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THE SPHERO-CONICAL VESSELS FROM THE LOWER DANUBE IN THE LIGHT OF NEW DISCOVERIES FROM ISACCEA, TULCEA COUNTY, ROMANIA

ABSTRACT

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So-called sphero-conical or grenade vessels are one of the more unusual archaeological finds in Eurasia and beyond dating to the period between the 8/9th to 15th centuries AD. They have been found in many sites located in the Middle East, Eastern Europe, the Caucasus as well as in Central Asia. These are small vessels, usually sphero-conical and spherical in shape, well-made by hand with rounded, short necks and small openings. In the literature the exact function of these wares is still under debate. The finds from the Lower Danube, especially from Dobruja (Isaccea and Nufăru) are the largest deposits in Europe. They are a good example of the special role of the Dobruja as an important network for commercial, cultural technological exchange between Europe and Asia in the Middle Ages. In this paper we will present new discoveries of the sphero-conical vessels from Isaccea and discuss the current state of research on these types of 'exotic' vessels in Europe.

Key words: Eastern Europe, sphero-conical vessels, Early Middle Ages, Lower Danube, cross-cultural interactions.

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Sphero-conical vessels describe a group of archaeological artifacts with the function of small containers for powdery or liquid substances. The group consists not only of earthenware, but also of vessels made of glass, brass, fayence and lead (Savage-Smith 1997; Alpatkina 2011). They are found over a vast area from Egypt in the south-west (François 1999; Bonnéric and Schmitt 2011, 101, pl. 5), throughout the Middle East: Israel, Syria, Lebanon, Turkey (Seyrig 1959, 81-89; Arnon 2007, 68, fig. 14: 1-11; Cytryn-Silverman 2010, 116; Çeken 2013; Tunçel 2014), Iraq (Ghouchani and Adle 1992), Iran and Afghanistan in the north (Dumarçay 1965, 75); from South-East Europe: Bulgaria, Romania, Moldova, Ukraine, Russia (Mihajlova 1987; Spinei 1970; Mănuclu-Adameşteanu 1984; Kravchenko 1986, 60-63, fig. 22:4, 24; Zelenko, Morozova 2012), to Caucasus: Dagestan, Azerbaijan, Armenia, Georgia (Dzhanpoladyan 1958; 1982; Ibragimov 2000, 74-76, 151; Abbasova and Nurutdinova 2014) and the southern part of Asian Russia (Galiyeva 2001, 52-53), through Central Asia (Rtveladze 1974, Shishkina and Pavchinskaja 1992, 65; Yeleuov, Akymbek and Chang 2014), and even as far east as China (Galiyeva 2001, 52-53). What is particularly interesting is that the vessels appeared in Western Art. The marble sculptures of Saint Gabriel and Saint Michael, both from the School of Nicola Pisano (2nd half of the 13th century) and preserved in Victoria and Albert Museum in London held objects which are interpreted as sphero-conical vessels analogical to finds from Islamic and Central Asian countries (Fontana 1999).

Until now, most of the sphero-conical vessels in South-Eastern Europe were excavated in the Lower Danube (Stănică 2015, fig. 73; Fig. 2, 3). Many fragments of vessels are known from Bulgaria (Mihajlova 1987) and the Republic of Moldova (Bârnea and Reaboi 1998, 153, 154; fig. 1:6, 2:3).

Sphero-conical vessels are considered to be objects related to the Islamic tradition of *turanji*, i.e. vessels with a thick clay body, used in warfare as hand grenades. They are dated from 8th/9th century to the 14th and 15th century AD (Nuretdinova 2011a, 150).

The term 'sphero-conical vessels' describes such forms as: conical, sphero-conical, almond-like shaped, and vessels with a short neck and a narrow orifice (Savage-Smith 1997). their dimensions do not exceed 15 cm in height and 12 cm in diameter and can hold about 220 ml (Ghouchani and Adle 1992, 72). Their walls are usually more than 1 cm thick, and the bottom is even thicker. Most of the ceramic examples were shaped from a selected clay mixture, fine grained and hard-fired at temperatures between 1100°C and 1250°C. Their outer layers differ; a whole range of their exterior decoration has been described. Some potteries show a smooth surface without any decoration, other examples bear elaborate ornaments and motifs: they are engraved, with affixed relief, incised, sealed or imprinted, with grooves or rills, covered by calligraphic inscriptions, signed by their makers or owners; some of the surfaces are fire-glazed (Ghouchani and Adle 1992, 72; Savage-Smith 1997; Sharvit 2008, 101; Nuretdinova 2011b, 51).

Several of the sphero-conical vessels are zoomorphic, with their forms resembling fish or birds (Tunçel 2011). In the case of fish-shaped vessels, they are interpreted as water-

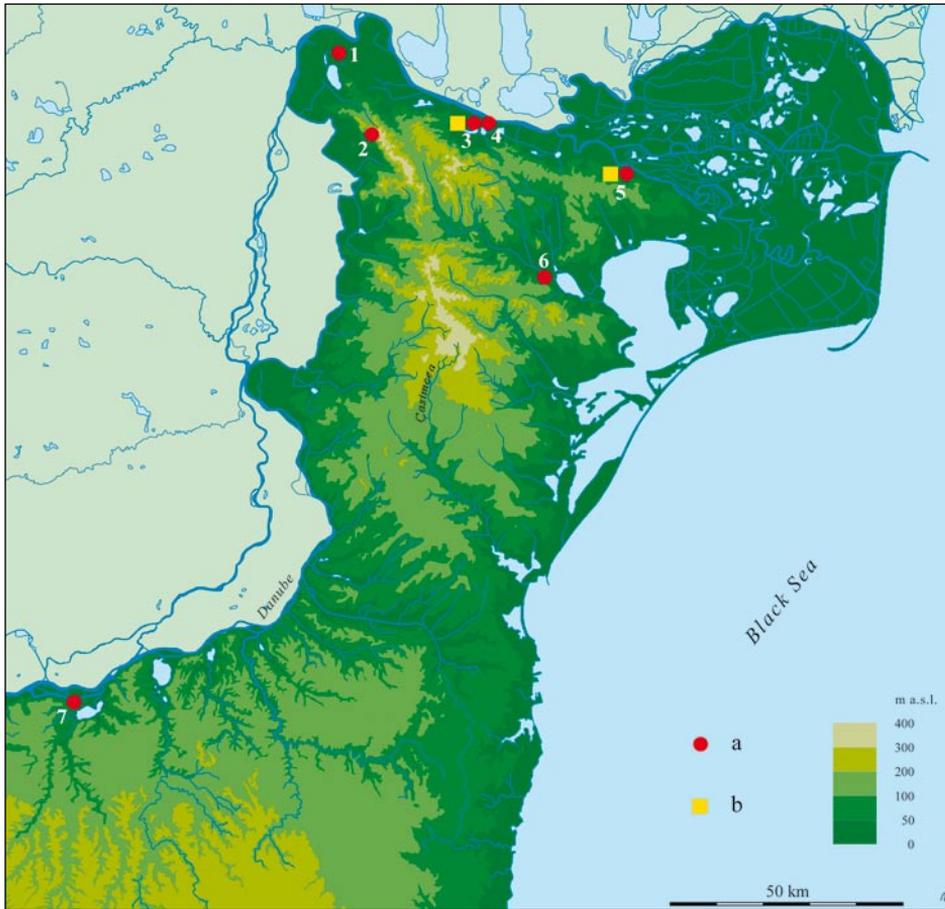


Fig. 1. The Sphero-conical Vessels from Dobruja, Romania. a – single finds, b – deposits; 1 – Garvăn-Dinogeta, 2 – Greci, 3 – Isaccea, 4 – Isaccea – Noviodunum, 5 – Nufăru, 6 – Babadag, 7 – Păcului lui Soare (drawing by B. Sz. Szmoniewski and I. Jordan)



