



UDC 94: 378.662.014.24(571.16)

THE CONTRIBUTION OF THE REPRESENTATIVES OF THE SIBERIAN (TOMSK) MINING AND GEOLOGICAL SCHOOL TO THE DEVELOPMENT OF MINERAL RAW MATERIAL BASE IN RUSSIA AND ABROAD

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This paper is devoted to the maturation and development of Siberian (Tomsk) mining and geological school - one of the leading schools in Russia, which was created in the first third of the 20th century in Tomsk Technological Institute by V.A.Obruchev and M.A.Usov known to be outstanding Russian and Soviet geoscientists and members of the Russian Academy of Science. The article touches upon the participation of representatives of Siberian (Tomsk) mining and geological school to the exploration and development of mineral and raw material base of Siberia, Russia's Far East, Central Asia. The information about the most important geological discoveries made by nurslings of Siberian (Tomsk) mining and geological school is provided.

Key words: Siberian (Tomsk) mining and geological school, Tomsk Technological Institute, Tomsk Polytechnic University, Siberian Geological Survey, V.A.Obruchev, M.A.Usov, raw materials deposits

How to cite this article: Chubik P.S., Nikiforov S.I. The Contribution of the Representatives of the Siberian (Tomsk) Mining and Geological School to the Development of Mineral Raw Material Base in Russia and Abroad. Zapiski Gornogo instituta. 2017. Vol. 228, p. 688-694. DOI: 10.25515/PMI.2017.6.688

Introduction. In 1901 a mining department was created within Tomsk Technological Institute of Emperor Nicholas II (TTI) known to be the first technical higher educational institution in the Asian part of Russia. A famous Russian geologist and traveller, graduate of Petersburg Mining Institute Prof. V.A.Obruchev was appointed to be the first dean of the department as well as ordinary professor of Geology Chair. This appointment has become fateful not only for Siberia but for the whole country as well. Thanks to overall efforts of V.A.Obruchev, his colleagues and followers in the beginning of XXth century a significant scientific and educational center addressing the issues of geology and mining was formed, the foundation of Siberian (Tomsk) mining and geological school was established; the representatives of Siberian (Tomsk) mining and geological school played a key role regarding research and exploration of natural wealth hidden in the depth of vast territories of West and East Siberia, Far East, Central Asia. The names of the nurslings of this school may be related to the discovery of hundreds of deposits, exploration of Kuzbass and other Siberian coal basins, foundation of such giants of Russian industry as Kuznetsk Metallurgical Plant and Norilsk Mining and Metallurgical Plant, formation and development of West Siberian oil and gas complex, exploration of raw material resources for nuclear industry.

V.A.Obruchev – a founder of Siberian (Tomsk) mining and geological school. In the beginning of the XXth century Siberia remained a sort of «terra incognita» regarding geological aspects. The exploration of natural wealth of Eastern territories of Russia was restrained due to the lack of geologists and underdevelopment of the state geological system, which was created to implement the organization of works relating to investigation of geological structure of Siberia and exploration of mineral deposits on its territory. The scope of activity of Geological Committee as a part of Mining Department of Russian Ministry of Property Relations (Geolcom) was limited from the boundaries of European part of the country due to small number of staff and deficit of material and financial resources. S.Ya.Edelshtein, a senior geologist of Geolcom, wrote in 1918: «Referring to Siberia we see that Geological Committee has paid less of its attention to this country over the first 25 years of its own existence not because the country was not considered to deserve it but due to the physical impossibility to serve such a huge territory» [3]. There were not many geologists in the Russian Empire. In comparison with other countries considering the number of geologists relating to the territory equal to the European part of Russia we may see that in England there were 100 times more geologists than in Russia, in Austria – 51 times more, in Italy – 15 times more [5]. When in 1888 V.A.Obruchev was assigned to the position of geologist for Irkutsk Mining Authority he occurred to be the only staff geologist for the whole territory of Siberia.



