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THE ROLE OF CHASHMAI AYUB BUKHARA WATER SUPPLY MUSEUM AND SOME ANCIENT WATER STRUCTURES IN THE FORMATION OF HYDRO LOGICAL OUTLOOK OF YOUNG PEOPLE

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ABSTRACT

The article highlights the current role of the Chashmai Ayub Water Supply Museum and some ancient waterworks in increasing the knowledge of young people about water science and the prospects for their effective use in the future.

KEYWORDS: Chashmai Ayub, Fountain, Baths, Cistern, Sewer, Ditch, Canal, Groundwater, Depth, Water Volume, Ditch, Mesh, Ditch.

INTRODUCTION

Relevance: It is no secret that water resources are limited around the world today. It is no coincidence that 2003 was declared the Year of Freshwater by the United Nations and March 22 is International Water Day.

Due to the development of irrigation and population in Central Asia, including Uzbekistan, there is already a shortage of water resources. The adoption of the law "On water and water use" on May 6, 1993 in our independent land is a clear proof of our opinion.

It is very difficult to imagine life without water. Water is the source of life not only for humanity, but for all beings. Therefore, water should be used in moderation. Everyone, whether a child or an adult, should treat water wisely. Therefore, the study of the Chashmai Ayub Bukhara Water Supply Museum and ancient waterworks plays an important role in developing the worldview of our youth in water science.

Goals and objectives: In order to achieve our goal, we have studied some ancient waterworks and the Chashmai Ayub Bukhara Water Supply Museum as objects. The following tasks were performed to achieve the goal:

- to get acquainted with the relevant literature on the subject;
- Collection and analysis of data related to the object of study;
- To acquaint young people with some ancient waterworks and the Museum of
- Water Supply Chashmai Ayub Bukhara;
- To study the history of the Chashmai Ayub Water Supply Museum;
- Classification of some ancient water structures (ditch, ditch, meshkob, sardoba);
- Geographical forecasting of the practical significance of the Chashmai Ayub Bukhara Water Supply Museum in the future.



Figure 1. The spring is a unique monument of Ayub-Bukhara

Brief classification of Chashmai Ayub water supply museum. The fountain of Job is sometimes called the tomb, in fact it is the place where Job walked. Apparently, the veneration of the prophet Job originated in pre-Islamic times in connection with the worship of water. The construction of the building will take several stages.



Figure 2. Exterior of Chashmai Ayub Water Supply Museum

It is believed that its ancient part dates back to the XII century. At the same time, the date 1380 or 1384/5 is engraved on the surviving tombstone (which caused the inscription to be read differently because it was not well preserved) - this is the reign of Amir Temur, and later appeared the roof, dated 16th century. The building has six rooms, inside of which there is a sacred spring, behind which there is a large altar mosque.

Chashmai believes that the construction of the tomb of Job dates back to the XII century. According to legend, one of the prophets in the Bible, Ayub (Iov), hit the ground with his stick while passing through this arid part of Bukhara, and as a result, a pure, healing spring of water appeared here. In the 14th century, Khorezmian masters, brought by Amir Temur in one of his marches, built a building on a spring and a well, and gave a conical shape to the cone-shaped dome on the high traction device in the well, which is typical for Khorezm.

Chashmai Ayub is a spring in Bukhara, or a well. It is said that Ayub was called "the spring of the Prophet Ayub" because he was cured of this water. Chashmai Mayib was phonetically changed to Chashmai Ayub. In the Fergana valley, the spring of Hazrat Ayub was mentioned by the Arab geographers as Muqaddas. This spring in the Kosonsoy valley is still called by the same name.

Geographical analysis of the architecture of Chashmai Ayub. The building of the shrine is rectangular (19x26) and consists of 4 rooms stretching from west to east. Each room is covered with different domes. . Initially, the oldest room was a square (4.5x4.5 m) well.



Figure 3. Chashmai Job well.

Legend has it that this room was built by Arslankhan at the same time as the Minaret Kalon and the Mosque of Prayer. On both sides of it there was a mountain room (4.5x4.5 m) with two doors for pilgrims, which served as a roof. On the wall of the shrine with a double dome and a front roof, according to the order of Amir Temur, in 1379 it was written that a large room with a domed dome and a corridor with towers in the corners were built. The old part of the building remained inside.



Figure 3. Interior of Chashmai Ayub Water Supply Museum.

On the left hand side of the entrance to the Chashmai Ayub Water Supply Museum there is a map of the pools in Bukhara in the early twentieth century, photos of the ancient main settlements of Bukhara, such as Bolo Hovuz, Labi Hovuz (Figure 5).



