

SOURCE STUDY AND HISTORICAL MATERIALS FROM THE POINT OF VIEW OF THE HISTORY OF METALLURGY

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Abstract. To date, a scientific study that studies the formation and development stages of mining production as a holistic scientific topic has not been covered in modern historiography. This situation was the main reason that prompted us to conduct scientific research in this direction at the level of the selected topic. In this article is analyzed this issue.

Key words: metallurgy, mining, source studies, historiography, fossils

Introduction. The first written information about the mineral resources of Uzbekistan is found in the Avesta, Greco-Roman sources, in the writings of the Achaemenid period, and in ancient Chinese and Persian-Arabic sources.

Analysis and results. Analysis of the information in the Avesta work shows that metalworking and weaponry were one of the most developed industries in Central Asia from ancient times. In various sections of the Mehr Yasht part of the work, there are allusions to the use of weapons, their production, and the help of Mithras in it, which allows us to gain an understanding of the types of weapons produced in the region in the field of weaponry at that time. For example, in the sixth section of the Mehr Yasht - sharp spears, in the eighth section - eagle feather arrows, bows, stones flying from the shaft, - blades, axes are described¹.

The reliefs of the Persepolis Palace and the Naqsh-e Rostam Rock, which date back to the Achaemenid period, depict the appearance, headgear, and weapons of the Khorezmians and the Sakas. Among them, the carved reliefs on the walls of the palace of the Iranian kings Darius I and Xerxes in the ancient city of Persepolis depict scenes of various groups of people paying tribute to the Achaemenid rulers.

¹Авесто: Яшт китоби. / М. Исмоков таржимаси. Тошкент: Шарқ, 2001.-Б.51,53.

The seventeenth group is the Khorezmians, who are depicted bringing a dagger, a battle axe, bracelets, and a horse as tribute².

If we analyze the information in ancient Persian rock inscriptions and bas-reliefs from the Persepolis palace, as well as Greco-Roman sources, in the 6th-5th centuries BC, the peoples living in Khorezm and the Aral Sea region, in addition to offensive weapons such as bows, spears, swords, daggers, and battle axes, began to prepare protective weapons for warriors, such as golden belts around their waists, helmets, shields, and metal armor on their heads³. In Khorezm, the introduction of iron shields instead of bronze and copper shields from the 4th century BC was one of the factors accelerating and strengthening the process of manufacturing protective armor.

The inscriptions written in the palace of the Achaemenid kings in Susa also contain information about gold and other rare metals and precious stones brought from Bactria, Sogdiana and Khorezm. In particular, from these inscriptions we can learn that gold was brought from Bactria, lapis lazuli and "sanaubar stone" from Sogd, and a stone called "akhshayna" from Khorezm was used in the construction of the palace⁴.

Herodotus wrote that the Massagetae had many gold and copper deposits, but that they did not use iron and silver because these metals were not available in their country⁵. Herodotus describes the Sakas in the army of King Xerxes as follows: "The Sakas (Scythians) wear a pointed, erect cap, trousers, and are armed with a Sakan bow and dagger. They also have a double-edged war axe-sagaris"⁶.

The Chinese ambassador Zhang-Xiang, who arrived in Central Asia in the 2nd century BC, wrote that the ancient Fergana people did not know how to smelt cast iron, and that the Chinese taught them⁷. Whether the peoples of Central Asia learned to smelt and cast iron from the Chinese or whether this was an art known to them before, in any case, they knew how to mine iron ore, smelt it to make iron and cast iron, and make various objects from it, as clearly

² Уилбер Д. Персеполь. Археологические раскопки резиденции персидских царей / Перевод с англ. Е.Л.Власовой. – М.: Наука, 1977. – С.70-71.

³ Литвинский. 1972, 126-бет

⁴ Луин Б.В. История Узбекистана в источниках. –Т.: Фан, 1984. С.11-12.

⁵ Геродот. История. В девяти книгах. /Пер. с греческого и коммент. Г.А. Стратановского. –М.: "ОЛМА-ПРЕСС Инвест", 2004. С.117.

⁶ Геродот. История. В девяти книгах / Перевод Г.А. Стратановского. –Л.: Наука, 1972. VII -том. –С 64.

⁷ Бичурин И. Собрание сведений о народах обитавших в Средней Азии в древние времена. –СПб.,1851. Т. III. –С.61-62.

shown by Zhang-Hsiang's data. Plutarch, in his report on Parthia, notes that the armor of the Parthians was made from the steel of Margiana⁸.

