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THE SPHERO-CONICAL VESSELS FOUND IN DVIN AND ANI

During excavations done at the medieval Armenian cities of Dvin and Ani, together with different earthen ware small clay vessels with thick walls, round and inflated in the middle, and narrowing down at the bottom, like a cone, are frequently found.

References to these unusual shaped vessels can be found in the pages of archaeological literature where they are referred to in different names, such as „Mercury vessels“, „Sphero-conical“ or „Egg-shaped vessels“.

As we shall see later, these descriptions do not completely describe their shape, nor the use purposes meaning of these vessels. But, following the accepted custom, we shall use the „sphero-conical vessels“ term.

These clay vessels with characteristic shapes are well-known to those archaeologists who excavate cities of the Middle Ages. They are found in many territories—in Egypt, Mesopotamia, in the countries on the eastern shores of the Mediterranean Sea, Greece, Asia Minor, Eastern Europe, the Northern Caucasus and in the Caucasus, Iran, and in Central Asia. The fundamental and characteristic shapes of these vessels are their half-spherical parts and the narrowing down, cone-like bottoms. With their many variations, with deflated or narrow sides, and elongated bottoms, with inflated, swelled, or with many sides, with elongated necks, or with flat bottoms (table 1, 2).

Despite the different external shapes of these vessels, the narrowing, cone-like interior cut is always kept the same.

A more definite and characteristic factor of these sphero-conical vessels are the upper part of their mouths, which narrowing comes to a small spout, and with round lips at the edges. The narrow (2—

3 mm) mouth is very suitable for a strong stopper and the stopper can, in a special way, be adjusted to the inside of the spout of the vessel.

The vessels are made of a fine mixture of fire-proof and water proof mortar and clay. The clay, being strong and thick, is like „stone clay“.

Because of the extra thickness of the walls the vessels are of a heavy weight and have a small capacity.

And because of the composition of the mortar, of the quality of the clay, of the degree of baking, and sometimes because of unforeseen reasons, all these factors determine the color of the clay from which the vessels are made of, and in different places, the colour is different—dark, red, yellow, and with their varying shades.

And sometimes these are the deciding factors when determining the place of origin of these vessels and to understand the characteristics of that particular region.

The sphero-conical vessels were made on a pottery-wheel in a special way.

In order to make the vessels more opaque, the interior of the vessels were covered again with a thin layer of a mixture of mercury.

The external appearances of these vessels are very interesting. They were made in different ways. The even and finely polished walls were to a great extent ornamented with epithet patterns and stamped on in different designs.

Uniting with one another in different pattern designs and with different kinds of ornaments, and with a mixture adding on all the minute details, the masters conceived difficult and beautiful creations giving the vessels a harmonizing appearance (tables II, VIII, and IX).

In the Ani collection we see examples of vessels where the ornaments are stamped on from top to bottom. The examples of the Dvin collection are of different kinds. The latter ones are ornamented with simple designs (fundamentally at the upper parts).

It is very rarely that we see glazed colored vessels in Ani.

In the studies made of these vessels as to their creation, purpose and meaning there is not a united or general agreement.

Similar situations in archaeology are not rare, especially when that particular object apart from its fundamental purpose or meaning, later, acquires additional usage in every-day life.

These sphero-conical vessels are classical examples of diverse opinions expressed in the pages of archaeological literature.

There are more than ten theories as to the usage of these vessels.

They are considered as candelabums (lanterns) holy vessels, fire-bombs, architectural ornaments, vessels to keep and transfer mercury, vessels to keep sweet-smelling fats, as toys, and so on.

In 1802, for the first time, the French traveller, Vivian Denon took interest in these vessels, who in his trips to Egypt took note of these sphero-conical vessels he had come across and expressed his opinion that because of their small size, these vessels could not have been of any particular use.

In the second half of the 19th century in Syria, Palestine, and in the city of Bulgar, near the Volga river, the finding of a great number of these sphero-conical vessels created interest in regards to them. Quite a number of articles dedicated to these vessels were published.