Engineering training of geologists in Russia in the second half of the XIXth century was conducted in a «single-piece» regime and was concentrated mainly in Petersburg Mining Institute. Specialists in the area of mineralogy, paleontology and geology, graduated from natural departments of physical and mathematical faculties, from a range of Russian universities (Moscow University, Petersburg University, Kazan University, Dorpat University, etc.), however graduates could have become geologists only after extended education in master courses at the Chairs of Geology and further defense of a corresponding thesis [5].

Under such conditions the foundation of mining department in 1901 in the newly-formed Tomsk Technological Institute became an important step regarding the development of mining and geological education and mining and geological science in Russia. For the first time ever, the base of training and preparation of highly skilled specialists in the sphere of mining and geology was to the greater extent moved closer to the territories for the investigation and exploration of which these specialists were dedicated.

Scientist-geologist, the future Member of the Academy of Science of USSR Vladimir Afanasjevich Obruchev played an important role in the foundation of a new mining and geological scientific and educational center. In spring 1901 the director of TTI E.L.Zubashev addressed to Ivan Vasilievich Mushketov – senior geologist of Geological Committee and professor of Petersburg Mining Institute, with the request to recommend a candidate for the position of a Dean of Mining Department. Ivan Vasilievich proposed his follower Vladimir Obruchev, graduate of Mining Institute, as a candidate. By this time a 38-year old V.A.Obruchev had already been a famous researcher of Siberia, a participant of expeditions around Central Asia under the guidance of I.V.Mushketov and G.N.Potanin. At the same time he did not have any scientific degrees and academic titles signing simply like a «mining engineer». Having received a proposition from E.L.Zubashev to be a Head of Mining Department and a Chair of Geology in TTI, V.A.Obruchev agreed after some hesitance. On the 1st of July 1901 V.A.Obruchev was assigned to carry duties of ordinary professor in the Chair of Geology and since the 9th of October he was elected as a Dean of TTI Mining Department.

Since the very first days spending in Tomsk Technological Institute V.A.Obruchev with all of his thoroughness started to organize educational and scientific work at the Mining Department. He documented terms of reference for design of mining campus building (construction of it was finished in 1905), he was actively engaged in creation of library and collections of geological, mineralogical and paleontological museums, composed education plans, selected staff for newly opening chairs of mining and geological cycle. At his invitation young and prospective scientists and professors arrived in Tomsk. The professional staff base of new department was composed by graduates of Petersburg Mining Institute. In 1902 L.L.Tove, a graduate of Mining Institute of 1884 and a mining engineer, was chosen to carry duties of extraordinary professor at the chair of mining art; he started the first in Russia independent course of lectures for students about «Golden Art». In 1903 P.K.Sobolevsky, a graduate of Mining Institute of 1898, was approved to be a Staff Academician of Geodesy and Survey Art (from 1911 he fulfilled the duties of TTI extraordinary professor and then – a professor of Moscow Mining Institute, a founder of Russian school of mining geometry). Future professors S.Yu.Doborozhinsky, P.P.Gudkov, D.V.Frost, mining engineers V.D.Ryazanov, G.F.Ovsyannikov and others are among graduates of Petersburg Mining Institute, invited by Obruchev to work for Tomsk Technological Institute.

In 1908 twenty first Siberian mining engineers graduated from TTI, 9 engineers of them had mining speciality, 5 engineers had ore speciality and 6 engineers had geological exploration speciality [10].

V.A.Obruchev paid a great significance to the organization of scientific work regarding investigation of geological structure of Siberia and neighboring territories as well as to practical issues relating to research and exploration of mineral resource deposits where not only professors and staff but also TTI students were engaged. «There is no, I guess, a region in Siberia where geologists of TTI had not worked... Over the last 15 years all the regions to be the most important in mining sense were studied to some extent by geologists from Tomsk», – noticed later Obruchev's follower M.A.Usov, member of the USSR Academy of Science [2]. So, the territories of Kuznetsk Ala Tau