Figure 5. Bukhara in the early twentieth century map of pools in the city.

Various utensils used in the previous period add to the beauty of the museum. In addition, the map of the baths in Bukhara in the late XIX and early XX centuries is reflected (Fig. 6). Baths are one of the proud places of Bukhara. At the beginning of the XX century in Bukhara there were 20 baths. Most of these baths were built in the XVI-XVII centuries and have not changed their shape. Bukhara baths are a unique place for residents and traders and visitors. The baths were built on the ground, and over the years and centuries, more than half of them have remained underground. The baths were operated in exchange for well water. These structures are similar in construction and differ from each other only in the number of rooms.



Figure 6. Late XIX - early centuries XX Map of baths in Bukhara.

Room 1 leads to the dressing room, then through the low and narrow corridor to the next room (basement) to the foot-washing room. It was followed by a domed, central room (miyonsaray), from which it was possible to move to a room with hot water (hot room), a room with cold water (ugly room) and a special room (vabjibixona). In addition, the site provides insights into the Bukhara sardobas, their importance, maps of the depletion of the Aral Sea, and the causes. The word sardoba is derived from the Forstil words sard - cold and ob - water. Sardoba is a domed monumental structure divided into two parts: the underground part is designed for water collection and storage, and the above part is built in the form of a round dome. Sardoba is a domed cistern for water buried deep in the ground. Construction began on caravan routes, usually from the X century. The water in such cisterns was cool even in the hottest time of the year. Irrespective of the size of the cisterns, they were up to 15 meters in diameter and 10-15 meters deep. The cisterns are filled with rain and melted snow, and sometimes with streams and canals, which are partially built in the way of underground canals-sewers. Most cisterns had one hatch for water. The Bukhara sardobas were distinguished by two hatches, but several hatches were installed around the Abdullah sardoba.

In Uzbekistan, the main building material for the cistern is high-quality and durable bricks of flat, rectangular shape. For centuries, cisterns have served as a guaranteed source of fresh water and storage in Central Asia. Their appearance is in the form of a dome made of bricks, with holes in the bottom. Through them through the wells or other underground tanks are passed radial ditches, which pay for the water of the barren during the rainy season. Due to the manuscripts of tourists, a detailed description of the cisterns has been preserved. "Half the distance between Malik and Mirza Rabot, on the side of the road, is a tall round domed building. At the top of the dome there is a round hole.

The descending path behind the steep gate leads into this circular building; The seven apex holes are symmetrical around a thick wall. The building is astonishingly strong, especially in the horizontal arrangement of flat square bricks in innumerable circular rows from the bottom of its magnificent dome to its highest point, so that each brick in the top row is inside the dome in relation to the bricks below. the side is slightly bulging; In general, this dome looks like an overturned round amphitheater stairs. This unique way of building a building, no matter how primitive it may seem, amazes with its durability. Such desert buildings are known as "sardoba".

Under a high, stone dome the size of a few sarjins, a traveler who is tired of walking in the heat of summer, always in the shade and coolness, finds great comfort here, and in the bitter winter serves as a shelter from snowstorms. As you enter the building, you will see that its openings are three feet (1 foot = 2,134 m) from the bottom of the building, which is made of stone "from the outside to the level of the surrounding soil", so the hall itself is dug into the ground. seems to be warm.



Figure 7. Sardoba.

This explains the need to have two or three raised forts under each cistern. In the spring, when the snow begins to melt, all the surrounding water flows towards the cistern and passes through its holes. That's why they tried to build such basins on steep slopes.

Koriz - (Persian) underground structure for the collection of groundwater and its discharge to the surface, used for water supply and irrigation. Koriz is widespread in the Middle East, Southeast Asia. Occurs in mountainous and foothill areas of Central Asia. About 200 sewers have been dug near Ashgabat, Turkmenistan, Bukhara, Samarkand and Navai regions of Uzbekistan. Until the 1920s, sewage was used to irrigate crops in Central Asia. Excavation of the trench required a clear definition of changes in groundwater levels and the slope of the terrain. This was done with the help of special tools (astrolabe, waterpass). Once the sewer route was determined, wells were dug every 5-40 meters along this route. The depth of the wells ranged from 14-15 meters, sometimes up to 60-70 meters. The wells are connected to each other by a solder (tunnel) that connects to the aquifer. Lahim is 1.5 meters high and 1 meter wide, its walls are reinforced with wood or stone, and its length is up to several kilometers, depending on the slope.

