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INTRODUCTION OF NEW TECHNIQUES IN THE FIELD OF HYDROMECHANICS IN TURKISTAN

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ANNOTATION

In this article, the issues of the state of hydraulic engineering works in the Turkistan region at the end of the XIX – beginning of the XX centuries and the introduction of new techniques into this area were revealed through the analysis of sources.

KEY WORDS: ***canal, ditch, plantation, hydraulic engineering, hydraulic reclamation engine, oil engine, siphon elevator, drainage, groove, water carrier, firm, credit.***

DISCUSSION

The fact that farming in the Turkistan region is based on artificial irrigation, the possibility of obtaining higher yields from irrigated lands every year prompted the colonists of the Russian Empire to make changes in the field of hydraulic engineering. Stream – head of a clan, waterman, who is working in Turkistan, was criticized in the Russian press for the fact that the watermans could not meet the requirements of the new conditions, the use of pirimitive technical means in irrigation works. The work on rational use of water and the regulation of peasant Affairs began in 1870 – ies, on August 2, 1888, a special regulation was adopted aimed at "Water regulation". In this regulation, the organization of hydrotechnical and hydromechanical works, rational use of canal and sewage water was entrusted to irrigator and 2 technical assistants. Technical means were needed for such activities as cleaning and re-starting old beehives, extracting new channels and ditches, extracting water for the vacant land, digging canals, raising water above them with the help of technical means. The productivity of the work performed on the hoe and дapata was low, and again it took a long time. In 1890 –ies from the center of Russia and abroad was brought an instrument (instrument) measuring the volume of water flowing in the ditches and canals. They are installed in the location of each mile (950-1000m) of the channels, measuring the amount of water. In the Samarkand region, black and white Wasps were identified with this device, 32 cubic feet of water flowed, which watered 600 desyatina land. At the end of the XIX century, machinery and equipment used in the excavation of canals and ditches, a mechanical hoist that lifts water upwards, techniques such as steaming came into the country.

In particular, work on the transmission of water through a mechanical hoist to crop lands located above 5-7 arshins (1 arshin -71 cm) from the ditches and channels was worthy of attention. In 1905 , 500 desyatina, engineer Arseyan –500 desyatina, trade firm "Aris K" - 700 desyatina, N.Gen fon Bekman mechanical hoist in Teshen oasis of the Caspian Sea region. N.Қorokin -300 desyatina, Mr. Butayev – 100 desyatina, economic sarb (Uzbek) Polatjon Qosimboyev – 60 desyatina brought water to the уarth. Mechanical hoists were installed on dozens of main channels and their network ditches in 1898-1905 years. In the above years, 1.457.637 rubles were spent on digging channels and mechanical hoists. 1.720 miles of channels have been dug, "- provides information, "Turkistan collection".

The use of new techniques, such as steam engine, oil engine, has also begun to be introduced in the release of water to the top. Steam engines (machine)was also widely used in all peasant farms of the Empire. In particular, in samara and Voyska – Donskoguberna, 1 desyatina cost from 30 rubles for raising water on the ground in a steamer, from 72 rubles to 100 rubles in some uncomfortable and high

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places, from 57 rubles to 125 rubles in a line. In Tbilisi (Caucasusorti), water with a steamer is about 30 meters above ground, and the berish costs 200 rubles. In some uezds in the Caucasus, it also cost 333 ruble. 1 desyatina in Syrdarya to raise water to the ground costs from 60 rubles to 100 rubles. In the Kharkov governorate, Bulgarians received 1 desyatina from 35 rubles to 60 rubles for land irrigation rent, in Rostov 80-100 rubles.

Thanks to the fact that it was expensive to raise the water with dvigatel, a siphon-elevator was used, which was brought from Russia to the country. Raising the water of Syrdarya with a siphon – elevator up to 2-10 arshin (1 desyatina ground) cost 35 rubles.

From the steam engine and siphon – elevators to the fields of crops not only with cotton wadded (spike), but also with horticulture, gardening and vegetable farming, there was a risk of raw water. At the beginning of the XX century, many "Siphon – elevator Lemishel N 10" branded devices were brought to the country, they cost from 25-55 rubles per desyatina, if 1200 desyatina brought water to the ground. One siphon-elevator can supply 2-13 acres of land with water and 40 peasant farms.

