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METALLURGISTS OF THE MINING UNIVERSITY AND DEVELOPMENT OF MONETARY INDUSTRY. 245 YEARS OF HISTORY

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Monetary industry combines several stages of metallurgical processes, which are continuously improved with the development of technology and the level of knowledge in the field of non-ferrous metals. The graduates of the Mining Institute, metallurgists of several generations, took part in establishment the Mint and development of technology to produce coins. Since January 24, 1718, when Peter the Great signed the decree «on production of small and large coins ...», the history of the monetary system of Russia and the coining of the first silver rubles began, which subsequently formed the basis of money relations. Twenty-four graduates of the mining and metallurgical departments of the Mining University worked as heads and münzmeister of the Mint. Silver rubles and work of Russian münzmeisters provided financial stability in Tsarist Russia from 1718 to 1917 and laid the foundation for further development of the monetary industry, taking into account new knowledge in the field of enrichment, preparation of polymetallic ores and their melting, and also stamping and processing of precious metals. This is the history of Russia and St. Petersburg, it combined the history of the Mining University, which this year will be 245 years old. It is of scientific interest to restore historical justice and update the methodological knowledge in the field of technology of monetary industry and metallurgical processes

Key words: Mining Institute, metallurgy, münzmeister, coins, silver, Mining Museum, coinage

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Introduction. At the beginning of the 18th century, Peter the Great began the revival of mining industry in Russia. He paid special attention to this issue and in 1700 established the Chamber of Mines. This institution laid foundations for development of the mining and metallurgical industry at a qualitatively new level. At the same time, Peter the Great realized that the progressive development of these industries was hindered by the absence of professionally trained metallurgy specialists in Russia. The tsar was forced to invite metallurgy engineers from Europe and pay them high salaries. However, the monarch found a way to get some benefits: under the contract, a foreign specialist was required to train several Russian foremen. Thus, the foundation was laid for the creation of a corps of Russian engineering personnel [7].

During the reign of Peter the Great, many metallurgical processes and machinery began to develop, for example, the mints started to have several types of machines: for milling strips, cutting coins, edge-rolling (knurling patterns or inscriptions on the edge of the coin) and coining. Basically, these were mechanisms that acted by the force of falling weight. «Hammer» and machine tools replaced the anvils and coiners in production processes, and later they were displaced by more advanced screw presses. Coins made from three metals – copper, silver and gold – had the portrait of the emperor, and they are of interest for systematic scientific research.

History of participation of metallurgists of the Mining Institute in the development of the monetary industry. The date of foundation of the Mint (today the St. Petersburg Mint – SPM) is considered December 12, 1724, although the coining started 300 years ago. Peter the Great issued a decree and ordered «to make gold coins in St. Petersburg in the fortress». Coin production was organized on the territory of Peter and Paul Fortress (Fig.1). The coins started to have the abbreviation «S.P.B.», which was the identification mark of St. Petersburg coinage up to 1914 [4].

The technique of coin production at the first stages of the monetary industry was borrowed from European states. Russia needed to develop its own technologies based on a thorough research of metallurgical processes, from enrichment and preparation of silver ore to melting to coining (metal treatment under pressure). There was a need to train specialists in the field of metallurgy.

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Fig.1. St. Petersburg Mint



Fig.2. Mining School

The first students admitted to the Mining School on June 28, 1774, were 19 students of Moscow University. The School enrolled students who had already studied the basics of Chemistry, Arithmetic and Geometry, German, French and Latin languages (Fig.2).

The training of the first students of the Mining School in the areas of monetary industry, assaying, mining and metallurgy began with the help of one of the first heads of the Mint, Ivan Andreevich Schlatter [2] (Fig.3).

In 1725, I.A.Schlatter came to work in St. Petersburg Mint, and in 1726 he was appointed as a munzwardein (the head of the assaying section). Four years after the start of coinage, St. Petersburg Mint was closed, as it was cheaper to produce coins in Moscow, and I.A.Schlatter was transferred to Moscow. In 1736 I.A.Schlatter wrote first books on assaying and coinage (in Russian), which were published in St. Petersburg printing house of the Imperial Academy of Sciences in 1739 and became the main schoolbooks for metallurgical students Mining School.