Fig. 5. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type I
(photo by G. Dincu)

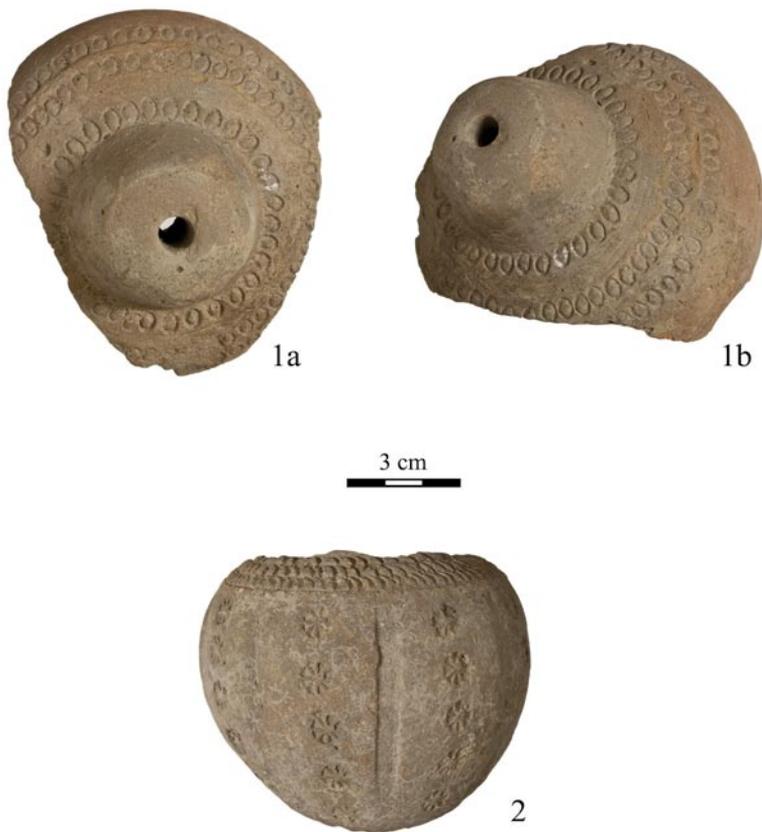


Fig. 7. Spherico-conical vessel from Isaccea, Tulcea county, Romania:
1a-1b – Type III, sub-type A; 2 – Type II, sub-type A (photo by G. Dincu)



Fig. 9. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type II, sub-type B (photo by G. Dincu)

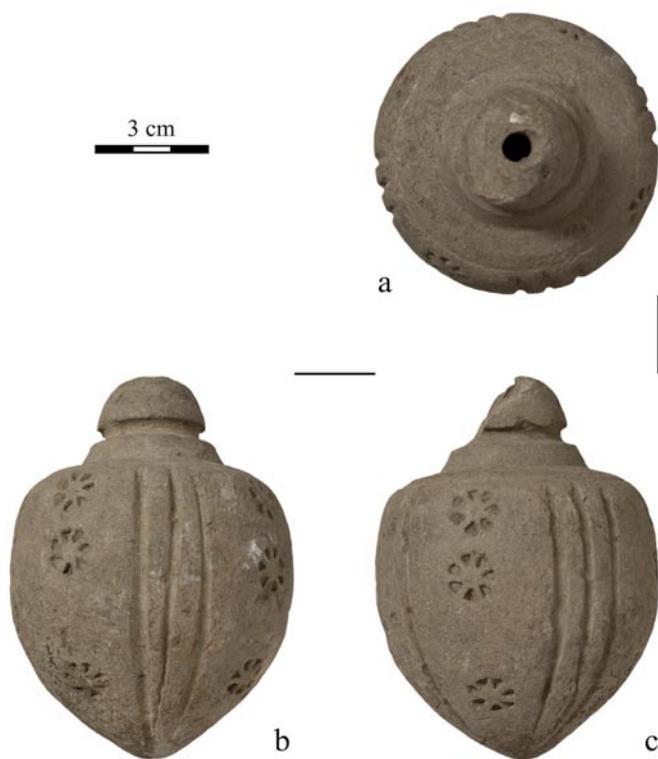


Fig. 10. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type II, sub-type B (photo by G. Dincu)



a



b

Fig. 12. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type II, sub-type C (photo by G. Dincu)



Fig. 13. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type II, sub-type D (photo by G. Dincu)



Fig. 16. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type III, sub-type B (photo by G. Dincu)



3 cm

a



b



c

Fig. 17. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type III, sub-type B (photo by G. Dincu)



a

3 cm



b

Fig. 18. Sphero-conical vessel
from Isaccea, Tulcea county, Romania.
Type III, sub-type B
(photo by G. Dincu)



a

3 cm



b

Fig. 20. Sphero-conical vessel
from Isaccea, Tulcea county, Romania.
Type III, sub-type C
(photo by G. Dincu)



Fig. 21. Sphero-conical vessel from Isaccea, Tulcea county, Romania. Type III, sub-type D (photo by G. Dincu)



Fig. 22. Sphero-conical vessel from Fostat in Egypt (made in Eastern Iran) (10th-12th century)
Height: 11.4 cm conversion, depth: 8.9 cm. © Victoria and Albert Museum, London



Fig. 23. Glazed spherico-conical vessel from Syria or Egypt (13th-14th century)
Height: 12.1 cm, diameter: 8.9 cm. © Victoria and Albert Museum, London



Fig. 24. Sphero-conical vessel from Egypt (11th-13th century). Height: 12.06 cm
The Madina Collection of Islamic Art, gift of Camilla Chandler Frost (M.2002.1.126)
<http://collections.lacma.org/node/204631>