Strabo (1st century BC) emphasizes in his information that silver was completely absent in the land of the Massagetae, iron was rare, and copper and gold objects were abundant⁹. The Roman historian Pliny (1st century) wrote about turquoise, a rare, precious stone that was often found in the land of the Sakas (in the Tashkent oasis)¹⁰. It was used to make various ornaments and jewelry.

The famous Indian epic "Mahabharata" contains information that the Tohars brought iron to India. According to experts, the remains of ancient iron mines found in the mountains of the Surkhan oasis (Kukhitog) also indicate the accuracy of this information. There is a lot of information about the trade and craft relations of the Central Asian regions with Achaemenid Iran and its dependent countries. The peoples of Central Asia made a great contribution to the creation of cultural monuments during the Achaemenid era. According to the inscriptions of Darius, gold was brought from Bactria for the construction of the royal palace in Susa, lapis lazuli and precious stones from Sogdiana, and turquoise from Khorezm¹¹.

The history of the great Han dynasty in China (206 BC - 25 AD) also contains information about the metal and non-metallic mineral resources extracted in Fergana and the Tashkent oasis. According to it, gold and silver were brought to Fergana from China during this period, and the people of Dovan (Fergana) learned from the Chinese the method of producing cast iron from iron¹².

There is also a lot of information about the minerals on the territory of Uzbekistan in the early Middle Ages in Chinese sources. Xuanzang's diary of his travels in Central Asia from 645 and the "History of the Northern Dynasty" mentions the gold, rubies and lapis lazuli of Badakhshan, the black salt of Khorezm, the five different colored salts extracted from the lower reaches of the Zarafshan River, and a source from 751 mentions the mercury, iron and gold deposits in Rakhon (Fergana)¹³.

⁸Кошеленко и др, Древнейший Мерв в свидетельствах письменных источников //Сборник документов (Составители Кошеленко Г.А., Губаев А., Бадер А. Н., Гаибов В.А.). - Ашхабад. 1994. – С.43.

⁹ Страбон. География в семнадцати книгах. Пер. с греч., вступ. слова и комм. Г.А. Стратановского. –М.: Олма-Пресс, 2004.

¹⁰ Массон М.Е. К истории горного дела на территории Узбекистана. -Т.: 1953. -С.11.

¹¹ Ўзбекистон тарихи. Муаллифлар жамоаси. Масъул мухаррирлар. А.Сагдуллаев, Б.Эшов. –Т. Университет, 1999. 54-бет.

¹² Бичурин Н.Я. (Иакинф). Собрание сведений о народах, обитавших в Средней Азии в древние времена. –Ч.2. –М-Л. 1950. С.154

¹³Массон М.Е. К истории горного дела. -С.14, 19.

Information about the development of the mining industry and the extraction of rocks and minerals in the Tashkent oasis - Chach and Ilok regions was first reflected in the works of medieval geographers and historians. Among them, we can mention the works of At-Tabari (10th century), Ibn Khawkal (10th century), Ibn Khurdadbek, Mahmud ibn Wali (15th century), the work of an unknown author called "Hudud al-Alam" (10th century), and others. These works contain important information about copper, silver, gold and other deposits in the territory of Uzbekistan, in particular, in the Chach and Ilok oasis. Therefore, we will briefly dwell on them. From the very beginning of the development of science in the medieval Islamic world, mineralogy, like many other sciences, developed, and this process largely corresponded to the needs of the socio-economic life of that period. At the time when Caliph Harun al-Rashid founded the "House of the Wise" in Baghdad (early 9th century), his son Ma'mun was the viceroy of Khorasan. It is known that Ma'mun established close ties with famous scientists of Central Asia from the very beginning. Later, during his tenure as Caliph of Baghdad (813-833), he continued these ties. In particular, during this period, the Academy in Baghdad began to operate under the leadership of Muhammad ibn Musa al-Khwarizmi. It was from this period that the science of mineralogy, like other branches of science, began to develop in the Muslim East. The fact that many works were written during this period on various ores and minerals is also an important sign of the development of this field. In his works, the Arab scholar as-Saolibi (961-1038) mentions that minerals were brought to the palace of Caliph Ma'mun and Wasiq in special lead containers covered with ice¹⁴. In the 9th-12th centuries, watermelons were also brought from Khorezm to China in bronze vessels filled with ice¹⁵. This information indicates that in the Middle Ages, special containers made of lead and bronze were made in Khorezm to transport melons to Eastern countries.

Sayyah al-Maqdisi's list of products exported from Khorezm for foreign trade notes that "...locks, bows that the strongest people can use, boats are made and equipped"¹⁶.

