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ON THE USE OF ROMAN IMPERIAL PERIOD GLASS RODS IN COSMETICS: ALTERNATIVE APPROACHES TO GENERAL UNDERSTANDING IN THE LIGHT OF ARCHAEOLOGICAL DATA

Makale Adı Roma İmparatorluk Dönemi Cam Çubuklarının Kozmetik Alanda Kullanımı Üzerine: Arkeolojik Veriler Işığında Genel Anlayışa Alternatif Yaklaşımlar

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Abstract: During the Roman Imperial Period, the production and use of glass rods were widespread. Numerous archaeological contexts and examples have been discovered in museums and private collections. The majority of these works, which were created utilizing the free-shaping technique (tooled), are composed of transculent light blue and transparent green glass. The literature emphasizes the use of glass rods as stirring and spatula rods, particularly in the cosmetics industry. This widespread understanding has led to the evaluation of glass rods, which have similar forms but different uses and functions, in the field of cosmetic products. Thus, artifacts whose utilization area and structural functions could not be completely specified were characterized and categorized in a simple manner, typically by evaluating them within the realm of cosmetic aesthetics. In this regard, our study indicates that glass rods are utilized in fields such as accessories, writing instruments, architecture, and textiles, in addition to the field of cosmetics, and it has been demonstrated that the rods serve a variety of purposes. For this purpose, attention was drawn to the necessity of determining the usage area and function of glass rods and reviewing the definition and classification features of similar artifacts in museums.

Keywords: Rome, Glass, Cosmetics, Medicine, Accessories, Architecture, Textile.

Öz: Cam çubukların üretimi ve kullanımı, Roma İmparatorluk Dönemi'nde yaygınlık göstermektedir. Kazı kontekstleri ile müze ve özel koleksiyonlarda çok sayıda örnekleri tespit edilmiştir. Serbest şekillendirme tekniği kullanılarak oluşturulan bu eserler, çoğunlukla açık mavi ve yeşil camdan üretilmişlerdir. Literatürde cam çubukların, özellikle kozmetik alanında karıştırma ve sürme çubukları olarak kullanımları üzerinde durulmuştur. Bu yaygın anlayış, benzer formlara sahip, fakat farklı kullanım alanı ve işlevi olabilecek türdeki cam çubukların da kozmetik ürünleri alanında ele alınmasına sebep olmuştur. Böylelikle kullanım alanı ve yapısal fonksiyonları kesin olarak belirlenememiş eserler, genellikle kozmetik eserler kapsamında değerlendirilerek basit bir şekilde tanımlanmış ve sınıflandırılmıştır. Bu bakımdan çalışmamızda cam çubukların kozmetik alanı haricinde aksesuar, yazı aracı, mimari ve tekstil gibi alanlarda da kullanıldığı belirtilerek çubukların farklı alanlarda ve işlevlerde kullanıldığı konusuna

eğilim gösterilmiştir. Bu amaçla, cam çubukların hem kullanım alanı ve işlevinin belirlenmesi hem de müzelerde bulunan benzer eserlerin tanım ve sınıflandırma özelliklerinin gözden geçirilmesi gerekliliğine dikkat çekilmiştir.

Anahtar Kelimeler: Roma, Cam, Kozmetik, Tıp, Aksesuar, Mimari, Tekstil.

INTRODUCTION

It is evident that the manufacture and utilization of glass rods were widespread during the Roman Imperial period. The most important indicators of this issue are excavation contexts, museum and private collection works. To give a short information (terminologically); A second to third-century letter among the Oxyrhynchus papyri refers to a delivery of four glass πλευρά and four glass flagons (λάγυνοι) delivered together in a breadbasket (Trowbridge, 1930, pp. 170-171). The standard meaning of πλευρόν is 'rib', and it is tempting to identify it as a reference to these thin rods. Both ends of the rods formed utilizing the free-shaping (tooled) process have different descriptions and specifications. Typically, they are composed of translucent light blue and transparent green glass and have a specific length and thickness. This color scale is not caused by the coloration of the glass, but by metals such as iron oxide and aluminum oxide. They were not intentionally colored in the same way in the Early Roman Imperial pots. Therefore, in terminology, these colors are defined as light green transparent and transparent in greenish tones. Although the use of glass rods is limited to the cosmetic field, it is thought that the rods may have other uses. In studies on rods, it is stressed that rods are commonly employed as stirring and spatula rods in the field of cosmetics. It is understood that the majority of studies in this field overlook the fact that rods may have multiple usage of fields. In other words, it was emphasized that rods can be used in the field of cosmetics in general. This situation constitutes the main theme of this study. In light of the fact that rods may have been utilized in a variety of fields, including medicine, writing instruments, accessories, architecture, textiles, and cosmetics, qualitative study has been conducted. Length and diameter measurement units, as well as design characteristics, are the most essential criteria in determining whether glass rods are suitable for usage in different environments. It has been found, based on an assessment of this type of feature, that the utilization areas of the rods create diversity.

The purpose of this study is to demonstrate how comparable types of glass rods, which are stated to be employed as stirring and spatula rods in the cosmetics area in general and are specifically referred to as "stirring rods", have different purposes. In order to achieve this objective, the usage of glass rods in areas such as medicine, writing instruments, accessories, architecture, and textiles has been examined. In addition, a huge number of samples created from different materials but with similar shapes forms have been observed. Production and utilization of shapes composed of metal, particularly bronze; also bone rods. However, since our subject is glass rods, non-glass samples are included thoroughly in the footnotes.

Glass Rod: Technique and Condition of Use

It was widespread in the Eastern Mediterranean starting from the 1st century AD in the Roman Imperial Period (Isings, 1971, p. 41). The glass rod recovered from Locarno, Switzerland, belongs to the Tiberius-Cladius period (Simonett, 1941, p. 98, Fig. 81). The glass rod found in Tenero, Italy, is dated to the 2nd half of the 1st century AD (Silvestrini, 1940, p. 326). The glass rod found in the OH tomb (Kam Museum) in Nijmegen, Netherlands, dates from 30-70 AD (Brunsting, 1936, p. 189; Isings, 1957, Form 79). In this context, it can be deduced from Isings' statement about glass rods that "where the Romans were there" (Isings, 1971, p. 41), the information that the rods gained identity and popularity during the Roman Imperial period. The usage areas of the rods create diversity. Different ideas showing that it is used in fields such as cosmetics (stirring / spatula rods), medicine (dropper / stirring rod), accessories (hairpin / needles and brooch), writing instrument (stylus), architecture (decoration element on panels) and textiles (distaff) and supporting them archaeological data. Its technical features are as