In 1737 the Empress Anna Ioannovna ordered to transfer half of the monetary industry back to St. Petersburg [3]. I.A.Schlatter came from Moscow and found Trubetskoy Bastio in a precarious state. However, his professional experience and organizational skills allowed to start coinage already in 1738. In 1740 on completion of the Mint restoration I.A.Schlatter was promoted to collegiate counsellor and planned the establishment of an educational institution which activities would relate to mining [8]. I.A.Schlatter died before the opening of the Mining School but made a significant contribution to training of future students of metallurgy.



Fig.3. I.A.Schlatter

After graduating from the Mining School, students were sent to work in state mining, metallurgical and engineering enterprises and, of course, in the mints of the Russian Empire.

Münzmeisters of the Mint. The St. Petersburg Mint was headed by mining engineers in the position of münzmeister. Münzmeister is an official appointed to control and observe state interests in the production (coining) of coins, only specialists with special metallurgical education were appointed for this post. The münzmeister was personally responsible for the quality of coins, its weight, as well as for the compliance of precious metals. Two or three münzmeisters worked simultaneously in St. Petersburg Mint. In this case, the initials of the younger münzmeister were pressed on coins. So, for example, in 1778, Lieutenant Yakov Petrovich Chernyshev was on a higher münzmeister position, and had two supporting münzmeisters: Fyodor Fyodorovich Lesnikov and Ivan Karlovich Zatler (Zaitsev). But only Fedor Lesnikov's initials were put on coins [10].

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The joint work of scientists and specialists of the Mining University and the Mint allowed to find out the names of the münzmeisters of St. Petersburg Mint, who graduated from the Mining School (then the Mining Cadet Corps). The first mention of the Mint münzmeister, who graduated from the Mining School, was found in the archives of the St. Petersburg Mining University. He was Mikhail Mikhailov, a graduate of 1777, who was appointed to this position in 1783. In 1812 Mikhail Fedorov started to work at the Mint as a münzmeister, he worked at this position for 10 years.

More than 100 years, until 1927, St. Petersburg Mint was headed by mining engineers working as münzmeisters, all of them were graduates of the Mining Cadet Corps (St. Petersburg Mining University). The carried out analytical study of archives of the Mining Museum made it possible to establish a connection between the graduates of the Mining University (metallurgical majors) and the activities of the Mint (see table) [9].

Graduates of the Mining Universities who worked at St. Petersburg Mint as münzmeisters

Münzmeister initials	Pictures of coins by periods	Names of münzmeisters	Mining University graduation year	Years of service
MM		Mikhail Mikhailov	1777	1783-1784
MF		Mikhail Fedorov	1799	1812-1822
PD		Pavel Danilov	1809	1820-1838
ACh		Aleksey Chadov	1817	1839-1843
KB		Konstantin Butenev	1826	1844-1845

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Continuation of the table

Münzmeister initials	Pictures of coins by periods	Names of münzmeisters	Mining University graduation year	Years of service
AG		Aleksandr Gertov	1823	1846-1857
PA		Pavel Alekseev	1834	1846-1852
NI		Nikolay Iossa	1838	1848, 1852-1855, 1866-1878
FB		Fedor Blum	1831	1856-1861
PF		Pavel Follendorf	1815	1858-1862
MI		Mikhail Ivanov	1853	1861-1863
AB		Aleksandr Belozerov	1852	1863

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Continuation of the table

Münzmeister initials	Pictures of coins by periods	Names of münzmeisters	Mining University graduation year	Years of service
AS		Aggey Svechin		1864-1865
NF		Nikolay Follendorf	1858	1864-1866, 1877-1882
SSh		Sergey Shostak	1856	1865-1866
DS		Dmitry Sabaneev	1866	1882-1883
AG		Appolon Grasgof	1866	1883-1899
FZ		Feliks Zaleman	1877	1899-1901
AR		Aleksandr Redko	1880	1901-1905

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End of the table

Münzmeister initials	Pictures of coins by periods	Names of münzmeisters	Mining University graduation year	Years of service
EB		Elikum Babayants	1894	1899, 1906-1913
VS		Viktor Smirnov	1898	1912-1917
AG		Artur Gartman	1906	1920-1922
PL		Petr Latyshev	1907	1922-1927

The most difficult work at the post of the münzmeister fall of the shoulders of two graduates of the Mining Institute, Artur Fedorovich Gartman and Petr Vasilievich Latyshev.