Canal (waterway). Canal, irrigation canal - a specially dug waterway, the main part of the irrigation system. Depending on the function of the canals, the main (rivers, reservoirs, water flows from irrigated lands to irrigated lands);

- distributor (distributes water from main canals to districts or farms);
- farm (water flowing through the inter-district or inter-farm canal to the irrigated lands of the farm), temporary (ditch), which serves for the distribution of water to the owners. The canal starts from the water intake facilities. Through the intake facilities, the water flows into the canal itself, or is pumped through the pumping station (machine channels). The canal can be excavated or lifted. Usually its cross section is trapezoidal. In some cases, the canal itself is made of concrete or reinforced concrete, nowadays prefabricated reinforced concrete structures are widely used.

Shohrud canal. One of the canals supplying water to Bukhara. Shahrud, or rather the Shaharrud canal. Sometimes it is written as Shohrud - "king's arig"; The city of Rudi Bukhara - before the "city of Bukhara" was called Rudi Zar. Originally, Rudi Zar was mentioned in the works of Arab geographers (10th century) as Nahri Zar.

The city of Bukhara is located not far from the left tributary of the Zarafshan River. This river used to supply water to the fields and the city. The Shohrud (Rudizar) canal was dug in ancient times from the river to the city. The Shohrud canal is the main source of water for several canals in the city and more than 80 Bukhara pools. Bridges have been built across the canal everywhere in the city. Currently, most of the canal goes underground. Only a small part flows under the open sky as before. The canal flows from east to west in the southern part of Bukhara.

A ditch on the outskirts of the city of Zakhkash-Bukhara. A ditch with draining water. Zovur, zagor was actually called a flood. In the Middle Ages, moist soil was called zagor. In the following centuries, the term zakhkash began to be used instead of zagkash.

Mesh, mesh - a narrow bag with a sewn-on leather. Mesh has long been known, mainly liquids (water, milk, molasses, koumiss, etc.) Used for transportation and storage, chalop preparation and other purposes. Widespread among the peoples of the East, Central Asia and Siberia. From ancient times, the East, especially in the army of the Turkic-Mongol peoples, was used effectively during military operations, such as crossing deep rivers, making sal. In the past, in Mesh, a person who made a living by transporting water from water sources (pools, ditches, wells, etc.) to houses, guzars, teahouses, caravanserais was called a meshkob or meshkobchi.

Sharkhpalak - 1) a structure that flows much lower than the irrigated land and lifts water from streams; A large wheel with a blade on which the buckets are mounted. The size of the wheel diameter depends on the size of the river or ditch, the amount of water flowing. The number of buckets depends on the diameter of the wheel.

The flowing water affects the impellers and turns the wheel so that the buckets are filled with water. Charkhpalak is one of the oldest water structures. The first wheels appeared in 4-3 thousand years BC.

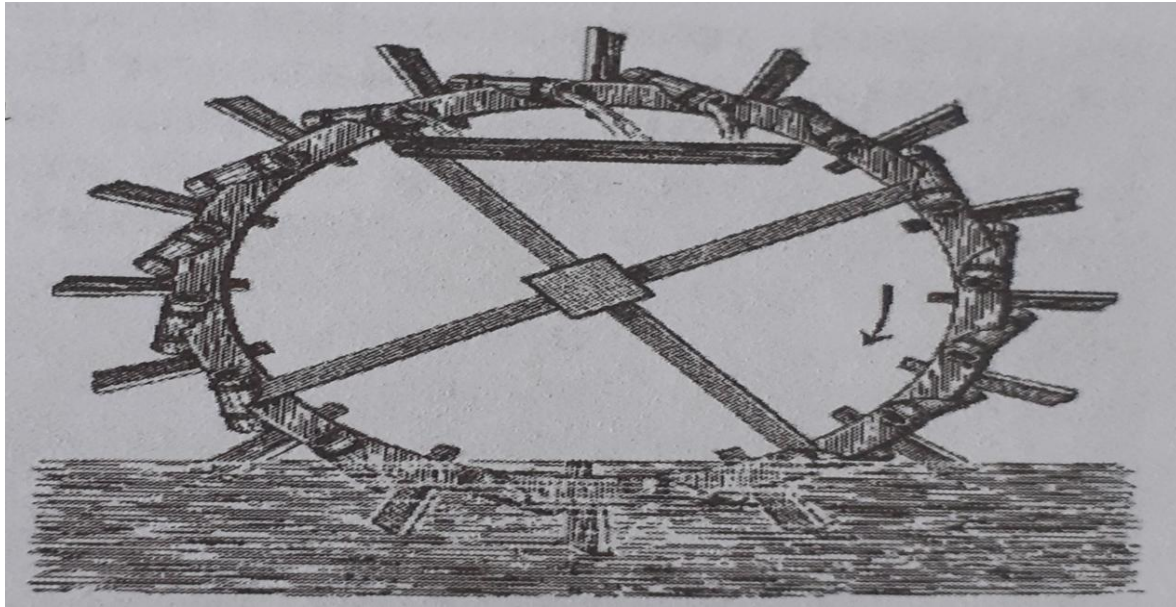


Figure 8. Charxpalak.