follows: while one of the ends of the rods formed using the free-shaping technique (tooled) (Gürler, 2000, p. 115) was flattened and ended (Goldstein, 1979, p. 263, Fig. 790; Grose, 1989, p. 349, Fig. 670 a-j; p. 358, Fig. 170), some examples of which are pointed (RCHM, 1962, 83a, 143b; Crummy, 1983, p. 28, No. 462, 464; Stephens, 2015, p. 110, Fig. 1; Marshall, 2017, p. 8, Fig. 1, 3) or some are ring-shaped or some are spoon-shaped. Some of the spoon-shaped ones have bird depictions (Vessberg and Westholm, 1956, p. 171; Hayes, 1975, p. 171; Horster, 1976, p. 117; Bernet, 1979, p. 117; von Saldern, 1980, pp. 33-34; Tait, 1991, p. 61; Whitehouse, 2003, pp. 52-53). Bicolor examples abound; in monochromatic rods is not a small amount. Their length is 20-30 cm; their thickness varies between 0.7-1.3 cm (Mojca, 2012, p. 268). In Anatolia (von Saldern, 1980, p. 33; Canav, 1985, p. 36; Taştemur, 2007, p. 185; Lightfoot and Arslan, 1992, pp. 147-149; Gürler, 2000, p. 177; Özarslan, 2015, p. 711, Fig. 11, Draw. 11) and outside Anatolia in excavation contexts, cm bars are quite common among museum and private collection works (Vessberg and Westholm, 1956, p. 171; Hayes, 1975, p. 171; Horster, 1976, p. 117; Bernet, 1979, p. 117; Oliver, 1980, p. 50; Tait, 1991, p. 61; Neuburg, 1962, p. N0. 60; Milne and Wardle, 1992, p. 81, Fig. 42; Fleming, 1997, p. 62, Pl. 88; 1999: p. 100, Pl. E98; Grossmann, 2002, pp. 21, No. 21; Whitehouse, 2003, pp. 52-53; Kucharczyk, 2007, p. 98, Fig. 3, No. 10; Wiltshire, 2021, p. 52).

General Use of Glass Rods:

Cosmetic

Glass rods are used to stirring or spatula cosmetic products such as cream and scent using a spatula (Woodbury, 1911, p. 46). Some of the ends of the rods are loop-shaped, some are flat-ended, and some are spoon-shaped; some spoon-shaped rods have images of birds (von Saldern, 1980, pp. 33-34). There are also variants with flat and deep spiral / twisted / spiral twist / diagonal fold decorations at one end. Commonly found in Roman cities in the Near East and Eastern Europe (Meyer, 1992, p. 40). There are instances of comparable cosmetic rods produced from a variety of materials, including bronze, and they are relatively widespread in museums and private collections. Their lengths range from 8 to 16 cm (Uzel, 2000, Lev. CXL, Nos. 15-16, 20; Çelikbaş, 2020, 191, Cat. No. TB1-TB3). Glass rods used in cosmetics often have flattened ends; however, rods with pointed or other shapes are also known (Isings, 1957, p. 94, Form 79; Isings, 1971, Pl. 4, No. 131). Glass rods with a diagonally curved end and a flat end are believed to be cosmetic application implements; these rods are known as “spatula rods”; it is mentioned that the walls are thick for cosmetic application (Goldstein, 1979, pp. 264, 263, Fig. 791). Glass rods devoid of protruding decorations may have been inserted into deep and long-necked unguentariums and used to release a tiny bit of the liquid (fragrant oil / perfume) inside (also to agitate the liquid), in addition to being among the common grave presents.

In the vaulted section under the marble courtyard in Sardis, two glass rods were found in the same layer where small vessel fragments belonging to the 2nd and 3rd century AD were recovered (von Saldern, 1980, p. 33). One of the glass rods was discovered in a Hellenistic tomb. It is suggested that similar products of this sort of glass rods are not related with the Hellenistic Period and that the rod may date to a time when widespread glass manufacture occurred. During the Late Hellenistic-Early Imperial periods, it is believed that such artifacts served as stir sticks for a very long time. Rods of glass are composed of dark blue and blue glass. Similar ones have been spotted in Syria as well as the northern and western regions of Italy. The green rod unearthed at Claros dates to the 1st and 2nd century AD (Taştemür, 2007, p. 185), while the green bar unearthed at Cibyra dates to the start of the 2nd century AD (Özarslan, 2015, p. 711, Fig. 11, Draw. 11). On one end of the rod is a bird-shaped figure. When compared to other instances, the broken end is most commonly shaped like a flat spatula or has a flat end. It is thought that the glass rods were employed as an anti-evaporation cap in long-necked containers, such as the unguentarium, and that the diagonal folds generated on the surface of the rod were utilized to ensure that the cosmetic substance in the unguentarium or

bottle was dispensed in a measured manner. The date of the dark blue glass rod on display at the Tire Museum is not specified. It is a neatly spaced, white glass yarn twist[1] (Gürler, 2000, p. 177). In the Glass Works Collection of Turkey Bottle and Glass Factories, the date of the pale greenish-brown bar is not specified. The drop-shaped tip's lower portion features two rows of transverse grooves. The entire rod is spirally embellished with dark blue and white glass thread[2] (Canav, 1985, p. 36). A colorless stick from the Yuksel Erimtan Collection is dated to the 1st or 2nd century AD. The end of a straight, thin rod was flattened to form a round disk. Due to the inward orientation of the fractured end, it is believed that it is in the shape of a ring[3] (Photo 1) (Lightfoot and Arslan, 1992, pp. 147-149).

Both ends of the glass rod retrieved at Marina El-Alamein, Egypt, are broken and spirally twisted (Kucharczyk, 2007, p. 98, Fig. 3, No. 10). Three glass artifacts were discovered at London-Leadenhall Court; this object is known as a stir rod. They are constructed from a bluish-green glass (Milne and Wardle, 1992, p. 81, Fig. 42). The glass rod in the Canada-Royal Ontario Museum dates back to the first century AD (Hayes, 1975, p. 171). At the New Zealand-Canterbury Museum, there is a glass rod from the Damon Collection. Made of clear dark blue glass. According to Wiltshire (2021, p. 52), the glass rod originating from Sidon dates to the 1st century AD (Photo 2). The rod in the USA-Carnegie Museum of Natural History is dated to the 1st and 2nd centuries AD. They are composed of blue, white, and dark purple (black) glass. The stick is said to be used to apply a liquid to the eye[4] (Oliver, 1980, p. 50). The origin of bronze artifacts is Palestine (Neuburg, 1962, No. 60) and Israel (Fleming, 1997, p. 62, Pl. 88; 1999: 100, Pl. E98). Many exist in private collections as well (Grossmann, 2002, p. 21, No. 21).

