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IMPORTANCE OF ANCIENT IRRIGATION FACILITIES AND ENGINEERING ACHIEVEMENTS

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ABSTRACT

In this article you will learn that the attitude to water has been formed historically and geographically since the beginning of human cultivation, during this period of evolution, people have made a variety of interesting and wonderful inventions. It also provides information on the first dams in Central Asia, cisterns that hold water in the deserts all year round, drains from engineering achievements, and excellent mechanical pumps.

Keywords: *dam, band, Bronze Age, ditch, cistern, water intake, water reservoir, corridors, astrolabe, nova, chain pump, wheel, steering shaft, pendulum, piston, valve, turbine.*

АННОТАЦИЯ

В этой статье вы узнаете, что отношение к воде формировалось исторически и географически с начала возделывания человека, за этот период эволюции люди сделали множество интересных и замечательных изобретений. В нем также представлена информация о первых плотинах в Средней Азии, цистернах, удерживающих воду в пустынях круглый год, стоках инженерных достижений и превосходных механических насосах.

Ключевые слова: *плотина, полоса, бронзовый век, ров, цистерна, водозабор, водохранилище, коридоры, астролябия, нова, цепной насос, колесо, рулевой вал, маятник, поршень, вентиль, турбина.*

INTRODUCTION

Since ancient times, within the needs of society, water has been formed as the number one need. That is why people, from ancient times, have the goal of being able to subjugate water and use it all the time, encouraging the construction of various new engineering structures and making amazing inventions. Since water had the property of free flowing in nature, its use would be limited. In order to make extensive use of the water, human beings have studied activities such as collecting it, extracting the waters below the earth and raising it higher and generating new flows over periods of time. This created conditions for the use of water on a wide scale and everywhere.

In history, the need for water has also increased in combination with the increase in people on Earth, the development of production relations, the formation of agricultural oases on river banks and in the foothills. The attention to the efficient use of water was the reason for the construction of solid water structures. Archaeological investigations carried out in Khorezm Oasis, Zarafshan, Farg"mother and Surkhandarya revealed that sugarcane networks and farming based on it arose during the "Jez"(bronze) period, 3,500-3,750 years ago. In such oases, the need for water naturally increased. The excavation of ditches and canals in order to supply water to the plantations, the construction of solid structures that carry water upwards began from these times. Later, large villages and cities began to form in these areas[1].

Bandaging the waters flowing from the mountains:

The waters flowing from the mountains are permeated with Rocky lands and Desert Gardens. Our ancestors from the 9th and 10th centuries filled the gorge of the mountain where water flowed with the help of stones or stones in order to make good use of such waters. The result is the formation of lakes in the mountains. Such collections are called by names such as wedding or band. During the construction of water structures like these the Khans, emirs, princes were head-eyebrows and were often referred to by the names of the built-up theirs.

DISCUSSION AND RESULTS

From history it is known that winter and spring seasonal precipitation in deserts and steppes, completely devoid of running waters, was considered the main source of water. In deserts, large puddles are formed, where snow and rainwater accumulate in the pits, the circumference of which consists of some Heights. Such puddles are called” Kaks". The water of the kaks is fresh, and the inhabitants have long used it to irrigate livestock in the desert. In addition, trade caravans who in the past traveled to foreign countries through the Kyzylkum, Karakum, Mirzachul, Karshi and other deserts of Central Asia also used the water of the kaks[1].

That is why the ancient caravan routes that crossed the deserts of Central Asia ran along the large. It should also be said that the water in the winters was not stored all year round. Because during the summer months, part of the water in the stumps evaporates under the influence of the strong light of the sun, the second part is absorbed into the ground and almost dried up in late June and early July. Such a situation undoubtedly caused great difficulties in the crossing of the waterless deserts of trade caravans. For this reason, it was important to provide water to caravans that run through deserts during the summer months. In order to save the water in the

stumps from solar glare by collecting it in deeper areas of smaller size, the ancient Sikhs built special waterworks along the caravan routes to the creeks in the deserts, and sometimes over the springs. Such structures are known as" cisterns". "Sardoba" is a Tajik word that means a Waterhouse or an icehouse. Cisterns can be called overhead indoor pools depending on their structure. Because they are a pool with a deep inside and a domed top, made of baked brick in a circle, and in the desert landscape they are visible as if it were the fire of a nomadic pastoral population. In order to keep the cistern pool muddy and the structure out of order, a large water clarifier was dug in front of the cistern - an outdoor pool[2]. Fresh water was poured into the cistern after the snow and rainwater that flowed from the surroundings first accumulated in the clarifier and sank to the bottom of the muddy pool in it. The area around it is lined with a fluffy wall so that the water does not get into the clarifier and contaminate the water. Cisterns are common water structures in the East, which were built mainly along ancient caravan routes. In Khorasan (northern Iran), such water structures are referred to by the names "Obanbor", and in Azerbaijan - "avdon" [3].

According to some reports, there were 44 cisterns in and around Uzbekistan, twenty - nine of which were in the Karshi desert, three in Mirzachul, three more on the ancient trade route between Tashkent and Fergana, and one in the desert Malik near Karmana. In its time, or caravanserais were also raised in the areas where these cisterns were located. These undoubtedly served as a stop in the deserts – a stop of caravans[4]. .

Surface water is considered another of the main sources of water – groundwater in areas bordering the pre-mountain and near waterless deserts, located far from rivers and lakes. Therefore, people who lived in such territories have tried to use the rich water reserves in the underground layers for the needs of society since ancient times. If they have made wells in the plains and met their needs by drawing water from a well with a" gourd "(a mesh sewn in the skin of a pet), they are made up of low-lying ones, and for their period, where hundreds of wells are interwoven with each other on the slopes of the mountains, they have taken out the groundwater.

Chain pumps are the firstbor Mill avv information that was used in ancient Babylon in the 600s is known to us through a bitical attached to ceramic hobs. The chain pump is made of very simple materials: a chain, a wheel, balls of the same size, and a simple chain pump is enough to prepare the bottom of the loudspeaker. This device removed the water by rotating the wheel using a horse or mule. During the wheel cycle, the balls attached to the chain are pushed up in the trumpet without the

paston rubbing hard against the upper trumpet, bringing with it water in the amount of space between the two balls.

Hydraulic sharpener that lifts water up using flow force.

As Times went by, people's demand for water began to increase, there was a shortage of water in society, it was much more difficult to pump water into relatively high ground without an electric pump. But at the same time, such difficulties gave impetus to new inventions, applying the knowledge accumulated over the centuries. In Europe and Russia in the XIX century with the help of the power of the current river, stream, etc.K, the invention of the hydraulic sharpener, which gave its waters up to 8-20 meters, led to a breakthrough in dexterity[5]. .

CONCLUSION

The operating principle of this device was that a sharp-barreled shaft placed in the center of the river, rotating as a result of a sharp-barreled stream, rotates a sterge placed horizontally, in turn, on one side of this sterge, a pendulum is installed in the form of a high-barreled stop on a vertically mounted peg. It was the swinging motion of the hermetic porches mounted inside the actuating hooks tube attached to either side of the pendulum. This results in the porshin collecting the water in a corridor through which the porshin moves by pulling it using a pipe so that the porshn pushes

the water as a result of the oscillating motion, the valve at the lower water inlet is closed due to the loss of suction power in the trumpet. As a result of the pressure generated, the water outlet valve opens and the water leaves, the valve is closed when porshn switches to the suction function again, blocking the released water from returning. Such porches are placed next to the two sides of the device, which regularly transfer water one after the other, forming a single-flow pipe through a Y-shaped connection from two troughs, providing a regular flow.

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