurgical Machine Building, a Soviet firm, which for decades shared fame with the champions in world metallurgical machine building. A.I. Moukh also heads a working group of the USSR Scientific-Industrial Union, the task of which is to prepare drafts of legislative documents that are capable of supporting sectorial, applied science in our difficult times. Thus,

[Brusin] Aleksandr Iosifovich. Do we, perhaps, not need to know anything particular about the fate of science, except the fact that it, like everyone, is having a hard time? We understand, it is hard. But let it be patient....

[Moukh] It will not be patient, we will simply lose it, more precisely, we are already losing it this minute. To support science is a kind of luxury of whoever can afford this. In ancient days science developed on the patronage of kings and the wealthy. Until recently our state was also such a patron: It supported science without the strict requirement of an immediate return on the invested assets. Now it is otherwise: The economy is sinking into the crater of the crisis, there is no money even for what is of the very highest priority. While science, of course, is no way finds itself to be in the category of what is top priority. Thus the main destructive blow is being struck: The state budget financing of the solution of priority problems, long-range, exploratory development, and work on the creation of a scientific research is being sharply reduced.

Shut off all the points of growth of a living organism and see what will happen! That is also how it is now with science.

In addition to the state, plants, which needed scientific innovations for introduction, fattened us rather well in bygone years. Today this oxygen duct is also being blocked. Why? The modern market, if we mean world civilization, took two centuries to form, but only in the last 30-40 years did the turn of competition bring firms to the spiral of scientific and technical progress, and they began to invest assets in the development of science. Incidentally, at this time governmental organs in various countries also came to themselves. They began racing one another to formulate expensive national scientific programs. But how was it during the century and a half before this? For the most part firms were indifferent to science, inasmuch as it was not a factor of their competition. And the flame of scientific research glimmered only in chairs, on a meager university ration.

Alas, in switching to the market, we are doomed to repeat this path. Today it is sufficient for any plant without scientific and technical progress to pursue the product that has been assimilated on the conveyor line. If you have a small brick plant with technology of the times of Demidov, thus, you are today king and dictator. You will have meat, travel authorizations, upholstered furniture, and tickets to the Bolshoy Theater.

Of course, among Soviet directors of plants there are many farsighted people, who intend to appear on the foreign market and consider it a matter of honor to emulate the best firms of the world of their own type. These directors understand the importance of domestic science and are prepared to help it. But how? Their own financial well-being is unstable.

In short, the effective demand for scientific and technical products is decreasing by leaps.

For science this is nearly the end, particularly for applied science. The updating of its material base has essentially halted. Pilot enterprises and works, having sensed the possibilities of market profits, are trying by hook or by crook to break loose from the "shackles" of scientific production associations and to acquire an independent status. But what is the price of a scientific development without its embodiment in metal? We are losing the latter....

[Brusin] You have drawn a picture of "clinical death." But is there a way out?

[Moukh] A way out? But does the answer to this question in practice really interest anyone? Resuscitation, as a set of expensive measures, perhaps, even, at first glance, illogical, artificial measures—that is what we have left. I will explain with a comparison. What did President Roosevelt do during the years of the world economic depression of 1929-1932? The state allocated vast assets for the building of roads, which led nowhere, for the digging of ditches, which no one needed. Masses of unemployed people were employed in these meaningless jobs. Let us take a good look, there is absolutely the same

approach as when saving a drowning person with artificial respiration: the forcible imitation of vital processes—up to the first independent pulse in the arteries.

Something similar is also necessary today for the saving of domestic science. Steps, which, it would seem, contradict market concepts, are required. But they are justified, based on the highest interests of the state.

[Brusin] Would you name these steps?

[Moukh] The first one is the tax lever. The current tax policy, which has been in effect with respect to scientific organizations since January of this year, increased the deductions to the budget by two- to threefold, which utterly destroyed all stimuli for both the development and the simple maintenance of the accumulated scientific and technical potential. Of course, it is necessary to act in a diametrically opposite manner.

Namely: to exempt completely from taxation a portion of the profit of scientific organizations, which is channeled into the financing of research and retooling. To exempt from taxation the amounts of the profit, which was derived from the sale of the first prototypes and production prototypes and batches of new equipment, which was produced by plants on the basis of developments of institutes and scientific production associations. To exempt from the payment of the tax the profit, which is derived from the sale for export of licenses and other scientific and technical products, and in this case to exempt scientific organizations from the mandatory sale to the state of currency receipts.

The second one is the "permitting" lever. To permit a temporary mechanism of the financing of science, particularly applied science. In particular, to permit to be included in the production cost of the scientific and technical product the expenditures on the reproduction of the scientific reserve within the limit of 20 percent of the cost of the work—this is a kind of depreciation of the scientific and technical potential.

Finally, the "prohibitory" lever. To develop specially the procedure of the withdrawal of enterprises and works from scientific production associations, in order to put a stop to the "salvo-like" splitting of these organizations with the subsequent degradation of science. To stipulate in the legislation the liability for the unsanctioned use of scientific intellectual property. In particular, to introduce widely in practice the hiring of specialists on a contractual basis, which envisages the mutual responsibility of the parties.