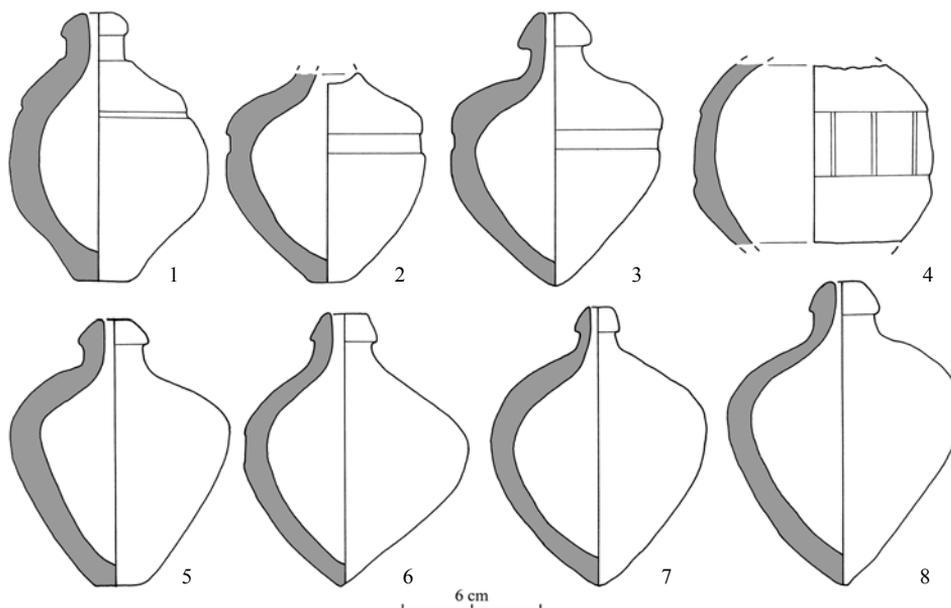


Fig. 2. The Sphero-conical Vessels from Dobruja. Nufăru, Tulcea county (according to Mănuclu-Adameșteanu 1984) (drawing by J. Ozóg)

bearing containers with references to water symbols (Dumarçay 1965, 77, fig. 2, 3; Ettinghausen 1965, 227, fig.14).

Despite numerous finds, there is very little information on their contents. In some sphero-conical vessels found in Eastern Turkey and Armenia – Dvin white or yellow powder, grape seeds and mastic like dough (Dzhanpoladyan 1958, 210), clay, sand, straw and coal in Lebanon – Ba'albek (Sarre 1925, 134, no.1), mercury in Lebanon – Sa'da (Chester 1871), Ukraine – Crimea (Vysotskiy 1908, 349), Russia – Kazan area (Vysotskiy 1908, 349; Lunin 1961, 256, no. 3) and pyrite from Israeli collections (Brosch 1980) were observed.

The first sherd of a conic-spherical from the Lower Danube was unearthed during the excavations carried out in 1949 on the location of the Byzantine fortress in Dinogetia-Garvan, in its 11th century layer. In 1950, the next find of this kind happened to be an intact pot found in an earthen pit from the 11th/12th century on the locus mentioned above (Barnea 1967, 275-276, fig. 164: 14). The next finds were purely accidental, on an archaeological site in Nufăru in 1976, 10 km to the east of Tulcea, a Romanian town situated by the Danube tributary, the Saint George branch. This deposit, found resting a pit, contained 12 sphero-conical vessels. The research project of the locus which was planned as the site's

preservation measures subsequently brought further finds of such vessels to light (Mănuclu-Adameşteanu 1984). It is worth mentioning here that sphero-conical vessels are constantly being discovered in Nufăru (Damian *et al.* 2007, 149, fig. 26).

The vessels from the deposit at Nufăru have been categorized in 4 groups according to their mineral ingredients, chemical formulas, and shaping/firing procedures as follows (Mănuclu-Adameşteanu 1984, 363-364):

Group I – includes vessels made of clay of a very fine quality, with the greenish-grey glimmer; greenware, i.e. unburned clay; stoneware- hard, fine grained. All of the pottery is hand-made on the potter's wheel and some asymmetry in their form is their common feature. The only decoration visible is a constant horizontally incised groove along the inner surface. Only one sample shows the double-grooved pattern (Fig. 2)

Group II – includes vessels made of clay of a yellowish-crimson shade; the potter's mixture contained a large amount of flake mica (phyllosilicate minerals). Considering their shaping and decoration, the necks are deeply trimmed and the surfaces left undecorated (Fig. 3:3)

Group III – includes one vessel of a beige shade, with a small addition of mica and definitely kaolinite minerals as the most important ingredient of mixtures widely known as china clay, ball clay or fire clay, hard fired and heat-resistant. Its surface is decorated by an imprint in the form of a rosette (Fig. 3:4).

Group IV sub-type A includes one vessel of the clay having a dark grey shade, with small amounts of mica and kaolin in the mixture. The surface is lacking any decoration (Fig. 3:2)

Group IV sub-type B includes a single sherd, or broken piece of pottery, describing an approximately sphero-conical shape and shaped of dark, almost black clay; its outer layer shows traces of glazing (Fig. 3:1).

The new finds from Issacea, Tulcea county, were unearthed during rescue excavations. Six items were found in D. Gherea Street and nineteen complete and fragmented bowls were found in Unirii Street in a destroyed pit together with a large number of animal bones and other earthenware, dated to the early Middle Ages. Unfortunately, the pit had been destroyed through human activity. All of the vessels presented fine craftsmanship, hand shaped on the potter's wheel, of good quality clay with the inclusion of mica and kaolinite. Some samples show traces of glaze firing. The shade of each exterior ranges from grey to orange. Their dimensions range from between 9 cm to 14.5 cm in height and 6.5 cm to 10 cm in diameter.

The artefacts mentioned above can be typologized as follows according to their form, ware, technique and surface treatment:

Type I – includes undecorated vessels made of high quality, ash-grey coloured clay (Fig. 4:1, 2 and 5)

Type II – includes the vessels decorated with oval imprints in form of rosettes. This type can be divided according to supplementary motifs into four following sub-types:

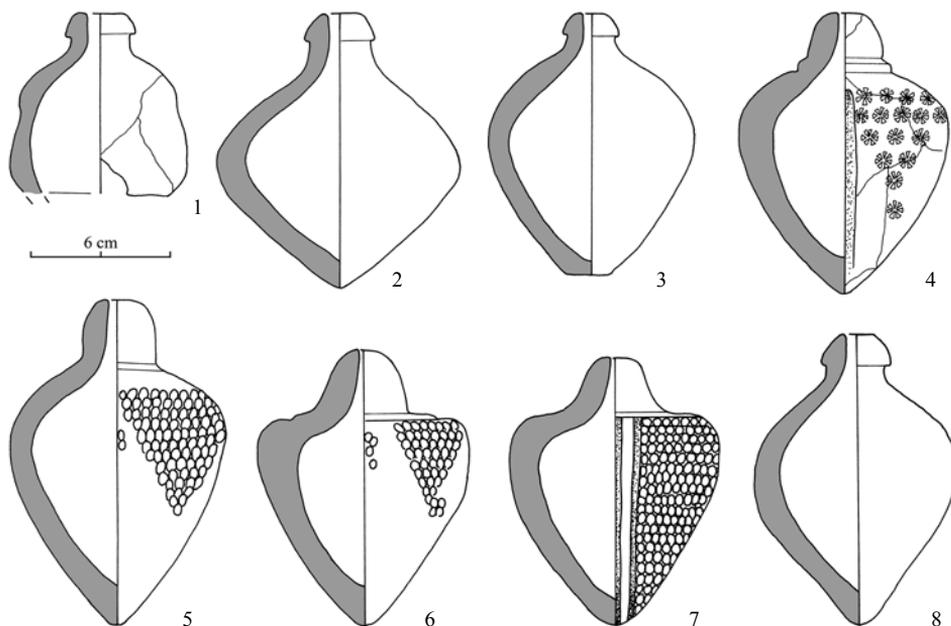


Fig. 3. The Sphero-conical Vessels from Dobruja, 1-4 – Nufăru, Tulcea county; 5 – Babadag, Tulcea county; 6, 7 – Isaccea – Town, Tulcea county; 8 – Greci, Tulcea county (according to Mănuclu-Adameșteanu 1984) (drawing by J. Ozóg)

Sub-type II.A. – on the surface of the vessel is one, quite broad groove or vertically engraved band (Fig. 6 and 7: 2).

