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NEWS OF THE SIBERIAN DEPARTMENT  
OF THE ACADEMY OF SCIENCES USSR

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[ Following is the translation of three articles in Izvestiya Sibirskogo otdeleniya Akademii nauk SSSR (News of the Siberian Department of the Academy of Sciences USSR), No 3, 1960, pages 129-132. ]

General Session of the Siberian Department  
of the Academy of Sciences USSR

A general session of the Siberian Department of the Academy of Sciences USSR was held on 13 January 1960. In addition to discussing the results of the scientific research activities of the Siberian Department in 1959, the regular general session of the Department reviewed the proposals for general advancement of science in Siberia and the Far East in the years 1960-1975.

Academician M. A. Lavrent'yev reported on the most significant results of scientific research achieved by the Department in 1959, and on the 15-year plan for development of science in Siberia and the Far East which had been earlier reviewed at the sessions of the joint scientific councils of the Department. The report was then widely discussed.

Academician S. A. Khristianovich reported on the progress being made in the building of the Scientific Village, as well as on the fulfillment of building plans in the Department's branches and composite institutes.

Academician P. Ya. Kochina spoke on the important economic value of the Kulunda Steppe irrigation which has been made a phase of the 15-year plan. The solution of this problem will permit the creation of favorable conditions for stable and abundant harvests on the vast territory of this Steppe.

Candidate of Philosophical Sciences D. D. Lubsanov reported on the work accomplished by the Buryat Complex Scientific Research Institute during the past year, and proposed the organization of a Soviet-Mongolian complex expedition, whose work would be of important value to

the development of productive capacities of Eastern Siberia and the Transbaykal region, including also the contiguous territories of the Mongolian People's Republic.

S. A. Zalygin, author and a hydrologist by specialty, spoke on the great scientific tasks facing our scientists in solving the problem of Kulunda Steppe irrigation and the reclamation of the Barabin lowland. He also proposed the organization of a Social Sciences Institute in Novosibirsk.

A. V. Kremenetskaya, Deputy Director of the Library, spoke about the tasks and needs of the State Scientific Technical Public Library of the Siberian Department of the Academy.

Doctor of Philosophical Sciences I. I. Matveyenkov spoke about the proposed network of social sciences institutions in Siberia and the Far East.

The general session approved the results of scientific work of the Department in 1959, including also the proposals for development of science in Siberia and the Far East in the years 1960-1975.

The session heard two scientific reports: V. V. Voyevodskiy, Corresponding Member of the Academy of Sciences USSR, entitled: "Investigation Into the Application of Paramagnetic Resonance in Chemistry," and G. B. Boki, Corresponding Member of the Academy of Sciences USSR, entitled: "Complex Compounds With Short Bonds in the Inner Sphere".

#### In the Joint Scientific Council on Physico-Mathematical and Technical Sciences

The regular session of the Council was held on 11 and 12 January 1960. The Scientific Council discussed the results of the scientific research work of the Department's establishments in 1959 in the area of physico-mathematical and technical sciences. Academician M. A. Lavrent'yev reported on the above matter.

The speaker noted the important work accomplished by the scientists in getting to know the industry of Novosibirsk and of Siberia, and in clarifying the problems requiring assistance from scientists. As a consequence, the Siberian Department is now facing new and interesting problems which must be solved partly in 1960, in the 7-year plan, and the 15-year plan.

Important results, theoretical as well as practical in nature, have been achieved during the report period.

A number of theoretical and experimental works directly concerned with industry have been brought to completion.

The Mathematics Institute saw the completion of P. P. Belinskiy's big book entitled "General Properties of Quasiconformal Reflections".

In the Hydrodynamics Institute, Candidate of Technical Sciences O. F. Vasil'yev completed a theoretical and experimental research on lifts for high pressure hydraulic installations. The results of this work have already been put into practice in designing that huge hydroelectric

station -- Bratskaya Hydroelectric Station.

The steam-gas plant for large electric power stations, which was worked out in the Institute of Theoretical and Applied Mechanics and in the Institute of Chemical Kinetics and Combustion, under the supervision of Academician S. A. Khristianovich, is of great economic significance. The calculations made by Teploelektroproyekt (Vsesoyuznyy gosudarstvennyy institut po proyektirovaniyu teplovykh elektrostantsiy -- All-Union State Institute for the Design and Planning of Thermal Electric Power Stations) show that electric power stations with steam-gas plants will be 1.5-2 times cheaper than similar proposed steam-turbine electric power stations. The pertinent material on this work has been made ready for submission to the Ministry of Electric Power Stations Construction.