with the gold ore deposits were explored by TTI professor P.P.Gudkov, the territories of Altai – by professor L.L.Tove. In 1910-1911 following the request of Russian Gold Mining Community P.P.Gudkov together with V.A.Obruchev participated in the geological expertise of golden ore deposits in Western Siberia. In summer 1913 Prof. P.P.Gudkov has been working in gold-bearing regions of Zaisansky parish of Semipalatinsk area and Mongolian Ala-Tau. Between 1913-1915 P.P.Gudkov guided a geological exploration works in Telbessky iron-ore region where a Public Company «Kopikuz» («Kuznetsky Coalery») was planning to organize a huge metallurgical enterprise. A great contribution in the exploration of Kuznetsky and Cheremhovskiy coal basins was made by TTI professors S.Yu.Doborozhinsky, M.A.Usov, M.K.Korovin and relating to the exploration of Yenisei golden ore basin – by professor B.L.Stepanov [9].

V.A.Obruchev undertook three scientific expeditions for geologic exploration of territories of Frontier Dzungaria (1905, 1906 and 1909), participated in the investigation of gold-ore placers and deposits in the South and East of Siberia. Materials gathered by V.A.Obruchev during his work in Siberia became a basis for creation of fundamental proceedings – «Geology of Siberia» in three volumes, which is called a Geological Encyclopedia of Siberia and a Handbook for Geologists who were engaged in the investigation of Siberia.

An honorary degree of the founder of mining and geological science in Siberia rightly belongs to V.A.Obruchev. He has left behind scientific developments and experience in many directions of geology and a pleiad of successors who continued his work. After his departure to Moscow in 1912 V.A.Obruchev constantly kept in contact with TTI, sent reprints of his works, interested in works of Tomsk natives. Many years later on the eve of the 40th anniversary of opening of the Institute (1940) he wrote: «Recalling years of professorship in Tomsk with the sense of complete satisfaction. A school of geologists graduated from Tomsk Institute enlarged to many dozens of people and performed huge works of investigation of Siberia and its natural wealth» [4].

Sibgeolcom and «Usovsky Period» of Siberian geology. By 1912 97 degreed mining engineers graduated from Tomsk Technological Institute, including 25 geologists, 4 mining surveyors, 41 mining engineer and 27 metallurgists [14]. Many of TTI nurslings of «Obruchev's Intake» managed to reach significant scientific and professional achievements. The representatives of the first graduating class of mining engineers of 1908 became professors of TTI and other Russian universities; among them were M.A.Usov, N.S.Penn, D.A.Strelnikov, A.V.Arsentiev. After V.A.Obruchev left, position of Geology Chair leader was taken up by his follower professor P.P.Gudkov.

Pavel Pavlovich Gudkov (1881-1955) was a brilliant scientist, pedagogue and administrator. after graduation of Petersburg Mining Institute in 1907 he accepted an offer to become a senior laboratory assistant at TTI Mining Department upon the recommendation of V.A.Obruchev's fellow student, famous geologists and traveller K.I.Bogdanovich. In 1913 he was chosen to be an extraordinary professor at the Geology Chair [8]. In 1918 P.P.Gudkov took the lead in organization of a special geologic establishment for systematic investigation of geologic structure, mineral and raw material resources of Siberia – Siberian Geological Committee (Sibgeolcom). Personally P.P.Gudkov became a Head of this establishment and had a role of key personnel of it belonged to collaborates and graduates of Tomsk Technological Institute: M.A.Usov, A.V.Lavrusky, N.S.Penn, M.K.Korovin, B.L.Stepanov, A.M.Kuzmin, K.E.Gabuniya, N.N.Urvantsev and others.

By the end of 1919 P.P.Gudkov left Tomsk and Russia. A position of Head of Sibgeolcom (from 1920 – Siberian Department of Geological Committee of RSFSR and from 1927 – West Siberian Department of All-Soviet Union Geolcom) was taken by Professor of TTI M.A.Usov [13].