Sub-type II.B. – on the surface of the vessel there are three vertical grooves (Fig. 8:1-5 and 9, 10).

Sub-type II.C. – more complicated ornamentation is found on the surface of the vessels, including oval imprints, wavy lines and horizontal grooves (Fig. 11:1, Fig. 12).

Sub-type II. D. – the most sophisticated system of ornamentation is to be found, based on band ornaments consisting of two rosette seals, two wavy lines and four horizontal rills. (Fig. 11: 2, Fig. 13).

Type III – includes the vessels with an oval imprints or seal. This type can be divided according to the shape of the layout/scheme of the oval imprints in the four following sub-types:

Sub-type III.A – on the surface of the vessels are oval imprints in one line ordinated around upper part (Fig. 7: 1a-1b, 14:2).

Sub-type III.B – on the surface of the vessels are oval imprints more or less irregularly scattered and flanked by two vertical rills (Fig. 15:1-3 and 16, 17, 18).

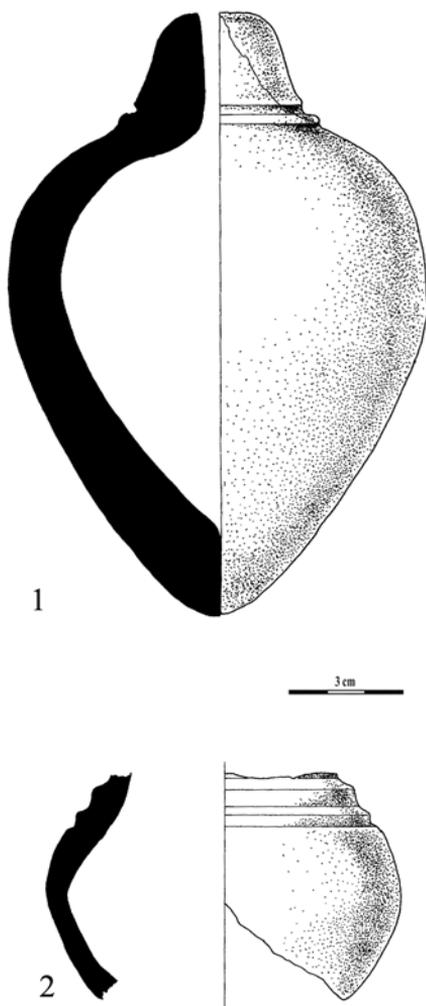


Fig. 4. The Sphero-conical vessels from Isaccea, Tulcea county, Romania. Type I (drawing by C. Geanbai)

Sub-type III. C – on the surface of the vessels are oval imprints filling all of the exterior of the body, from the shoulder to the bottom edge and flanked by three vertical lines (Fig. 19: 1-2, 20).

Sub-type III. D – on the surface of the vessels are oval imprints filling the lower part of the exterior, composed in a triangle while in the upper part, where the shoulder becomes the neck, it is decorated by rills and lamellas (14:1, 3(?) and 21).

Sphero-conical vessels analogical to the types presented above are known from a vast area from Egypt to Central Asia. Type I sphero-conical vessels (undecorated) are the most common finds (Barnea 1967, 275-276, fig. 164: 14; Mănucu-Adameşteanu 1984, 369, pl. 1: 3, 4, II: 3,4 III: 3, VII: 5-8; VIII: 2, 3; IV:4; VIII:8; Damian *et al.* 2007, fig. 26; Mihajlova 1987, tab. II and III; Ibragimov 2000, 151; Galiyeva 2001, fig. 1; Nuretdinova 2011a, fig. 2: 4-9, 11; Nuretdinova and Belyayev 2015, fig. 3: 2: 5-8; 3: 2-3, 8; Fig. 2:5).

Type III sphero-conical vessels have many analogies in the vast territories from Egypt to Central Asia. Bowls of this group have been found in Northern Dobruja (Romania): Isaccea-Town and Babadag (Mănucu-Adameşteanu 1984, 369, pl. IV: 1, 2, 3, fig. 3: 5-7) (Fig. 3: 5-7) in Bilhorod-Dnistrovskiyi/Cetatea Albă (formerly known as Akkerman) on the Dnie-ster river (Ukraine) (Kravchenko 1984, 60-63, fig. 24: 1-5, 13), on the southern coast of Crimea (Ukraine) (Zelenko and Mo-

rozova 2012, 188, fig. 1: 1-2) and from the Volga Bulgaria in Russia (Nuretdinova 2011b, fig. 3:2, 3, 6; Zelenko and Morozova 2012, fig. 7: 1-4). In the Middle East these types of vessels, with oval imprints or a seal, were classified by 'Abd al-Ra'ūf (1978, 1-79) as a Type A – Egyptian Sphero-Conical Vessels (see: Shavrit 2008, tabl. 3:1; 101, figs. 3.1: 1-3, 5-7; 3.2: 8-15; Prag 2006, 302, fig. 4) (Fig. 22, 23, 24 and 25).

Fewer analogies belong to Type II with rosette imprints. One sphero-conical vessel with the same imprint has been found in Nufăru in Northern Dobruja (Mănucu-Adameşteanu 1984, 369) (Fig. 3:4) and another in Bilhorod-Dnistrovskiyi/Cetatea Albă (formerly known as Akkerman) on the Dniester river (Ukraine) (Kravchenko 1984, 60-63, fig. 24: 8, 11, 12) and Volga Bulgaria in Russia (Nuretdinova 2011a, fig. 3:12). The rosette pattern is observed on vessels from the Middle-East which were classified by 'Abd al-Ra'ūf (1978, 1-79) as a Type B – Syrian Sphero-Conical Vessels (see Shavrit 2008, 101, tabl. 3:2, figs. 3.3: 1, 4; 3.5: 8) (Fig. 26). It is worth mentioning that in Isaccea deposits have been found with moulds to produce bowls with rosette imprints (Stănică 2015, 224 pl. 38) close to the rosette imprints from sphero-conical vessels. What is particularly interesting is that moulds and vessels with rosette imprints are known from the site as Bilhorod-Dnistrovskiyi/Cetatea Albă in Ukraine, Orheiul Vechi in Republic of Moldova or from Crimea in Ukraine where the sphero-conical vessels have been found (Stănică 2015, 224).

