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## MINING INSTITUTE OF URAL BRANCH OF RUSSIAN ACADEMY OF SCIENCES IS OUR MEMORY OF ARKADIY EVGENEVICH KRASNOSHTEIN



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Present issue of "Gornyi Journal" ("Mining Magazine") is dedicated to twenty-fifth anniversary of the Mining Institute and to memory of its first director, Corresponding Member of Russian Academy of Sciences, Arkadiy Evgenievich Krasnoshtein.

I would not like to analyze the stages of the gone way in my short opening article, to discuss our successes and failures, to establish achievements in the field of fundamental and applied researches. I suppose that well-wishing reader will conceive scientific activity of the institute after acquaintance with content of present issue of the magazine. Unfortunately, presented here articles on the whole are applied to mining industry. Whole complex of researches connected with scientific support of the search and extraction of the oil, engineering-geological search and solution of the other problems of the mineral extraction were excluded out of the field of vision. Probably, it is not very important. First of all, 25 years ago it has been formed scientific collective of the persons holding the same views. It was capable to solve most of the large-scale problems of the modern mining, geological and geophysics science. Collective is demanded both in science and in production. So, it is necessary to appeal to historical facts.

Urals Branch of Academy of Sciences of USSR has been set up in September 27, 1987 in accordance with Decree of Central Committee of the Communist Party of the Soviet Union and Soviet of Ministers of the USSR № 1088. It has included Mining Institute. Decision concerning to setting up in Perm of the Mining Institute of Ural Branch of Academy of Sciences of USSR on the base of Department of mining aerology and geophysics of the Institute of geophysics of Ural Branch of Academy of Sciences of USSR and Kungursky sub-division of the Institute of Geology and Geochemistry named by Zavaritsky of Ural Branch of Academy of Sciences of USSR has been registered officially in February 1, 1988 in accordance with Decree of Presidium of Urals Branch of Academy of Sciences of USSR № 2–7.

It was our first entry into the great academic science. It has to be noted here reminiscences of Mr. Krasnoshtein A. E.: *"Euphoria was over. Fanfares have died down. We have glanced back and have seen yawning vacuum in surrounding space. Panic idea has imbued*

*our mind: "What has been done by us?" Telltale chill has run along the spinal cord. We have switched successful and clear institute being to academic activity, that was filled with vagueness, concrete responsibility and unforeseen obstacles. Idea "fundamental science at the mining enterprise" has seemed as the forced and irrational one. Besides, it has arisen thousand problems: availability of the personnel, production areas, necessary equipment and instruments and so on."*

1988 has been begun on the above mentioned "major" note. But the saying is: "the eyes are afraid of something but the hands (it will be more exactly — the head) do it". Soon four scientific laboratories have been set up in Perm, two permanent laboratories — in Kungur and Beresnyki settlements. It has been formulated principal directions of fundamental investigations. Number of personnel of the institute has



Corresponding member of Russian Academy  
of Sciences A. E. Krasnoshtein (1937–2009)

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**Beginning of the Mining Institute of Ural Branch of Russian Academy of Sciences**



**Mining institute of Ural Branch of Russian Academy of Sciences today**

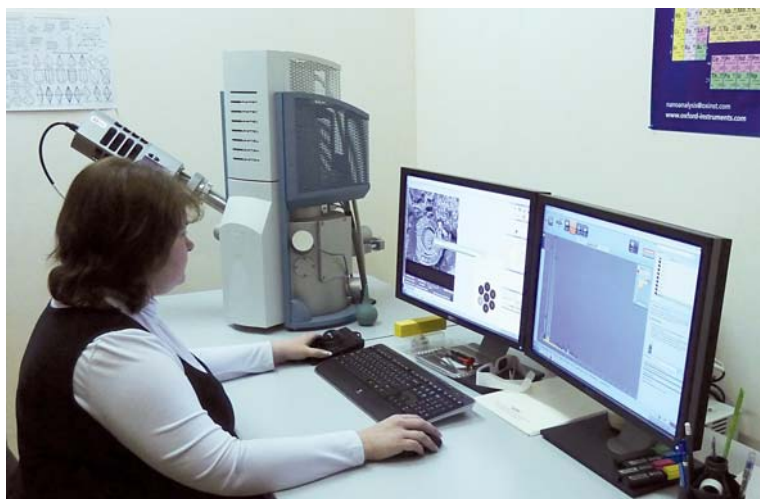
reached 80 persons. It involves 38 research workers including three Doctors of science and 18 Candidates of science. First agreements for fulfillment of the scientific-research works have been concluded with PA "Uralkaliy". It was the fact that volume of the contracts was some more than 10 % of total financing. Employees of the institute have published 33 works and have prepared two claims for inventions. Institute has been accommodated in the five (mainly leased) premises: main building — 510 m<sup>2</sup>; semi-basement — 185 m<sup>2</sup>; premises at the technical floor — 30 m<sup>2</sup>; permanent laboratory in Kungur — 512 m<sup>2</sup> and permanent laboratory in Beresnikiy — 30 m<sup>2</sup>. Equipping of the institute has been begun step by step. Institute of Mathematics and Mechanics of Ural Branch of Academy of Science USSR has passed electronic computer ES-1060. But usage of the last one was short-term owing to fast development of computer techniques and beginning of exploiting of the personnel computers.