[Brusin] If all this is introduced on a crash basis....

[Moukh] ...the flourishing of domestic science will not occur. It is simply that in one, two, three years we will still be able to talk about it as a phenomenon.

Soviet-American Seminar Analyzes Science Indicators

917A0180A Moscow RADIKAL in Russian No 26, 9 Jul 91 pp 2, 3

[Article by Candidate of Economic Sciences Boris Saltykov, deputy director of the Analytical Center of the USSR Academy of Sciences for Problems of Socioeconomic and Scientific and Technical Development: "Do We Have Much Real Science?"—first two paragraphs are RADIKAL introduction]

[Text] According to revised data, the spending on science in the country did not increased by 9 billion rubles [R], but decreased by R1.5 billion.

The second Soviet-American seminar "Science Indicators and Science Policy" was recently held in Moscow. The working meeting of specialists of the two countries was conducted within the framework of a joint project of the U.S. National Science Foundation and the USSR Academy of Sciences, the goal of which is the analysis of the systems of indicators of the scientific potential of each country and the practice of their use when formulating science policy.

In the 1970's our countries made an attempt to conduct a similar meeting, but due to the complete "secrecy" of the data on the indicators of the development of Soviet science this work did not yield a result that was in any way significant and useful. To any questions of the American side, which concerned the breakdown of the spending on science by individual sectors of industry or directions of research, our specialists were forced to respond that these figures were not published in the open press.

Four to five years ago journalists (and not only they) wrote with delight that a fourth of the scientific personnel of the world worked in the USSR, while we had several fold more engineers than in the United States. Now such declarations evoke only a sense of shame. I feel ashamed and sorry for the fact that our science was one of the "Potemkin villages" of the administrative system, which used it too often for proof of the next advantage of socialism.

Ideological dogmas dictated not only science policy, but also the approaches to statistics. In the early 1970's the system of accounting was changed so that tens and hundreds of thousands of engineers, "who conduct research and developed in accordance with the approved plan," were included among scientific personnel.

Today we have at last learned that in our science matters are not splendid. At the same time I want to warn against indiscriminately destructive assessments of Soviet basic research, for the age-old traditions of the best domestic scientific schools are not a myth, but a reality. The results of the examination of the level of basic operations, which was conducted three to four years ago, also testify to this. One of its main conclusions was that in

approximately 40 percent of all directions of modern science we are at the world level. And this is given the poor technical equipment of laboratories and the backward instrument and computer base.

Natural in the present urgent situation are the questions: How much "real" science and how much "so-called" science do we have? Whom should our state provide with everything necessary for the conducting of research, and whom is it possible to reassign to the element of the market? In other words, what share of scientific work should be financed from the state budget, while what will plants and other independent organizations, no matter whose property they are, pay for? A large number of questions of this sort, which are connected in one way or another with the commenced denationalization (and at times also privatization) of our science, are arising.

Today it is difficult to give rational answers to them, because all these years we lived in our own "frame of reference" and used a system of the statistical accounting of science and technology, which was suited only for us. Here we ourselves did not properly know how many of our 1.5 million scientific personnel were engaged in research and development, for example, in biotechnology and how many were in numerical mathematics. First, such data were simply not gathered in our country and, second, the system of concepts differed significantly from the one adopted in the industrially developed countries of the world. Such a question, which is simple at first glance, as the comparison of the number of scientific personnel of the USSR and the United States, required the conducting of special research, moreover, the results gave a spread in values of 20-30 percent.

Starting in 1988-1989 the processes of democratization and glasnost began at last to extend to statistics as well. Data on our spending on military research and development were published for the first time—in 1988 it came to about 50 percent of the total spending and nearly three-fourths of the expenditures of the state budget on scientific research and development. The USSR State Committee for Statistics jointly with organizations of the USSR Academy of Sciences and the State Committee for Science and Technology began to make radical changes in the methodology of the accounting of scientific personnel and other resources of science in order to bring it as close as possible to the standards adopted in the civilized world (particularly the standards of UNESCO).

The concept "scientific and technical activity" regardless of who is engaged in it and where was made the cornerstone (let us note: Earlier the formally defined "scientific research institution" was the main subject of our statistics).

As a result data on scientific personnel and the research and development being conducted began to be gathered not just with regard to 5,000 scientific institutions of the Union, but with regard to all organizations, including scientific production associations, design bureaus, and plants (in all more than 8,000 organizations were covered). Integrated accounting form "1-science," which replaced more than 10 old reporting documents of the Central Statistics Administration, which were not matched with each other, became the specific tool of the implementation of the new statistical approach.

Now we have begun to understand much better what Soviet science is today. In particular, in the practice of analyzing scientific personnel we have switched for the first time to the use of the generally accepted concept "specialists engaged in research and development." Now the direct comparison of these categories of personnel in the USSR and the United States is becoming more specific and informative.

