

The alumni of the Siberian geological school

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*in the development of
mineral resource base*

The National Geological Service of Russia was instituted in 1882 with the Geological Committee opening in St.-Petersburg. Besides the director there was only six geologists on the staff. The first permanent geologist was appointed in Russia in 1888 in Irkutsk Mining Authority. At 25 V.A. Obrutchev (1863-1956), a graduate of Petersburg Mining Institute, became first permanent geologist in Siberia. Later he organized the Mining Department at Tomsk Institute of Technology and became its first dean (1901-1909). V. A. Obrutchev won Lenin Prize (1926), was academician of the Russian Academy of Sciences (1929), Hero of Socialist Labour (1945), twice a winner of State Prize (1941, 1950).

V.A. Obrutchev and his follower M.A. Usov (1883-1939) who was the first academician in Siberia (1939) founded the Siberian Geological School which has played the outstanding part in exploration of geology and minerals of Siberia and other regions of the former Soviet Union. Industrialization of Siberia was originated and developed in that school, in particular, reclamation of such giants as Kuznetsk and Kansk-Achinsk coal deposits, Kuznetsk Metallurgical Combine and Norilsk Mining-Metallurgical Combines, West Siberian oil-and-gas complex, and also creation of powerful mineral resource base in Asian part of the country.

The position of mineral resources in Russian economy is defined by the development of oil and gas industry, coal industry, metallurgical industry, and chemical industry.

Oil-and-Gas Resources. There are 12 oil-and-gas-bearing fields in Russia. West Siberian field is of great importance which includes 49 fields (47 in Tumen and 2 in Tomsk regions) out of 65 largest and unique fields of Russia. The largest fields are Samotlorskoe, Mamontovskoe, Fyodorovskoe, Priobskoe, Yamburgskoe.

West Siberian field ranks first among the both Russian hydrocarbon fields (the initial explored oil stocks are some 60% of the entire Russia, current

stocks are more than 70%) and oil-and-gas fields (almost 70% of the entire Russia fields).

The perspectives of oil-and-gas-bearing in West Siberia were initially connected with oil and gas exploration in palaeozoy deposits. In 1920 M.A. Usov indicated the possible oil-bearing of papaeozoy deposits in Kuznetsk field, which is the largest field in the West Siberian plate. In 1925 Y.A. Kuznetsov discovered bitumen of asphaltitum type there.

In 1932 academician I.M. Gubkin, the initiator of oil and gas exploration in West Siberia, gave following reasons for the possible oil-and-gas bearing in Kuznetsk field:

- 1) Lyptobiolitum coals and combustible shales in the north-east deflection in central parts are possibly changing to oil-bearing veins;
- 2) Bitumen in devon deposits;
- 3) Certain similarity of the geological construction of Kuznetsk deflection and Appalachia oil-bearing region of the USA where rich oil and gas fields coincide with devon and carbon deposits.

The integrated exploration of geological structure and oil-and-gas-bearing of West Siberian plate began only in 1948-53. Abstracts on results of drilling test holes and conducting regional geophysical work allowed in detail to explore the stratigraphy and outline principal laws of changing veins of meso-kainozoy deposits; carry out tectonic division; reveal geochemical and hydro geological laws of a deposit case; and set about finding out the laws of oil-and-gas formation and accumulation.

Oil-bearing exploration in South-West regions of West Siberia was intensively conducted by M.K. Korovin and V.P. Kazarinov. In 1964 they were awarded Lenin Prize for the predicted oil-and-gas bearing of the West Siberia plate on the basis of its tectonic construction.

G.P. Bogomyakov, First Secretary of Tumen Regional Committee and a member of Central Committee of the Communist Party, was awarded Lenin

Камнев Ю.М.

Родился 19.10.1944 г. в селе Молчанова Томской области. Томский политехнический институт окончил в 1973 году по специальности «Технология и техника разведки месторождений полезных ископаемых», факультет геологоразведочный, заочное отделение. В 1978 году окончил Высшую партийную школу при ЦК КПСС. С 1964 по 1973 год работал бурильщиком, мастером, инженером по бурению в объединении «Куйбышев-нефть». С 1973 по 1980 г. на партийной работе — инструктор, зав. отделом, секретарь РК КПСС. В 1981 году переехал в Западную Сибирь, работал в объединении «Нижневартовскнефтегаз». С 1987 года — генеральный директор ОАО «СпецУБР» Тюменской нефтяной компании. За время работы в Западной Сибири организовал работы по бурению более 3000 эксплуатационных скважин на нефть и газ. Обеспечил ввод в эксплуатацию 17 новых месторождений, в том числе Ваньеганского, Бахилковского, Покачевского. Один из участников разработки технологии горизонтального бурения скважин в Западной Сибири. Обладатель почетного международного приза «Хрустальный эйтмейкер», знака имени академика Кузнецова, Почетный нефтяник Российской Федерации, член-корреспондент Российской инженерной академии.

