

History V.J. Ushakov of Scientific Schools

The Role of Tomsk Institute of Technology/Tomsk Polytechnic Institute/Tomsk Polytechnic University in the Foundation and Development of Science in Siberia

The opening of Tomsk Institute of Technology (TIT) has greatly influenced the development and improvement of industry and natural resources of Siberia, promoted the formation of science and higher education in the region. Many famous scientists and teachers from the universities of European Russia were invited to the Institute to give lectures. Among them were experienced scientists, such as V.A. Obrutchev, the chief geologist of Siberia, professors F.E. Molin, D.P. Turbaba, and others.

Academician V.A. Obrutchev is the founder of the School of Geology and Mining, first in Siberia. He taught the whole galaxy of such distinguished scientists as M.A. Usov, K.E. Gabunia, M.A. Yanishevsky, K.I. Satpaev, N.N. Urvantsev, M.K. Korovin, who in their turn, educated followers who have continued their work right until the present days. Among them were laureates of Lenin and Stalin Prizes, State Prizes and Prizes from the Council of Ministers of the USSR. V.A. Obrutchev is also the founder of the Mining Department of TIT. He was first Dean of the Department and also the originator in the field of mining research. For his scientific papers V.A. Obrutchev was awarded highest prizes from Russia and two prizes from the Paris Academy of Sciences.

The following projects of the Mining School facilitated development of Kuzbass: D.A. Strelnikov's extraction massive seam system; A.F. Sukhanov's and G.E. Bakanov's hole-making techniques; K.N. Shmargunov's picks;

A.T. Martynenko's mechanisms for loading and unloading operations; N.A. Chinakal's shield extraction massive seam system (Stalin Prize). The glorious galaxy of representatives of this school has been replenished by Heroes of Socialist Labor: M.I. Shadov, V.P. Romanov, V.I. Bochkarev; O.D. Alimov, the laureate of State Prize; N.N. Urvantsev, the founder of the City of Norilsk and the Norilsk combine. Some of the final-year students of the Mining Department of TIT became ministers, directors of large manufacturing outfits, public and social officials.

Mechanical engineers of TIT have made a valuable contribution to the development of Siberia and transformation between Russia and the powerful industrial State. Professors I.I. Babarykov, N.V. Gutovsky, N.I. Kartashev, A.P. Malyshev, T.I. Tikhonov, I.N. Butakov, A.M. Rosenberg, A.N. Dobrovidov, A.N. Yeryomin and several generations of their followers have exercised a significant influence on the development of the tool industry, metal cutting automation, and steel modification technology. Great was their contribution to the invention of cast-cutting tools and development of reinforcing technologies increasing their durability.

It is safe to say that the greater influence on the development of domestic machine building exercised our graduates who have become distinguished scientists and industrial organizers outside the walls of home Institute. The alumni D.D. Bondarev

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and I.I. Sikorsky took part in the invention of a multiengineed aeroplane, first in the world. N.I. Kamov and L.M. Mil are the designers of well-known helicopters. V.F. Fidler was the chief engineer of 'Uralmash' Company. K.N. Bilyak, the Hero of Socialist Labor and the laureate of State Prize, was the Deputy Minister of the Aircraft Industry of the Soviet Union. M.L. Terasaturov was the Director of Putilov Plant, one of the

founders of domestic tractor building. G.I. Nosov was the Director of Magnitogorsk combine, the laureate of State Prize. V.V. Gupalov is the Director of 'Kras mash', Hero of Socialist Labor. N.S. Lychagin, A.M. Staver, A.K. Martynov and many others are laureates of State Prize.

TIT scientists and teachers developed the technology of utilizing reinforced concrete in the rigorous climate of Siberia. They also designed reinforced concrete constructions for Kemerovo Coking Chemistry Combine, railroad bridges and overbridges over the Transsiberian Main Line.

The establishment of the Chemical Department at Tomsk Institute of Technology is connected with names of D.I. Mendeleev and E.L. Zubashev, first Rector of TIT. Working hard they expedited the industrial pioneering of Siberia. Professor D.P. Turbaba investigated minerals stocks, the water composition of many West Siberian lakes, in particular, Shira Lake, which currently is the health resort. The scientists of Tomsk Polytechnic University intensively participate in the foundation of this health resort and investigations of Shira Lake. Academician N.M. Kizhner is the author of a number of chemical reactions. The research conducted by Academician M.I. Chizhevsky and Professor V.J. Mostovich in the field of Kuznetsk coal coking, and oil and peat refining has been continued by Professor



Научно-Техническая конференция Горного Францабггета,
посвященная 40-летию Великой Октябрьской Соц. революции.
Т.П.И. — 18.10.1957г.

I.V. Gebler and his followers. N.P. Kulik, heading Departments at Chemical and Physical Faculties of TIT for many years was the follower of Professor N.F. Yushkevich, the TIT alumnus of 1910 and the author of sulphur 'know-how'. In 1986 N.P. Kulik was awarded the title of the laureate of State Prize for the development of special technologies. Even now, being of 94 years old Professor Kulik continues its creative work at Tomsk Polytechnic University.