Sibgeolcom played in 1920s a significant role in geologic investigations and development of productive forces of Siberian region. In 1919 about 11 expeditionary units worked in accordance with its programs. In particular, M.A.Usov investigated the area of Anzhero-Sudzhensk coal pit; B.L.Stepanov studied manganese exposure in the upper reaches of Tom River. Dealing with the task of Sibgeolcom of coal deposit prospecting in the lower reaches of Yenisey river, N.N.Urvantsev found cooper-nickel ores of unique Norilsk deposit [6]. With this expedition a special biography chapter of TTI graduate of 1918 Nikolai Nikolaevich Urvantsev started, he is known



to be an outstanding geologist, polar explorer, one of the pioneers in Norilsk ore basin exploration and investigation, founder of a future Norilsk City.

During 1920-1930 almost all main geological works in Siberia and Northern Kazakhstan were designed and performed under direct guidance of Michael Antonovich Usov (1883-1939). He was a head of Telbesbureau Geological Service which was created in 1926 with the purpose of preparation of mineral resource base for Kuznetsk Metallurgical Plant, organized and took over a leadership of prospecting and exploration works in Mountain Shoriya, which resulted in the discovery of new deposits, also M.A.Usov investigated Telbesskoye iron-ore deposit that was considered to be the largest in Siberia for those times.

In the second half of 20s members of Sibgeolcom and Tomsk Technological Institute (from 1925 – Siberian Technological Institute) conducted large-scale works regarding prospecting and preparation for exploration of mineral and raw material base of Kuznetsk Metallurgical Plant. Professor F.M.Galakhov realized magnetometer survey works in iron-ore objects, Professor A.M.Kuzmin prepared for exploration Kaltanovskoye and Salairskoye deposits of segger clays, a deposit of fluxing limestone on demand of metallurgic production. Also A.M.Kuzmin justified a possibility of bauxites indication in Western Siberia Region. Professor V.I.Mostovich, lecturers F.A.Belishev and V.A.Agrenkov performed special laboratory studies of ores, coals, segger clays and mineral waters. Professor F.N.Shakhov studied mineralogy of iron ores of Telbessky and Abakan regions, manganese ores of Mazulskoye deposit. Professor M.I.Kutchin consulted Kuznetskstroy on hydrogeological issues, solved problems of engineering geology and water supply when constructing metallurgic plant. Professor D.A.Strelnikov and future member of the Academy of Sciences L.D.Sheviakov became project leaders in shaft design of Telbesbureau [1].

In 1934 M.A.Usov wrote a paper «To the Methodology of Prospecting of Iron Ores in Mountainous Areas of the Region» which became a basic guideline for conducting exploration works for iron-ore raw materials. All those years M.A.Usov was engaged in the investigation of Kuznetsk coal basin. His works devoted to the issues of Kuzbass areal structure give a complete idea about structure and history of this basin development. His petrographic works dedicated to the description of certain igneous complexes of Siberia are considered to be classical. Works «Fractions and Phases of Intrusives», «Phases of Effusives» published in 1924-1925 won international acclaim [11].

In 1932 M.A.Usov was chosen to be a Corresponding Member of USSR Academy of Sciences and in 1939 he became a Member of USSR Academy of Sciences, therefore he became the first Siberian academician. In 1938 M.A.Usov was assigned to be a director of All-Union Scientific and Investigation Geology Institute, however very soon he left this position due to the health state.

According to the notes of Academician V.A.Obruchev concerning a period of a twenty years of investigation of mineral and raw material resources of Siberia – M.A.Usov played a role of a leader in geologic exploration process; as V.A.Obruchev said, those twenty years «should be truly called an «Usovsky Period» because guidance of M.A.Usov and his personal participation in the research process induced wonderful results both in theoretical and practical relation» [6]. Another Academician S.I.Vavilov making a presentation on the Urals-Kuzbass field session of USSR Academy of Sciences in 1932 specially emphasized achievements of geologists from Tomsk in the exploration of the region: «The fact that the basis of investigation of natural wealth of Siberia formed by natives of Tomsk is known for USSR Academy of Science» (newspaper «Krasnoye Znamya», the 16th of June 1932).