In the 4th and 5th centuries AD tall, double-bodied unguentariums made of glass were widely used for eye makeup. Since the forms are little and the mouth openings are narrow, it is evident that they are used together with a metal (bronze) or bone spatula to remove the lead (the natural mineral form of sulfur) that is put into it for use in eye makeup (Gorin-Rosen and Katsnelson, 2007, p. 110, Fig. 16, No. 1-2, 111, Fig. 17, No. 1-5, 112, Fig. 18, No. 1-2, 113, Fig. 19, No. 1-3, 115, Fig. 20; 116, Fig. 21). In such unguentariums, glass rods were likely employed. The rods have a circular cross section and are flat with a pointed tip. They are composed of light green glass and range in length from 11 to 28 cm (Oliver, 1980, p. 50; Wiltshire, 2021, p. 52). Glass rods with a flat end and large lengths should be considered for this application.

The rods with a flat end and a ring on one end, which are believed to be used for stirring or applying (spatula) items like as cream and perfume in cosmetics, were obtained while the glass was still in the melt state, and a spiral was made by rotating the stick around itself. The tip is in the form of a disc; it was produced by pulling the upper part in the form of a ring and sticking it back to the glass. In Anatolia, glass rods are more prevalent in museums and private collections. The glass rod found in Arykanda is dated to the 1st century AD[5] (Tek, 2007, p. 166). The rod in the Uşak Archeology Museum is composed of blue glass and white glass yarn that is widely spaced and twisted. One end is ring-shaped, while the opposite end was flattened and inclined toward the rod to produce a circular disc[6] (Çakmaklı, 2007, p. 123). The artifact in the Silifke Museum dates to the 1st and 2nd century AD[7] (Erten, 2018, p. 100). The rod in the Kocabaş Collection is dated to the 1st century AD. It is made of dark blue glass[8] (Akat et al., 1984, p. 56).

[1] Length 22,5 cm, wall thickness 0,7 cm.
[2] Length 16,6 cm, wall thickness 1,2 cm.
[3] Length 16,3 cm, wall thickness 0,85 cm.
[4] Length 19,9 cm.
[5] Length 3,5 cm, diameter 2,7 cm.
[6] Length 18,2 cm, diameter 0,5 cm.
[7] Length 9,2 cm, diameter 2,7 cm.
[8] Length 16,5 cm.

The light green glass rod in the Turkish Bottle and Glass Factories Glass Works Collection is totally spirally decorated with white opaque glass thread. One end is in the shape of a disc, while the other end is an irregular ring. Length is 18,6 cm and the diameter is 1,2 cm (Canav, 1985, p. 36). The Koray Selcik Collection contains rods from the 1st and 2nd centuries AD. Consisting of green glass. It is created by pulling one end into the shape of a disc and the other end into the shape of a ring, and then sticking them back to the glass[9] (Coşkun, 2019, p. 560).

The date of the rod discovered in Cyprus is unknown. Consisting of green glass. One end is shaped like a ring, while the other is straight and rounded[10] (Vessberg and Westholm, 1956, p. 171). The rod discovered in Egypt-Faiyum dates back between the 1st and 2nd centuries AD[11] (Tait, 1991, p. 61). The rod in the New York-Corning Glass Museum is dated to the 1st and 2nd centuries AD. It is composed of green glass. On one end of the rod is a duck, while the other end has an uneven ring form[12] (Whitehouse, 2003, pp. 52-53). The surviving glass rod at the Canada-Royal Ontario Museum dates to the 1st century AD (Hayes, 1975, p. 171). The rod in the Staatliche Museum (from Germany) is dated to the 1st and 2nd centuries AD. The material is opaque glass[13] (Horster, 1976, p. 117). The rod in the Constable-Maxwell Antique Glass Collection (from London) is dated to the 1st and 2nd centuries AD. It is constructed of greenish-white glass. One end of the rod is shaped like a ring, while the other end is shaped like an uneven disc[14] (Bernet, 1979, p. 117).

It is thought that glass rods with a flat end and a ring on the other end were manufactured and utilized as a component in cosmetics. It should have been used to sink the flat end into the mold while leaving the ring end exposed. The ring on one end of the stick makes it easier to handle, while the lack of decals on the other end suggests that it facilitates simple immersion and removal of liquid from the bottle/container. It is said that flat-tipped, spiral-shaped glass rods are used for stirring or spatula cosmetic items such as cream / perfume. Nonetheless, it has been shown that this form of glass rod is utilized as a decorative feature in corner plaster.

Using Glass Rods for Different Functions: Examples and A Brief Discussion

Medicine

Rods with a ring on one end and a bird on the other are believed to have been employed as droppers (Akat et al., 1984, pp. 24-25; Özet, 1998, p. 93; Facsady, 2008, pp. 166-167, Fig. 2-5) and stirring rod (Kelley, 2012, p. 431, Fig. 17. 5; Varga, 2015, p. 199, Pl. II, No. 2) in the 1st century AD (Akat et al., 198, pp. 24-25; Fig. 18, No. 48-50). On one end of the rods is a ring or animal figure (bird or rooster), and on the other is a button. This characteristic demonstrates that in addition to its primary function, visual appeal is also given attention. Typically, it is composed of translucent glass and is spirally twisted from white / blue opaque glass on transparent green or dark green. Their average length varies from 12-30,5 cm (Özet, 1998, p. 93). In this connection, the glass rod with spirally twisted green-yellow glass thread decoration, located in the Bodrum Museum of Underwater Archeology, dates back to the 1st and 2nd centuries AD. The rod is likely to have been used as a dropper[15] (Facsady, 2008, p. 166-167, Fig. 2-5; Özet, 1998, p. 93) (Photo 3).