Number of Scientific Personnel of the USSR and the United States

(on 1 January, thousands)

Scientific personnel	USSR		United States	
	1986	1989	1986	1988
Specialists engaged in research and development	1,599.4	1,654.6	1,725.5	2,026.9
Moreover, science teachers	423.1	436.3	494.0	no data

Owing to the new procedural approaches it was possible for the first time to obtain relatively reliable data on the breakdown of the spending on basic and applied research, as well as on experimental design development. In 1989 in the USSR these fractions in percent were the following: 7.0, 34.1, and 58.9. In the United States a different structure has been maintained for many years: 12 percent of the spending is for basic research, 21 percent is for applied research, and about 67 percent is for development. The comparison of these indicators makes it possible to confirm the conclusion that also suggested itself on the basis of other observations: In our country too little capital is being spent on basic science and unjustifiably much is being spent on applied work, which does not end with anything specific.

Finally, in the last two years an attempt has been made to estimate what is called "double counting" in our data on the spending on science. This point is that in accordance with the old methodology the data on the total spending of each organization were included in the report regardless of whether it conducted the research on its own or a portion of the money was transferred to other organizations through economic contracts. Here some expenditures, of course, were reflected in the reports twice, and sometimes three times.

Having eliminated from the total spending on research and development the share, for which settlements between competitors accounted, statisticians obtained truly sensational results. The real Soviet outlays on research and development, which are moderate as it is,

as compared, for example, with the United States (in 1990 the spending on science in this country came to $150 billion) decreased by another 20-30 percent. Thus, according to the data of the State Committee for Statistics, the spending on science in the USSR, from which double counting was eliminated, came to R32.3 billion (instead of the previously published R37.8 billion), while in 1989 it came to R30.8 billion (instead of R47 billion!). Of course, in these data there is also much that is unclear, but the change of the system of accounting, no doubt, is proceeding in the correct direction.

All these "novelties" of Soviet science statistics were a topic of frank and heated discussions at the mentioned Soviet-American seminar. However, they constitute only the visible part of the enormous iceberg of the new problems, with which Soviet statisticians and economists are faced today.

One of them concerns the accounting of new subjects of scientific and technical activity—cooperatives, centers of scientific and technical creativity, unions and associations of scientists, and so on. Today no one can reliably estimate their contribution to research and development, although the annual amount of work of this sector has already exceeded R5 billion. It is also necessary to organize the accounting of such new processes for us as unemployment, emigration, and inflation. The relations with republic organs of statistics will also have be organized in a completely new way.

Now, however regrettable, we still cannot give an unequivocal and complete answer to the question of what Soviet science is.

Problems in Drafting Intellectual Property Law Discussed

917A0181A Moscow RADIKAL in Russian No 26, 9 Jul 91 p 2

[Interview with Academician Yuriy Ryzhov, chairman of the Committee for Science and Technologies of the USSR Supreme Soviet, by RADIKAL special correspondent Marina Lapina under the rubric "The Extraction of the Essence"; date and place not given: "'First of All, First of All Airplanes...'—first two paragraphs are RADIKAL introduction]

[Text] In recent times there has been much talk about intellectual property. The draft of the law has already been prepared, but for the present few people, we believe, will be able to explain what this property is and "with what they eat it." Apparently, due to the lack of a clear answer to this question differences also arose during the discussions of the draft law in the Supreme Soviet.

What is their essence? Our special correspondent Marina Lapina addressed this question to Academician Yuriy Ryzhov, chairman of the Committee for Science and Technologies of the Supreme Soviet.

[Ryzhov] The State Committee for Science and Technology submitted the draft of the law on intellectual property simultaneously to our committee and the Committee for Legislation and to several other committees. The Committee for Legislation reacted negatively to it. Specialists from the Institute of State and Law of the USSR Academy of Sciences and from other institutes, who also turned over their criticism to our committee, participated in the consideration of the draft. Then we held a discussion of this draft law in our committee and came to the conclusion that there is a large grain of truth in this criticism. The first thing, with which we agreed, is that it is necessary to determine the necessity of such a draft law in principle. In our country the Law on Invention is already in effect, a law on patenting and on the copyright is being prepared, there are the draft of the law on the protection of trademarks and the basic principles of civil legislation. From the entire set of existing legislation and legislation being prepared it is necessary to separate out what these laws do not cover or will not be able to cover even by the making of amendments. After discussion in the Supreme Soviet everyone agreed that it is necessary to deal with this. But even if such an "island," which will be grouped with intellectual property, remains, another question arises: Is its legal regulation possible in general, can a law enforcement organ confiscate this property, if it has been illegally appropriated by someone, make one pay for it, and so on?

These two fundamental questions, which were singled out during the discussion of the draft law, for the present remain unanswered. When we proposed to withdraw the draft law from discussion in the Supreme Soviet, A.I. Lukyanov all the same insisted on its hearing—I do not know why. At the meeting Chairman of the State Committee for Science and Technology Academician N.P. Laverov gave the report, then I spoke about the conclusions of our committee, then the chairman of the Committee for Legislation spoke. As a result they postponed the consideration of the draft law for modification, not having regarded the held hearing as consideration even in the first reading.