In ancient times, in the territory of Uzbekistan, the pump was the main means of drainage. With the advent of pumps in the XIX century, the need for wheelbarrows decreased, but in some places it is still used (Figure 8);

2) cultural and recreational facilities to be installed in parks and playgrounds, a large-diameter wheel on which the seats can be hung in a circular motion. Such a wheel is driven by an engine. Careful and rational approach to water, saving every drop of water, eliminating waste, improving water supply to the population of Uzbekistan for the production of consumer and non-consumable products in all sectors of the economy provides the required amount of water. Especially today, ancient waterworks are widely used as water-saving technologies in agriculture and various sectors of the economy.

Suggestions and recommendations:

- So have more opinions about the sights of Bukhara;
- To have more opinions about the sights of Bukhara;
- Reproduction of various types of trees around the building in the organization of domestic and foreign tourism;
- relocation of the adjacent market area to the interior;
- more trips to this place in the formation of the hydrological outlook of young people;
- to instill in our youth the idea that every drop of water is a source of life;
- to feel that the improvement of water ecology is in the hands of young people.

CONCLUSION

In conclusion, we hope that the Chashmai Ayub Museum of Water Supply and the ancient waterworks will serve as a program for the development of the hydrological outlook of students.

We must preserve historical buildings, including water structures, as the apple of our eye for future generations.

REFERENCES:

1. Y.K. Khayitov, N.A. Toshbekov., Efficient Use Of Collector-Drainage Networks (On The Example Of Bukhara Region). The American Journal of Agriculture and Biomedical Engineering, 3(02), 10-15.
2. Y.K. Khayitov, N.A. Toshbekov., T.A. Zhumaeva., Criteria and scales of the secondary use of collector-drainage waters (on the example of the Bukhara oasis). Bulletin of the Karakalpak branch of the Academy of Sciences of the Republic of Uzbekistan 2019 55-58
3. 3. Suv O`zbekiston kelajagi uchun muhim hayotiy resurs. O`zbekiston nashriyoti, Toshkent- 2007. 59-66-betlar.
4. Y.K. Khayitov, N.A. Toshbekov., T. A. Zhumaeva., Hydrological Assessment Of The Meliorative Condition Of Collector Drink Water In Bukhara Region. Nature **The USA Journals Volume 03 Issue 02-2021** and Science. MARSLAND PRESS. Volume 18 - Number 4 (Cumulated No. 157), April 25, 2020.99-101.
5. Y.K. Khayitov, N.A. Toshbekov., T. A. Zhumaeva., EFFICIENT USE OF WATER RESOURCES OF THE AMU-BUKHARA CANAL. ACADEMIK. An International multidisciplinary Research Journal 05/30/2020, 15-18.
6. Y.K. Khayitov, N.A. Toshbekov., T. A. Zhumaeva., The Formation of Water Collector-Resources Drainage Network of Zarafshan Oasis and the Questions of Recycling. TEST Engineering & Management. May-June 2020 ISSN: 0193-4120 Page No. 27380 - 27385.
7. Buxoro sharq durdonasi."Sharq" nashriyot-matbaa konsernining bosh tahririyati. Toshkent-1997. 96-97-bet, 105 –bet.
8. A.A.Azimov. O`zbekistonda suvdan foydalanish an`analari va zamonaviy yondashuvlar. "Fan va texnologiya" nashriyoti, Toshkent -2015. 73-75- betlar.
9. 9. Abu Bakr Muhammad ibn Ja`far Narshaxiy. Buxoro tarixi. Toshkent "Sharq mash`ali" jurnaliga ilova "Sharq bayozi" 1993. 35 - bet.
10. 10. O`zbekiston milliy ensiklopediyasi 4-son."O`zbekiston milliy ensiklopediyasi". Davlat ilmiy nashriyoti. Toshkent. 2002 –yil. 623-bet.
11. 11. O`zbekiston milliy ensiklopediyasi 9-son."O`zbekiston milliy ensiklopediyasi". Davlat ilmiy nashriyoti .Toshkent.2005 –yil. 575-bet, 579-bet.
12. 12. Qorayev Suyun. O`zbekiston viloyatlari toponimlari. "O`zbekiston milliy ensiklopediyasi" Davlat ilmiy nashriyoti, 2005. 52-65-betlar.
13. 13. meros.uz. <https://meros.uz> Chashmai – Ayub maqbarasi.
14. 14. <https://parstoday.com> Chashmai Ayub maqbarasi.(SURATLAR) – Parstoday
15. 15. Atoeva Mehriniso Farhodovna, Eshmirzaeva Matluba Abdishukurovna. (2021). Application Of The Law Of Conservation Of Energy In