In Khorezm, locks, gold and silver-plated saddles and harnesses, and jugans and water jugs were exported for foreign trade in the 10th–14th centuries. Sources indicate that specialized

¹⁴Бартольд В.В. Туркестан в эпоху монгольского завоевания. – Сочинения. Т. I. – М.: «Наука», 1963. – С. 297.

¹⁵Шефер Э. Золотые персики Самарканда. Книга о чужеземных диковинах в империи Тан. – М.: ГРВЛ, 1981. – С. 147-148, 164 (608 с.).

¹⁶МИТТ. – М.–Л., 1939. Т. I – С. 202.

professions such as locksmiths, coppersmiths, and goldsmiths existed in the 10th–11th centuries¹⁷.

In the development of mineralogy in the Eastern Muslim world, the work of Hussein ibn Ishaq "Book of Stones", the work of the Basra encyclopedist al-Qandi "On Precious Stones and Similar Minerals", and the work of ar-Razi "Book of Secrets" play an important role.

We find information about mining in Uzbekistan, in particular in the Iloq oasis, in the works of Arab geographers of the 9th–12th centuries, in the work of the unknown author "Hudud al-Olam", etc. In covering the issue of mining in the Iloq oasis, the works of the same name "Masalik wal mamalik"¹⁸, ("Roads and Countries") by Ibn Khurdadbek, Istakhri and Ibn Hawqal, the work of "Minerology" by Al-Biruni, the work of the unknown author "Hudud al-Olam" ("Regions of the World"), etc. are of great importance. It is known that the work "Roads and Countries" was created by several authors who lived in the 9th century. It is known that the first work of this name was written by Abu Zayd al-Balkhi. Later, another Arab geographer, Abu Ishaq Ibrahim bin Muhammad al-Farasi al-Istakri, significantly supplemented this work and enriched it with new information and called it "Kitab al-Masalik wal-Mamalik". Of the Arab travelers who visited Transoxiana, the information of Abul Qasim Muhammad ibn Hawqal, who left Baghdad in 943 and traveled to all Muslim countries, is of particular importance. During his travels, he met Istakri. Later, he completely revised and supplemented Istakri's work and created the work "Masalik wal-Mamalik" ("Roads and Countries") in 977. In this work, Ibn Hawqal also provides information about the Ilaq mines, noting that there was a mint in Ilaq at this time (in the 9th century), and that the coins minted here were of great importance in internal and external economic relations in the form of large sums of money. Like Ibn Khurdadbek and other Arab geographers, Ibn Hawqal also emphasizes that there were no mints anywhere else in Transoxiana after Bukhara, Samarkand, and Ilaq¹⁹.

The historiography of this topic can be divided into the following three periods:

1. The study of the topic in the second half of the 19th century - the beginning of the 20th century.
2. Historiography of the Soviet era.
3. Historiography of the period of independence.

¹⁷ Якубовский А.Ю. Феодальное общество Средней Азии и его торговля... – С. 3; МИТТ. – С. 202 ; Иброҳимов С. Фарғона шеваларининг касб–хунар лексикаси. – Б.93.

¹⁸ Абу Райхан Беруни. Собрание сведений для познания драгоценностей (Минерология) / Перевод Беленицкого. – Л., 1963

¹⁹ Бетгер Е.К. Извлечение из книги «Пути и страны» Абул Касыма ибн Хаукаля ... – С.24.

On the eve of the Russian Empire's conquest, the mining industry in the Central Asian khanates was in a state of crisis, and the exploitation of rich underground deposits was in a state of simple production²⁰.

It is no secret that one of the main goals of the military subjugation of the Turkestan region by Tsarist Russia was to acquire the rich underground deposits in the region. Therefore, after the conquest of Central Asia, in the late 19th and early 20th centuries, preliminary work was carried out to search for deposits containing useful minerals in the region, the first studies were carried out to study and analyze the history of mining in the Uzbek khanates, and the collected information on this issue was published. Despite this, serious and systematic scientific research on this topic was not carried out during the colonial period.

In Soviet times, the study of ancient deposits and the history of mining production in Uzbekistan began. This process was carried out inextricably linked with the issue of finding places with useful minerals.

In the mid-20s of the 20th century, information was published about ancient deposits in the western ridges of the Kurama Mountains - in Karamazar. Along with historians and archaeologists, geologists, geographers, and mining specialists also participated in the research. In 1924, geologist A.P. Krikov discovered the remains of an ancient metal smelting site in the Nishboshi area. This site and other ancient deposits of the Ilok oasis were later studied by geographer B.N. Nasledov²¹.