In 1914, in the emirate of Bukhara, "barley model farm" was established, specializing in cotton growing, gardening, livestock. Water discharge to this farm was considered a problem, its cultivated land was located at an altitude of 14,75 sashin (1 sashin-70cm). For this reason, the extraction of water from the ground every 1 desyatina required 200-250 rubles. To this area, water was extracted with the help of a steam-powered engine of the Maltsev Joint-Stock Company plant. Specialist engineers offered to install an oil engine instead of oil rigging. However, this proposal could not solve the problem of water production without implementation barley exemplary farm property was sent to the purchase of increased sales in 1916, " writes historian scientist S.Shadmanova. During the colonial years, measures were also taken to improve soil fertility through drains in Turkey, to use water resources in an inexpensive and convenient way, to establish hygienic rules. The drains were closed and open, and expert engineers recommended building closed drains. Open drains are expensive, they have to be repaired at least once a year, and also quickly the pipe will be filled with mud. There was a need for special stalls and tools, technical equipment in order to install, cut, connect one to the other closed drainage pipes, which were inexpensive. For this purpose, the lathe cutting the pipe, the metal cutting screw press, the cupboard metal clamps, which firmly hold the tube connected to the other, also entered the country as a technical means.

Agronomist A.I.Shahnazarov in Tashkent 1902 when establishing hydrotechnical and hydro meloration works in Turkistan on the basis of period "School of agricultural hydrotechnics" opened on the initiative of A.I.Shahnazarov and the "gardeners school" vs organized by R.Shreder was also significant. At the school of hydrotechnics taught arithmetic, geometrics, russian language, religious studies (law of Khuza) sarb(Uzbek) language, jurisprudence, metrology, physics, botany, special education, woodworking, gardening, geodesy, construction culture etc. The period of study at the school was three years, and those who graduated from a city knowledge institution for at least two years were accepted to study. Two years were given theoretical knowledge, and the third year was full practice. Those who graduated from school took the post of stream-head of a clan or waterman. The school also had a head, two teachers operating, and a workshop of locksmith equipment. The annual cost of the school is 7000 rubles, and 4500 rubles are covered from the state treasury, and the remaining funds from the account of the Zemstvo of the Republic of Turkey. In the school workshop there were new technical tools for 331 rubles. There was a boarding school for 19 people. Also in the school, children of European nationality and the local population studied, the number of pupils did not exceed 35-45 people. The goods available at the school of hydrotechnics were collected in a small amount in the school workshop of hydrotechnical equipment, in 1909-th year, about 9,000 rubles. The school of agricultural hydrotechnics also had its own land area. Although the agricultural schools operating in Pishpek and Kopal are located at long distances from Tashkent (500,1300, Mi), they are called agronomists A.I.Shakhnazarov, S.B.Ponyatovsky visited several times and gave lectures in the direction of hydrotechnics, hydromeloration. However, the material and technical base in these schools is failing and there are no new technical means for practice, qualified specialists.

At the end of the XIX – beginning of the XX century, it was not at the level of demand, no matter how much the Imperial and local administrators tried to carry out extensive work on hydromeloration in Turkestan, the introduction of new technical means in the country. While the new techniques were few, their price was high. For this reason, irrigation work was carried out mainly by farmers through simple labor weapons (hoe, lapata). Graf, who inspected the territory of the Republic of Turkey between the years 1908-1909 K.Palen: "the rise of agricultural culture in the country in 1900-1908 years are not enough that an average of 550 thousand rubles is spent every year, the experience suggests that every year an average of 63.500 rubles should be spent on work, information from agriculture, labor weapons, machinery, development of modern agriculture in general. K.Palen's "agricultural cooperations", it was believed that the new techniques farmers could freely, at any time, buy, sell water elevators to their long-term credit evasion. In 1911, there were 31 credit union associations in Turkistan, with 4

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thousand members, in 1917 there were 833 Credit Union and 194 thousand members. They gave credit to peasant farms on the condition of a payment of 51 percent in the amount of 12 million rubles.

At the beginning of the XX century, Russian hydrotechnics brought the drilling rig to the country, using groundwater, to establish irrigation work through artesian wells. Russian engineer Matisev with the help of this tool practically tested the fact that the release of water from 1 desyatina ground will cost from 64 rubles to 31 rubles in the steppe desert. According to his calculations, if the farmer receives an average profit of 100 rubles from each desyatina land, irrigation of lands through water in Artesian areas with a drilling rig will be significant, and labor productivity will also increase. In his opinion, starting from 1910-th year, annually for the population transferred to irrigation and meloration work, the transfer of funds in the amount of 6-7 million rubles was considered significant. Water and steam, oil engines, siphon – elevators, equipment necessary for the construction of drainage from the beginning of the XIX-early XX centuries, facilitated the labor of peasants and served in a certain sense to the growth of the peasant culture. Due to them, labor productivity increased, the melioration of the soil improved, water was removed from the vacant lands, crop areas expanded, productivity increased. However, the new technical tools were mainly used by representatives of the population who moved to Turkistan. The fact that the main goal was aimed at raising the culture of the farm of the settlers in the country was openly stated by the administrators of the Empire.

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