16. Economics. The American Journal of Applied Sciences, 3(01), 93-103.
17. Zebiniso ATOYEVA, The use of innovative pedagogical technologies in mathematics in secondary schools. Жамият ва инновациялар – Общество и инновации – Society and innovations Journal home page: <https://inscience.uz/index.php/socinov/index/>
18. Rahima Safarova, Characteristics of teaching physics in medical institutes, Жамият ва инновациялар – Общество и инновации – Society and innovations. Journal home page: <https://inscience.uz/index.php/socinov/index>.
19. Safarova Rakhima Sattor kizi, PREPARING STUDENTS FOR USE OF SCHOOL PHYSICAL EXPERIMENT IN THE PROCESS OF TEACHING PHYSICS, European Journal of Research and Reflection in Educational Sciences Vol. 8 No. 9, 2020 ISSN 2056-5852.
20. Атоева М.Ф. Периодичность обучения физике. Аспирант и соискатель.
21. Москва, 2010. – №6. – С. 41-43.
22. M.F. Atoyeva. Interdisciplinary relations in physics course at specialized secondary education. The Way of Science. – Volgograd, 2016. – №9 (31). – P.22-24.
23. M.F. Atoyeva. The significance of periodicity at teaching physics. The Way of Science. – Volgograd, 2016. – № 10 (32). – P.62-64.
24. Атоева М.Ф. Эффективность обучения электродинамике на основе технологии периодичности. The Way of Science. – Volgograd, 2016. – № 10 (32). – P.65-66.
25. M.F. Atoyeva. Use of Periodicity in Teaching Physics. Eastern European Scientific Journal. – Düsseldorf-Germany, 2017. № 4. –P. 35-39.
26. M.F. Atoyeva. Didactic foundations of inter-media relations in the training of university students. International Scientific Journal. **Theoretical & Applied Science**. p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online). **Year: 2020 Issue: 06 Volume: 86**, P. 124.
27. M.F. Atoyeva, R. Safarova. Pedagogical integration as a means of forming professionally important qualities among students of a medical university. *Academicia*. ISSN: 2249-7137 Vol. 10, Issue 8, August 2020. Impact Factor: SJIF 2020 = 7.13 *ACADEMICIA: An International Multidisciplinary Research Journal* <https://saarj.com>.
28. M.F. Atoyeva. Pedagogical Tests As An Element Of Types Of Pedagogical Technologies. The American Journal of Applied Sciences, 2(09), (TAJAS) SJIF-5.276 DOI-10.37547/tajas Volume 2 Issue 9, 19.09.2020. ISSN 2689-09. 92 **The USA Journals, USA** www.usajournalshub.com/index.php/tajas 164-169. Имп.5.2.
29. Farkhodovna, A. M. (2020). The problems of preparing students for the use
30. of school physical experiment in the context of specialized education at secondary schools. European Journal of Research and Reflection in Educational Sciences, 8 (9), 164-167.
31. Saidov S.O., Fayzieva Kh. A., Yuldosheva N. B. Atoyeva M.F. The Elements Of Organization Of The Educational Process On The Basis Of New Pedagogical Technologies. The American Journal of Applied Sciences, 2(09), (TAJAS) SJIF-5.276 DOI-10.37547/tajas

Volume 2 Issue 9, 19.09.2020. ISSN 2689-09.92 **The USA Journals, USA**
www.usajournalshub.com/index.php/tajas 164- 169. **Имп.5.2.**

- 32.** Atoeva Mehriniso Farhodovna, Arabov Jasur Olimboevich, Kobilov Bakhtiyor Badriddinovich. (2020). Innovative Pedagogical Technologies For Training The Course Of Physics. The American Journal of Interdisciplinary Innovations and Research, 2(12), 82-91.