First report about scientific and organizational activity of the institute has noted following principal problems of its development:

- sharp shortage of production areas restraining development of laboratorial basis of existing sub-divisions and creating of the new laboratories necessary for solution of the raised tasks;
- insufficient provision of the laboratories with equipment and apparatus;
- weak development of scientific-technical and scientific-auxiliary sub-divisions.

1988 was the first year in history of the institute. The year has been completed. It was not the worse year. We were waited for hard 1990-th. But in this period Arkadiy Evgenievich has done the principal work. He has formulated the general conception for scientific activity of the institute. It may be formulated in following way: fundamental and applied problems of mining have to be solved together with the whole of sciences about the Earth (geology, geophysics, geochemistry, geomechanics and proper mining sciences) and basis branches of science (mathematics, physics, chemistry). And secondly: in period of shortage of the means and possibilities for purchase of the modern scientific equipment it has been done stake on complete computerizing of the institute. I think, above mentioned solutions was the basis for formation of the institute and was guarantee for its scientific rise.

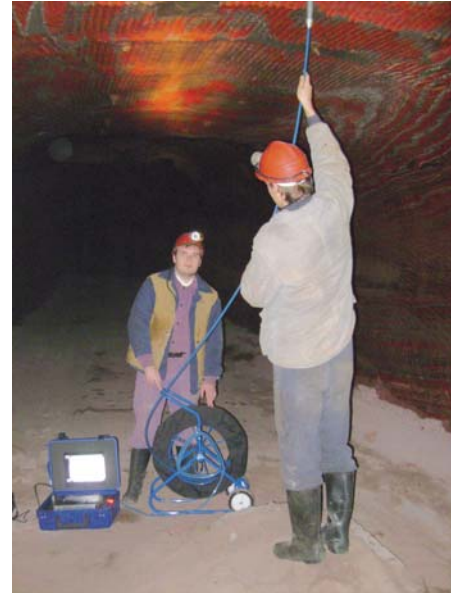
Today number of employees of the institute is 240 persons including 20 Doctors of Science and about 50 Candidate of Science. Structure of the institute involves 15 scientific sub-divisions: 2 departments and 10 laboratories in Perm, 2 permanent laboratories in Kungur and Beresnikiy settlements, department in St.-Petersburg, scientific-production geophysical expedition, experimental-methodical seismic-prospecting party. Institute has in its efficient management: in Perm — administrative building 549 m<sup>2</sup>, laboratory building with the annex 2250 m<sup>2</sup>, underground parking for 10 cars; in Beresnikiy settlement



**Scanning electronic microscope Tescan VEGA 3 LMH**



**Laboratory of physical and mechanical testing at the higher educational-academic chair**



**Field investigations in potassium mine**



**Annual scientific session of Mining Institute of Ural Branch of Russian Academy of Sciences**



**Visit of delegation of language of the region Lower Saxon (Germany) and gratitude for great creative co-operation between Mining Institute of Ural Branch of Academy of Sciences and Klaustalsky Technical University**

— permanent building 835 m<sup>2</sup>, brick garage 154 m<sup>2</sup>; in Kungur settlement — permanent building 512 m<sup>2</sup>, break garage 78 m<sup>2</sup>. Most of the building have been constructed and put in exploiting at the expense of the extra-budget resources.