The Mining Institute, in close cooperation with Kuzbass miners, has proposed better ways to work the coal and ore deposits. These investigations were carried out under the direction of Corresponding Members of the Academy of Sciences USSR, N.A. Chinakal and T. F. Gorbachev.

The Hydrodynamics Institute has built an experimental unit with variable water jet, making it possible to approach the solution of the water yield problem in a new and different way. The investigations into the spin detonation conducted in the same institute by Candidate of Technical Sciences B. V. Voytsekhovskiy, are of great scientific significance.

A number of important projects have been carried to completion in the Institute of Automation and Electrometry (K. B. Karandeyev, Director, Alternate Members of the Academy of Sciences USSR). A close rapport has been established between the Institute and the industry of Novosibirsk and the Kuzbass.

Much work in the past year has gone into the building of large installations which will be used in 1960-1961 for systematic investigations of the corresponding problems. Units of a rapid computer have been assembled in the Computer Center of the Mathematics Institute. This computer will be installed in Novosibirsk and will be operational by the middle of 1960. Installations for the testing of reactions between solids and gas flows at ultrahigh speeds and temperatures have been designed and partially built in the Institute of Theoretical and Applied Mechanics. A number of plants have been designed and built in the Hydrodynamics, Transport-Energy, Mining, and other institutes.

An outstanding contribution made by the Department to the industry has been a number of methods and devices for the aerelectric geophysical survey of minerals, which were developed by the Institute of Automation and Electrometry; methods for demolition and blasting of rocks on river bottoms, proposed by the Hydrodynamics Institute; new, high power drilling units and systems to work the coal and ore deposits, developed in the Mining Institute.

Scientific Council discussed the joint report of Academician S. A. Khristianovich and Corresponding Member of the Academy of Sciences USSR T. F. Gorbachev on the problems of research and of development of

scientific research institutions in Siberia and the Far East in physico-mathematical and technical sciences in the years 1960-1975. The establishment of new, big scientific centers in Krasnoyarsk, Irkutsk, in the Khabarovsk-Vladivostok region, is being contemplated, as is the development of the Novosibirsk center. The solution of important problems in the area of electric power is being worked out in order to achieve full electrification of the country; the problems of extensive utilization of atomic and thermonuclear energy in the national economy; the problems in mathematics, mechanics, radio electronics; the problems of automation and mechanization of industry; the use of explosives in the national economy, etc.

Academician S. L. Sobolev reported to the Scientific Council on the publishing activities of the Department in physico-mathematical and technical sciences in 1959, and on the prospects of their expansion in 1960.

Scientific Council heard the report of Candidate of Physico-Mathematical Sciences Yu. G. Shafer entitled: "Work Results Achieved by the Cosmic Rays Laboratory, Yakutsk Branch, Siberian Department of the Academy of Sciences USSR, in the IGY and IGS Program," and passed a resolution for further researches into cosmic rays, terrestrial magnetism, northern Lights, and the ionosphere. The establishment has been projected of an Institute for Physical Research in the Yakutsk Branch.

For the first time in its existence, the Siberian Department was the scene of dissertation defenses.

On 11 January 1960, Candidate of Physico-Mathematical Sciences P. P. Belinskiy, Senior Scientific Worker in the Mathematics Institute, Siberian Department of the Academy of Sciences USSR, successfully defended his doctoral dissertation entitled "General Properties of Quasiconformal Reflections". Academician M. A. Lavrent'yev, Academician I. N. Vekua, and Doctor of Physico-Mathematical Sciences, Prof L. I. Volkovyskiy acted as official opponents. Scientific Council unanimously conferred the academic degree of Doctor of Physico-Mathematical Sciences on P. P. Belinskiy.

On 12 January 1960 two candidacy dissertations were defended. B. V. Chirikov, Scientific Worker in the Institute of Nuclear Physics, Siberian Department of the Academy of Sciences USSR, successfully defended his dissertation entitled: "Nonlinear Variations in Systems Approximating the Conservative". Doctor of Physico-Mathematical Sciences M. S. Rabinovich and Doctor of Physico-Mathematical Sciences Yu. B. Rumer acted as official opponents.

S. N. Rodionov, Scientific Worker in the same institute, defended his dissertation: "Experimental Study of the Behavior of Charged Particles in an Adiabatic Trap". Academician L. A. Artsimovich and Candidate of Physico-Mathematical Sciences I. N. Golovin acted as official opponents, with G. I. Budker, Corresponding Member of the Academy of Sciences USSR, and Doctor of Physico-Mathematical Sciences M. S. Rabinovich acting in the capacity of auxiliary opponents.