Similar glass rods with diagonally curved and flat ends are believed to have been employed as ear spoons among medical instruments. It is even said that the glass rods are twisted in order to

[9] Length 17 cm, diameter 2,6 cm.
[10] Length 16,4 cm.
[11] Length 15,1 cm.
[12] Length 22,8 cm, diameter 1,2 cm.
[13] Length 18,8 cm, diameter 0,5 cm.
[14] Length 19,3 cm.
[15] Length 19,8 cm, diameter 0,9 cm. It is mentioned that the Roman Imperial Period droppers were 20-30 cm long and that this type of rods with scalloped or corrugated surfaces were made depending on the material.

stirring the liquid better (Taştemür, 2015, p. 39). In this regard, the spirally twisted glass rod in the Hamonic medical tools collection is a significant illustration of the subject's extent[16] (Hamonic, 1900, p. 12, 13, Pl. 8). However, it is also reported that the glass rods discovered with medical instruments are not a special form produced for the use of medical instruments (Uzel, 2000, Pl. CXL, No. 15-16, 20; Çelikbaş, 2020, p. 191, Cat. No. TB1-TB3). It is hypothesised that the fact that glass rods are more brittle than metal rods contributes to this effect. For this reason, this shows that glass rods are favoured in the medical area as a secondary purpose. In addition to their fragile structures, the majority of evidence suggests that they were utilised as ornaments, such as hairpins.

Accessory

Pins used as accessories were utilized as both pins / hairpins in hairstyles and brooches in dresses. It is known that their usage for both purposes is uncommon; yet, examples of this type of needles made of different materials have been discovered. However, there are few archaeological evidence of glass needles. This suggests that these objects are not commonly utilized in the accessory field.

Use of Glass Rods in Hair: Historically, this type of hairpins was common during the Roman Imperial period. The designs of hair needles produced with simple workmanship closely resemble those of modern knitting needles. They are made of metal (gold, bronze, silver) (Cool, 1990, pp. 148-182), bone (MacGregor, 1976, p. 13; Stephens, 2015, p. 110, Fig. 1) and glass (RCHM, 1962, pp. 83a, 143b; Crummy, 1983, p. 28, No. 462, 464); bone material is more preferred[17]. The rods, which are flat on one end and ring-shaped on the other, are made as hairpins as one of its uses (Isings, 1971, Pl. 4/131). One end of the needles has various shapes, such as a ball head, ring, human/animal figure, or human hand. One end of the needles is always pointed to insert into the hair; the other end ends with a knob or round shape (Photo 4), figure / geometrical depiction (Hrnciarik, 2017, p. 32, Fig. 13). Cylindrical shape; wavy / straight

[16] Length 11 cm, diameter 1,5 cm.

[17] Combs and hairpins were among the burial presents discovered in the Nagada Necropolis around 3200-3000 BCE. There are three hairpins available. Different sizes and embellishments distinguish each needle. One end is rounded, while the other is pointy. In addition, two convex-profiled ring embellishments are placed at intervals. The rod with a stylized animal depiction and the longest length relative to the other two rods tapers towards the tip more sharply than the preceding rod. The body is adorned at regular intervals with latticework. The bar depicting a bird on one end is shorter and has a smaller diameter than the other two bars; its body is unadorned. Combs and hairpins were commonly crafted from the bones of animals inhabiting the Nile and its banks, whether they were hazardous or not. Thus, it is discovered that zoomorphic ornaments are also incorporated into the patterns. The creation of authentic iconographies connected with religion and authority. Such meanings are frequent throughout the Pre-Dynastic Period, when the vulture or snake was employed, the falcon represented the pharaoh, and several animals were associated with the gods (Bartus, 2012, p. 230, Fig. 3; Marshall, 2017, pp. 6-10). In Colchster, England, four glass rods were found in a woman's grave dating back to the 4th century BC. The presence of glass rods in the immediate vicinity of the female skull suggests that such rods were also used as hairpins. Three of the needles made of light green glass were made of the same type. They are spherical head and slightly curl; their length is 7,6 cm; their diameter is 0,6 cm. The length of the deep-curl needle with a ring head at one end is 5.5 cm; its diameter is 0,4 cm (Alvarez, 2006, p. 784, Fig. 2). Numerous bone needles were recovered from Colchster, England; needles were studied in subtypes according to their head form; they are round head, spool-shaped head, cuboid (cube-like) head, conical head. Their average length varies between 6-9 cm; The length of the needles, whose heads are flat and undecorated, is up to 12 cm. One end of the other four bone hairpins in the museum is pointed and the other end has a human figure (female / male). They are made of black and brown bone. It ends by narrowing towards the pointed end. It is dated to the 4th century AD (Crummy, 1983, p. 28, No. 462, 464). There are four hairpins made of bone in the British Museum. Needles are made in different sizes and designs. One end of the cylindrical needle is pointed and the other end has a concave profile and a small ring is placed in the body. It continues by expanding from one end to the other end of the needle, which has one pointed tip end and a sphere placed on the ring at the other. The needles, which are pointed at one end and have a sphere placed on the ring at the other end, are deeply spirally twisted, carved in such a way that they gradually expand along their length and then narrow. There are two bone hairpins in the London Museum. One end of the needles is pointed, the other end is rounded in the form of a bun and ends by narrowing towards the pointed end. They are dark brown in color; Their length is 8.5 cm. It is dated to the 4th century AD (Crummy, 1983, pp. 19-26, Fig. 20-26).

carved in such a way that it gradually expands along its length and then contracts; It has a form that gradually expands from one end to the other[18] (Simpson, 2004, p. 236). These types of objects are widely used to fasten capes and tunics, as well as preferred in women's hairstyles (Isings, 1970, p. 32, No. 131; Crummy, 1983, p. 19).

Two glass rods with cantharus-shaped heads were discovered in the stone coffin of a little girl in North Yorkshire; it was seen that the sticks fixed the bun of the young girl (RCHM, 1962, pp. 83a, 143b). Glass, leather, copper, and bronze items were unearthed at the Broadgate on Liverpool Street excavations. Additionally, there are hairpins among the pieces. It is shaped like a human hand or has a pointed tip and a tiny ring at the opposite end (Marshall, 2018, pp. 71, 377). Similar hair needles made of bone are observed to be manufactured of glass as well. Glass needles are heavier than bone ones. The surface of fragile and delicate glass is similarly slippery. Therefore, since glass rods do not provide an easy / practical use for attaching to the hair (bun), it should not be used widely and should only be preferred on special occasions.

Use of Glass Rods in Clothes: It is also mentioned that glass rods are employed as needles in the clothing industry (Mojca, 2012, p. 268, Fig. 5-6). Needles made of metal, particularly bronze[19] and bone[20], are more likely to be manufactured and utilized than glass needles (Stephens, 2015, p. 110, Fig. 2, A, B, C). During the archaeological digs, a great number of Roman-era needles were discovered. These objects are abundant in settlements, especially in textile production areas, in tombs, in museums and private collections (Vitto, 2010, p. 76, Fig. 14, 6; Mojca, 2012, p. 268, Fig. 5-6). One-eyed and three-eyed needles are commonly used as forms. The precise function of the three-eyed needles is unknown. This sort of needles is believed to have been employed in a fabric-forming method prior to knitting and crocheting. This method is known as "knotless net" or "knotless mesh" (Corti and Sanfelici, 2018, pp. 525, 529, Fig. 6).