Today the institute is equipped with the modern field and laboratory equipment permitting to solve at the high level fundamental and applied tasks of rational and safe mining. Carried out complex of investigations is demanded by the real economic sector. Every year institute fulfills innovative works in accordance with agreements with more than 50 Russian and foreign institutions. Our biggest customers are: "Uralkaliy" JSC;

"LUKOIL-Komi" JSC; "Permneftgeophysica" JSC; "Belaruskaliy" JSC; "LUKOIL-Perm" JSC; "EuroChem-Usol'sky potassium combine" Ltd.; "Institute "Gypronickel" Ltd.; "GMK "Norilsk nickel" JSC.; "Galurgia" JSC; "Dailman-Haniel Shakhtostroy" Ltd. (Germany); "Tissen Shahtbay" Ltd. (Germany) and many others. Share of obtained extra-budget means is about 70 % in total volume of financing. Extra-budget means permit to develop material and technical basis of the institute. Solved practical tasks predetermine new directions in fundamental investigations.

Today the institute closely co-operates with the





universities and engineering firms in Germany, Great Britain, Australia, USA, Canada, South Africa, CIS. More than 200 reports are presented at the different international forums every year. It is published more than 250 articles and drawn up about 10 patents every year. Doctor Soviet works in the institute by the three specializations.

Participation in educational activity is one of priority tasks of the institute. Higher educational-academic chair "Mining of useful minerals deposits" works about 10 years in the Perm scientific-research poly-technical university. Branch geophysical chair works in the Perm scientific-research state university. Employees of the institute take part in educational process. Students take part in scientific investigations. More than 30 students combine their study and work in the laboratories every year. It favours the rise of the new scientific generation. It has to be noted and it is pleasant that employees, who have begun their activity in the institute as the students, now defend their thesis for a Doctor's degree.

It was statistical data about 25-years way of our institute. Arkadiy Evgenievich Krasnoshtein has taught not to stop on achieved level. He has dreamed about new construction projects, about future of the institute. "Let us dream" — it is the title of the afterword for the book of Arkadiy Evgenievich. I would like to quote the lines again:

A. E. Krasnoshtein: ...*"Let us dream, since the real investigators are the dreamers always. Thus, I look mentally into the distance and see the new institute buildings, the laboratories equipped with the up-to-day equipment, tens of the new young Doctors and Candidate of science and (it is very important) one or three academicians of Russian Academy of Sciences. I see extensive and multilateral co-operation with foreign and Russian colleagues from Australia to Canada, from the Kola Peninsula to South Africa. And our employees act not as the learners and statist but as the teachers and mentors.*

*Principal scientific conception of the institute has been formulated twenty years ago. It captures more and more minds of colleagues in mining sciences. It will permit to this direction to take properly worthy place among the sciences about the Earth and to develop fundamental and applied aspects of the highly effective*

*and safe mining. In its turn it will increase role and importance of mining sciences and will be powerful locomotive in development of mining branches of industry.*

*Scientific achievements and their demand by the real production are the only way to material well-being. It is the source for uninterrupted development and renewal of material and technical basis and maximum satisfaction of social demands of the collective.*

*Popular wisdom says: "Quality of meal depends of volume of work"*

*Thus, good luck, dear friends! Any way may be overcome by the traveler!*

*The way is easier in your youth. So, the general task for future is uninterrupted and laborious job with the young people following us but leaving us behind in many respects. It is the paradox and source of progress at the same time. "The teacher trains the follower and will be learned by him".*

*And some more, when I think about future I would like, first of all, to keep for many years creative and friendly spirit, mutual aid and mutual understanding, honesty and adherence to the principles, decency and mutual feeling, exactingness and justice. We have used above mentioned principles as the basis for construction of our institute. They were inculcated constantly in consciousness of the people. And they have permitted to transform the labour collective into the real family with common distress and gladness.*

*New ideas may be born and realized only in such institute. It is the place that you want to visit and realize here your abilities. Its collective is not afraid for shocks and crisis, flight up and falls. It looks and walks in future with unconcealed optimism".*

I hope very much that we realize dreams of Arkadiy Evgenievich. Today our institute is the best memories of Arkadiy Evgenievich Krasnoshtein. **EM**

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