The function of the sphero-conical vessels has been the subject of the utmost interest for many scientists who have produced a sizeable literature in many languages proposing various opinions about the purpose of the vessels (see Savage-Smith 1997; Fontana 1999, 12-14 footnote 18; Nuretdinova 2011a). The most popular suggestion describes their function as hand grenades; while others propose tasks of containing lead, alcohol, scent, healing balsams, lamp oil; according to other researchers, they were used as weights or elements of architectural decoration (see Fontana 1999, 12-14, footnote 18).

Most of this literature suggests some military function for the sphero-conical vessels, with their contents exploding either as hand grenades or in marine battles as a projectile for flame throwing machines or shells for catapults (Arendt 1931; Mercier 1952; Ruszczyc 1962; Bosi 1966, 46-48; see also the discussion in: Seyrig 1959, 84-87; Ettinghausen 1965, 225-226). They were to contain the so-called 'Greek fire', a highly explosive mixture of petroleum, pitch, sulphur, potassium nitrate, slaked lime and resin. Byzantine military manuals state that 'Greek fire' was sometimes deployed in pottery vessels (*kytrai* or *tzykalia*) which were thrown by catapult (Pryor *et al.* 2006, 378-379, 609; 86-87; Forbes 1959, 70-90). Apart from containing Greek fire, they could have carried other explosive materials inside. It should also be pointed out that inscriptions reading *fath – fath*, which means *victory – victory*; bi-Hamâ in [the city of] Hama, and finally requests and prayers for victory are to be found on a number of such vessels coming from the territory of present

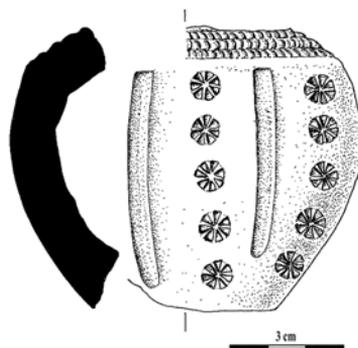


Fig. 6. The Sphero-conical vessels from Isaccea, Tulcea county, Romania. Type II, sub-type A (drawing by C. Geanbai)

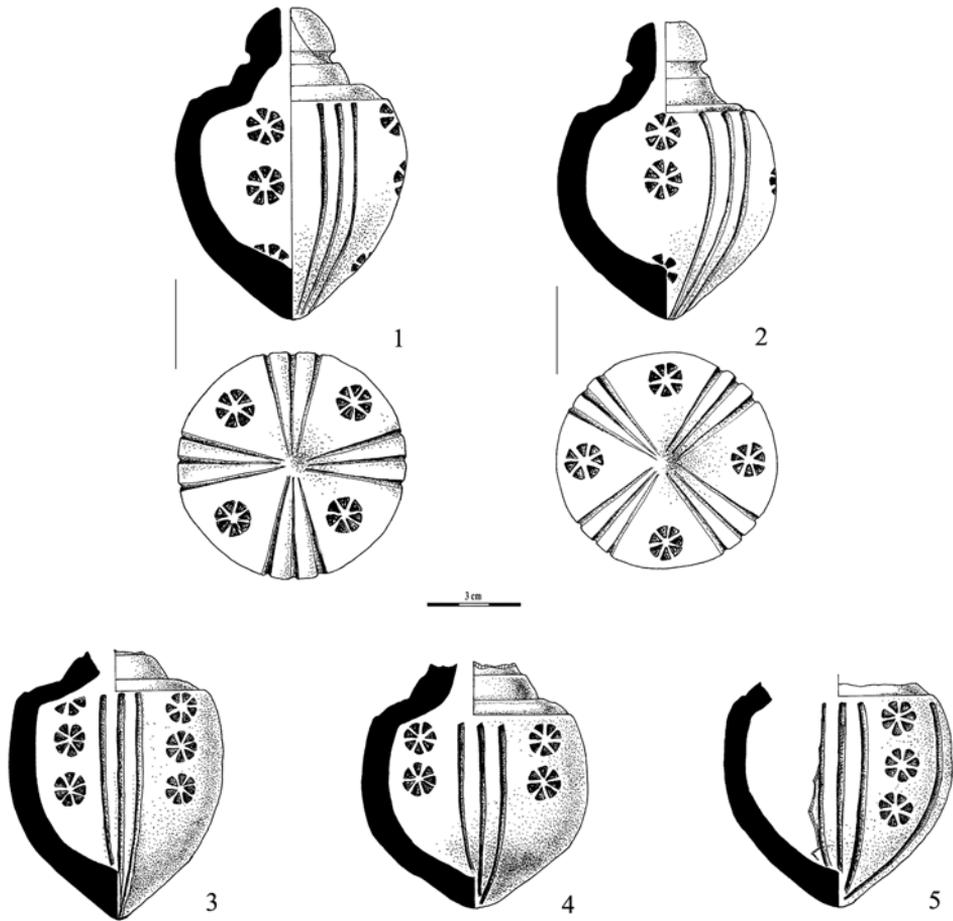


Fig. 8. The Sphero-conical vessels from Isaccea, Tulcea county, Romania.
Type II, sub-type B (drawing by C. Geanbai)

day Syria (Sezgin 2010, 101). All those inscriptions are supposed to prove their military purpose. Hand grenades of a similar form are illustrated in modern Arab handbooks of warfare and martial techniques (Sezgin 2010, 121, 123). Yet one question remains unsolved: how could the insignificant quantities of explosives contained in such small vessels pose a serious threat to any of Asia's fortresses or even the walls of towns? They may perhaps have served as ignition devices being capable of igniting a small flame which could have caused a serious fire when thrown onto constructions of organic materials placed close to the walls. Alternatively, they could have been shot as ballistic projectiles in marine battles onto the enemy's deck.

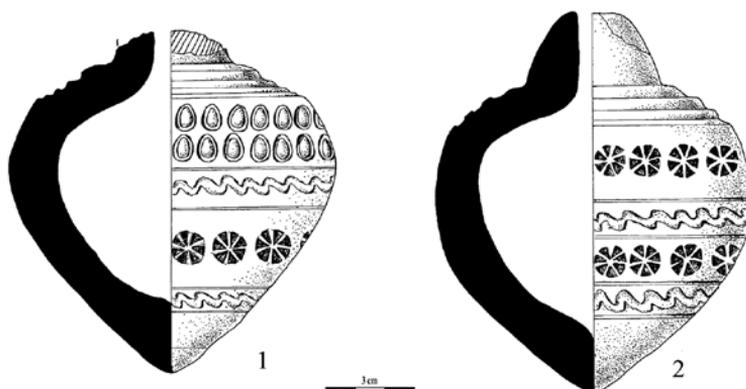


Fig. 11. The Sphero-conical vessels from Isaccea, Tulcea county, Romania. 1 – Type II, sub-type C, 2 – Type II, sub-type D (drawing by C. Geanbai)

It is worth mentioning here that traces of pyrite have been found inside the vessels from Israel. According to Joshua Brosch (1980, 114-115), it can be seen as the evidence for their function as containers for powdery kindling which, next to flint and tinder, presented tools for lighting fire. It could explain the rapid spread of the vessels all around the Arab world, and also help to understand the presence of the rich ornamentation of the exterior.