«Usov created a great school of geologists at Tomsk Industrial Institute named by Kirov» – reported in the note of Nature magazine that was published right after passing of Siberian academician (1939. № 3643). Brought up by M.A.Usov a group of young graduates of Tomsk Technological Institute with the specialization in various areas of geology, truly, is a star pleiad of brilliant representatives of Siberian mining and geological school. There were future professors, academicians and Corresponding Members of USSR Academy of Science among them – V.A.Hahlov, K.V.Radugin, L.L.Halfin, A.G.Sivov, I.K.Bazhenov, A.M.Kuzmin, F.N.Shakhov, K.I.Satpaev, U.A.Kuznetsov, A.S.Homentovskiy, G.A.Helkvist, A.Ya.Bulinnikov, M.I.Kuchin, etc.



The participation of the Representatives of the Siberian (Tomsk) mining and geological school in the exploration of mineral and raw material resources in the country and abroad. The followers of V.A.Obruchev and M.A.Usov and further generations of nurslings of Siberian mining and geological school made a considerable contribution in the exploration of mineral and raw material base in the country and near abroad. Suffice to say that starting from 1908 personnel structure of geological survey of Western, Eastern Siberia and Kazakhstan was formed basically by TTI graduates; the number of specialists that was trained during pre-war period was exceeding 540 people [12].

For over then a hundred-year period about 567 representatives of Siberian Mining and Geological School among whom there were 464 graduates of Tomsk Technological Institute (now – Tomsk Polytechnic University) joined the ranks of discoverers of the deposits of raw materials on the territory of Russia and near abroad [7].

We may emphasize the brightest discoveries made by Tomsk natives. A special place among these discoveries belongs to Norilsk cooper-nickel ores deposit due to the fact that ores of it contain also cobalt, gold, silver and platinoids. Today this ore region, which was explored by N.N.Urvantsev includes the following deposits: Norilsk-I, Norilsk-II, Talkhanskoye, Oktyabrskoye, etc. G.G.Rempel, a graduate of 1995 of Geologic and Exploration Department of Tomsk Polytechnic Institute, became one of the first explorers of the Oktyabrskoye deposit. Today Norilsk-I, Talkhanskoye and Oktyabrskoye deposits are main raw material base of PLC «Mining and Metallurgical Company «Norilsk Nickel».

World's largest copper-ore deposit of Dzhezkazgan was explored and developed by K.I.Satpayev, TTI graduate of 1926, who afterwards became an Academician of USSR Academy of Science and First President of Kazakhstan Academy of Science, Laureate of Lenin and State Awards. Moreover, he developed a methodological basis for and composed a forecast metallogenic map of Central Kazakhstan, which is considered to be unique and with no counterparts; this map allowed to open more than 330 deposits of ferrous metals, non-ferrous metals and rare metals that now are a basis of Kazakhstan economics and production sphere. Tomsk Polytechnic Institute (TPI) graduates explored such deposits in Kazakhstan as poly-metallic deposit of Anisimov kluch (V.E.Golubtsov), Artemievskoye (V.E.Golubtsov, V.S.Kuzebny), Malinovskoye (N.N.Kim); deposit of titan ores – Karaotkel (O.A.Evstigneev, M.M.Kravtchenko); wolfram deposit – North Katpar (A.K.Mazurov), Bayan (A.K.Sheyanov), Karaoba (O.A.Sinev); deposit of copper and molybdenum – Karatasskoye (A.T.Sitko); uranium deposit – (A.A.Abakumov, S.P.Nilolaev, L.G.Pavlov, etc.); deposit of industrial diamonds – Kumdikolskoye (U.A.Podkuyko) and others.