In the 20-30s of the 20th century, the activities of a special group of archaeologists within the Tajik-Pamir geological expedition played an important role in the study of ancient deposits of Karamazar. The activities of the group leader, archaeologist M.Ye. Masson, are significant in this. With his direct participation, archaeological research was carried out at ancient deposits and smelting sites. Comparison of the results of the research with relevant information from written sources led to the obtaining of important results regarding the history of mining in the Ilok oasis. The activities of this expedition determined the further development of joint geological-archaeological research in the oasis. By clarifying the location of ancient deposits and the volume of ores extracted from the deposits, it was possible to obtain important

²⁰ Туркистон чор Россияси мустамлакачилиги даврида. Ўзбекистоннинг янги тарихи. 1-жилд. – Тошкент.:Шарк, 2000. – Б. 49-50.

²¹ Наследов Б.Н. Древние шлаки и полиметаллические месторождения Лашкерекско-Янгокловского участка. //За недра Средней Азии. –Т., 1932. №2.

conclusions about the presence of certain types of minerals and raw material reserves. These issues were reflected in a generalized form in some reports and separate articles by M.Ye. Masson.

In the late 1930s, due to the unstable political situation, the study of the ancient deposits of the Tashkent oasis and the history of mining production was suspended. Work in this direction resumed only in the 1950s. In 1955, within the framework of a special program developed by the USSR Academy of Sciences, scientific research began on the topic “The History of the Formation and Development of Geological Knowledge in Central Asia in Antiquity and the Middle Ages”. The article published by the head of the scientific program O.I. Islamov also contains important information on the topic under study²².

In the middle of the 20th century, research on the study of ancient deposits in Ilok expanded further. The Karamazar Mountains, the Chatkal-Kurama regions became a kind of fulcrum for historical and archaeological studies. A special group led by B.A. Litvinsky conducted scientific research in the ranges of the Kurama Mountains belonging to Tajikistan, and geologists and archaeologists continued their research on the Ilok deposits in Uzbekistan. In this regard, the activities of a special scientific group organized in 1959 by the Institute of History and Archeology of the Academy of Sciences of Uzbekistan and the Museum of the History of the Peoples of Uzbekistan to study the history of ancient deposits and mining production in the Angren River valley and the Chatkal-Kurama mountains are of great importance. The results of the research conducted by this scientific group were summarized and supplemented by Yu.F. Buryakov²³.

A new stage in the study of deposits in the Ilok Mountains began in the 1960s. A decision was made within the framework of the Ministry of Geology of Uzbekistan, established in 1965, to conduct complex geological and archaeological research. The decision specifically noted the need to pay attention to the study of ancient deposits, places of saturation and processing of mineral raw materials, the depth and degree of exploitation of deposits, morphological characteristics of deposits, etc.²⁴.

²² Исломов О.И. Разведка памятников горного дела в республиках Средней Азии в 1955 г. //Тр. Института истории естествознания и техники АН СССР. Т. XXIII –М., 1960.

²³ Буряков Ю.Ф. Древний серебряный рудник Актепа // Из истории культуры народов Узбекистана. –Т., 1965, Ўша муаллиф. Древний серебряный рудник Лашкерек // СА №1. –М., 1965., Ўша муаллиф. О местонахождении «серебряного рудника Шаша» // ОНУ, №12. –Т., 1965.

²⁴ Прутер Е.Б. Древний горный промысел Узбекистана – целесообразность и перспективы изучения. //Узбекский геологический журнал. 1978. №4. С.93-94.

During 1961-1975, a scientific group studying ancient mines identified about 600 mines, ore enrichment and raw material processing points in Uzbekistan. By this time, research conducted in the Chatkal-Kurama mountains had led to this area taking a leading position in the history of mining production in Uzbekistan, in terms of the number of ancient mines, and becoming an area where the history of mining was relatively widely studied²⁵.

As a result of archaeological research carried out in this area, many new mines, metal smelting sites, leading centers of mining production were discovered, important results were obtained on the historical stages of mining production and other related issues. The level of creativity of miners and metallurgists, their residential and production complexes were also studied. As a result, new centers of primary processing of ores associated with the Bronze Age were identified. In particular, ores in Kairakkum were initially extracted from the surface, and then from shallow pits, and were smelted in the Supatov Hills²⁶.