And later, archaeologists began to occupy themselves with these vessels and in the studies which were dedicated to the accounts and results achieved during archaeological excavations of these plain clay vessels, these scientists made attempts to give their explanations and opinions as to the use of these vessels.

The existing different opinions have been collected and brought forth from different studies made¹.

Among the theories is one that is of the opinion that the sphero-conical vessels had been used as lanterns or candelabums in which naphtha (oil) had been burned and sometimes to hold candles. In 1871,

A. F. Lihachov at the Congress of Archaeologists, expressed this opinion and later this theory gained many supporters and partisans, among whom have been noted archaeologists such as N. F. Visotski and V. A. Gorodtsov.

But this theory has little persuasive evidence. Firstly, being a burning vessel, the evidence is flimsy, because of the absence of necessary ventilation, the shape, and the unpracticability of the mouth. Besides, among these vessels not one of them has, in this case, the undeniable proof or remnants of fire or burning leaves. It is possible that later, very rarely, these vessels could possibly have been used for that purpose.

There exists another argument or assumption and according to it, these vessels, especially the ornamented examples, were used as architectural ornaments which with their iron bars had been fastened (up side down) on the walls of fortresses or towers. The reason for this theory is that some of these vessels have been found in the piles of earth which have contained the ruins of buildings.

These assumptions are not very convincing for the small vessels and the small ornamentations on them could not have been seen from the high walls of the fortresses.

And one of the theories is, as was stated previously, that these vessels were used for worshipping and were used in the deserts and holy places for the transportation of water. It is said, if that is possible, for example, during the journey to the holy fountain of „Zem-zem“ in Mecca.

Vessels with handles very rarely found, and in the form of a fish are presented as proof, and by which they tie them with the worshipping of water. This assumption is not acceptable either, for the small capacity and heavy weight of these vessels made their use unfeasible during the long journeys in the desert. It is commonly known that in the East, vessels that were lighter, larger and more convenient were used for that purpose.

Among the opinions is one that is of the belief that these vessels served as fire-grenades and in which were filled quickly ignitable and also explosive fuel, and were thrown from the battle stations in the fortresses onto the enemy positions. The grenades not only would cause fire, but were, with small clay fragments, supposed to cause casualty and panic among the enemy.

According to the supporters of this concept these fire-grenades were used in the time of battle for defensive purposes by the Arabs, as well as by the

¹ In the studies and books by E. Lentz, Z. Vinogradov, H. M. Djanpoladian, and R. Ettinghausen.

Byzantine warriors. The French scientist De Soulcy has many supporters of this supposition. And this has led to many debates on the question. The opponents of this theory have justly brought forth much evidence which contradicts that theory. They are that the thickness and strength, complete uniformity, fire-resistant, and many other peculiarities made these vessels very unsuitable for the making of fire and, especially, explosive grenades. Besides, the narrow and small mouths of the vessels made them very unsuitable for the rapid filling of fire fuel which during the time of battle is a very important thing. Besides that, the spherico-conical shape of the vessel and often the elongated lower part was negative and not suitable for ballistic purposes.

In agreement with the descriptions kept in medieval literature, the fire-grenades used by the crusaders had a completely different shape. The proof that rejects that theory is that they were only found without exception in dwelling places with other household goods. Therefore, we must completely reject the above mentioned assumption.

It is difficult to agree with the comparatively new born belief of H. Seyrig and J. Rogers who maintain that the spherico-conical shaped vessels were those that the Roman architect Vitruvius (1st century B.C.) had written about the "Aeolian vessels" which had been used as pokers to poke fire in the fireplace. But, as is known, Vitruvius has, on another occasion, clearly written that an empty copper sphere was used for that purpose. They were half-filled with water and put into the fire and when the metal got heated the steam would force itself out of the vessel and in this way would stir the fire.

The strong and fire-resistant spherico-conical shaped vessels never did fit in with that idea of being used for that purpose.

Let us return to the most widely spread assumption as to the use of these vessels, a theory which incidentally, has facts to back it up. According to this assumption these vessels, which are the subject of our study, were used for the purpose of keeping mercury. This theory was so widely spread that sometimes they were plainly called "mercury-vessels".

