

A.F. Korobeinikov, Y.N. Popov, V.G. Lukianov

# Polytechnician to Kuzbass

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The establishment of the first Siberian technical university substantially expedited the exploration and cultivation of mineral resources in different regions of the country and, first of all, expedited the formation of the resource industry in Kuzbass. The opening of the Mining Department at Tomsk Institute of Technology in 1901 also promoted the formation of the resource industry in Kuzbass. The productive forces of Siberia could intensively develop in the integrated cultivating of natural resources of Ural and Kuzbass. That stipulated the development of the Ural-Kuznetsk Project, which was implemented by TIT scientists under the leadership of professors P. Gudkov and M. Usov. Kuzbass appeared in that Project not only as the coals output center, but also as a metallurgical center. To implement that Project the Siberian Geological Committee was instituted in 1918. It answered also for economic development of the West-Siberian region. Professors P. Gudkov (Director), A. Lavrsky (Vice Director), M. Korovin, I.

Rachkovsky, K. Gabunia, K. Tumentsev, B. Stapanov, N. Pavlov, Z. Lebedeva, I. Androsoy, N. Tolkachevskaya, S. Kurbatov, N. Penn, N. Urvantsev, A. Kuzmin, E. Pisarev, A. Arsentiev, I. Yashvili were included in the Committee.

## Geologists to Kuzbass

By the beginning of the Mining Department's activity Kuznetsk coal field was already the operational mining region with the coal output mines formed by the end of last century, namely: Batchatskaya, Kolchuginskaya, and Angerskaya. However, information about the geology of Kuznetsk field was fragmentary and its effectiveness was not high. The systematic territory exploration was started in 1914 under the leadership of L. Lugutin.

In 1927 the geology of some Kuznetsk regions was explored more thoroughly. To that period belongs the start of Usov's and his followers' geological research. They paid much attention to the geological construction of Kuzbass. Finally they decoded the stratigraphy and complicated tectonics of the field. Accurate exploration of tectonic forms allowed Usov to classify numerous forms of disjunctive associations. That classification appeared to be very useful for solving problems of developing coal seams in Kuzbass.

Usov's research conducted into Kuzbass tectonic goes far beyond the limits of one basin and is, as a matter of fact, the significant contribution to the world geology. Methods of tectonic analysis were described in his publication «Structural geology» (1940) and are still very popular and topical nowadays.

Usov's followers continued his investigations and concretized them.

Заседание Сибгеолокома во главе с М.А.Усовым, 1927 г.  
The conference of Siberian  
Geology Committee heading  
by Usov M.A., 1927.





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Professor I. Molchanov developed the geometrical method of investigating disjunctives and its application in displaced parts of the field. The classification of disjunctives suggested by Molchanov was added to specialists' armoury to research ore deposits and mineral resources and stood the test of time.

I. Molchanov together with his follower Professor A. Belitsky improved the method of investigating the influence of small folds, coal seam breakage and cracks upon conditions of prospecting and exploitation of coal-fields. A. Belitsky suggested the tectonic division of Kuzbass, which has become the basis for the prospecting systems development. Associate professors V. Koudelsky and Y. Popov carried on with Belitsky's investigations. They concretized the system of Kuzbass tectonic division and developed single elementary structures for prospecting techniques.

Among the TIT scientists who did much for the stratification of coal-bearing layers was Prof. Khalfin. His school played the important part in Kuzbass research. They solved a number of basic problems of stratigraphy of reference horizons and boundaries. Prof. Khalfin's followers R. Benediktova, O. Betekhtina, A. Kurbatova, and M. Parfenova specialized in exploration and division of palaeozoy layers. Prof. Lebedev was engaged in mezozoy layers. The research included lithological characteristics by Y. Kazansky and his proceedings.

Academician Y. Kuznetsov, correspondent member F. Shakhov, professors A. Kuzmin, I. Lebedev, and N. Anisimova investigated magmatism in Kuznetsk field and surrounding structures. Their proceedings describe conditions of deposits and the South-East basin intrusions' composition.

Our scientists paid much attention to exploration of the coal composition and its quality. I. Ammosov and A. Aksarin developed the theory of coal metamorphism and investigated the quality of coals.

M.Kuchin, V. Nydner, G. Rogov, G. Plevako, and other researchers studied working conditions in Kuzbass. They developed theoretical basics for predicting prospecting data on water flow in mines outputs and coal seams. They outlined the geological division of Kuzbass.

F. P. Nifontov and V.E. Olkhovatenko with the group examined geological conditions in Kuzbass. They formulated the theory and prac-

tice of detecting the edge stability of underground workings upon the coal open-pit mining.

The Department of Geophysical Prospecting (Z.A. Mysho, L.I. Ivanchura, G.G. Zyatev) developed methods of the improvement of ground and logging works in Kuzbass, in particular, palaeomagnetic responses of rocks to divide coal-bearing layers.

Controlled directional drilling and creation of special tools for drilling control is connected with Professor C. Sulakshin and A/Professors B. Spiridonov and V. Khramenkov.