The intensification of ore mining in the Kurama Mountains, especially in its southwestern ridges, dates back to the Early Iron Age. The mining centers of this period, such as Adrasman, Mazorbuloq, Konsoy, Charukhdayron in the eastern and southern Karamazar, Uchkatli-Miskan, Chokadambuloq in the northern Karamazar, have been studied.

Secondly, large deposits of rare and non-ferrous metals were discovered in the upper reaches of the Ahangaron and their history was studied.

M.E. Masson, Yu.F. Buryakov, I.Kh. Khamrabayev, E. Iskandarov, O.I. Islamov, Ye.B. Pruger, R.A. Bokiyeu made a significant contribution to the study of the history of mining in the Tashkent oasis during this period.

In the 80s-90s of the 20th century, new scientific research was carried out on the study of the mining industry of Choch and Iloq, and the collected data was analyzed in various articles.

Information on the metalworking industries of the early Middle Ages is rare in sources and scientific publications. Nevertheless, the studies of Ye. Ye. Nerazik, N.Yu. Vishnevskaya, Yu.P. Manilov, A.V. Gudkova, V.N. Yagodin, Ye.A. Armarchuk, M.M. Mambetullayev contain some information on the metalworking industries.

Some information on the history of mining in Uzbekistan of different periods is also reflected in the defended dissertations on the mining industry of Central Asia. These studies

²⁵ Пругер Е.Б. Древний горный промысел Узбекистана – целесообразность и перспективы изучения. //Узбекский геологический журнал. 1978. №4. С.93-94.

²⁶Литвинский Б.А. и др. Древности Кайраккумов. –Душанбе.: Ирфон, 1962. С.73.

were conducted based on scientific research and verified data in the Fergana Valley, southern (Surkhon and Kashkadarya oases) and western (Kyzylkum) regions of Uzbekistan. In particular, the results of the research conducted by archaeologist Yu.F. Buryakov, who studied the ancient mines and the history of mining production of the Tashkent oasis, were supplemented and systematized. This specialist carried out important work on the ancient mines of the Choch-Ilok oasis, metal smelting points, comparing the information of written sources in this area with the results of archaeological research and drawing appropriate scientific conclusions. His research on archaeological monuments in the oasis such as Imloq-Tunkat, Kul ota-Tunket, Ablik-Abrik, Namudlik, Kuhi-Sim, as well as on ancient mines in the Kurama mountains (Aq tepa, Koktepa, Qoratash, Miskon-Qoratep, Konimansur, etc.) and Chotqol (Kokrel, Kamarguk, Qizylma, Qoykar, Kapturak) was of particular importance.

The historiographical analysis of the problem shows that in the Tashkent oasis, from the research of S.F. Mashkovsev in the field of mining and metallurgy and the first special archaeological works in the field of mining and metallurgy by M.E. Masson to the systematic study of the oasis by Yu.F. Buryakov, and later by Ye.B. Pruger, a great deal of work was done on the topographic recording of monuments, a detailed study of individual deposits and large deposit complexes, and metallurgical points. Geologist O.I. Islamov, archaeologists B.A. Litvinsky and S.A. Dudakov also made a great contribution to the description of the monuments on the Kurama ridge, describing the significance of the Akhangaran valley basin as a major historical and metallurgical center of the East in ancient times and especially in the Middle Ages. In recent years, some new information has been obtained on the history of mining and metallurgical production. Their analysis shows that the main focus of these works is on the processes of mining and processing of minerals. Therefore, we set out to summarize the work of previous researchers in historical-geographical, chronological and economic terms, enriching them with new information.

Conclusion. As a result of the research, a complex of large deposits was studied in the areas around Angren, on the left and right banks of the Akhangaron. The largest polymetallic region of Iloq was located to the north and west of Angren, on the right bank of the Akhangaron. Previous research had found ancient silver and other polymetallic deposits in this area, between the Baksuksay and Karabagsay streams. As a result of our research, new deposits and smelting and saturating points for ore extracted from them were discovered and studied in the upper right stream of Karabagsay, at the exit of the stream to the foothill plain. At these points, according to the slags, it was determined that silver was extracted from iron and polymetallic ores, and

they were used in the early and developed Middle Ages. Based on this, archaeologists have discovered a mine 2-3 km from the present village of Karabagsay. It can be noted that the Karabakhtepa monument of the early and advanced medieval periods found above is associated with these deposits.

Despite the work carried out, a scientific study that studies the formation and development stages of mining production in Uzbekistan, in particular in the Tashkent oasis, as a holistic scientific topic has not yet been covered in modern historiography. This situation was the main reason that prompted us to conduct scientific research in this direction at the level of the selected topic.

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