Levant

The Journal of the Council for British Research in the Levant

ISSN: 0075-8914 (Print) 1756-3801 (Online) Journal homepage: https://www.tandfonline.com/loi/ylev20

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LEVANT 38 2006 Pp. 145–158

Brass Chains from a Public Building in the Area of the Bathhouse at Tiberias

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This paper presents a description and analysis of a long section of brass chain discovered in recent excavations of the bathhouse at Tiberias. Segments of a similar chain were uncovered in earlier excavations at the site, and are also published here. Comparative analysis shows these objects to be chains for the suspension of lamps from a ceiling. Textual, artefactual and art historical evidence suggests that they were manufactured in the late tenth or eleventh century CE.

The Discovery of the Chain

In the excavations conducted recently (March 2004) in the area of the bathhouse at Tiberias, a long (4.8 m) and most impressive metal chain was discovered.[1] The folded chain was found in collapse debris (Locus 1010) on a plaster floor at an elevation of 202.18 m below sea level (Figs. 1, 2).

Above the chain was a heap of pottery roof tiles that had fallen when the structure's ceiling, to which the chain had been attached, collapsed. Two coins were discovered with the chain in the collapse debris: an Umayyad coin minted in Damascus and an Abbasid coin of the ninth century CE. The ceramic finds included glazed sherds of the Abbasid-Fatimid period. Among the glass finds were various handles and rim fragments of lamps including those of the mosque lamp type, and fragments of window-panes made of crimson and green glass.[2]

The plaster floor on which the chain was found was exposed in the 1950s during the excavations carried out by Bezalel Rabani in the area of the bathhouse (Fig. 3). Trial probes under the floor yielded coins and potsherds of the Late Roman and Byzantine periods. Hence, the chain and the plaster floor are not contemporary: the floor was laid in the Byzantine period (fifth–sixth centuries CE), while the chain belongs to the latest phase of Tiberias' existence, the Fatimid period (tenth–eleventh centuries CE). Numerous sections of chain were found by Rabani in the vicinity. It seems that the chains originated in a public building, perhaps a covered market first built during the Byzantine period. While it is possible that part of the building was modified in the Early Islamic period to serve as a mosque, there is no evidence for this, apart from the chain, which was found in the excavation. Judging by the collapse debris above the chain, it is likely that the structure was destroyed in an earthquake, perhaps the one that struck Tiberias in 1068 CE (Stacey 2004, 8; Gil 1992, section 602). In 1075, most of Tiberias' inhabitants were massacred by the Seljuq army, after which the city was completely deserted. It is thus also possible that the building's collapse is connected with the Seljuq carnage in the latter part of eleventh century. In 1099 the Crusaders rebuilt Tiberias in a more northerly location.

Description of the Chain

The chain is made of brass (an alloy of copper and zinc) and is composed of alternating straight links and links shaped like a figure 3 (Fig. 4). At the end of the chain is a flower-shaped element – to which a single link is attached – that is pointed at the top and rounded at the bottom (Fig. 5). As discussed later, the chain was suspended from the ceiling, and three chains were attached to its terminating link. These chains supported a glass or metal lamp.

The chain is composed of 24 straight links. Each link has a hexagonal cross-section with pointed loops at the ends. The straight links alternate with 25 connecting links shaped like a figure 3. The straight links closest to the decorated elements are distinguished from the other links by an engraved decoration of three adjoining rings at their center (Fig .6). The ends of the connecting figure 3-shaped