[Lapina] But when in the State Committee for Science and Technology they wrote this draft law, did its authors imply something by intellectual property?

[Ryzhov] The criticism of the Committee for Legislation also consisted in the fact that lawyers of the State Committee for Science and Technology made the law in the image of the laws that protect physical assets, which are actually all protected, but it is difficult to devise means of protection for something immaterial, for example, an idea. Moreover, during the discussions several people said that a struggle of two legal school was under way. I do not presume to judge this—our Committee for Science and Technologies cannot be an arbiter in this dispute. But I think that such a statement of the question is hardly legitimate. Rather, it is a matter of a clear definition of the subject.

[Lapina] In the immediate future, as far as I know, the draft law on science and technology policy should be considered. In my opinion, during the discussion of this draft law there has also been no unanimity....

[Ryzhov] The first version of the law actually raised questions. There were many declarations there. Of course, in the law it is difficult to stipulate all the norms of the support of science by the state, but simply to say that "the state is obliged to support" is no more than an appeal. Now if some guaranteed percentage of the union budget, which should be allocated for basic science, had been recorded in the law, then it would be a different matter. Recently we, for example heard one more time the question of the financing of research in the area of plasma physics, on controlled thermonuclear fusion (UTS).... In spite of the numerous recommendations and statements of our committee and the Supreme Soviet on how to support this field of science in 1991, the Ministry of Finance is allocating far less money than is required. It is just the same as chaos. Now the deputy minister of finance has sent to the Supreme Soviet a document, in which he wrote that the budget is not taking shape, that the budget deficit will increase and some additional amount of money will be required for various needs, including on the order of an additional 2 billion rubles [R] for science. In this document there is a table of the items of expenditures of the budget for five months of this year. During these three months the spending should come to approximately 42 percent of the annual spending. So, the spending in the majority of directions comes to far less than 40 percent—18-20 percent and so on. And the item of military spending alone was fulfilled by more than 37 percent. The priority financing not of the social spheres, science, and education, but the military-industrial complex is again occurring. Here are the priorities in the country. The meager amount of money, which is being allocated, for example, for thermonuclear fusion (R140 million instead of R250 million), does not help the matter. Cooperation on many international projects is falling apart, we are not meeting the obligations to the international community.

[Lapina] This concerns not only controlled thermonuclear fusion....

[Ryzhov] Yes, space research as well. We supported these directions because they are for the present actually up to standard. Even the meager money, which it was decided to allocate from the budget, is not being given, moreover, with them it is now all the same impossible to do anything owing to inflationary processes.

[Lapina] A closed circle results.

[Ryzhov] You and I are not talking for the first time, and you know that I am a pessimist. I have already said that the situation is more than regrettable, and we may find ourselves "overboard" states with a high intellectual potential. The latest studies of UNESCO showed that with respect to such an indicator as the coefficient of the intellectualization of young people, however you look at it, we were in third place in the 1960's, but have now slipped to 50th place. And with respect to the coefficient of the intellectualization of the population, which is determined by the number of undergraduates per 1,000 inhabitants and so on, we are also in the fifth group of 10. About what high science is it possible speak if the educational system yields such results!

Criteria for Election to USSR Academy of Sciences Discussed

917A0183A Moscow POISK in Russian No 18 (104), 26 Apr-2 May 91 p 3

[Interview with Academicians Oleg Nefedov, Viktor Kabanov, and Nikolay Plate by POISK special correspondent Vladimir Shlemin under the rubric "Point of View"; date and place not given: "How To Become an Academician"—first two paragraphs are POISK introduction]

[Text] Several months have passed since the day when the names of the new members of the USSR Academy of Sciences were announced. But to this day people are recalling the election and are evaluating the level of objectivity of the made decisions.

How is it possible to achieve the maximum objectivity in case of election to the USSR Academy of Sciences and in general is objectivity possible here? Our special correspondent Vladimir Shlemin addressed approximately such a question to Academicians Oleg Nefedov, Viktor Kabanov, and Nikolay Plate.

[Kabanov] Today, when a large number of academies of different types are being established in the country, a question naturally arises: How conclusive is the election of the scientific community of the USSR Academy of Sciences? Does election to the Academy of Sciences of the country actually imply outstanding scientific achievements of those elected? Our task is to ensure during the election the selection of scientists have the highest possible scientific potential and deserved scientific prestige, and to evaluate their achievements objectively. The title of member of the USSR Academy of Sciences should actually imply leadership in domestic science and prestige in world science.

[Shlemin] As far as I know, in our country there are hundreds of thousands of doctors of sciences alone. Is it possible to elect the worthy ones without passing someone over?

[Kabanov] The number of members of the Academy of Sciences is limited. To extend its framework infinitely is simply impossible and, besides, not necessary. Therefore, to elect all good scientific personnel to the ranks of the USSR Academy of Sciences is an insoluble problem. Membership in the Academy is a kind of reward to the scientist from the scientific community. We are obliged to do everything so that this lofty title would be conferred only on those who enjoy deserved prestige in science.