In Iqrit, Palestine, glass rods were discovered in a tomb dating to the 3rd and 4th century AD[21] (Vitto, 2010, p. 76, Fig. 14, 6). The spirally twisted glass rod is broken at the top and bottom; it is made of transparent glass. In Ptuj, Slovenia, a tomb from the Roman era was unearthed with spiral-twisted glass rods (Mojca, 2012, p. 268, Fig. 5-6). The rods are composed of translucent bright green glass. On one end is a simple bird motif. It is depicted with stylised bird wings, and its straight tail points skyward. The bird's broad, rounded mouth and short wings imply it may have been a waterfowl, despite the simplification. The base of the bent glass rod is smooth and sharp. The term "needle" refers to the glass rod on display at the Corning Glass Museum in New York[22] (Whitehouse, 2003, p. No. 976). White threads were wrapped around dark blue translucent glass to create the glass rod from the 1st century AD. It has a triangle opening on one end and a little taper on the other; end tapers down slightly (Photo 5).

[18] Different-sized needles are always single-ended. Numerous instances of the same form made of different materials have been identified (Stephens, 2015, p. 112).

[19] Bronze needles are well-known. Needles are bronze objects having a pointed end and leaf-shaped perforations on the opposite end. (Yıldırım, 1989, Pl. 38, Fig. 1-8, No. 6). These types of objects are resembles Urartian needles from the 7th century (Çelikbaş, 2020, p. 200, Pl. 56, TC18). They are round in section and range in length from 6,6 to 11,5 cm. There is a rectangular-shaped rope hole. The average length of ivory needles from the Early Imperial Period is nine cm, with a pointed tip and leaf-shaped, perforated tips (Uzel, 2000, Pl. LXXIII, No. 38).

[20] There are three bone needles from the Roman Imperial Period on display at the British Museum. Needles are made in different sizes and designs. One end of the needles, which extends and continues from one end to the other, is very sharp and pointed; the other end has a thread hole. Two of the needles are sharp at one end and rectangular with rounded corners at the other. The thread hole is long and rectangular, with little ring holes on either side. The needle has three eyes. One of the needles has a triangular tip, and the thread hole is in the shape of a little ring at the base of the triangle (Stephens, 2015, p. 110, Fig. 2). The Metropolitan Museum contains a bone needle from the Roman era. One end of the needle is sharp, while the other end is rectangular with rounded corners, and the thread hole is also rectangular and long (Corti and Sanfelici, 2018, p. 526, Fig. 1).

[21] Length 6,3 cm diameter 0,3 cm.

[22] Length 15,3 cm diameter 0,3 cm.

There are needle examples made of metal (bronze), bone, and glass. Metal (bronze) and bone needles are typically sharp on one end and rectangular with rounded corners on the other. The glass rods, which are believed to have been used as needles, feature a pointy end and a stylised bird on the opposite end. The ends of the glass rods are not as sharp as those of needles made of metal or bone. They has thick-walled. The sizes of needles made from different materials (metal and bone) and glass needles are extremely comparable. This indicates that huge needles may have been used as fasteners on fabric that may have been sewed with thick needles. Nevertheless, brooches were utilized as cape fastening; needles are slender. It also implies that the glass rods are too thin to be used as needles for stitching and that they are prone to shatter with less force.

Type Tool (Stylus?)

In the Roman Imperial period, important writing instruments included styluses, wax tablets, lead (Mullen and Bowman, 2021, p. 15, Fig. 4; Soslu, 2022, pp. 397-415) and wooden surfaces (Salvemini et al., 2014, p. 1234). Metal styluses, particularly iron and copper, are widespread. One end of the metal samples used for writing is sharp, while the other end, which is used to erase the writing, has a thin, flat, upward-opening shape; their length is up to 20 cm (Keyer, 2019, p. 341, Fig. 1). There are also styluses with bodies that are twisted / twist-decorated bodies (Willi, 2021, p. 37, Fig. 19). In the Early Imperial period, bone styli were common (Shatil, 2020, p. 738, Fig. 21. 2, No. 13). It is known that wooden styluses were commonly utilised during the late Roman Imperial and Egyptian periods (Willi, 2021, p. 33). It was used as a stylus on glass rods with one end sharp and the other end perforated and twisted into the shape of a leaf; their length is between 15 and 16 cm (Akat et al., p. 984, Fig. 18, No. 51a-b) (Photo 6). It is believed to date back to the 1st century AD (Willi, 2021, p. 37, Fig. 19).

Glass rods resemble styluses in appearance. However, upon closer inspection, it is determined that the glass rods are not suited for use as a writing instrument. One end of the writing stylus is quite sharp. After approximately 2 to 3 cm, there are a few spiral augers that we believe are designed to be easier and more comfortable to use (the pen does not slip out of the hand). Following the auger, it ascends gently. It is not in the form of holes and rings, which are used to erase writing; rather, it is flat. The glass rods are either unadorned or twisted from the bottom to the top. Although it is believed that spirally twisted glass rods were employed as pen nibs due to their shape, no archaeological evidence has been discovered to confirm this use.

Architecture

Archaeological evidence indicates that the glass rods with plain ends were employed as architectural decorations on the panels. It is believed that the twisted glass rods discovered in Late Roman tombs were utilized in building (Isings, 1971, p. 32). The lengths of opaque glass rods range between 9 and 15 cm. Another glass rod on display at the Corning Glass Museum in New York dates from the 1st century BC to the 1st century AD. The glass used for the bars on the Meander-decorated wall panel is opaque white (Goldstein, 1979, p. 263, Fig. 790) (Photo 7). Six rows of twisted polychrome glass rods (Goldstein, 1979, p. 263, Fig. 791) (Photo 8) on a corner piece of plaster (about 8 cm in height); ten spirally twisted yellow, white, green, and blue opaque glass rods (Goldstein, 1979, p. 246, Fig. 720) (Photo 9). It is said that the glass rods on display at the Spain-Toledo Art Museum were employed as plaster decorations (Grose, 1989, p. 349, Fig. 670 a-j; p. 358, Fig. 170) (Photo 10).

Archaeological evidence indicates that instances with a flat end were used in architecture; the rod portion is straight or spirally twisted[23] (Grose, 1989, p. 47, Fig. 18; Barag, 1985, Pl. 20, No.

