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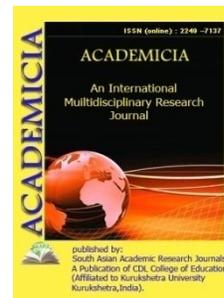
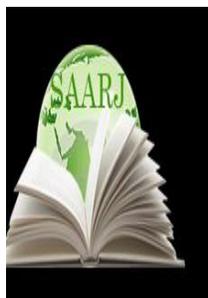
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METAL-MELTING FURNACES OF CULTURE OF SAPALLI

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ABSTRACT

On monuments of the given culture many artefacts (forges, furnaces and are found.), connected with gorcharin and the metalcutting manufacture(Askarov A., 1981.), playing the important role in an economic life of the population of an epoch of bronze. As a result of settlement Sapallitepe inspections, in rooms 13, 52, 81, 93, 98, 111, 123, 130 the rests metal are revealed, and in a room 52 3 round furnaces located in one number are opened. Walls of furnaces have strongly scorched and have a rough surface of greenish colour. Under two of them slices spending metal are met. A surface of walls of all known on monuments Sapalli cultures of the furnaces used for processing of metal, strongly scorched under the influence of fire and on them slag of aeruginous colour was formed. These constructions we conditionally named the metal-melting centres though under the form they remind the centres for kitchen and for heating of rooms.

KEYWORDS: *Sapalli, Dzharkutan, Kuzali, Molali, Altyndepe, Dashly, Murghab, average Asia, Ancient Bactria, Margiana, Southern Turkmenistan, Zarafshan, Sarazm.*

INTRODUCTION

In the article about forms, the sizes, functions, development stages, areas of distribution of metal-melting furnaces at all stages of Sapalli culture are investigated, wide analogies and cultural-chronological interpretations of the given objects to other synchronous cultures adjacent territory are resulted. Presence of metal-melting furnaces, tigils, casting moulds specifies in high local development of metal working in Ancient Bactria.

The agricultural culture of Sapalli has been opened and entered into A.A. Askarovym's science and today it is possible to say with full confidence that its material culture is one of most comprehensively studied (Askarov A., 1977.). As a result of the works spent in Dzharkutane, the formation problem, most likely, protocity culture of Central Asia on an example of such features as a citadel, a palace of the governor, defensive works, craft constructions, fire temple, inhabited files and others city factors is opened (Askarov A., 1993.). T.K. Hodzhajov on the basis of

anthropological sources of this culture has acquainted scientific community with data on ethnoses of the population of Bactria of a bronze epoch (Hodzhajov T., 1976). S.B. Shaydullaev on materials of Dzharkutan has shown not only culture of the first cities, but also that statehood rudiments have been put during a bronze epoch (Shaydullaev Sh., 2009.).

On monuments of the given culture many artefacts (forges, furnaces and are found.), connected with gorcharin and the metal cutting manufacture (Askarov A., 1981.), playing the important role in an economic life of the population of an epoch of bronze.

Though on monuments of an epoch of bronze of Southern Uzbekistan metal-melting furnaces, however till today are found many, we have no full data on their design. They were not considered in publications as a separate theme. Studying of metal products of Sapalli's cultures has been spent by V.D. Ruzanov and K. Kanjutoj V.D. Ruzanov's researches, basically, are directed on definition of typology and a chemical compound of subjects with their binding to like metal to sources and areas (Ruzanov V., 2011). K. Kanjuty's researches are devoted typology of metal products culture by Sapalli (KAI KANIUTH, 2006). Special studying of metal-melting furnaces information of researchers was not spent.

As a result of settlement Sapallitepe inspections, in rooms 13, 52, 81, 93, 98, 111, 123, 130 the rests metal are revealed, and in a room 52 3 round furnaces located in one number are opened. Walls of furnaces have strongly scorched and have a rough surface of greenish colour. Under two of them slices spending metal are met. The lay-out of a room, the furnace, and korolki - all these facts say that the given premise was a metal-melting workshop. Analogichnye finds are met in a northeast corner of 104th room of this settlement. And the furnace is found in a northeast corner 39th rooms rectangular forms in the sizes 70x32 sm, depth 50 see Besides, in a southwest corner of 105th room the metal-melting centre of a squared shape is opened. Proceeding from the facts set forth above, A. Askarov has come to a conclusion that in settlement territory there were metal-melting forges and workshops on metal processing (Askarov A., 1977).