This idea was first expressed by the English scientist Granville Chester. A vessel with a granulate of mercury was found in Sidon.

E. F. Visotski had found a vessel containing mercury in the old Crimea. It was plugged with a wooden stopper and to be stronger was coated with wax. In 1905, an article was published by E. Posavski describing the vessels found in the regions

alled Termez and Otrar. And attached to the article was an analysis made by N. Teyh, M. A., referring to the mixture of a dark brown element found in one spherico-conical vessel, and, incidentally, was formed by wax (wax and ozocerite) and mercury. There were traces of mercury in other vessels found in the foundation of the Imperial Palace in the Kremlin in 1908, and in three vessels found in the town of Sokh in Central Asia.

In order to determine the origin and significance of these vessels, lately, new sources are being investigated. Archaeologist P. V. Lounin has published one page of a manuscript from a 16th century book on medicine and apothecary in the Persian language, where the qualities and the use of mercury are described, and as an explanation a picture of three spherico-conical vessels is shown which according to P. V. Lounin are presented as vessels in which to keep mercury.

In accordance with ethnographic information from Asia Minor, Iran, and from Central Asia, until lately, these types of vessels were used in the household and were used definitely as vessels in which to keep mixtures of mercury. Those Persian speaking inhabitants who lived in those regions called these vessels "Simap-Guzache", which in a word-for-word translation means "mercury-vessels".

In four lines of a part of a poem by the medieval poet Khakani Shirvani, and according to it "these vessels were called "mercury-vessels" back in the 12th century.

In the Middle Ages mercury was widely used in every-day life and in medicine. The alchemists considered mercury a part of a mixture of all metals.

Mercury is the only liquid metal and the heaviest liquid (the weight is 13,7). It easily mixes with other metals. The use of mercury as a coating and as a production process dates back to the 1st century A.D.

The incorporating of mercury has much physiological activity and because of this is used in medicine, especially in the treatment of skin and venereal diseases. The eminent Armenian doctor of the Middle Ages Amirdovlat of Amaseia in his "Angidats Anpet" book repeatedly writes of mercury and the many ways of using it, and gives more than twenty names of mercury. In medieval times, mercury was seldom used in the pure state, it was more often used in mixtures, and its use widely embraced the life and activities of the medieval man (medicine, metallurgy, jewelry making, etc.).

In the Middle Ages they not only knew of the use of mercury, but, also of its harmful effects. It is not by accident that in the works of the alchemists and in the books on medicine, warnings are given many times to the harmful effects of mercury. According to these warnings, mercury and its vaporization can bring about and cause heavy and incurable illnesses, therefore, one must be very careful in regards to mercury, its use, and to the preservation of it.

In our opinion also, the sphero-conical vessels with their shape and other qualities could be used as convenient vessels to keep mercury in. The preparation and use of these vessels show that the creation of these vessels were not by accident, but the result of a long process of thinking and creating.

The shape of the vessels that are the object of our study are so that liquid cannot accidentally pour out of it, but when necessary comes out in a thin stream or in drops.

The lips at the mouth are so strong and made in a special way that even a hermetic stopper can be used. The interior of the vessel with the cone-like bottom is very appropriate for the collection of residue or remains of the liquid or whatever is poured into it. The strength of the earthenware is very appropriate also, the thickness of the walls, size and etc. This shows that the sphero-conical vessels with all their features must be suitable to keep and store expensive, poisonous, and easily evaporating solutions, liquids, and they could have been made for the purpose of storing or keeping mercury and/or its mixtures. I think it would be right to call them mercury-vessels. But, the evidence shows that these vessels were not only used to keep and store mercury and its mixtures. Among the evidence is one fact that has much weight and demands attention and refutes other evidence—the large number of these vessels which have been found at different medieval sites, and which are kept in the different museums of the world. That large amount of mercury and its mixtures could not have been used so consistently in every-day life, nor could it have been used for other purposes so freely. Although mercury is a metal which is quite common and available everywhere, however, pure mercury is very rarely found in nature. One of the most commonly found mixtures of mercury is crystallized zincobarium which was also widely used in the Middle Ages. That was not only an ore from which pure mercury was obtained, but in itself also, a beautiful

red-colored paint-cinnabar, which was widely used in fresco painting, miniatures, and in other fields.

