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# ..ГОРНОДОБЫВАЮЩАЯ И МЕТАЛЛУРГИЧЕСКАЯ ПРОМЫШЛЕННОСТЬ В ДРЕВНОСТИ И СРЕДНИЕ ВЕКА В ПИСЬМЕННЫХ ИСТОЧНИКАХ MINING AND METALLURGICAL INDUSTRY IN ANTIQUITY AND THE MIDDLE AGES IN WRITTEN SOURCES

**Зияев Хусан Ниёз угли**
Докторант Самаркандского государственного университета
ziyayevhusan@gmail.com
**Husan Niyozovich Ziyayev**
Doctoral Student at Samarkand State University
ziyayevhusan@gmail.com

**Аннотация.** В данной статье рассматриваются письменные источники, связанные с горнодобывающей и металлургической промышленностью на территории Узбекистана в древности и средневековье. В частности, изучаются сведения из первого письменного источника по истории Средней Азии — «Авесты», а также информация из трудов средневековых историков, таких как ат-Табари и Абу Райхан Бируни. Рассматриваются первые металлические монеты, драгоценные камни, торговые пути, по которым происходил обмен товарами и культурой.
**Ключевые слова:** Рахта-Эштар, Митра, Панджакент, Конимех, Ягноб, Матча, металл, медь, железо, свинец, олово, смола, асбест, золото, серебро, бирюза, латунь.
**Abstract.** This article examines written sources related to the mining and metallurgical industries in the territory of Uzbekistan during ancient and medieval times. In particular, it explores information from the first written source on the history of Central Asia — the *Avesta* — as well as data from the works of medieval historians such as al-Tabari and Abu Rayhan al-Biruni. The article discusses the earliest metal coins, precious stones, and trade routes that facilitated the exchange of goods and culture.
**Keywords:** Rakhta-Ishtar, Mithra, Panjakent, Konimekh, Yaghnob, Matcha, metal, copper, iron, lead, tin, resin, asbestos, gold, silver, turquoise, brass.

One of the earliest written sources that provides information about the role of metals in the lives of the peoples of Central Asia is the Avesta. It contains information about the Eastern states and Central Asia, which was historically and culturally part of them. In its hymns, praise is given to the god and the best representative of these lands, Raxta-Eshtar. Raxta-Eshtar's power and strength are symbolized by his metal-made shovel, the metal tools and equipment of his horse, and his battle gear. The text says: "Ever-victorious, mighty, immune to lies, riding in a golden chariot... the sun god Mitra possesses thousands of arrows, thousands of double-edged knives, thousands of maces made of the finest metal, and a hundred-edged, hundred-strike yellow metal axe coated in gold."[1]. Based on archaeological excavations and written sources, it is evident that in the first millennium BCE, metals such as copper, iron, lead, and tin were mined in the mountainous regions of the Zarafshan Valley—particularly around Panjakent, Konimex, Yaghnob, and Matcha. These mining activities played a significant role in strengthening the economic power of the Sogdian state. Written sources, especially ancient Sogdian inscriptions and the works of Arab geographers, provide clear references to this activity.

[1] Авеста. Избранные гимны. Пер. с авеста и камментарий И.М. Стеблин-Каменского. Душанбе.,1990, С.-86-87.

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The Kushan Empire and the Greco-Bactrian Kingdom, preserving rich cultural and material traditions, began to mint various metal coins by smelting ores. Over time, the images on these coins, originally depicting Greek gods such as Zeus, were replaced with symbols closer to the cultures of the Central Asian peoples, such as images of their beloved horses. Many such metal coins have been discovered, and continue to be found, in the Surkhandarya region of Uzbekistan. Archaeologists such as G. Pugachenkova and others consider the Dalverzin Tepe in Surkhandarya to be the site of the Kushan Empire's capital. Kadphises, believed to be either the son or grandson of Heraios, was the first ruler of the Kushans. Before Kadphises Kujula, coins typically bore the image of Heraios.

It is also worth mentioning that during the rule of the Achaemenid dynasty and the era of Darius, who held control over Central Asia for nearly 200 years, vast amounts of gold, silver, and precious stones constantly flowed into the hands of Iranian and Persian jewelers.

This leads to the conclusion that during these periods, gold and silver—both alluvial and extracted from mines—were actively mined from the soil of Central Asia. Alongside them, precious stones such as rubies, emeralds, turquoise, mother-of-pearl, and pearls were also extracted, while gold, silver, and copper were smelted[2].

In the works of Eastern historians, interesting information is presented about metals in the context of events that took place in the cities of Transoxiana. The Arab historian Al-Tabari, while describing in detail the Arab campaigns in Central Asia, reports the following: "After the Arabs under the leadership of Qutayba captured the city of Paykand near Bukhara in 706, they obtained a vast amount of gold and silver vessels, which were melted down into metal. Never before had such a large amount of spoils been acquired in Khurasan."

He also writes: "After the conquest of Samarkand in 712, Qutayba ordered the collection of all the treasures from the city's temples. According to this order, statues were looted, temples were burned, and even the used nails were melted down, resulting in the collection of 50,000 mithqals of gold[3]". According to Al-Tabari, the Arabs who defeated the troops of Chach and Fergana that came to aid besieged Samarkand filled the Paykand treasury with captured weapons, tools, and golden belts.

