

SCIENTIFIC HERITAGE OF MIRZO ULUGBEK

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Annotation. In the history of the Middle Ages, Mirzo Ulugbek's scientific legacy was of great service to the Renaissance. It is natural that the study of this process contributes to the development of world science.

Key words: The second renaissance period, the activity of Mirzo Ulugbek, history, science and social life.

Mirza Muhammad ibn Shahrukh ibn Temur Ulugbek Koraghani (1394-1449) is a great astronomer and mathematician, a famous scholar of his time, a statesman, the grandson of the famous ruler and entrepreneur Amir Temur, who ruled Movaraunnahr from 1441-1449.

Ulug'bek (Muhammad Taragai) was born on March 22, 1394 in the city of Sultaniya in the territory of present-day Azerbaijan.

1405, after the death of the great master who created a huge kingdom that covered all the territory of the Near and Middle East, except for Central Asia, from the Mediterranean Sea to Northern India, all his inherited property passed to his sons and grandsons. Shahrukh, the son of Timur, who was elected at the residence of Herat, sits at the top of the Timurid dynasty.

The management of Mavaraunnahr will be handed over to Shahrukh's eldest son, Amir Temur's grandson, Ulugbek. In 1409, Ulugbek was declared the governor of Samarkand, after the death of his father, Shahrukh, in 1447, he became the head of the Timurid dynasty.

In his youth, Ulugbek showed great interest in science and arts, especially mathematics and astronomy. The rich library collected by his father and grandfather, where he spent a lot of time, became the basis for the expansion of his intellectual worldview.

Ulugbek received a very good education, considering the standards of those times. Possessing an excellent memory, he was fluent in Arabic and Persian, well versed in Turkish poetry, mastered literary styles and participated in literary debates. He also wrote poems. Ulugbek's teacher was a famous scientist, a famous mathematician and astronomer in the court of Timurids, Qazizada Rumi. He showed nine-year-old Ulugbekka the ruins of the famous observatory in Maroga. It is these memories of his youth that may have determined the future of the future astronomer. During the reign of Ulugbek, Samarkand became one of the centers of science in the Middle Ages. In

Samarkand, in the first half of the 15th century, a whole scientific school was formed around Ulugbek, which united famous astronomers and mathematicians such as Ghiyosiddin Jamshid Koshii, Qazizoda Rumi, Ali Kushchi. At that time, the historian Hafizi Abru, who wrote an excellent work on the history of Central Asia, the famous doctor Mavlano Nefis, the poets Sirojiddin Samarkandi, Sakkoki, Lutfi, Badakhshi and others lived in Samarkand. They were the advanced people of their time who believed in the power of human mind and science.

1417-1420 Ulugbek built a madrasa in Samarkand and became the first architectural ensemble built in Registan. Ulugbek invited many astronomers and mathematicians of the Islamic world to this madrasa. The other two madrasahs were built in Gijduvan and Bukhara. Madrasahs built by Ulugbek served as universities. On the facade of Ulugbek's madrasa built in Bukhara, the inscription "The pursuit of knowledge is a duty for every Muslim" is preserved. But Ulugbek's great passion was astronomy. The meaning of Ulugbek's life and astronomer followers-scientists such as Qazizoda Rumi, Jamshid Ghiyasiddin al Koshi, Ali Kushchi motivated the construction of the observatory.

According to research scientists, the construction of the observatory was completed in 1428-1429. The observatory was a rare building of its time. In order to withstand earthquakes, the stony foot of Kohak Hill was chosen for the construction of the building. The main instrument - the sextant (angle meter) - is designed along the meridian lines from south to north. In addition to the main instrument, the observatory had other astronomical equipment.

Perhaps, the size of the sextant, its convenient structure, and the knowledge of Ulugbek and his partner were the reasons for making accurate astronomical observations. Under the leadership and participation of the great astronomer Ulug'bek, the main work of the observatory "Zidzhii Koraghaniy", "Ulugbek's star chart" was compiled. In the book, the positions of 1018 stars from this Samarkand observatory are determined with incredible accuracy, the first since Hipparchus. The creation of the astronomical constellation is a great contribution to the treasury of world astronomy. In addition, determining the inclination of the ecliptic to the equator and the length of the sidereal year in the observatory; work was carried out to calculate the value of the sine in an angle - an important astronomical constant - to the eighteenth decimal place.

Ulugbek checked his data several times and came to the conclusion that his numbers are correct. 1437 determines the length of the astronomical year: 365 days 6 hours 10 minutes 8 seconds. Later it became clear that the difference in changes was 58 seconds. If you take into account that the length of an astronomical year is 31 million 558 thousand 150 seconds, you can be sure how accurately Ulugbek made his measurements. Along with being a great scientist, Ulugbek was a weak general. He spent most of his time at the observatory and devoted little time to public affairs.