[23] The glass rod, discovered in a temple near the ziggurat in Zanbil, Iran, and now on exhibit at the Corning Glass Museum, dates to the 13th century BC. Made of opaque white and dark purple glass; hollow, cylinder-shaped, and spirally twisted. Glass rods in the British Museum 8th-4th BC dates back to the centuries.

173-176). In cosmetics and medicine, the same form is also utilized as a stirring rod / dropper. The rods in the earliest architectural pieces are plain and undecorated. The widespread production and use of spiral-twisted glass rods throughout the Roman era are believed to have been influenced by the earliest instances.

Textile

It is thought that the glass rods are related to the patterns typically employed in wool spinning (Petcu and Petcu-Levei, 2022, p. 168). Clothing was an essential requirement for individuals throughout the Ancient Period, as it is today. For this reason, the manufacture of rope from plant and animal raw materials and the weaving of these ropes has been one of the most important industries[24] (Bernard-Knapp, 1991, p. 31; Barber, 1991, p. 39; Karaca, 2012, p. 133). Various equipment, including as spindles, oreke, and the kalathos, which is where the yarn is held, are employed in the spinning process. In all areas of the Roman Empire, artifacts made of metal (bronze, iron, silver), wood, bone, ivory, amber, amber, and glass date back to the 1st century AD (Mojca, 2012, p. 264; Petcu and Petcu-Levei, 2022, p.170, 168). The glass rods are believed to have been used as a knitting yarn on which wool was spun into yarn (Erten, 2018, p. 101-102). In spinning the selected material for weaving into a rope, spindle spindle whorls attached to the end of a rod (spindle) were favored (Levy and Gilead, 2012, p. 12). The spindle whorls, which have been used extensively throughout history, are shaped like wheels made of limestone, terracotta, serpentine, marble, meerschaum, stone, or bone[25].

While obtaining yarn from raw materials such as cotton or wool, spindle whorls, which create weight, are used to rotate the spindle straight and prevent the rope from tangling and tangling (Tamsü and Akça, 2002, p. 203). There are also more valuable examples such as glass and amber in tomb contexts[26] (Köroğlu, 2004, p. 7). Glass spindle whorls are used in the production of delicate fabrics. The coexistence of spindle whorls and rods used for spindle shows that the form was used as a spindle whorl (Taştemür and Gürler, 2019, p. 116). It is not limited to a certain place as the tools are easy to carry. It could be done standing or sitting. The bottom part of the knitted fabric designed to hold the unspun wool has to be held by hand. Using his thumbs he would extract fibers from the wool on the knit, which were then spun into yarn by the rotating motion of the spindle. Reed or wooden tools are used for daily work. In addition, glass samples are produced in different types. In addition to the patterns that end with a disc or a sphere on both sides, there are also pieces that end with a loop. One end of the rod is depicted with figure decoration, pine cone, ring and vessel (aryballos). Rods that end with a ring are

[24] The oldest weaving sample dating back to the 7th millennium BC was found in a cave in Dead Sea. Early evidence is the textiles wrapped around the bones of corpses decomposed from soft tissues in funeral rites.

[25] Limestone samples from the 2nd millennium BC found at Seyitömer Höyük (Karaoglan, 2019, pp. 191-203). Examples from the 1st century BC found in Fatsa Cıngırt Castle (Erol and Tamer, 2012, pp. 120-121, Cat. No. 3-4). Examples from the Roman Imperial Period in the Muharrem Kayhan collection (Kassab-Tezgor, 2015, pp. 42-43, No. 38). Rods found in Amorium (Demirel-Gökalp, 2015, Fig. 40). Terracotta samples from the 2nd millennium BC found at Seyitömer Höyük (Karaoglan, 2019, pp. 191-203). Marble samples from Cibyra from the 2nd and 3rd centuries AD (Simsek, 2013, p. 149, No. 115, 122). Meerschaum samples from the 2nd millennium BC found at Seyitömer Höyük (Karaoglan, 2019, pp. 191-203). Stone samples dating to the 1st century BC found in Fatsa Cıngırt Castle (Erol and Tamer, 2012, p. 120, Cat. No. 1-2). Three spindle whorls, K.00-27, K.02-9 and K.02-56, were found in Allianoi. Artifacts with a spindle hole in the middle are flat at the bottom, conical or oval with a flat top. While K.02-9, dated to the 4th-6th centuries AD, is undecorated, there are circles with incised lines around the holes of 9 K.00-27 and K.02-56 of the 2nd-3rd centuries AD (Karaca, 2013, p. 135). The example found in the works of the Parion Roman Theater (Akkaş, 2016, p. 254, Fig. 4, No. 55). Byzantine Period samples found in Harput Citadel (Aytac, 2018, p. 21, Cat. No. 8). In the excavations of Tralleis, examples of spindle whorls made of bone were handled, it has a diameter of 2,7 cm. It belongs to the 4th and 6th centuries AD (Ünal, Özcihan and Toy, 2021, p. 282, Cat. No. 9).

[26] The resins formed on the trees mix into the sea with the effect of wind and storms. Amber extracted from the coasts of the Baltic Sea, Ukraine, Romania, England and Sicily is one of the most popular stones used in jewelry making. In ancient times, amber was believed to be magical. It has also been used in medicine making. Today, beauty creams are made from this stone of organic origin.

usually 2 cm in diameter; In the spinning process, it is ensured that the tool is held tightly. Glass rods, which were common in the first and second centuries AD, are also found in the third and fourth centuries AD (Facsady, 2008, pp. 166-167).

For the Romans, the spinning process acquired a positive symbolic meaning (Petcu and Petcu-Levei, 2022, p. 172). Additionally, it is believed that glass specimens served as status symbols (Gleba and Mannering, 2012, p. 10). Considered allegorical artifacts representing a woman's marriage and maturation. It is one of the symbolic wedding presents that ladies receive to signify their new social status. Pliny (VIII.74) states that among the wedding goods a woman has, there is a spindle with woolen thread on it.