As was stated above, a chemical analysis made of the granulate of mercury in one of the sphero-conical vessels has given a greater percentage of the remains of the so-called ozocerite mineral. There were great deposits of ozocerite in the Transcaucasus and in Central Asia in medieval times. Now, ozocerite is used as a healing medicine for skin diseases and is used in the ointment form.

It is most likely that those studying these sphero-conical vessels with their small and thick walls, and who have concluded that they were used not only to keep and store mercury and its mixtures and have had a wider use and used for different purposes, are justified in their opinions. They had been used in every-day life as containers for expensive oils, medicine, quickly evaporating liquids, and for rose-water. Rose water, as is known, was a product exported from Armenia.

As has been shown, the sphero-conical vessels were used by the alchemists in their work-rooms and served as convenient receptacles for the distilling of liquids.

In writings left by the alchemists, they remind us of the „philosophical clay“ and this strong mortar evidently was used to make these sphero-conical vessels.

Therefore, at the first glance, these seemingly common earthenware must not be confused with the really common paintless and unglazed drinking cups, urns or vases or dishes used in the household and consider them as such.

Excavations done lately, and a study of the unearthed material from pottery-making work-shops have shown that these sphero-conical vessels did not have a special work-room for their production, but were made in the usual work-shops with their fire-places which gave off great heat and were used for the baking of the earthenware, and where all kinds of dishes, vessels, vases and urns (painted, glazed, and unglazed) were made. These kinds of work-shops were found in Baylakan (Orenkala), and also in Termez, Dvin, Ani, Bilar, Bolgar and in other cities.

The sharp ends of the sphero-conical vessels and the narrowing, small mouth outlet were very convenient in many circumstances and therefore were used widely. In Armenia, beginning from ancient times, we come across vessels of this type, but with thinner clay. The population of the Uartian city of Teyshebaini was familiar with these vessels (photo 1).

The sphero-conical vessels may be kept in a lying position. The liquid will not pour or leak out. Evidently, these vessels have had for that purpose (lying) suitable and special props or supports (made of wood or clay). They could have been put into the sand on special round pillows, or hung on walls by string.

The sphero-conical vessels that we have studied were widely used especially during the 9th—14th centuries among the countries which had active and long-standing commercial ties. The convincing fact that substantiates this theory is that on the shores of the Volga river, in the city of Bulgar, a group of sphero-conical vessels found there, completely differ from a collection of vessels of the same type found in that city, which in their shape, in the colour of the clay, and especially the signs of being baked in high temperatures are similar to the same type of vessels found in Ani. (table XX). This fact must not appear to be unusual to us, for written sources, and a study of the archaeological objects found, clearly show that for a long time existed commercial and social ties between the inhabitants of the town of Bulgar, situated on the shores of the Volga river, and the inhabitants of the town of Ani. There was a great trading colony (founded by Armenians) near the town of Bulgar.

Therefore, sphero-conical vessels may serve as material (in some cases) to determine commercial ties.

In order to determine the different uses of sphero-conical vessels, the place where they were found is of great significance.

They primarily were found in the collection of household utensils used every day, in residential buildings, in the baths, in pottery-making workshops, in the forges of blacksmiths, in metal refineries, and in other places.

After deciding the significance and uses of sphero-conical vessels, it is our intention to study and to publish the results of our study of the sphero-conical vessels found during the excavations done in the two medieval Armenian cities of Dvin and Ani.

During the excavations made in Dvin there has been found a large collection of sphero-conical vessels totalling more than 450 samples (whole vessels and fragments). They are kept in the Armenian State Museum of History in Yerevan.

They were primarily found in dwellings, in wells which yield many household objects, and in unforeseen places in the piles of earth.

A large collection of sphero-conical vessels were found in the city of Ani, and according to the account made by N. J. Marr, there are more than 600 samples (whole and in pieces). Unfortunately, only 13 whole and 37 pieces of samples of them have been preserved and which are also kept in the Armenian State Museum of History in Armenia.