This idea of the military implementation of sphero-conical vessels has often been criticized (Seyrig 1959, 84-87; Ettinghausen 1965, 225-226). The main fault seems to be in focusing too much on the Arab literature which describes objects which are similar in form but of different materials, i.e. of glass (*qawârîr*) and of copper (*naffâta*) (see Ghoughani and Adle 1992, 72-73; Sezgin 2010, 101-102). There is no support in the historical sources, however, for clay as a possible material. The French researcher M. Mercier who listed the Arab sources supported the opinion that earthenware hand grenades can be seen as a transition phase between glass vessels and those of copper, and, in the view of the plainness of clay and its common use, those made of pottery were simply omitted and ignored (Mercier 1952, 43, 94, 98, 104, 125). Only one citation mentions clay sphero-conical vessels with a martial implementation but instead of explosives they were made to contain dead scorpions (Ghouchani and Adle 1992, 73, 87).

A quite different interpretation of the function of sphero-conical vessels has been presented by Russian and Soviet researchers (see Nuretdinova 2011b). The author of this hypothesis was A. F. Lichaczev. In his work published in 1876, Lichaczev suggested interpreting the vessels as lamps containing fat or oil/petroleum (Likhachev 1876, 31; 1886). He was conscious of the difficulty of the possible placing of such a lamp, given the lack of any prop or foot to support the vessels in an upright position, however, he represented the view that such props must have existed but were simply not found until that time. Subsequent

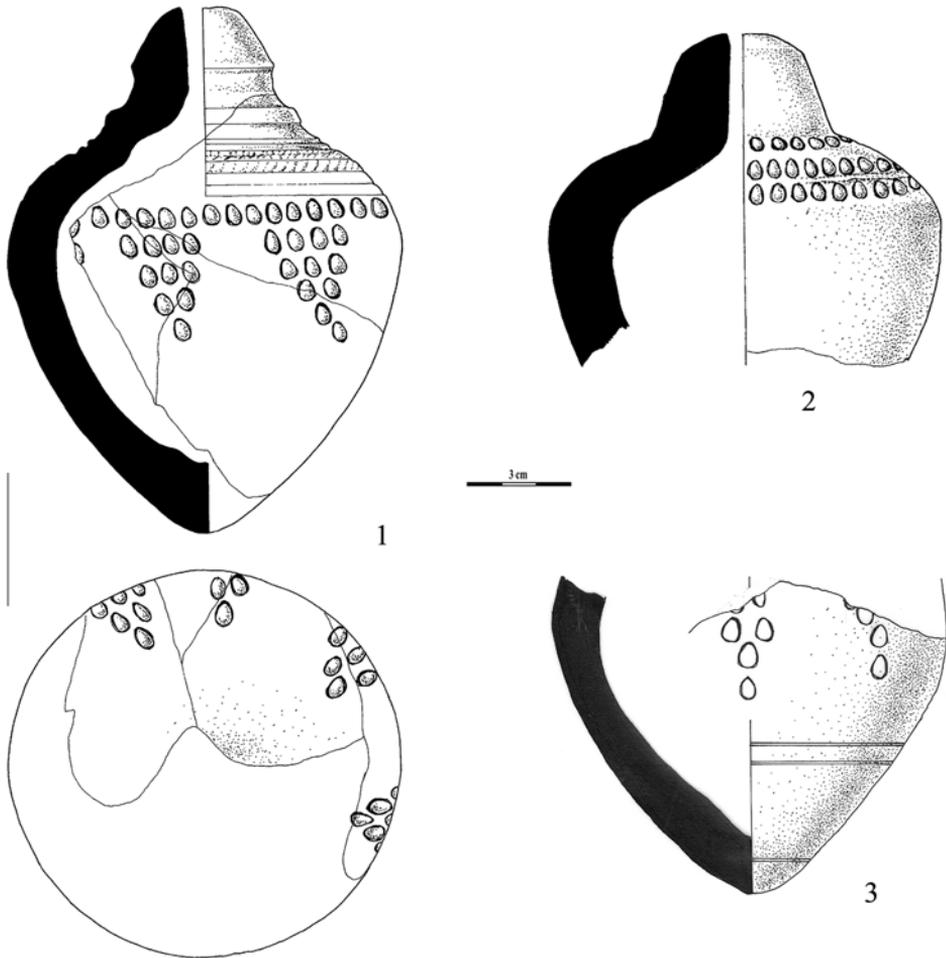


Fig. 14. The Spherico-conical vessels from Isaccea, Tulcea county, Romania.
1, 3 – Type III, sub-type D, 2 – Type III, sub-type A (drawing by C. Geanbai)

generations of Russian and Soviet scientists expressed their support for this approach, arguing that such elements could have been made of wood and not survived to our times (see Nuretdinova 2011b, 54).

An interesting hypothesis about the possible function of the vessels invokes the so-called ‘Heron’s flask’, or aeolipile (Hildburg 1951, 27-55; Seyrig 1959, 81-89; Ettinghausen 1965, 224-225, pl. C, D). This device could be considered a prototype of the steam engine. It consisted of a fire-heated boiler and a turbine in the form of a ball fixed on an axle. Steam coming from the boiler would enter the ball through hollow pivots or axles and