Thirteen glass objects were found in the Dobrudja Necropolis in Romania. Two of them were made into a ring at one end and a circular disc at the other. Their length ranges from 20 to 22 cm, and their diameter ranges from 0,8 to 1 cm. They are constructed from blue and green glass. With a rooster, duck, pot depiction on one end and a ring on the other, the lengths of the distaff are between 24-21 cm; their diameter is between 0,7-0,8 cm. They are composed of opaque transculent light blue, white, and red glass. Glass distaffs are dated to the 1st and 2nd centuries. (Petcu and Petcu-Levei, 2022, p. 181, Cat, No. 1-2; pp. 181-182, Cat, No. 3-6) (Photo 11). Along with the glass rod, a glass spindle whorl was also found in Castra. Another possible use of spindle whorls is at the ends of rods like pins. Five spirally decorated glass spindle whorls measuring between 2,1 and 2,5 cm were discovered in a tomb at Mishmar Haemek, which are on display at the Israel Museum and are dated to the end of the 1st century AD. Observing the evolution of the glass design of the earliest spindle whorls manufactured reveals that they are opaque. The discovery of similar-shaped rods produced from materials such as bone, metal (bronze), amber, and ivory shows that the materials served as inspiration for the creation of the aforementioned form in glass[27].

Spiral twisted glass rods were recovered from Aquincum. They are made of blue-green translucent glass and measure 29,3 cm in length. On one end is a simplified bird motif. Styled bird (water bird) depicted with open wings; its tail is relatively long and curved downward, and its head features a tuft of hair. The lower part of the twisted glass rod was formed into a loop by bending the rod back and straightening it. Considering the size, form, and ornamentation of the rod, it is thought to be oreke used by Roman women for spinning. The fact that a spindle whorl was also discovered in the burial lends credence to the theory that the rod was an oreke (Facsady, 2008, pp. 165-166). The lengths of the spirally twisted glass specimens in the Aquincum Museum range from 18 to 29 cm, while their diameters range from 0,7 to 1,5 cm. One end is pointy and the other has bird / rooster / dog figures (Gleba and Mannering, 2012, pp. 170-172). The glass rod in the Yüksel Erimtan Collection dates to the 1st and 2nd centuries AD (Lightfoot and Arslan, 1992, pp. 147-149)[28].

Distaffs made of amber from the Roman Imperial period were found in Viminacium in Serbia. According to their forms, they are divided into three groups as finger, hand and arm distaffs. One end of the finger distaffs has a ring, the other a figure (human, animal) and spear. The body is plain cylindrical without decoration. There are many types of distaff. There are specimens similar to glass rods. One end of these is a cock, and the other end is flattened to form a circular disk. One end of the sleeve patterns is rounded and the other end is rectangular and has a hole; the body is decorated (Dankovic, 2019, p. 220). Some evidence of textile production has been found in the Early Roman city of Old Virunum in Magdalensberg. It is thought that textile

[27] Glass sample from Israel (Length 23,6 cm) (Savuage, 2014, p. 199, Fig. 9.10); glass sample from the Parion Roman Theatre (Akkaş, 2016, p. 254, Fig.4, No. 56); bone specimen from Capidava, Romania (Ratidu, 2016, p. 144, Pl. II; amber specimen from the Roman Imperial Period (Dankovic, 2019, p. 217, Fig. 4); ivory samples from Delos (Savuage, 2014, p. 189, Fig. 9.5); bone distaffs from Tralleis belonging to the 3rd-6th centuries AD were evaluated (Length 7,7 cm) (Ünal, Özcihan and Toy, 2021, p. 280, Cat. No. 2).

[28] Length 16,3 cm, diameter 0,85 cm.

production is one of the most important branches of the city's economy and was established for trade. Spinning tools called finger öreke have been found. The spiral twisted rod is broken; One end is ring and the other end is flattened to form a circular disk. Two bone specimens were recovered from a tomb in Carnuntum-Petronell, one of the largest cities in Pannonia. One end of the patterns ends in a Venus figure and the other end in the form of a ring (Gostencnik, 2012, p. 70, Fig. 2.4a; p. 76, Fig. 2. 9 b, g).

Amber distaffs from the Roman Imperial period were found in Viminacium, Serbia. They are split into three classes based on their shapes: finger, hand, and arm distaffs. On one end of the finger distaffs is a ring, while the other bears a human or animal figure and spear. The body is cylindrical and devoid of ornamentation. There are numerous varieties of distaff. There exist instances that resemble glass rods. The opposite end of them is flattened to produce a circular disc. One end of the sleeve patterns is rounded, while the other end is rectangular with a hole; the body is embellished (Dankovic, 2019, p. 220). In the Early Roman city of Old Virunum in Magdalensberg, traces of textile industry have been discovered. It is believed that textile production is one of the city's most important economic sectors and that it was developed for trade. There have been discoveries of spinning instruments known as finger distaff. The spirally twisted rod is broken; one end is a ring and the other end has been flattened into a round disc. Two bone specimens were discovered in a tomb in one of Pannonia's greatest cities, Carnuntum-Petronell. One end of the design is shaped like Venus, while the other end is a ring (Gostencnik, 2012, p. 70, Fig. 2.4a; p. 76, Fig. 2. 9 b, g).

On tomb steles, gynaikonitis (gynaeceum) scenes, bowls, and mosaics, distaffs are shown (Facsady, 2008, p. 168). Female figurines and distaffs are represented on the tomb steles (Facsady, 2008, p. 168, Fig. 7). The spinning tool plays an important role in the burial tradition. The spindle and distaff seen in the hands of women on Asia Minor stelae indicate married life and the presence of a wife. As wedding gifts during Roman wedding rites, objects with high craftsmanship, such as distaffs, were presented to the newlyweds (Facsady, 2008, p. Fig.7). In several regions of the empire, glass and wooden distaffs from the second to third centuries were discovered. Important data were obtained in the examinations made in the grave of a girl in Switzerland. These; the diameter of the ring finger and the diameter of the glass rod's ring; hand skin is considered within the ring and on the rod; It has been established that the distaff is always held in the same posture in the left hand (Petcu and Petcu-Levei, 2022, p. 168) based on the discovery of organic materials indicating the object's lengthy history of use (Photo 12). The wooden distaff in the Louvre Museum was discovered in a tomb along with a spool of thread; their length is between 20 and 30 cm. They are more or less stylistically detailed, depending on the material from which they are made. They may terminate at one end as a flat disc, a sphere, or a ring; this provides practicality to those who use them (Petcu and Petcu-Levei, 2022, p. 169).

According to we are known, it is quite possible that these artefacts are associated with the patterns often employed in wool spinning. Because the spinning of wool had a symbolic significance during the Roman Imperial period. It is regarded a sign of domesticity and morality in a woman's life. Distaffs have a strong ideological structure in marriage and funeral ceremonies. The clothing of the priests and the textiles used in religious ceremonies were made entirely of wool. Due to the fragility and delicacy of the glass, they must have been employed as family-specific ritual objects that signify the position and status of women within the family. It is also true that glass rods are rarely employed due to their fragile and delicate composition. Glass rods, which are believed to have been employed as glass distaff, could only have been utilised for yarns with a smooth, slippery surface, such as filaments that do not require much twisting.