Kamnev Y.M. was born on October 19, 1944 Molchanovo village of Tomsk district. In 1973 he graduated from TPU, «Technology and technics of mineral deposits' exploring» speciality, Geological Exploration department. Since 1964 to 1973 he worked as a driller, a master. Since 1973 to 1980 he worked as a Party instructor, a head of department. In 1987 he moved to Western Siberia region, worked in «Nizhnevartovsk Oil and Gaz» Association. Since 1987 he is a chief director of JSC «SpecUBR» of Tyumen Oil Company. He is one of the inventors of horizontal drill technology of oil wells in Western Siberia. He is the owner of honorary international prize «Crystal Earthmaker», academician Kuznetsov's medal, the honorary oil industry worker of RF, Correspondent Member of Russian Engineering Academy.



Prize for the discovery of the unique oil, gas and gas condensate in West Siberia including Samotlorskoe and Yamburgskoe fields. A.M. Brekhuntsov, E. A. Teplyakov, and M.P. Glushnev were awarded State Prizes.

Coal Resources. Currently the main resource base of coal industry of Russia is Kuznetsk coal field (Kuzbass), which takes first place in the world in stocks (114,3 billion tons, depths is 600 m), coal quality and exploration. Kuzbass coal fields are developed by 65 mines and 34 cuts which are maintained by 18 concentrators. In the near future 10 new mines and 3 cuts will be called into being. Kuzbass provides coking coals for all metallurgical plants situated in eastern regions of Russia and also exports them.

In 1913 Kuzbass coals (13,6 billion tons) were appreciated for the first time at the International Geological Congress. Intensive geological work led by M. Usov and M. Korovin allowed discovering coal in Kedrov-Krokhalevskoe and Berezovo-Birulinskoe fields in Kemerovo region, Prokopievsk-Kiselevsk region, in Tom-Usinsky, Mrassky, and Kondomsky regions, metabituminous coals in Osinovsky and Baidaevisky regions.

About the achievements of pre-war period one can judge from coal stock addition which in 1936 came to 450,7 billion tons.

During the World War II rich coking coals deposits were discovered in Kondomsky and Mrassky regions. For the discovery of rich coking coals deposits in the south of Kuzbass I. Zvonarev, I. Molchanov, V. Skok, and V. Stanov were awarded State Prizes.

Along with Kuznetsk coal field M. Korovin actively explored other coal field of Siberia, namely: Kansk-Achinsky, Tungussky, and Irkutsky. He was the first one who set a question on reclamation of Kansk-Achinsky field and described Tungussky coal field. These coal field are the largest in Russia. Annual output amounts to 36,4 million tons; coal security comes to 800 years.

Today Kansk-Achinsky hydrogenous coal field with its cheap fuel stocks of 81,4 billion tons is the resource base of Kansk-Achinsky fuel-energy complex which is the main energy base in Siberia.

Hydrogenous coals in that region were discovered in 1876. However, more or less regular exploration of it began in the early 30s. In 1931-32 A.V. Aksarin discovered Saiano-Partisan field; in 1936-37 I.A. Zvonarev and I.I. Molchanov discovered Balakhtinskoe field, and in 1947 I.P. Zhuiko discovered Abanskoe deposit.

Ferrous Metallurgy Resources. Iron ore, quartz, refractory clays, moulding sands and other metallurgical resources deposits discovered by M. Usov and A. Kuzmin served as a basis for Kuzbass metallurgical industry. Today here operates not only Kuznetsk Metallurgical Combine, the first five-year-period giant, but also West-Siberian Metallurgical Plant.

In 1931 Tashtagolskoe and Shalymyskoe deposits were discovered (Y. Kuznetsov and K. Radugin) and included in the most important industrial Kondomsky group of iron ore deposits. P.Gudkov and M. Usov took an active part in prospecting and geological exploration of Telbess group of iron ore deposits. A. Kuzmin and A. Sivov organized prospecting of Tasheigino-Maizasskaya group (for the first time boulders and fragments of black iron ore A. Kuzmin were discovered in 1929).