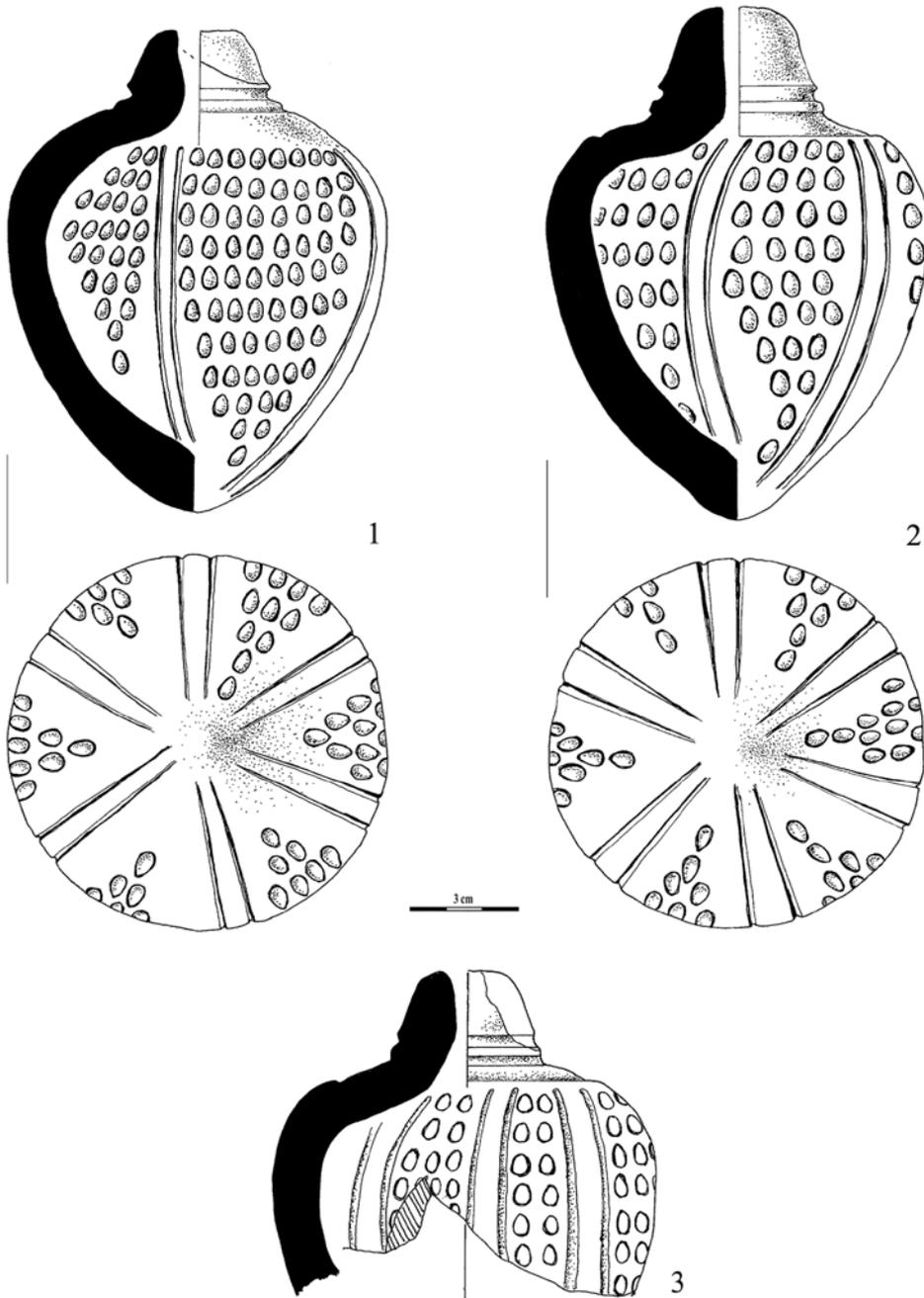


Fig. 15. The Sphero-conical vessels from Isaccea, Tulcea county, Romania. Type III, sub-type B (drawing by C. Geanbai)

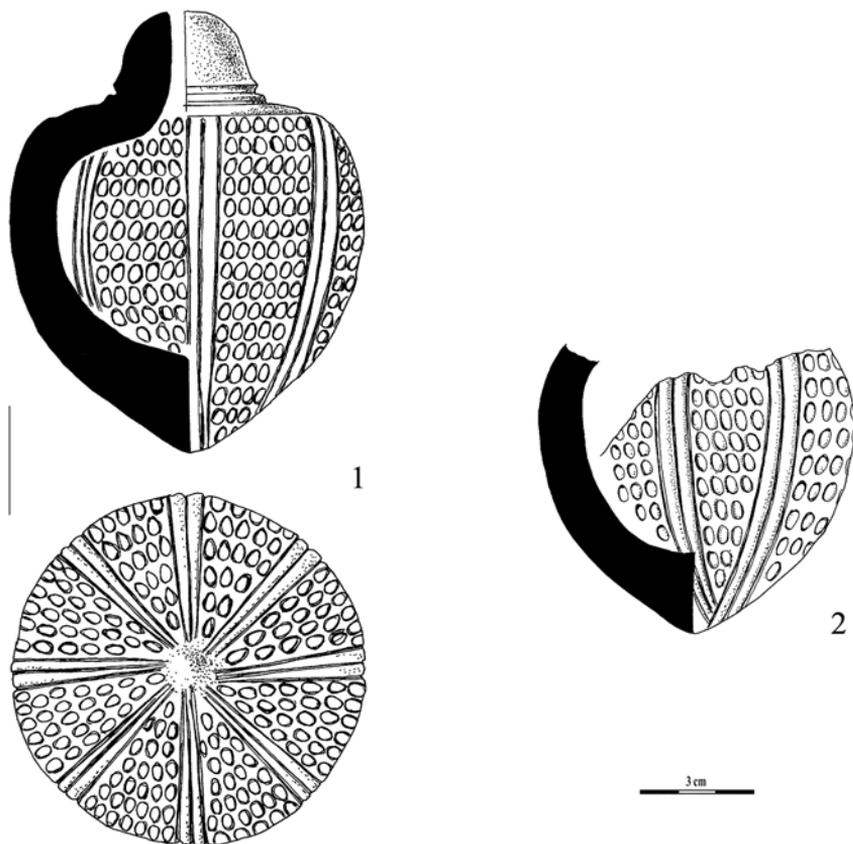


Fig. 19. The Spherico-conical vessels from Isaccea, Tulcea county, Romania.
Type III, sub-type C (drawing by C. Geanbai)

escape through the nozzles. The jet propelling force created in this way would put the turbine into a circular movement, thus making the jet engine work. According to this theory, the spherico-conical vessels could easily be interpreted as jet engines. The weak point in the theory is the lack of any such turbines being produced of clay. European and Himalayan examples of such jet engines have clearly shown that they were made of metal (Ettinghausen 1965, pl. C, D). Hildburg, the author of this approach, suggests that clay devices were used as means for visual instruction and demonstration and had not been designed for any practical purpose (1951, 29). However, no equivalent for the word *aeolipile* could be found in either Arabic or Persian literature, and the work of Heron from Alexandria mentioning the term above and describing the functioning of the device was translated into Arabic no earlier than the late 1st century (Ghouchani and Adle 1992, 73-74).

A very plausible interpretation is that the sphero-conical vessels must have served as containers to carry mercury (Ettinghausen 1965, 222-223). This view developed based on some ethnographical observations and citations from Arabic sources as well as chemical analyses of the contents. Oral accounts gathered from the Moslem population inhabiting regions of Russian Turkestan seems to support the view of the function of such vessels: they are said to have served as containers for transporting mercury as late as the 19th century. They were called *simop-kusatscha*, i.e. containing 'fluid silver' / mercury. Similar information has been collected in Turkey where settlers from Armenia used such sphero-conical vessels as containers to store mercury (Ettinghausen 1965, 222-223). The Tashkent copy made in 1541 of an Arabic manuscript on pharmacy which had been written by Ali bin Husayn al-Ansari in 1369, contains a drawing of three sphero-conical vessels as suggested containers for mercury storage (Lunin 1961).

It should be stressed here that mercury was widely used in the Arabic world for pharmaceutical production; it was utilised against headaches, epilepsy, syphilis and in cosmetic products for dermatological use. It was also exploited in veterinary medicine and the mirror industry (Thomann 2015).