[Nefedov] And here first of all serious preliminary work with the maximum openness and glasnost plays a role. It is necessary to give the scientific community and those who do the electing—the members of the Academy—an opportunity to get to know the candidates well. We in the General and Technical Chemistry Department began the preparation for the election nearly two years in advance. First, the decision was made to hold the broadest possible election of corresponding members, in order to draw into the USSR Academy of Sciences new names—from among both mature scientists, who have long been worthy of election, and comparatively young doctors of scientists. And we actually succeeded in electing 21 (!) new corresponding members.

We traditionally held the election in four basic chemical specialties (incidentally, in conformity with the classification adopted in the International Union of Chemists): physical, organic, and technical chemistry, as well as "high-molecular compounds." Here in the last case we even dropped the word "chemistry," inasmuch as in polymer science chemistry and physics are most closely interwoven. Moreover, we announced the academy vacancies, inasmuch as there were only three of them, as broadly as possible—"chemistry."

Many scientific sessions (in all there were six of them) and meetings of the bureau of the department, at which the scientific papers of about 80 candidates were heard, preceded the election. The subsequent comprehensive and thorough discussion of the candidates in the expert commission made it possible to select from the total number—197 candidates—a group of 59 people, who were recommended for election. And, finally, the discussion of the candidates at the general meeting of the department immediately before the voting. And here is the result: All those elected were among those recommended, moreover, 18 of the 21 were elected on the first round of voting.

In my opinion, the election of the three full members of the USSR Academy of Sciences was public, moreover, the journal IZVESTIYA AN SSSR. SERIYA KHIMICHESKAYA" afforded the candidates the opportunity to familiarize the members of the department and the scientific community in advance with their latest scientific results in a special issue of the journal.

As a result of the held election, we believe, the ratio of academicians and corresponding members became more optimal (3:5 instead of the recent 1:1), the youngest member of the department appeared (A. Khokhlov, 36), and the average age of members of the department decreased by five years; new members of the USSR Academy of Sciences appeared in eight cities and at 19 institutes, including three sectorial institutes. While at such a "provincial" institute as the Institute of Chemistry in Ufa three new corresponding members appeared simultaneously; two new corresponding members were also added at the Moscow Institute of Physical Chemistry, where in the last 32 years no one at all has been elected to the USSR Academy of Sciences (there is also a similar situation with respect to the Leningrad Institute of High-Molecular Compounds—no one has been elected for 22 years, and at the Kazan Institute of Organic and Physical Chemistry—26 years).

[Plate] But did you, incidentally, not ponder why the title of member of the Academy is so attractive for a scientist?

[Shlemin] Probably because this is for him one of the highest degrees of recognition, a kind of grade of "five" in the table of scientific achievements....

[Plate] Not only that. At the same time this, as a rule, signifies the appearance of a fruitful scientific school. In the scholarly world a new leader has appeared, and his intellectual powers can become a center of crystallization, a center that attracts talented young scientific personnel. This means that a person, whose abilities make it possible not only to create effectively himself, but also to teach, to convey the set of knowledge, which is based on his own research and findings, has appeared.

Of course, everything is not confined to this. The title of member of the Academy affords the great possibility of valuable and extensive contacts with representatives of the world scientific community and gives authority and recognition both within domestic science and abroad.

And there is another important thing. In experimental science the times of people working on their own have passed. This is especially characteristic of chemistry. Here one simply cannot manage without the participation of the collective. If the recognition of the role of the leader of this collective has come, hence, a serious base of science, another, it can be said, springboard for future scientific development has been created.

That is why objectivity and openness are so important here. And in the past election, it appears, we achieved the necessary effect. Scientists, who owing to their works were already known to the scientific community, were admitted to the Academy of Sciences. In my opinion, among them there was not one such person, about whom the day after the election people would ask in bewilderment: "But who is this? Where is he from?"

[Shlemin] If this is actually the case, from where is the talk, which is constantly coming up in society about the elite nature of the Academy and its exclusiveness?

[Plate] Elite nature? I would not very likely agree with this. Yet not at all in the sense that populists imply, but in the sense of the highest social recognition of intelligence and talent, regardless of the region, the place of work, or the position of the person who aspires to an academic title.

Chemistry in this respect is most unique. For enormous scientific achievements here exist not only in basic, academic research. We have rich sectorial science. In it there are many people who are embodying ideas in real, practical processes and products. And they are doing this at the highest intellectual level.

We elected as a corresponding member of the USSR Academy of Sciences, for example, Salambek Khadzhiyev—director of the Groznyy Institute of Petrochemistry of the Ministry of the Chemical and Petroleum Refining Industry. In addition to everything else—and he is both a good manager and a people's deputy, which to some extent affected his rating—Khadzhiyev is a splendid organic chemist, who has discovered fundamentally important phenomena in the catalysis of hydrocarbons.