Abdulatif, the eldest son of Ulugbek, declares war against his father under the strong influence of the clergy. The son invites his father to go on a pilgrimage to Mecca. During his trip to Mecca in 1449, Ulugbek was killed in accordance with Sharia law. After the tragic death of Great Ulugbek, his bright star did not fade. Ulug'bek's faithful disciple Ali Kushchi, forced to leave his native Samarkand, takes Ulug'bek's book "Zidzhiy Koraghani" to Europe. Later, the book became the property of many generations of scientists. Ulugbek's name and works became famous among European and Asian scientists. Ulug'bek's "Starry Sky Constellation" published by Jan Hevelij in the 17th century contains a pattern depicting the world's great astronomers who lived in different times and places. They are depicted sitting across a table on either side of Urania, the inspiration for astronomy. Ulugbek is among them. The author of the sketch did not have a portrait of Ulugbek, but took his picture.

Ulugbek's main scientific work is called "Zidzhiy Jadidi Koraghani" or "New Astronomical Table of Gurgon". The author completed this work in 1444, after thirty years of diligence and astronomical observations. The astronomical reference was soon translated into Latin at the same time as Claudius Ptolemy's "Almagest" and King Alfonso XV of Castile's astronomical table, which was considered a manual for observatories throughout Europe.

The accuracy of these tables is ahead of what was previously achieved in the East and Europe. Only by the 17th century, Tycho Brahe managed to achieve an accuracy equal to the observations from Samarkand, and later, he achieved an even more accurate result. It is no wonder that "Ulugbek's Zidzhi" attracted the attention of European astronomers as it did in the East. "Ulugbek's Zidzhi" consists of four major acts. The first part, called Chronology, describes the chronological methods adopted by various Eastern nations. The second part describes the problems of practical astronomy, the third part provides information about the movement of visible stars based on the geocentric system of the world, and the fourth part is devoted to astrology - the inevitable fate of the science of the medieval worldview.

The 1018 constellations calculated by Ulugbek serve as a compass for astronomers and historians studying ancient chronology. Ulugbek's star chart confirms the authenticity of Ptolemy's star map presented in "Almagest". In 1648, Ulugbek's main work on the famous Samarkand observatory was published for the first time in England, one of the oldest centers of science and culture. John Greaves (1602 - 1652), professor of astronomy at Oxford University, prepared the work for publication and wrote a commentary on it. Later, series plates were published several times in England.

17 years after the first Oxford edition, Thomas Hyde (1636-1703), a scholar, keeper of the Bodleian Library in Oxford, English orientalist and translator, prepared the Samarkand edition for a new edition in Persian and Latin, "Tabulae Longae, sive Lat. Stellarum Fixarum, ex observatione Ulugh Beighi", published under the title Oxonii,

1665. The publication of Ulugbek's Tables in Europe, where a unique star catalog, requiring enormous and laborious observational and computational labor to compile, was calculated by a few individuals and highly valued by celestial explorers. 25 years after Hyde's Oxford edition, information on Ulugbek's table appears in the pages of the book "Prodromus Astronomiae" published in Gdańsk by the Polish astronomer Jan Hevelius (1611-1687). Here is a comparison between data from the series available at the time: Ptolemy, Tycho Bragg, Riccioli, Prince Gass and Hevelius.

In 1839, the French orientalist L.A. Sediyo (1808-1876) partially publishes Ulugbek's table under the title "Tables astronomique d'Oloug Beg, commentees et publiees avec le texte en regard", chapter I, section I, Paris, 1839. And, finally, a more accurate analysis of the Ulugbek table based on the study of 8 manuscripts stored in the libraries of Great Britain was published in 1917 in the USA by E. B. "Ulugh Beg's Catalog of Stars" by Noble. Published under the name Revised from all Persian Manuscripts Existing in Great Britain. It is worth mentioning that there are dozens of manuscripts of "Zidzhi" in European and Asian book storage warehouses. Ulugbek's table of stars became the last word of medieval astronomy. This table was the highest pillar of medieval astronomy before the invention of the telescope.

Ulugbek's rich scientific legacy confirms that he was not only the son of a great Muslim. The genius of creative thinking has made an invaluable contribution to the development of science and civilization of all mankind. Therefore, many centuries later, even today, the name of Ulugbek remains a symbol that unites the peoples of the East and the West with the intention of achieving meritorious goals.

Mirzo Ulugbek's high moral and tangible heritage is studied in the world's leading educational institutions and scientific centers. On the initiative of the First President of the Republic of Uzbekistan Islam Karimov, the fact that the National University of Uzbekistan was named in honor of this famous scientist confirms the high scientific and spiritual power of the republic today. In 1994, the 600th anniversary of the scientist's birth was celebrated at the international level, so a number of events were held with the participation of foreign scientists, specialists and public figures.

In 2009, an international scientific conference dedicated to the 615th anniversary of the birth of Mirzo Ulugbek was held in Paris. More than 130 scientists and representatives of various international organizations participated in the conference.

From the events being held, it is clear how great the interest in the scientific and spiritual heritage of Mirzo Ulugbek is all over the world.

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