In 1906, A.F.Gartman right after graduation started to work at assaying section of St. Petersburg Mint. He studied all technological processes of the enterprise, and in 1917 he managed to organize a coinage of copper coins near Moscow.

P.V.Latyshev graduated from the Mining Institute and since 1903 he worked at the Mint, and already since 1911, he headed two important divisions – medal and auxiliary units. In 1916 he was appointed at the position of assistant manager of coin production areas. And together with A.F.Gartman he was dismissed in 1918 [5].

In 1917, the Russian Empire is at a turning point. The events of 1917 influenced such a huge enterprise as the Mint with large routine staff and production areas, which amounted to more than 7 thousand square meters. In early 1918, the Mint completely stopped its main production, but the shutdown lasted not so long, in the autumn of the same year A.F.Gartman was invited to the Mint to resume production. The resumption of its activities was connected with the preparation of the first monetary reform of 1922-1924 in Soviet Russia. From 1920 to 1922 Gartman headed the coin production, and his initials – «AG» – were placed on the edges of the first coins of the Soviet state. The appex of his mining career was the appointment as the head of Petrograd Mint in the summer of 1922, he invited P.V.Latyshev to work to replace him, his initials – «P.L.» – were pressed on silver and gold coins of the USSR in 1922-1927 [11]. P.V.Latyshev accepted all the hardships for the technical reorganization of coin production and the implementation of the program of the first monetary reform of 1922-1924 [6].

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In 1924 due to renaming of Petrograd, the Mint was renamed to Leningrad Mint (LM). In the 1920s and prewar years, the Mint developed and introduced into mass production new types of products: military medals made from precious metals, badges, gold bars and disks for denture treatment. In the same years the Mint fulfilled several orders for foreign countries, this also influenced the development of the level of science and technology in the field of metallurgy [1].

The monetary reform of 1922-1924 suddenly aroused interest in gold and silver, and in 1922 the population could use the Tsar's gold and silver coins for sale and purchase of various goods and services, and government agencies started to accept payments in tsarist gold coins. At the same time the coining of silver coins of the RSFSR continued. The coins of the RSFSR of 1922 practically did not differ from the coins of the RSFSR in 1921, they only changed the date to «1922» [8]. In addition, on coins of the RSFSR of 1922, with a nominal value of 1 ruble, two variants of the inscription on the edge appeared: «PURE SILVER 4 ZOLOTNIK 21 FRACTIONS (A.G.)»; «PURE SILVER 4 ZOLOTNIK 21 FRACTIONS (P.L.)».

After the decree on the transition from zolotnik to metric system A.F.Gartman and P.V.Latyshev were assigned the task of organizing the transition of the production of the St. Petersburg Mint from the zolotnik to metric system [2]. Zolotnik is a Russian unit of weight, which is 4.266 g, or 1/48 of a grivenka, or 1/96 of the Russian pound. The word «zolotnik» came from an ancient Old Russian gold coin – zlatnik that weighed 4.2 grams [12]. Zlatniks are the first Russian gold coins that were minted in Kievan Rus in the late X – early XI centuries. In appearance, coinage and weight, the zlatniks looked like Byzantine solids, which were strong and massive gold coins of a very high purity of gold weighing 4.55 g. The zolotnik system used 92, 72, and 56 rates of gold. After 1927 there was a transition to the metric system of rates, which shows the amount of precious metal per 1000 parts of the alloy, and today it operates in modern Russia [6].

The fates of A.F.Gartman and P.Latyshev are in many respects similar and tragic, both died in the besieged Leningrad, both left a notable mark in the history of Russian numismatics.

In the journal «Zapiski Gornogo institute» the archivist of the Mint, M.I.Smirnov, published an article [7] on biographies of five graduates of the Mining Institute in the nineteenth and twentieth centuries, one of which was his grandfather. All of them worked at St. Petersburg Mint, improving their theoretical and practical skills in the field of metallurgical processes, and they left a notable mark in the history of the Mint. Analyzing the 245-year history of professional communication between the Mining University and the St. Petersburg Mint, we can safely say that for many years the graduates of the Mining University were highly demanded professionals, who actively developed the monetary industry of Russia and held high and important positions at the Mint.

Conclusion. The analytical study was conducted, and the historical and scientific relationship of the St. Petersburg Mint with the Mining University was established, it influenced the formation and development of metallurgical processes in the field of precious metals and coinage during the 245-year history.

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