A. K. Chernenko

In the Joint Scientific Council  
Chemical Sciences

The Joint Scientific Council on Chemical Sciences, Siberian Department of the Academy of Sciences USSR, held its regular session on 11-12 January, at which the heads of the Department's chemical establishments had their reports reviewed. The following achievements, out of a number of very important ones, were noted. A study of the structure of silicates has been started in Siberia (G. B. Bokiy, Corresponding Member of the Academy of Sciences USSR, and Candidate of Physico-Mathematical Sciences R. F. Klevtsova); ideas have been evolved respecting the controlled synthesis of extragents (A. V. Nikolayev, Corresponding Member of the Academy of Sciences USSR); radiation yields of radicals during irradiation of benzene, diphenyl, and terphenyl have been measured (V. V. Voyevodskiy, Corresponding Member of the Academy of Sciences USSR); effect of oxygen admixtures on the speed at which ethylene is polymerized using chromium oxide catalysts has been clarified (G. K. Boreskov, Corresponding Member of the Academy of Sciences USSR); a method for obtaining fluoro-chlorine derivatives by subjecting fluoro-bromine derivatives to the action of chlorine has been worked out (N. N. Vorozhtsov, Corresponding Member of the Academy of Sciences USSR, and G. G. Yakobson); new fluorosilicon-organic compounds and acetylene silicon-organic alcohols have been obtained (Doctor of Chemical Sciences M. F. Shostakovskiy, Candidate of Chemical Sciences B. A. Sokolov, and Candidate of Chemical Sciences N. V. Komarov); conditions for utilizing slurry byproducts in manufacture of cements have been determined (Candidate of Technical Sciences A. T. Logvinenko and Candidate of Technical Sciences G. D. Uryvayeva); synthesis of two scintillators has been accomplished, one of which has been approved for use (Candidate of Chemical Sciences I. L. Kotlyarevskiy).

The scientist-chemists are rendering extensive service to the establishments and sovmarkhozes (National Economic Councils).

The review of the basic proposals for the advancement of chemistry in Siberia and the Far East in the years 1960-1975 has resulted in defining the key directions which scientific research must take (for example, all-around chemization of the economy of Siberia and the Far East). This research will be carried on in a close rapport with chemists in other institutions comprising the Department of Chemical Sciences of the Academy of Sciences USSR. In order to carry these proposals to realization, the plan is to establish chemistry departments in Krasnoyarsk, Irkutsk, Khabarovsk, and Vladivostok.

A session of the Council was given over to the defense of S. S. Batsanov's doctoral dissertation entitled: "New Refractometric Methods in Structural Chemistry." Over 150 representatives of the community attended an interesting discussion following the dissertant's report. Taking part in the discussion were the official opponents: Doctor of Chemical Sciences A. V. Ablov, Doctor of Chemical Sciences G. Kh. Kamay, Doctor of Chemical Sciences B. V. Ptitsyn, Corresponding Member of the

Academy of Sciences USSR G. B. Bokiya, and Corresponding Member V. V. Voyevodskiy. The Scientific Council decreed unanimously to submit S. S. Batsanov's dissertation to the Higher Certification Commission for the conferment of the academic degree of Doctor of Chemical Sciences.

The Council heard two scientific reports: That of Doctor of Chemical Sciences V. T. Bykov on "Some Problems of the Theory of Adsorption and Investigation of Natural Adsorbents in the Far East" dealt with the results of ten years of work by the author and his associates in the Far Eastern Branch of the Siberian Department, Academy of Sciences USSR. The correct theoretical approach, the combination of various analytic methods -- all this has enabled the author to clarify the relationship between the structure of adsorbents and their efficiency in purifying petroleum products and in refining. Corresponding Members of the Academy of Sciences USSR G. K. Boreskov and A. V. Nikolayev, Candidate of Chemical Sciences B. A. Frolov, Candidate of Chemical Sciences Ye. P. Ozhigov, and Doctor of Chemical Sciences G. V. Rudakov participated in discussion on the report and on the trends of future research.

The report of Candidate of Chemical Sciences V. A. Koptug, "The Mechanism of Migration of Substitutes in Aromatic Compounds", dealt with the determination, using carbon-14 isotope, of relation between intra- and intermolecular mechanisms in isomerization of mono-substituted aromatic compounds. Corresponding Member of the Academy of Sciences USSR V. V. Voyevodskiy and others took part in discussion of this interesting report.

The Scientific Council reviewed also certain regular business matters as well as a number of organizational problems.

K. Ye. Mironov