TPI Graduates U.N.Glazirin, E.I.Vrublevich and A.T.Stebleva were awarded with Lenin Prize (1967) for the discovery and exploration of a huge Gorevskoye polymetallic deposit in Krasnoyarsk region. TPI graduates A.M.Prusevich, A.Ya.Bulinnikov, I.K.Bazhenov and S.S.Mikhailov discovered Kiya-Shaltirskoye deposit of nephelinic ores at Kuznetsk Alatau, which is used for the needs of Atchinsk aluminous plant to get aluminous without preliminary ore dressing. Unique Sinnirskoye deposit of potash and aluminous ores in Zabaikalie was discovered by TPI graduate A.S.Pak; a large-scale deposits of copper and molybdenum in Khakasia – Sorskoye and Ipchulskoye were discovered by V.D.Tomashpolskaya, I.S.Tseiklin, L.G.Pospelov, A.A.Mesyaminov. Among the first discoverers of Aktashskoye deposit of azogue (Mountain Altai) was TTI graduate V.A.Kuznetsov, Academician of USSR Academy of Science. Under the guidance of Professor F.N.Shakhov, Corresponding Member of USSR Academy of Science and TPI graduate, a School of Geology and Geochemistry of Rare and Radioactive Elements was created; the representatives of this School became the first explorers of several uranium deposits. Continuing the best traditions of mining and geological school founders in the investigation of gold mineralization of Siberia a large number of the deposits of this noble and precious metal was discovered by the graduates of this school. For the discovery of one of these deposits in the North-East of the country a graduate of TPI N.E.Khabarova was entitled a Hero of Socialist Labor (1981). The following graduates of TPI were involved in the discovery of diamonds deposit: A.G.Ivanov (pipe «Intertatnional», Yakutia), V.A.Medvedev (Arkhangelsk deposit in the Arkhangelsk region).



The foundation for the development of metallurgic production in Kuzbass was composed by the deposits of iron ore, quartz rocks, seggar clays, moulding sand and deposits of other raw materials, which were discovered under the guidance of TTI Professors M.A.Usov and A.M.Kuzmin. In 1930 in the area of Mountain Shoriya the deposits Tashtagolskoye and Shalimskoye (U.A.Kuznetsov, K.V.Radugin and others) were opened being a part of the Kondomskaya Group of iron-ore banks. A range of largest-scale iron-ore deposits in the Eastern and Western Sayans were discovered by TPI graduates: Krasnokamenskaya group of deposits (A.A.Mesyandinov, V.V.Bogatsky, etc.), Anzasskoye deposit (E.S.Sergeeva, V.N.Dovgal), Volkovskoye (E.S.Edintsev). In 1960 Sredne-Angarsk iron-ore region was discovered (N.N.Dashkevich, G.S.Starudubov). For the opening of huge Usinsk deposit of manganese ores (Kemerovo region) Professor of Tomsk Industrial Institute K.V.Radugin was awarded a Stalin Prize in 1943.

A significant contribution in the development of raw materials base of coal industry of the country was made by the representatives of Siberian (Tomsk) mining and geological school. Intensive geologic and exploration works leded by M.A.Usov and M.K.Korovin allowed to discover in a pre-war years several large deposits of Kuzbass coal basin including Kedrovo-Krokhalevskoye, Berezovo-Birulinskoye (V.I.Skok and others), coal-bearing areas with the crozzling and power-generating coals in Prokopievsk-Kiselevsk, Tom-Usinsk, Mrassk, Kondomsk, Osinsk and other Kuzbass regions (I.I.Molchanov, V.A.Hahlov, I.N.Zvonarev, V.V.Stanov, etc.) In 1947 I.N.Zvonarev, I.I.Molchanov, V.I.Skok, V.V.Stanov were awarded with Stalin Prize. For the discovery and exploration of coal deposits of Kansk-Atchnsk basin N.I.Rubanov, G.G.Pozdniakov, N.P.Pavlenko, V.V.Ponomarev were recognized by State Prizes of USSR in 1981; in 1988 V.V.Gladisheva was awarded for the opening of Shubarkolskoye deposit of coal in Karaganda region of Kazakhstan.