Why look far for examples, when we have elected as corresponding members more than 10 heads of laboratories. Rating them not according to position, but according to talent.

[Kabanov] If you like, I will explain from where these popular notions of "a closed nature" and "an elite nature" appear.

The point is that in daily life man is constantly faced with "social" or "political" choices. Whether he is electing a trade union organizer, a deputy, or a people's judge. He casts his vote for whoever will to one extent or another represent or defend his interests.

A member of the Academy is elected on the basis of his personal contribution to science, he does not use anyone's platform. It is entirely a matter of his personal abilities. The election to the Academy of Sciences differs from all other elections. This is an election to one's own level. And at all academies this is an election **from above.**

[Shlemin] But then the danger of a kind of intellectual stagnation, the nonacceptance of the new and unusual arises. While this promises great losses for science.

[Kabanov] Every election to some extent presumes the possibility of a mistake. They also happened in the history of the Academy of Sciences. But for their most part not as the result of internal opportunism or the nonacceptance of the personality of the scientist, but as a consequence of pressure from above, which at times was so concentrated and severe that it was impossible to withstand it purely physically. And still phenomena of such a sort are unnatural for the USSR Academy of Sciences.

[Shlemin] Do some means exist, which make it possible to insure oneself against mistakes?

[Nefedov] There is, in my opinion, a very serious criterion—the opinion of the world scientific community and of our foreign colleagues, many of whom are well acquainted without science.

On the threshold of the election I received, for example, letters from foreign members of our Academy and Nobel Prize laureates—Dorothy Hodgkin and Ronald Hoffman, in which on their own initiative they expressed their opinion with regard to the candidates most worthy of election to the USSR Academy of Sciences. And it is characteristic that our choice coincided completely with their recommendations.

From the editorial board: With this report POISK is continuing the discussion of the problems and tasks of the present Academy and invites all those concerned to take part in it.

East Europe, USSR Academies of Sciences Meet, Discuss Changes

Common Issues Discussed

917A0185A Moscow POISK in Russian No 19 (105), 3-9 May 91 p 3

[Article by POISK special Correspondent Artur Borisyako under the rubric "What Is Science To Be Like?" (Sofia-Moscow): "Sofia: A Difficult Choice"—first paragraph is POISK introduction]

[Text] Confidence in the future, it appears, has abandoned us and "our" former allies for a long time. The wave of reforms, which smashed many state and public structures in Eastern Europe, did not bypass the academies of sciences. The past year gave rise to many problems, which became the theme of the Sofia conference of presidents and representatives of the academies of sciences of the countries of Eastern Europe, the Soviet Union, Mongolia, the DPRK, Vietnam, and Cuba. As President of the Bulgarian Academy of Sciences Academician Sendov said, "not voluminous communiques, but the exchange of opinions and the clarification of the formed situation" were the goal of the meeting.

The East German Version

The most radical changes, as should have been expected, occurred at the GDR Academy of Sciences. It is simply being eliminated.

Elimination began with all the highest echelons of "scientific power" headed by the presidium of the Academy of Sciences being abolished. Scientific research institutes and other subdivisions were detached from the academy. Thus, it turned into a society of scientists with a status similar to the statuses of academies in other western countries.

As for the center of scientific instrument making, the publishing housing, the printing plants, and the service departments, they will most likely be sold to private hands.

Research institutes will be transferred, like everywhere in the FRG, to the jurisdiction of the state governments. However, first they will undergo examination. The FRG council for science will conduct it, enlisting, for the most part, West German scientists. The results in the form of recommendations will be delivered to the Federal Ministry for Research and Technology. It will decide which institutes will go on the auction block and which ones will be included in the scientific structures of Germany. The main criterion is the competitive ability on the world market of ideas and technologies. Thus far about 30 institutes have been examined. The deadline for the making of decisions is 31 December 1991. During this period the experts will also state their opinion on all the international programs of the GDR Academy of Sciences. It is now already known that the German side is halting participation in the Interkosmos program.

"Not Only in Dark Tones"

The prospects of the majority of academies in the countries of Eastern Europe are far more vague. They do not have wealthy colleagues, with whom it would be possible to reunite. Not elimination, but life under the conditions of political and economic instability threatens them. A hard life. For example, according to the prediction of Scientific Secretary of the Czechoslovak Academy of Sciences Pavel Vlasak, inflation in combination with the increase of prices for fuel, materials, and equipment may this year "eat up" about half of the budget of the Czechoslovak Academy of Sciences. For neighbors the situation, apparently, will be similar.

Nevertheless "it hardly makes sense to depict the future only in dark tones." Such is the opinion of many participants in the meeting. "We have been convinced from our own experience that new leaders in politics realize quite quickly the danger of destroying the already existing infrastructure of science," said Secretary General of the Hungarian Academy of Sciences Academician Iztvan Lang.

When in April 1990 the election to parliament of Hungary was approaching, several politicians attacked the Hungarian Academy of Sciences as one of the symbols of the outgoing regime. Their accusations reduced to the fact that, first, membership in the academy in many cases was ensured not by scientific achievements, but by services to the authorities; second, the Hungarian Academy of Sciences was set up after "the Stalinist model," which should be swept away, having transferred the research institutes to educational institutions; third, the system of scientific qualification and the awarding of scientific degrees do not conform to world norms.