In 1930 Teiskoe deposit was discovered in Kuznetsk Alatau (I. Bazhenov, A. Kuz). In 1932 M. Afanasiev and K. Filatov carried out first counting of Abakan deposits. Iron deposits of Krasnokamensky, Anzassk and Volkov groups and a series of other deposits were discovered. In 1960 N. Dashkevich and G. Starodubov discovered Sredne-Angarsky iron ore deposit.

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A. Kuzmin provided fluxes and refractory clays for Kuznetsk Metallurgical Combine.

Black Iron Ore Resources. Kuzbass' demands for manganese account for about 2 million tons yearly at its 17-19% content in ore and may be fully satisfied by Usinsk deposit which is situated in the central part of Kuznetsk Alatau and still is not reclaiming for the high costs of the branch-line building. In 1939 K. Radugin opened Usinsk black iron ore deposit and was awarded State Prize for that. Total stocks of that deposit with regard for off-balance ores (5-10 per cent of manganese) amount to 150 million tons.

Non-Ferrous Metallurgy Resources are presented by complex ores, aluminum resources, cobalt, mercury, tungsten, molybdenum, and other minerals.

Systematic prospecting of non-ferrous metals was started in 1919 after the establishment of the Siberian Geological Committee at TIT's Mining Department. Its founder and first director was P.P. Gudkov, academician of California Academy of the United States. During the first years of the Soviet Power prospecting included small-scale mapping of Salair and Altai territories and examination of some known ore deposits. To geological works on complex ore deposits of Salair belong Usov's investigations. B. Speransky, V. Kuznetsov also conducted research in complex ore and zinc deposits.

The main achievement of the Siberian Geological Committee was Norilsk copper-nickel region discovered by N. Urvantsev in 1919-22. Ores of that region contain also cobalt, gold, silver, and platinum. Today this region includes such deposits as Norilsk-1, Norilsk-2, Talnakhsky, Oktiabrsky, and others. G. Rempel was one of the discoverers of Oktiabrsky deposit. All these deposits form the resource base of 'Norilsk Nickel' Company.

Y. Glazyrin, E. Vrublevich, and A. Stebleva were awarded Lenin Prize for the discovery and prospecting of the large complex ore deposit in Krasnoyarsk Krai.

The importance of complex deposits discovered by the alumni of the Siberian Geological School is characterized by the following figures: Krasnoyarsk Krai delivers 80,9% of nickel, 72,1% of copper, 75,6 % of cobalt, and 98,1% of planitoids of the gross output.

K. Satpaev, a 1926-year graduate, academician and first President of



Khazakhstan Academy of Sciences, academician of the Academy of Sciences of the USSR, winner of Lenin and State Prizes explored and reclaimed the largest in the world Dgezkazgan copper-and-ore deposit. Besides, he formulated the methodology and the unique metal-genetic prediction map for Central Khazakhstan, which allowed opening more than 330 deposits of ferrous, non-ferrous, and rare metals being the basis of economy and production sphere of independent Khazakhstan.

Nefelin rocks is one of the kinds of aluminum resources. First information about them in West Alautsky region belongs to S. Ilienok. Y. Kuznetsov was first scientist who paid attention to nefelin rocks as possible alumina resources. Today ores of Kia-Shaltyrsky deposit discovered by A. Prusevich, A. Bulynnikov, and I. Bazhenov refer to the richest nefelin deposits of Russia and are used for getting alumina in Achinsk alumina plant without the preliminary concentration.

V. Nudner discovered black iron ores high in cobalt for the first time in Siberia in 1933 (in Altai Krai).

The largest Khakasia deposits of copper and molybdenum were discovered by V. Tomashpolskaya, I. Tzeiklin, G. Pospelov, A. Mesyannikov in Corsk (1936), and N. Mishko in Ipchulsk (1953).

It should be noted that the founders and alumni of the Siberian Geological School actively participated in exploration of Siberian gold-bearing regions (V. Obrutchev, P. Gudkov, M. Usov, N. Gornostaev, A. Bulynnikov, I. Bazhenov, I. Molchanov, F. Shakhov, A. Kuzmin, and many others). N. Khabarova was awarded the title of Hero of Socialist labour for opening and exploration of gold deposits in the North-East of the country.

В.Г.Язиков (второй слева), вице-президент ОАО «Казатомпром» на приеме иностранных партнеров у Президента республики Казахстан Н.Назарбаева (первый слева).

Yazikov V.G. (the 2nd on the left), vice-president of JSC Kazakhstan Nuclear Industry, at the president Nazarbaev's reception with foreign partners. The president is the first on the left.