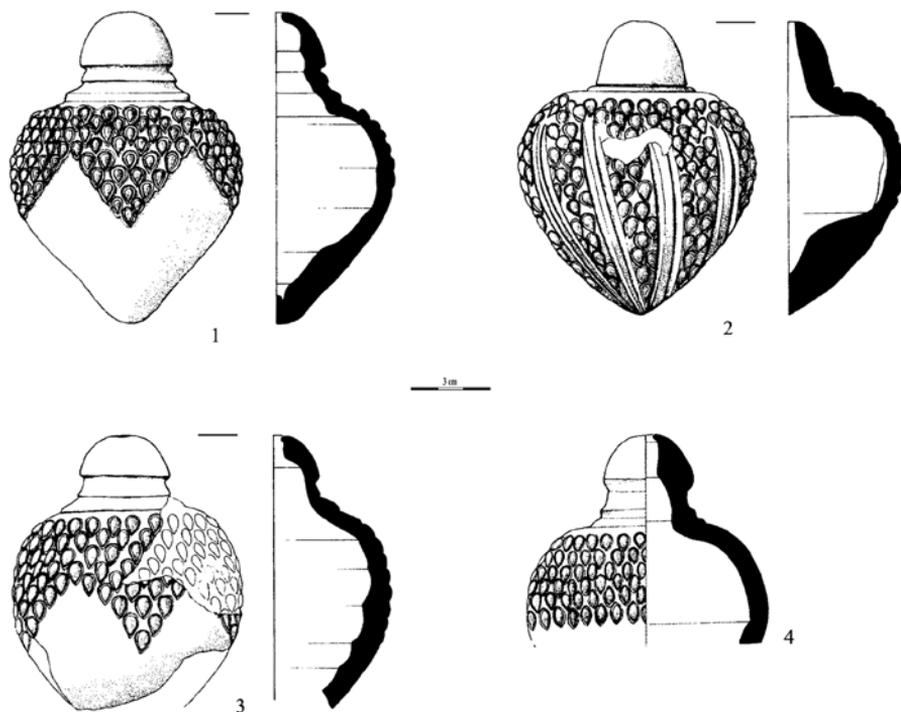


Fig. 25. The Sphero-Conical Vessels from Baniyas, Israel (according to Sharvit 2008) (drawing by C. Geanbai)

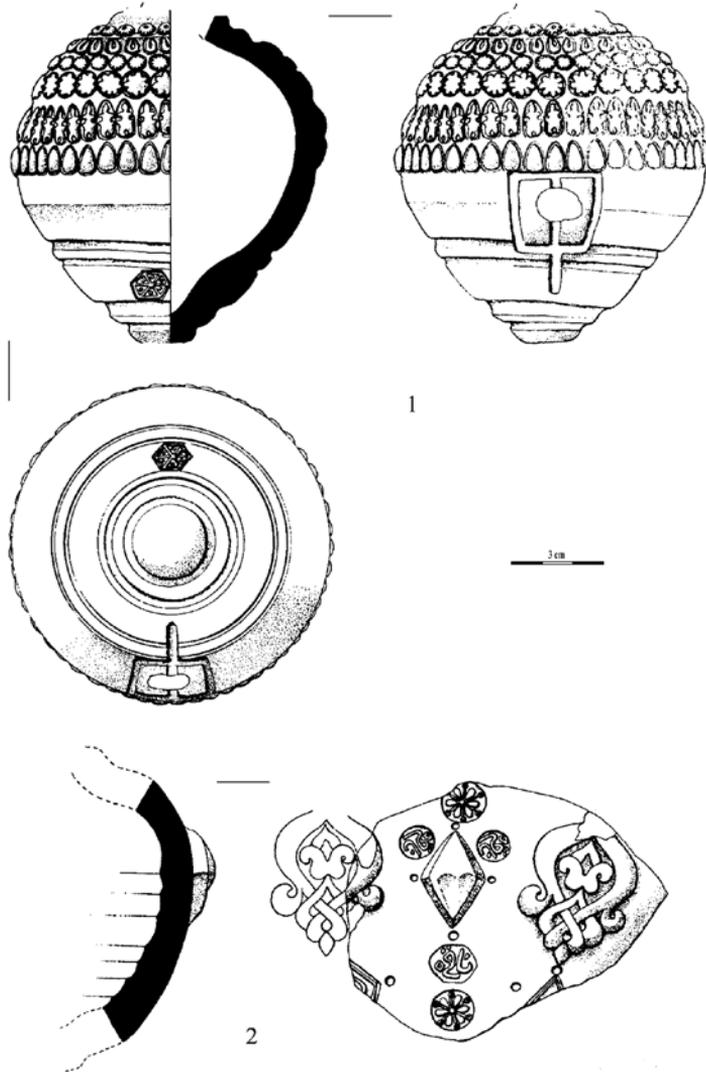


Fig. 26. The Sphero-Conical Vessels from Baniyas, Israel (according to Sharvit 2008)
(drawing by C. Geanbai)

Several scientific sources also consider the possibility of sphero-conical vessels being used to store other valuable fluids such as balms, perfumes or rose water. Such substances could easily be stored in such thick-walled vessels. An example supporting this approach is to be found in the clay relief from the Umayyad family's palace in Qasr-al-Hair al-Gharbi; the relief mentioned shows a woman carrying such a vessel (Ettinghausen 1965, fig. XLVI-

II:B). Particularly noteworthy is that a large number of vessels were found close to the minarets which were surrounded by sanitary and hygienic facilities. There were often the places where ritual baths with fragrant water were taken before prayers. The rose water or balms could have been stored and used from the sphero-conical vessels (Yeleuov, Akymbek and Chang 2014, 386).

Finally, we have to mention a suggestion of their use as parts of water-pipes (Keall 1992; 1993). According to Edward J. Keall (1993, 283) “the enigmatic sphero-conical vessels [...] represent ceramic version of the coconut, and as such do reflect a practice in the Middle East of smoking in private, three centuries before the introduction of tobacco” (Keall 1993).

One of the latest interpretations refers to the use of an alcoholic beverage called *fuqc/fuqāqī fuqqa* or *fukka* or suggests their function as beer gourd containers (Ghouchani and Adle 1992, 74–86 see also Savage-Smith 1997, 324–325). This conception is based on the verification of written Arabic and Persian sources, as well as on the linguistic analyses of the inscriptions in form of Arabic calligraphy decorating the exteriors of the sphero-conical vessels. In various places, but overwhelmingly in Asia, the vessels come with inscriptions meaning ‘Drink to your health’, ‘A drink for your health, be blessed, made by Hamshad’, ‘Blessings for the owner, drink it well, by Hamshad’ or ‘Raise a drink to your health, take blessings, made by Ahmad b. Musa’. In several vessels, in those from Dvin for example, the remains of grapevine seeds have been found; this could support the thesis, as the *fuqqa* beverage is said to have been made of grapes (see also Savage-Smith 1997).

The current, preliminary state of research hardly allows for the unambiguous interpretation of the function of the sphero-conical vessels excavated in Isaccea. This article’s objective has been to show their multi-functionality and to suggest that they could have been used for various purposes according to need (see Rogers 1969). In the case of the Lower Danube finds, they should be seen in connection with the Tartars in their occupation periods; they might have been used militarily during their raids; otherwise, they could have been brought along as small portable vessels for the medical, cosmetic or veterinary applications of liquid mercury.

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