In May 1990, on the threshold of the election of the new leadership of the academy, the criticism reached such a scale that it was decided to hold the vote only after obtaining guarantees of the parliament and the government on three points:

1) no political party will interfere in the internal affairs of the Hungarian Academy of Sciences;

2) there will be no inspection of membership in the academy;

3) the institutes will remain in the structure of the Hungarian Academy of Sciences.

The guarantees were obtained. The election was held. When the situation had stabilized somewhat, there was prepared a package of reforms that were aimed:

—at the democratization of academic life;

—at the increase of the autonomy of research institutes;

—at the expansion of contacts with higher educational institutions;

—at the reduction of the administrative staff;

—at the changeover to grants and to the financing of projects on the basis of competition.

The academies of sciences of the other countries, perhaps, by taking part in less critical battles, took different paths. Bulgaria, Hungary, Poland, the CSFR, Romania, the Soviet Union, Mongolia, and Vietnam formulated as a result a certain "gentleman's set" if reforms of the transition period.

In any case, in addition to the above-indicated steps everyone envisaged the establishment of national scientific funds for the financing of basic research. Everyone displayed interest in the ukase of the USSR President on the autonomy of the USSR Academy of Sciences and the attachment of property to it. Among the Bulgarians it has already been prepared, in the CSFR they are working on it.

Brain-Drain

At the meeting the most different opinions were expressed on the problem of the "brain drain." Academician Lang linked its emergence with the razing of the "iron curtain" and the achievement of a certain level in guaranteeing the rights of the individual. Vice President of the Cuban Academy of Sciences Prof. Daisy Rivera called the "brain drain" "stealing on the part of strong powers."

In Hungary, two years ago, 6 percent of the scientific associates of the Academy of Sciences worked abroad on long-term missions. Now the figure has increased to 15 percent (a third in Germany, a third in the United States, a third in other countries). According to forecasts, only half will return home.

In the words of Academician Litiu Constantinescu, a member of the presidium of the Romanian Academy, about 260 leading mathematicians have left Romania.

President of the USSR Academy of Sciences Academician Guriy Marchuk called the "brain drain" from the Union "thus far negligible."

Even in united Germany this problem is being felt. Professor Klinkman told about the ever increasing transfer of minds to western states, which is leading to the creation of a kind of vacuum in East Germany. This is fraught in the future with unpleasant consequences.

These consequences, of course, are far less unpleasant than the ones that await other countries. The academies for their most part are taking steps on increasing the well-being of scientists. However, it is quite difficult to win in this competition. As Academician Keerna said, in spite of the 60-80 percent increase of the wage of scientists, even he, the president of the Academy of Sciences of Estonia, earns in a month one-tenth as much as an Estonia who is temporarily employed in unskilled jobs in Finland.

In the statements of Academician Marchuk and Academician Lang steps were proposed "for the rationalization and minimization of the 'brain drain'" in addition to increasing the remuneration of labor:

—the demonopolization of science and the constant modernization of research equipment;

—the intensive search for and training of young scientists;

—the establishment of ties with scientists who have left (in Hungary a new category of membership in the academy: "member of the academy of Hungarian origin, who works abroad," appeared in connection with this).

Time will show the effectiveness of these steps. For the present all the countries (first of all Cuba and the DPRK) to a different, true, degree are relying on the patriotic feelings of their scientists.

A New Life

In this matter all the meeting participants were unanimous: The preservation of existing ties and the establishment of new ones are worth any efforts. For example, for Vietnam, Prof. Ho Chi Thuanga stated, this is one of the main channels of participation in basic development.

Scientific contacts are now being paid for more and more often with currency. Academician Marchuk proposed to use scientific barter deals more extensively for obtaining it. As an example he cited the Soviet-Spanish-British astrophysics project. The USSR Academy of Sciences will pay for access to scientific results not with dollars, but with optical equipment which has been manufactured at Soviet plants.

Academician Lang said that Hungary plans active integration in multilateral international programs. Such as the UNESCO program "Man and the Biosphere" or the "Global Change" program of the International Council of Scientific Unions.

Council representative Professor Turow, who attended the Sofia meeting, stated that this nongovernmental organization, which has more than 60 collective members, is using every opportunity in providing assistance to the academies and scientists of the countries of Eastern Europe and the Soviet Union during the transition period. The council has set up a special working group for this.

Evaluating the results of the meeting, Academician Marchuk said that in addition to the clarification of positions it contributed to the renewal of mutual agreements between the academies. All the parties confirmed their interest in the continuation of such contacts. In the future the establishment of a consultative council of presidents of the academies of sciences, which is similar in functions to the one that recently appeared in our country, is possible.