In a settlement Dzharkutan temple the workshop with 8 metal-melting furnaces also has been opened (Ionesov V., 1990). In one of them about 2 kg of the rests metallic an alloy are revealed. In this workshop are found 4 tigl for metal fusion (Askarov A., 1993).

In the course of archaeological researches on Dzharkutan various metal products, tamga (brands, stamp), tumor (amulets) which testify that workshops where melting of metal, make instruments of labour and military equipment here functioned have been found out (Askarov A., 2001).

According to A.A. Askarova, found out in an economic-office part of a temple of fire of the furnace functioned long time. The splinters found in the same place тиглей for metal fusion say that this room intended for bronze fusion (Askarov A., 2001).

In our researches spent last years, it is noted that in producing a premise of the Dzharkutan's temple, it has been surveyed 8 furnaces concerning various stages of Sapalli's culture, testifying to the centralized metal cutting manufacture (Raximov K., 2011.).

In given article we will consider forms, the sizes, a functional purpose, dating of the furnaces concerning different stages Sapalli cultures. We will note analogies of our furnaces in other cultures.

As it is known, at fusion of metal for heat achievement special furnaces which on the structure essentially differed from the centres of house use were necessary. A surface of walls of all known on monuments Sapalli cultures of the furnaces used for processing of metal, strongly scorched under the influence of fire and on them slag of aeruginous colour was formed. These constructions we conditionally named the metal-melting centres though under the form they remind the centres for kitchen and for heating of rooms.

1 - metal-melting furnace is revealed in a northeast corner of 5th premise of the multiroom house in a southern part of a citadel of Dzharkutana (fig. 1). The squared shape furnace, the sizes 0,80x0,65 m, depth 20-22 see the Furnace the Internal part of the furnace is located in the middle likely constructions by the area 1,25x1 m. plastered by clay with an impurity of straw, walls are covered by a firm layer of greenish colour, thickness 4-4,5 Filling over a floor see consists of a layer of ashes in the thickness of 2-6 sm, on top which there is a layer of soft soil in the thickness 15-17 the rooms Found on a floor pottery see date the furnace the Dzharkutansky stage.

2 - metal-melting furnace is located on a surface of a platform of 5th tepe, in its southern part (fig. 2). In the plan it of a squared shape, corners are rounded off. Furnace walls are laid out from fragments of brick, in the thickness 15 80x90 sm, the sizes of an internal part the External sizes of the furnace see a floor surface 57x40 sm, depth 65. Inside part of furnace see is covered special, maintaining a heat, clay in the thickness 2-3 furnace Walls see have strongly scorched and in some places blocked. The internal part of the centre at dipping is a little narrowed. The fragments of ceramics found out in this layer, date the furnace Djarkutan's stage. Besides, in a layer pieces burnt bricks are met, and internal walls of the furnace testify that it was used for metal fusion.

3 - metal-melting furnace is opened in the western part раскопа, on 4th теpe (fig. 3). The furnace is revealed on depth of 50-60 sm from an ancient surface. Has in the plan a squared shape, the sizes 57x97 sm, it is deepened on 50 the Height of the remained walls of the furnace see is various: the western wall has remained on one brick (12 sm), northern and east have remained on 50 sm, southern - furnace Walls on 38-40 see are erected from сирцового a brick in the sizes 20x34x9; 40x20x9; 38x20x9 Inside part a furnace see is plastered "samman" by clay in the thickness in 1,5-2 twice furnace Filling see consists of ashes in 2-5 see Over it the layer of burnt wood with ashes of 2-6 sm which is covered by a soft soil layer with an impurity of ashes in the thickness 40-42 is tracked in the thickness see In layer structure entered blocked the furnace walls, scorched to a redness brick, and also pottery fragments of dzarkutan a stage sapalli cultures.