These vessels which existed at the same time and were found in the two Armenian cities, differ from one another in the color of the clay, in the details, and in their shape, and in the technique of ornamentation.

The vessels found in Dvin fundamentally have dark gray clay (61%). and in terms of numbers the following group is composed of yellow-green colored vessels (20%), and the number of black colored clay vessels are less (10%). Of the above vessels, the percentage of brown-colored vessels is 7%, and finally the smallest number of vessels have red-colored clay (2%). The sphero-conical vessels in Dvin are found practically everywhere and are considered to be one of the most used of household objects. They belong to the 9th—14th centuries.

A number of sphero-conical vessels have been found in the citadel, in the region where water was directed and supplied to the fortress, and belong to the 10th—11th centuries. A number of them have been found in dwellings situated in the central streets, in the inn, in the baths, and belong to the 12th—13th centuries.

In the collection of sphero-conical vessels found in Dvin are vessels in many different shapes (table 1). One group is ornamented by stamped pattern designs very moderately done, mainly on the upper and middle parts of the vessels (tables II, IV). A great number of the sphero-conical vessels have even, ornamented walls and are not of large sizes. A greater majority of them are 9—12 cm. in size, and their capacities differ from 200 to 350 grams. As shown in the comparative table, the outer measurement of the vessel does not always correspond to its capacity. The weights of the vessels differ also. The sphero-conical vessels unearthed in Dvin have larger measurements and capacity (one of the largest measures 19,5 and a capacity of 12,5—21,00 grams). The ornamentation is more elaborate. Certain examples are ornamented from top to bottom and to give them a more beautiful appearance, some of the ornaments have been inlaid in red and green colors and glazed.

In the ornamented vessels of Dvin and Ani, as the table containing vessels with stamped ornaments

clearly shows the opportunities given to the medieval masters to create different kinds of pattern designs on the vessels (tables V—VIII).

The style of the creations of the stamped ornaments on the vessels from Ani and Dvin remind us of the works of the Armenian silversmiths.

Some of the sphero-conical vessels from Ani are stamped in blue and green colors (photo 13).

The style of the sphero-conical vessels of Ani may be divided into two groups. One group is rich in stamped ornaments and is of larger sizes than the other, which is more moderate in its style of stamping. The epithet ornamentations cover only the upper half of the vessels. It is immediately noticeable that these vessels were made in different workshops. But, this difference in style does not mean that the time of the creation of these vessels differs.

The different styles of vessels are found not only in the citadel (10th—11th centuries), but also in the dwelling places in the main street (12th—13th centuries).

And, because of this, we come to the conclusion, that in Ani at the same time and for a long period of time, existed two independent pottery-making workshops which at the same time, and where one pottery produced styles differing from the other, and made sphero-conical vessels.

The Dvin collection gives us the opportunity of separating the group of vessels belonging to the 9th century. This group of vessels are made of a darker clay, have smaller sizes, have round-like walls, and are very rarely ornamented.

In the Dvin collection of sphero-conical vessels there are two vessels made from yellow clay which especially attract our attention (photos 39, 40), which are ornamented by an encircling three times repeated, twisting on each other, the picture of double snakes in relief. These two vessels, one which was found in 1939, and the other in 1949, are very similar to each other, not only by their clay, not only by their beautiful and sphero-conical shapes, but by the creation of the ornamentations and minute details they have in common. These vessels belong to the 12th century. It is quite possible that they were made in the same pottery and by the hands of the same master, but belonged to two different persons. Samples of this type of sphero-conical vessels with pictures of twisted snakes made in relief are known to be found in different museums.

There is a vessel of that type in the Moscow

History Museum (photo 56). Three vessels of this type are in the Palestine Museum. Also, another vessel on which is the picture in relief of double twisting snakes and on which the picture is repeated six times was bought by archaeologist Y. Rogers in Teheran and the origin is also unknown.

Other details in the vessels mentioned are testimony to the fact that they were made in the same pottery. Work-shop But, it is difficult to say as to where the work-shop of that pottery-maker master was.