Professor I.F. Ponomarev and Professor P.G. Usov were strongly involved in the development of silicate industry engineering in Siberia. They led the creation of special classes of ceramics and designed the following plants: faience plant in Krasnoyarsk, fireproof materials plant in Krasnoyarsk Krai, glassworks in Ulan-Ude. Under their leadership the china factory was reconstructed in Irkutsk region, tunnel-annealing furnaces were invented for glassworks in Kemerovo region.

Professor A.G. Stromberg, the prominent scientist of the world conducts major work in the field of analytical chemistry for many years. Together with his followers Professor Stromberg has developed the techniques and devices for amalgam voltamperometry (polarography). These devices make it possible to detect to a high precision slight concentration of wide-range substances contained in food and the environment. The large-scale production of



Профессор Кижнер Н.М., зав. кафедрой органической химии (1901-1912 гг.) на занятиях со студентами. Professor Kizhner N.M., the head of Organic Chemistry Chair (1901-1912), during his classes with students.

these devices has been organized within the walls of TPU.

Professor A.A. Vorobiev has made the important contribution to the development of research conducted by TPU. Many publications devoted to his contribution to the development of Tomsk Polytechnic Institute, higher education and science in Siberia have been issued during last years. Professor Vorobiev is the founder of several scientific schools which make good progress today. He established four research institutes and the unique complex of accelerating and high-voltage technology and a number of Faculties and Departments reorganized the technical institution into the large-scale scientific and educational center, which later was conferred with a status of polytechnic university. Keeping up the traditions of the scientific schools combined with responding to social needs have determined the present-day spectrum of scientific subjects which can be represented by the following items:

- nuclear physics and accelerating technology;
- energy and material savings based on up-to-date electrophysical methods of influencing materials;
- non-destructive testing for material and construction quality;

- optimization and control systems, artificial intellect and multimedia;
- material science including space material science;
- industrial ecology;
- energy resources and energy supply.

The important and sometimes outstanding results have been achieved in each of these scientific trends.

Already in its first decades of existence, Tomsk Institute of Technology has concentrated well-experienced scientists and engineers, creat-

ed a worthy research complex and become the technical and intellectual centre of Siberia. On the basis of TIT and TPU the whole system of research institutions has been developed: The Siberian Geological Committee, The Siberian Division of Physical and Chemical Society, The Institute for Investigations of Siberia, The Institute for Applied Physics, later renamed as The Siberian Physical Technical Institute. Research Institutes: for Nuclear Physics, High Voltages, Non-Destructive Testing, and Automatics and Electromechanics, Cybernetic Center, and some others.

The TIT scientists have played an active part in the establishment of the West Siberian and Tomsk Branch of the Siberian Division of the Russian Academy of Sciences.

Scientific achievements of TIT-TPI-TPU are recognized by the advanced countries of the world. Thus, the student M.A. Kapelushnikov (graduated in 1914) supervised by Professor I.I. Bobarykov designed a turbo-drill, first in the world. Later on he streamlined it and patented. The United States, Canada, France and some other countries purchased the turbo-drill license. Professor P.P. Gudkov, First Vice Rector of TPU, successfully delivered lectures in Columbus University,

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Stanford University and other universities of the United States and was elected a honorary member of seven American scientific societies. TIT graduates V. A. Vanukov and B.J. Mostovich worked as Associate Professors in the Warsaw Polytechnic Institute. V. P. Weinberg, V.A. Obrutchev, N.M. Kizhner, and N.N. Luzin, the Siberian geologists, chemists, and physicists had prestige among French scientists and were elected in the Paris Academy of Sciences.

Even during the years of restricted relations between the soviet and foreign scientists, the Institute officers took part in foreign exhibitions and assisted less developed countries with specialist training and conducting researches.

International scientific activity has become more regular and expanded for the past 5-8 years. Some of the results of the international activity in 1999: cash assets received from foreign R&D contracts totaled to 1,096 million US dollars; 62 delegations from abroad visited our University; 65 University officers traveled far abroad on business.

The results achieved by the scientific generation of today as well as its predecessors are recognized in Russia and abroad. Again, in 1999:

- Members of the authors' team A.G. Zherlitzyn, Head of Laboratory

at the Research Institute for Nuclear Physics and A.N. Didenko, its former Deputy Director were awarded a Prize from the Russian Government for research conducted in the field of UHV electronics;

- A. Vorobiev, G. Vorobiev, and A. Chepikov discovered the nature of dielectric breakdown on the liquid-solid interface under pulse voltage, the Certificate for which has been conferred last year with the priority of 14th December 1961;
- A.Y. Falk holds Master's degree at the Faculty of Geology and Oil & Gas Production. Among other 12 students she was awarded a Medal from the Russian Academy of Sciences and a bonus;
- More than 40 students received awards from the Russian Ministry of Education for their scientific papers, nine medals among them;
- Professor N.G. Markov, Head of the Department of Computer Engineering received the State support grant from the leading scientific schools of Russia.

The high level of the TPU scientific activity is supported by ratings of the Russian Ministry of Education and the Association of Technical Universities of Russia according to which TPU steadily ranks fifth.



Президент АН СССР
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Keldysh M.V., the President of
Academy of Sciences of the
USSR, in TPI Nuclear Physics
Institute, 1967.