As a result of the spent researches, it is found 23 metal-melting furnaces concerning by the various periods of this culture. Under the form they share on 2 types:

1. Furnaces of the roundish form;
2. Squared shape furnaces.

Metal-melting furnaces of the roundish form it is found 3, they are rowed in one room. The second type is presented by 20 furnaces.

According to V.I.Sarianidi, Dashly-3 opened in 51st room the furnace of a squared shape with tigl's, was the metal-melting furnace (Sarianidi V., 1984.).

The centre of the roundish form in diameter of 2 m, dated in II millennium BC on settlement Dalvarzin and the ceramic nozzle found near to it, were the metal-melting furnace. On distance of 10-12 m from the furnace 8 casting moulds and tigl are revealed. Presence metal-melting tigl and original metal products speaks about the existence fact here metal-melting furnaces(Zadniproviskiy Yu.,1962).

The analysis of metal-melting furnaces of Sapalli's culture has shown that on sapallin's a stage furnaces of the first and second type, and on the following джаркутанском were applied, "kuzalin" and "molalin" stages furnaces of the second type were widely applied. On the sizes of the furnace of the second type was a little more than furnaces of the first type.

To a wall of 105th room of Sapallitepa 7 metal-melting furnaces of the identical sizes, squared are attached. The arrangement in one room of 7 furnaces testifies to functioning of the centralised metal manufacture.

In the Dzharkutansky stage of Sapalli's culture metal-melting furnaces functioned in each house. Hence, in each family there were the masters making metal products.

In kuzalin a stage metal manufacture is centralised. In 8th room of the Dzharkutansky temple nearby 8 furnaces of a squared shape with each other functioned. It is possible to believe that in this period priests of a temple supervised metal manufacture. This tradition has been continued and on mollalyn's a stage.

Thus, it is possible to assert that on each monument there could be workshops on fusion of metal and manufacture of metal products. This process is observed and in Southern Turkmenistan, since the periode calcolitic (Terexov N.,1975).

The technology of fusion of metal and manufacturing of products demanded from masters of certain abilities and necessary knowledge in this sphere. Usually, the technology of fusion of metal is adopted from advanced cultures. On quality of the made copper and bronze products found on monuments, it is visible that metalist Sapallin's culture have very well mastered this knowledge and skills. The school metallist Sapalli's culture had uniform traditions with school metallist of Dashly and Murghab.

Their ore base was the general. The basic mines of metal settled down in Zarafshan's basin which belonged to the nomadic population (Andronov) and to settled population of Bactria-Margiana. Therefore subjects of material culture, characteristic for Bactria and Margiana meet and in territory of ancient Sogda. As the proof it is served by finds from Dzhama where subjects, characteristic for nomadic and settled population have been found.

On monuments of Sapalli's culture it is found only 4 clay tigl, in which плавился metal. Tigl have the form of the cylinder with сливом for metal moulding. On an internal surface тиглей there are metal rests. It is established that the first metal тигли have appeared on monuments of an epoch of early bronze of Southern Turkmenistan - Altyndepe and Northern Tajikistan – Sarazm(Masson V.,1991). Found there metal-melting tilgy testify to existence own metalloproduction.

These тигли were used for moulding cleared of slags and the melted copper and tin in the form. Apparently, manufacture of metal by the population of Sapalli's culture has turned to the developed branch of workmanship of an epoch of bronze.

Found on monuments of Sapalli's culture metal-melting furnaces and тигли testify that during a bronze epoch metalcutting производство Sapalli's culture is allocated in independent branch, have a high level of development.

From the above-stated data it is possible to assume absolutely definitely that in Ancient Bactria during a bronze epoch metal working has been developed. All found metal products have a local origin that is proved by detection here on monuments of an epoch of bronze of enough of metal-melting furnaces, casting moulds and тиглей for metal fusion.

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