The thing is that double, twisted snakes, the symbol of evil spirits and good souls, was a widely spread theme in the folklore of different peoples in the art of making pottery (table XVIII).

In Armenia this symbol was found everywhere, as minute details in architecture and in other fields of art. This symbol was widely used in miniature, and in the ornamental arts, where it is possible to see, quite frequently, snakes and other animals and birds with the double twisted bodies theme, and see the progress where the real picture of animals becomes a form of ornamentation (table XVIII).

But, the double snakes drawings found on our sphero-conical vessels can be interpreted from another angle. As is known, the drawing of twisted snakes in ancient times had its distinct meaning. That was the symbol of the ancient Greek God of medicine Asclepius-Esculapos. That they knew of the healing powers of snake poison in Greece is evident by the fact that snakes were kept in prohibited areas and as a rule, existed in the holy places of the God Asclepius, and next to hospitals.

We may assume, that under the circumstances, that is expressed by the paintings of snakes found on our vessels. So, the same paintings of snakes, repeated in different places and repeated on a few sphero-conical vessels, in this case, could also have its advice, because in those vessels were kept liquids which contained snake poison, or poisonous liquid, medicine or ointment,

The greater number of the Dvin vessels and a greater number of the Ani vessels have their peculiarities, which is rarely met on sphero-conical vessels of other regions. In our collection of vessels, regardless of their size, shape, and their ornamentations have, after being baked, signs which have been scratched on, or symbols, and sometimes inscriptions or other signs.

These signs were made after being baked, already firm, sometimes even on ornamented earthenware, and therefore could not have been the signs

of the master pottery-maker. Only on one occasion do we see an inscription in the name of the pottery maker, master and that being before baking, and that is on the remains of a vessel from Dvin and reads „Fayruz“ (photo 40, table XIII, 8).

There are signs with Armenian letters on the vessels from Ani and no complicated symbols (table XI).

The signs scratched on the Dvin vessels are much more diversified and have many repetitions and the vessels are found in different places of the city.

From the examples presented (table XII—XVII) it becomes evident that inscriptions in Arab-like lettering have been scratched on the vessels, and facsimiles of Arab letters, and quite often are jumbled and become symbols, and many other inexplicable signs.

Those inscriptions in Arab-like lettering which have been subjected to jumbling fundamentally are personal names—Abu-Bakr, Ali, Amin, Ahmad, Bahram, Isa, Yusuf, Hasan, Muhammed, Ubayd, Umar, Haddad, and Shirin. Some of the personal names can be taken as symbols or good wishes. The Arabic inscriptions have been read by the workers of the Arabic Section of the Leningrad branch of the Institute for Eastern Studies of the Academy of Sciences of the U.S.S.R.

Among the jumbled manner of the signs can be seen the Armenian letters Դ or Հ.

Most probably these signs belonged to the owner

of these spherico-conical vessels who engraved either his name or own sign, or that sign expressed or showed what the vessel contained.

The progress made in glassmaking and in connection with the increasing of production tenfold, vessels made of glass began to be frequently used to keep medicine and expensive oils.

Because of the flexibility of the material for glassmaking and peculiarities connected with the technique of production, glass vessels in comparison with clay vessels have a greater variety (photos 65, 67).

In the collection of glassware found in Dvin, we have several samples of them (photos 60—64).

Glass spherico-conical vessels were made by the blowing method as well as by special patterns made of brick (photo 66), and only a few of them are known to exist. They are located in the Central Asian city of Milet, in Sofia, Saray-Berkey, and in Gyrgan.

Studying in detail the collection of spherico-conical vessels found during the excavations made in Dvin and Ani and comparing them with many vessels of the same type, we have come to the opinion that these thick clay, spherico-conical vessels with small mouths and sharpened ends had been used to keep and store sweet-smelling oils, easily evaporating and poisonous liquids, different kinds of medicine and for the keeping of ointments. These vessels were widely used in every-day life in the 9th—14th centuries by the people who lived in the Middle East and in Eastern Europe.