CONCLUSION

It is understood that the production and use of glass rods were widespread during the Roman Imperial period. Archaeological evidence supports this assertion. However, it is evident that the descriptions of the glass rods' applications are insufficient and that the rods may have a variety of applications. That is, in studies on glass rods, it is emphasized that rods are generally used in the field of cosmetics as stirring and spatula rods. In fact, it has been discovered that there are numerous research on this issue but that the fact that the rods have multiple applications has been disregarded. For this reason, qualitative study has been conducted highlighting the idea that rods can be employed in domains other than cosmetics, including medicine, writing instruments, accessories, architecture, and textiles. The length and diameter measurement units, as well as design characteristics, are the most essential criteria in deciding whether glass rods are suitable for usage in different areas. Examining the characteristics of this type reveals that the application areas of the rods are diverse. Additionally, it should be highlighted that this issue is rarely encountered in context finds. Two glass rods with cantharus heads were discovered in the stone coffin of a little girl in North Yorkshire; it is believed that the rods were used to secure the girl's hair. This information can be used to demonstrate that glass rods are also utilized as accessories.

As previously indicated, the length and diameter dimensions of the glass rods, as well as their ornamentation, provide crucial information regarding their usage areas. Obviously, the fact that this information lacks certainty should not be disregarded. Accordingly, cosmetics is one of these issues. In the use of cosmetics fields, stirring and spatula rods range in length from 13 to 22 cm and in diameter from 0,5 to 2,7 cm. The lengths and diameters of the glass rods used as droppers and stirring rods in the medical field range from 11 to 19 cm and 0,9 to 1,5 cm, respectively. The diameter of the glass rods used as brooches in the accessories field is 0,3 cm and their length ranges from 6 to 15 cm. The lengths and diameters of the glass rods used as architectural embellishments range from 9 to 14 cm and 0,5 to 0,8 cm, respectively. It was established that the preserved length of the glass rods used as distaff in textiles is 16 cm and that their diameter is 0,9 cm. Some of the glass rods believed to be used in areas cosmetics and medicine as stirring and spatula rods or droppers are longer and have thicker walls than those used in other professions. It is believed that in the aforementioned utilization areas short glass rods are utilized in various areas. The fact that the thickness of the glass rods used as brooches in clothing is fairly thin compared to the thickness of glass rods used in other areas - so as not to cause harm to the dress - promotes their usage as brooches. The length of the glass rods said to be employed as distaff in textiles is longer than the length of glass rods used in other fields. This demonstrates that they are convenient for winding yarn; this types of glass rods are utilized in the cosmetics industry; glass rods of various types are also frequently employed in other sectors. Glass rods with one flat end and one ring end are made and utilized as cosmetic materials' auxiliary components; the flat end should have been dipped into the mold with the ring end on top. The ring on one end of the rod makes it exceptionally easy to hold the rod, while the absence of a loop at the other end makes it simple to immerse and remove liquid from bottles and containers. The form of the glass rods suggests that they may have been utilized in the medical profession, although no context information could be located. The fact that one end is decorated with figures, however, shows that they were made for decorative purposes rather than practical use. Taking into account the shape and styles of glass rods, it is evident that they are better suited for usage as accessories; the availability of context data demonstrating its use as a hairpin helps this application. Given the limited data available, this sort of glass rods should have been chosen for exceptional events. Glass rods are believed to have been employed as needles; nevertheless, they are too thin to be utilized as needles and have a significant likelihood of shattering with minimal force. It is believed that glass rods are unsuitable for use as styluses due to their material composition (glass) and thin (brittle) construction. Its use as a decoration element in a corner plaster is supported by archaeological data. Examples demonstrate that glass

rods with a flat end and a deep spiral ornamentation are utilized for mixing and applying cosmetic goods such as creams and perfumes, as well as for use as a decorative feature in corner plaster. Glass rods, which are believed to have been employed as a distaff in textiles, must have been incorporated in yarns with a smooth, slippery surface, such as filaments that do not require much twisting. Due to the fragility of the glass, it is possible that they are also employed as symbols that belong to a single family, are utilized in rituals, and reflect the position and status of women in the family. It is a fact that the glass rods are not preferred much due to their fragile structure.

Consequently, it is believed that the encounter of glass rods in museums and private collections, as opposed to contextual data, is responsible for the similarity and confusion in the interpretations of the rods' usage areas. In other words, absence from an archaeological context is a significant problem. Due to the inability to properly identify the functions and usage areas of the rods, it is evident that they are utilized, defined under multiple names in the literature. Therefore, the information that will be collected through scientific excavations will yield more exact conclusions regarding the areas of use for glass rods.

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FIGURES

Photo 1: Glass Rods Used in Cosmetics (Lightfoot and Arslan, 1992, pp. 147-149).

Photo 2: Glass Rods Used in Cosmetics (Wiltshire, 2021, p. 52).

Photo 3: Glass Rod Used as Dropper (Facsady, 2008, p. 166, Fig. 2).

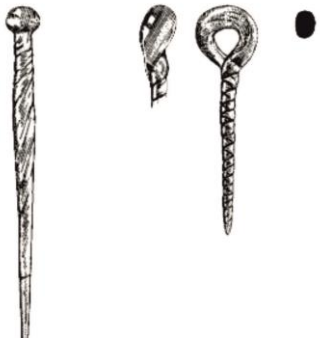

Photo 4: Glass Rods Used as Hairpins (Crummy, 1983, p. 28, No. 462, 464).

Photo 5: Glass Rod Used as Clothes Pin (Whitehouse, 2003, No. 976).

Photo 6: Glass Rods Used as Stylus (Akat et al., 1984, Fig. 18, No. 51a-b).

Photo 7: Glass Rod Used in Architectural Decoration (Grose, 1989, p. 47, Fig. 18).

Photo 8: Glass Rods Used in Architectural Decoration (Goldstein, 1989, p. 263, No. 790).

Photo 9: Glass Rods Used in Architectural Decoration (Goldstein, 1989, p. 263, No. 791).

Photo 10: Glass Rods Used in Architectural Decoration (Goldstein, 1989, p. 246, No. 720).

Photo 11: Romano-Italian Cast Architectural Decorations (Grose, 1989, p. 349, Fig. 670 a-j).

Photo 12: Glass Rod Used as a Distaff (Petcu and Petcu-Levei, 2022, pp. 181-184, Cat, No. 1, 4, 6)