Detailed information about the underground wealth of Transoxiana, that is, modern-day Uzbekistan, is provided in Arabic sources from the 9th to 12th centuries, especially in the works of 10th-century geographers. When describing the countries of Transoxiana, they specifically mention the reserves of underground resources and the centers of their extraction. For example, Istakhri, writing in the mid-10th century, states: "From Khurasan to the borders of Balkh, and from there to Bandshir, which at that time did not yet belong to the domain of Wakhan."

According to Eastern geographers of the 9th–10th centuries, the richest metallurgical resources were under the control of Central Asia. The Caliph, describing this region, emphasized the richness of the mountains of Transoxiana, stretching from Wakhan to Chach, then to Ilaq, and to the borders of the Kyrgyz state.

Speaking about Shash and Ilaq, particular attention is given to Ilaq's gold and silver mines and its mint. It is noted that a large capital circulated through minted coins, and Ibn Hawqal also emphasized that such mints existed in Bukhara and Samarkand. Regarding Fergana, it is mentioned

[2] А.С. Ҳасанов Н.М. Асқарова. "Қадимги давр маъданчилиги". Тошкент. "М уҳаррир" нашристи. 2011. 13 б.
[3] Тарихи ат - Табарий. Тошкент. 1987, 119 - бет

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that around Ahsikent there were gold and silver mines. In Sughd, there were deposits of resin, asbestos, gold, silver, turquoise, yellow copper, and tin. In the mountains of upper Nasaf and Isfara, a black stone that burned like coal was found[4]. In the chapter about gold in his book Mineralogy, al-Biruni reminds us of the historical belief: "Wherever there is a gold mine and gold itself, one must not close their eyes to it, because it quickly captures your mind and enchants you. After that, a person lives thinking only about possessing it, drifting away from spiritual wealth[5]".

The presence of gold and silver mines in Ilaq was kept secret from both friends and foes, as well as from greedy materialists. During this period, nearly 50 large and small cities developed in Shash and Ilaq.

The technology for extracting ores of gold, silver, mercury, iron, copper, and tin, as well as the methods for producing alloys, including bronze, is described[6].

Active study of the mineral deposits and occasional reports about ancient mines began after Turkestan was occupied by the Tsarist Russia. The region's nature, mineral resources, and raw material base (reserves) were thoroughly studied and documented in geographical descriptions [7].

The region and its individual districts have been studied by scholars and industrialists. For example, the ancient mines of the Akhangaron oasis are mentioned in the works of V.V. Bartold. Some of these ancient mines are also described in the works of mining engineer V.N. Tomilin and archaeologist I.A. Kastan.

The large Kansay mine was studied by mining engineer V.N. Weber. The first comprehensive major work on this subject was authored by V.N. Weber. He summarized the results of the study of Turkestan's mines, supplemented them with additional information, and collected data on ancient mining sites. This work was written in 1913 and supplemented in 1917. V.N. Weber writes: "Even simply listing the locations of ancient mining operations testifies to the fact that ancient metallurgists performed a large volume of work."

The 1920s marked a new qualitative stage in the study of the history of mining and metallurgy. At that time, the permanent Tajik-Pamir geological expedition began work in the streams of the Tian Shan mountains. Simultaneously, P.P. Ivanov published his work *The History of Mining in Central Asia*. Unfortunately, this work was based solely on written sources and did not take into account or analytically study the results of geologists' and archaeologists' research. As a result, the work contains numerous chronological, political, and economic inaccuracies.

Geologists who began studying ancient mines strive, during the exploration and evaluation of mining sites, to determine the extent of ancient work done, the structure of the mine sections, and the remaining reserves of the mine in detail.

An example of this is the exploration and evaluation campaign conducted at the Loshkarek mine in the Tashkent region. During the work, geologists R.L. Dudin and Barovskiy determined the average amount of silver in the ore and estimated the approximate volume of ore mined in ancient times[8]. Further detailed study of the mines relates to the exploration and prospecting work carried out at ancient mines in Northern Fergana. In 1955-1956, G.R. Zolotov, in 1965, A.A. Abdurakhmonov, in 1979-1982, G.R. Yusupov, and in 1985-1995, L.Ye. Kabo documented the

[4] Бетгер Е.К.Извлечение из книги «Пути и страны» Абуль Касыма ибн Хаукаля.//Тр.САГУ,вып вып№3, Археалогия Средний Азии,вып№4,Ташкент,1957,стр 13-26.

[5] А.С. Ҳасанов Н.М. Асқарова. "Қадимги давр маъданчилиги". Тошкент. "М уҳаррир" нашристи. 2011. 41 б.

[6] Абу Райхан ал-Беруни. Собрание сведений для познания драгоценностей (Минералогия) //Пер.Беленицкого.Д.,1963.стр 214-240,518.

[7] Мушкетов И В. Туркистан,т №2.СПБ.1873. стр 87.

[8] Дунин-Барновский Р.Л. О сереброности месторождения Лашкерек.Узбекский геологический журнал.1959.,№2,стр.62-67.

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geological-structural mapping of the mines, evaluated the depth of excavations at ancient mining waste sites, and analyzed the amount of silver.

From the 1950s onward, archaeological research into the economy and urbanization history of major historical cultural regions in Uzbekistan intensified. Studying ancient mining sites, which were one of the factors influencing this historical process, became a primary focus of archaeologists.

In conclusion, the mining industry in the territory of Uzbekistan has existed for thousands of years, its history reflected in written sources, archaeological findings, and modern geological research. These historical evidences demonstrate that the region of Uzbekistan, especially Central Sogdiana, has been one of the centers of ancient development in metallurgy and mining.

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