USSR Academy Official Comments

917A0185B Moscow POISK in Russian No 9 (105), 3-9 May 91 p 3

[Article by Sergey Markianov, chief of the Main Administration of Foreign Relations of the USSR Academy of Sciences, under the rubric "What Is Science To Be Like?": "Cooperation Will Not Be Interrupted"—first paragraph is POISK introduction]

[Text] In addition to the plenary sessions the conference also had a "submerged part": consultations of staff members of the foreign relations services of the academies of scientists. Representatives of the Main Administration of Foreign Relations of the USSR Academy of Sciences actively participated in this work. Commenting on the results, Sergey Markianov, chief of the Main Administration of Foreign Relations of the USSR Academy of Sciences, said:

The meeting participants were unanimous in the opinion that the urgent changes in interacademy cooperation should be accomplished in complete conformity with the mechanisms of economic regulation, which exist in the countries, and should rely on the elements of market relations in the sphere of the exchange of goods and services, the financial and credit system, pricing, and taxation with allowance made for the peculiarities which are characteristic of the field of science and technology and, first of all, basic science.

When elaborating the concept of the restructuring of the cooperation of the academies of sciences one should use the many years of experience of their joint interaction, as a result of which strong ties were established between scientists and scientific collectives, a large number of joint measures were implemented, significant results were achieved in the area of the basic and applied sciences, and the traditions of mutual contact and integration in the area of the basic sciences were established.

Under the conditions of the decentralization of international scientific ties the cooperation of the academies of sciences should be oriented toward the joint elaboration and implementation of special-purpose research programs and projects, which are selected on a competitive basis and are implemented by direct ties between cooperating scientific organizations. Here the scientific expedience of the joint elaboration of the selected problems should be the basic criterion when selecting the goal, content, and forms of cooperation.

Being a set of scientific, production, economic, and organizational legal measures, which have been agreed upon by the interested parties, goal programs and projects ensure the clear delimitation, accounting, and monitoring of the intermediate and final stages of work and the obtained results.

There is not ruled out here the use of other forms of joint activity: the establishment of joint institutes, laboratories, and scientific and technical centers, the training of scientific personnel in accordance with coordinated programs, and so forth, as well as the use of the forms of interaction of scientists, which were established long ago and are most widespread in world practice: the exchange of scientific associates and information, the holding of international and national congresses, conferences, symposiums, and seminars, the giving of lectures, consultations, and others.

The specification of the existing legal norms and the elaboration of new ones, which regulate and stimulate interacademy ties, the formation of the corresponding organizational legal mechanism of the management of joint work, as well as the development and introduction of an efficient system of financing, which supports jointly conducted research and trips of scientific associates with allowance made for the number of participants and the anticipated results, will be of decisive importance for the effective interaction of the academies of sciences.

Here the financing of goal projects can be accomplished by the establishment of special-purpose financial funds by means of assets of the participants in the given project or its client. The breakdown of expenses in conformity with proportionate participation in research programs on the basis of agreements or contracts should be the basic principle of the financing of larger research programs with a large number of participating organizations and a long period of implementation. The financing of trips of scientists can be carried out on a currency or noncurrency equivalent basis and can be provided for in the corresponding agreements or contracts.

Moscow International Conference on Basic Science Set for Oct 91

917A0155A Moscow POISK in Russian No 11 (97), 8-14 Mar 91 p 8

[Advertisement]

[Text] The International Scientific and Technical Conference "Urgent Problems of the Basic Sciences"

Moscow, the USSR, October 1991.

The organizer:

Moscow State Technical University imeni N.E. Bauman

The prospective participants:

Leading universities and firms of the USSR, the United States, Canada, Japan, England, France, Italy, and other members of the world scientific and economic community.

New possibilities and broad horizons are opening up for the participants and sponsors.

You will be able:

—to obtain scientific and commercial information about the latest achievements of the basic sciences and

applied technical research, advanced industrial technology, and production organization;

—to verify scientific results, to interest foreign partners in your products, services, and research;

—to acquire new scientific, production, and commercial ties, to expand the sphere of your international and economic presence, particularly on the Soviet market;

—to establish direct relations with the developers of promising scientific directions and the authors of original technologies, instruments, and devices, to obtain access to the Soviet intellectual market;

—to organize and forecast more efficiently your production and commercial activity.

The planned composition of the sections:

—the section of mathematics and mathematical simulation;

—the section of discrete mathematics;

—the section of theoretical and experimental physics;

—the section of new technologies and the automation of production processes;

—the section of chemistry and ecology;

—the section of mechanics and biomechanics;

—the section of radio optoelectronics and laser technology;

—the section of automation, remote control, and robotics;

—the section of foreign languages.

The scientific methods seminar "Problems of the Present Organization of Science and Production. Engineering. Marketing" will be held within the framework of the conference.

Address of the organizing committee:

107005, Moscow, 2-ya Baumanskaya ulitsa, 5. Moscow State Technical University imeni N.E. Bauman. The Organizing Committee of the International Conference "Urgent Problems of the Basic Sciences."

Phone numbers: 265-68-38, 261-17-61, 261-68-30.

Fax number: 267-66-30.