Nurslings of mining and geological school created by V.A.Obruchev and M.A.Usov took a very direct participation in the opening of largest deposits of oil and gas in Western Siberia. For the scientific justification of the prospects of oil-and-gas bearing capacity of West-Siberian low-lying area and for the discovery of the first, in this province, Berezovsky gas-bearing region, Professors of TTI M.K.Korovin and V.P.Kazarinov became Laureates of Lenin Prize in 1964. TTI graduate G.P.Bogomiakov was recognized in 1970 by Lenin Prize for the discovery of unique deposits of oil-and-gas and gas condensate in Western Siberia including Samotlorskoye and Yamburgskoye ones and A.M.Brekhuntsov, E.A.Tepliakov, M.P.Glushnev were awarded with State Prizes of USSR. Only in Tomsk area in the period from 1962 to 2007 there were discovered about 79 oil-and-gas deposits with the participation of TPI graduates [7].

The representatives of mining department of Siberia (Tomsk) mining and geological school managed huge enterprises of mining and ore, coal and metallurgic industry of the country. There were the Heroes of Socialist Labour among these people: B.N.Zherebin – director of Kuznetsk Metallurgic Plant, V.Ya.Oplanchuk – Director of Leninabadsky Mining and Chemical Plant, V.P.Romanov – Head of «Kuzbassugol» Plant, V.G.Kozhevin – Director of «Kemerovougol», M.N.Markelov – Director of «Vostsibugol», V.I.Vorobiev – Director of «Kuzbasshahstroy», etc. A mining engineer M.I.Shadov, who is a graduate of Supreme Engineer Courses of Tomsk Polytechnic Institute, was a Head of USSR Ministry of Coal Industry during some period. M.V.Kurlenya, G.I.Gritsko, T.F.Gorbachev, N.A.Chinakal, G.V.Polyakov, E.V.Pinneker have become Prominent Scientists in the area of mining engineering; all these people were TTI graduates, Academicians and Corresponding Members of USSR Academy of Science.

Conclusions. Over 110 years from the very first graduates left Tomsk Technological Institute, more then 20 thousands of specialists in the geology sphere and mining engineering area were trained, 30 nurslings of mining and geological exploration faculty became Academicians and Corresponding Members of USSR Academy of Science, Russian Academy of Science, national academies of USSR republics and CIS, 23 persons were awarded a distinguished title of Hero of Socialist Labor, about 70 people became Laureates of Lenin Prize, State Prizes, the Prize of the Government and the President of Russian Federation, more then 170 people became Professors and Doctors of Science, over 1000 obtained PhD degree.



A key advantage of the created and acting in Tomsk mining and geological scientific and educational center is its territorial proximity to the largest deposits of raw materials situated in the Asian part of the country as well as to the enterprises of development and mineral resources processing.

Traditions established by the founders of Siberian (Tomsk) mining and geological school continue up to this day. Currently the training of specialists is in «Applied Geology», «Technologies in Geological Exploration», «Mining Engineering», masters in «Geology». Under the Double-Degree program, in tandem with Heriot-Watt University (Edinburgh, Great Britain), the training of masters in «Geology and Geophysics Problems of Oil-and-Gas Deposit Exploration» is led.

All the books and educational guides, instruments, collections of minerals and ancient organisms in TPU, gathered by V.A.Obruchev, M.A.Usov, their colleagues and followers are carefully kept and used in the educational process. There was created a Memorial Museum devoted to V.A.Obruchev and M.A.Usov; this Museum is situated in the cabinet where these outstanding scientists were working. After the first year at university students-geologists have geodesic and geological training in the surroundings of Tomsk; the same way this training was organized for the first students of Mining Department of Tomsk Technologic Institute in the beginning of XXth century. Mining engineers geologists graduated from Tomsk Polytechnic University are highly demanded, have quick professional promotion and are playing a prominent role in the activities of leading Russian and foreign geologic organizations, mining and development and oil-and-gas companies.

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This paper was accepted for publication on 30 October, 2017.