## Mining Engineers to Kuzbass

In 1927-29 two design organisations 'Telbesbureau' ('Giprometz' branch in Tomsk, later reorganized in 'Kuznetskstroy') and 'Shakhtstroy' ('Giproshakht' branch in Siberia) were established at TIT. Those organizations aimed to design plants for Kuznetsk Metallurgical Combine and Siberian coal-field mines. Professor D.A. Strelnikov was at the head of the design. Professor N.S. Penn and G.E. Bakanov projected mines. In 1929 project works spread all over the coal fields of Kuzbass and the East of the USSR under the leadership of Prof. L. Shevyakov. A/Professors A.S. Betekhtin, A.F. Sykhanov, assistant lecturers G.P. Ksunin, A.T. Martynenko, and senior-year students actively participated in 'Shakhtstroy'.

In 1930 the Siberian Research Institute for Metals was founded in Tomsk. N.V. Guitovsky was its director. The Institute conducted research into metallurgical production in Kuzbass. Workers visited mining plants to assist in erection works. By the end of 1937 38 students engaged on degree theses went to 'Kuzbassugol' Combine. B.N. Zherebin who graduated in mining played the important part in the development of Kuznetsk Metallurgical Combine being the director for about 10 years. The following scientists have done much to solve the problems of formation of Bolshoy Kuzbass, scilicet: D. Strelnikov (mine of thick coal seams in 1926); V. Mikhailov (research in rotary hole boring); A. Sukhanov (making holes with a percussive machine); G. Bakanov (ore deposit extraction in 1927-1940); A. Betekhtin and G. Ksunin (air-force economy mines, electric locomotive mine haulage); K. Shmargunov (theory of electric picks design); R. Trofimov (mining electrical engineering); A.



Martynenko (mechanization of loading mine production of Kuzbass); A. Volkov (design of underground survey); V. Nuvariev (geodesy observations balancing by means of the least squares); N. Chinkal (creation and introduction of heading machines for thick seams extraction); V. Mikhailov (design of new electric drills); I. Balashov (flaw detector for fall lines test and indicator for hoisting machines' breaks test).

During the World War II our scientists paid much attention to design and introduction of the new mine system by means of heading machines. I. Balashov developed test methods for fall lines; R. Trofimov invented the short circuit protection in mines up to 500 V; A. Betekhtin increased the capacity of accumulators for inspection lamps; G. Bakanov built up the classification of ore extraction systems.

Later on the following problems were investigated. Optimal efficiency of coal mines and quarries (N. Kapuistin); extraction systems and

preparation of mine horizons (V. Proskurin, N. Kapustin, I. Guseev, N. Fyodorov); coal extraction on the river Iny (B. Kortelev); coal extractions subjected to sudden coal and gas blow-outs (G. Gritsko); new extraction systems for coal deposits (V. Proskurin, N. Kapustin, G. Posokhov); roof control of coal seams and new kinds of excavation casing (A. Andrianov, N. Kuznetsov, G. Posokhov, M. Kurleha, Y. Pyzhkov, V. Shalaurov).

I. Khrustalev, I. Balashov, V. Petunov, V. Kutsepalenko, N. Klykov, V. Udut researched lifting gears, servicing and design of induction drives, mechanisms for transposition of cylinders, fall lines. B. Titov worked at the increasing of operating economy of mine fans with pneumatic drive, V. Voronchikhin and M. Tyryshkin investigated rotation velocity automatic control of pneumatic deep-well pumps and air flow sensors.

Organization and planning of mining plants construction in Kuzbass was fulfilled by C. Leontiev, P. Akimochkin, V. Koryakov, V. Lukianov, V. Tzetzarkin. P. Akimochkin, V. Zakhlebny, V. Razin, V. Tzetzarkin investigated mining pressure in channeling underground working. In 1956 A. Volkov, B. Popko, I. Savinykh invented new types of mining theodolites. P. Leonov, A. Korotaev, D. Gusev, B. Surnachev, L. Kalachev, A. Surnachev, S. Batalin, V. Razin, and A. Prilensky solved problems of exploitation safety.

Professor O. D. Alimov with his colleagues (I. Basov, V. Gorbunov, D. Malikov, J. Serov, N. Ryashentsev, L. Dvornikov) investigated solenoid picks, electric machines for rotary hole boring, pneumatic machines for drill holes of large diameter, frozen grounds cutting machines, and backblows of pneumatic picks.

Our scientists have created the scientific-production base in Kuzbass. The 1928-year graduate T.F. Gorbachev was the organizer of the mining and geological science and the chairman of the West Siberian Branch, vice President of the Russian Academy of Sciences, and its correspondent member. Today our alumni are at the head of mining institutes of Russia. Among them academician M. Kurlenya, Novosibirsk Mining Institute and correspondent member G. Gritzko, Novokuznetsk Coal Institute. In Kuzbass work our alumni, professors V. Gorbunov, O. Alimov, L. Dvornikov, Y. Ryzhov.

Д.А. СТРЕЛЬНИКОВ, В.Г. КОЖЕВИН  
Т.Ф. ГОРБАЧЕВ

# РАЗРАБОТКА УГОЛЬНЫХ МЕСТОРОЖДЕНИЙ КУЗБАССА

УГЛЕТЕХИЗДАТ

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