Figure 1. *The brass chain as it was discovered in the excavations.*

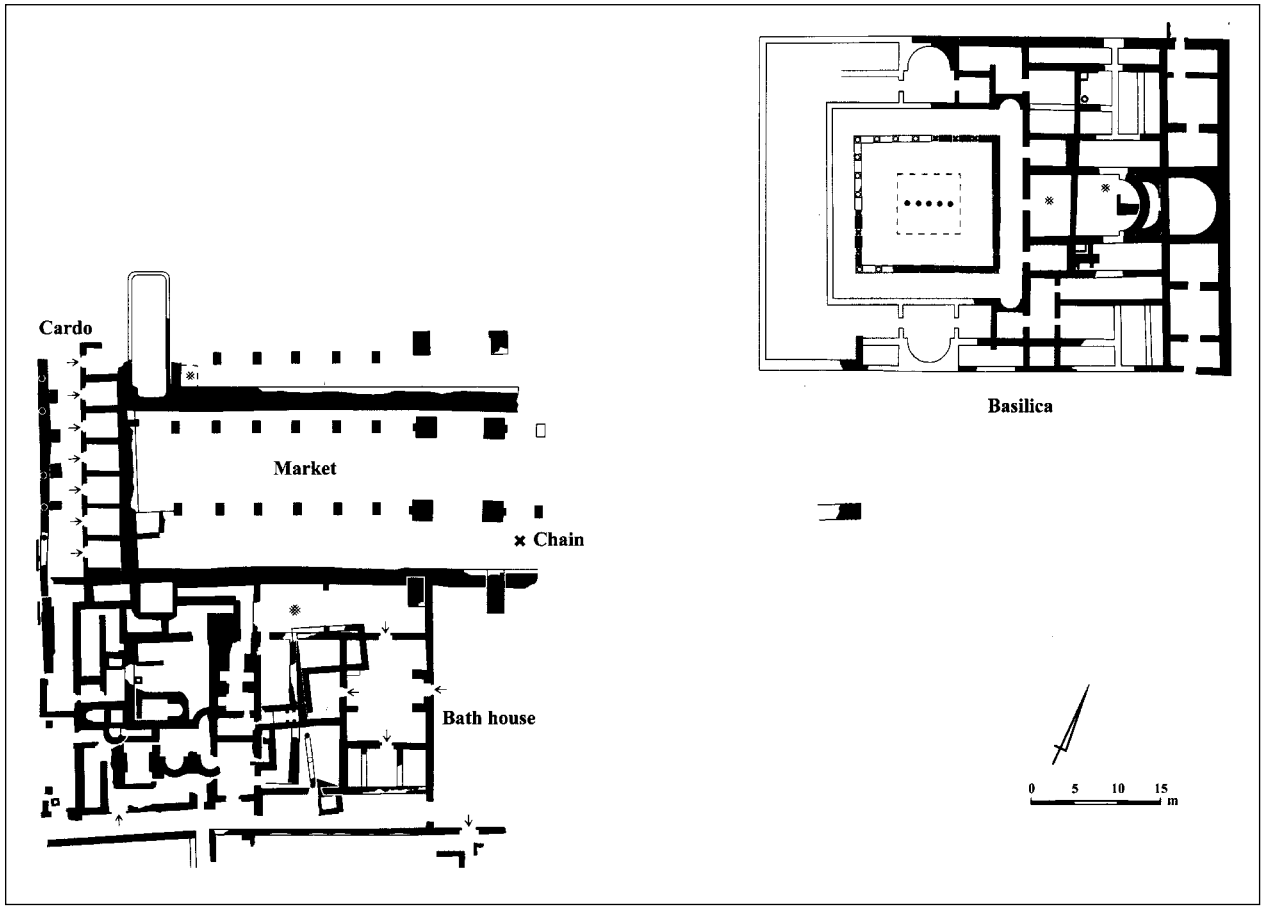

Figure 2. *Plan and section of the remains in the area of the bathhouse at Tiberias.*

links were slightly bent by a hammer blow to facilitate attachment to the loops of the straight links (Fig. 7).

A connecting flower-shaped element is located at the termination of the chain; it ends in a link to which the three lamp chains were attached. This element is composed of four S-shaped components: two of them are soldered together in one plane to form a heart shape, while the other two are attached perpendicularly with an upper and a lower pin (Fig. 8), forming a complex element having a three-dimensional character. It appears that this complex element was intended to stabilize the lamp that hung from it.

These elements are decorated with circles surrounding dots. This decoration was produced by striking on an embossed punch with a hammer. The accuracy with which the motif was executed – at equidistant intervals – testifies to the skill of the craftsman who decorated the chain. Continuous punching at distances of a few millimeters to half a centimeter – with the decoration limited by the edges of the item – creates the appearance of a flowing design.

In the Early Islamic period the motif of a circle with a central dot appears on various solid materials, such as stone, bone, ivory and metals. Melikian-Chirvani (1974) discusses this motif in his article on Iranian metal bowls dated to the tenth–eleventh centuries. He states that the motif originated in northeast Iran in the third millennium BCE and spread from there to regions outside Iran. In Syria-Palestine and Egypt, the motif is known from the second millennium BCE to the Byzantine period during the sixth–seventh centuries CE.[3]

The motif of a circle with a central dot is widespread on metal vessels of the Early Islamic period, for example on the tripod feet and trays of lampstands, and of metal lamp fillers of this period. Two lamp fillers were found in Rabani's excavations in

Figure 3. *General view of the area of the bathhouse and the city market, looking northwest.*

the bathhouse at Tiberias (IAA Nos. 53-1148, 1150) and there are two additional examples in the hoard found in Tiberias in 1998[4] (Khamis and Amir 1999, Pl. 2, IAA Nos. 1999-3706-7).

All the elements of the chain were mold-made. There are slight variations in size of up to a few millimeters, apparently as a result of discrepancies in the quantity of metal poured into the mold during manufacturing. The chain was found covered with dark green corrosion. After cleaning, the original brownish-gold color of the metal was revealed. This gold color reinforces Ponting's (2003)[5] conclusions in regard to the use of brass during the tenth and eleventh centuries CE. In addition, various finds from Tiberias point to similarities between the brass industries in Tiberias and Iran as presented by Allan (1979)[6] in his discussions dealing with evidence given by historians in regard to the brass industry in Iran. This is not surprising taking into consideration the broad range of metal goods from the city – attesting to an extensive brass industry in Tiberias.

Additional Chains from the Bathhouse

The Repositories of the Israel Antiquities Authority contain an assemblage of parts of chains and links from the excavations conducted in the 1950s by Rabani in the area of the bathhouse of Tiberias.[7] The total length of these pieces is about 20 m.[8]

The links are identical in shape and size to those of the chain discovered recently, and were found only a few meters from it (Figs. 9–10). These chains, too, terminate in flower-shaped elements with a connecting link to which the lamps' chains were attached (Fig. 11). The presence of an additional detached connecting link may hint at the existence of another chain. There is also a hook (Fig. 12) that was attached to the chain, like the rest of the links, by a loop at the end of a straight link with a hexagonal cross-section. All the parts of the chain, including the broken links, are in an excellent state of preservation.

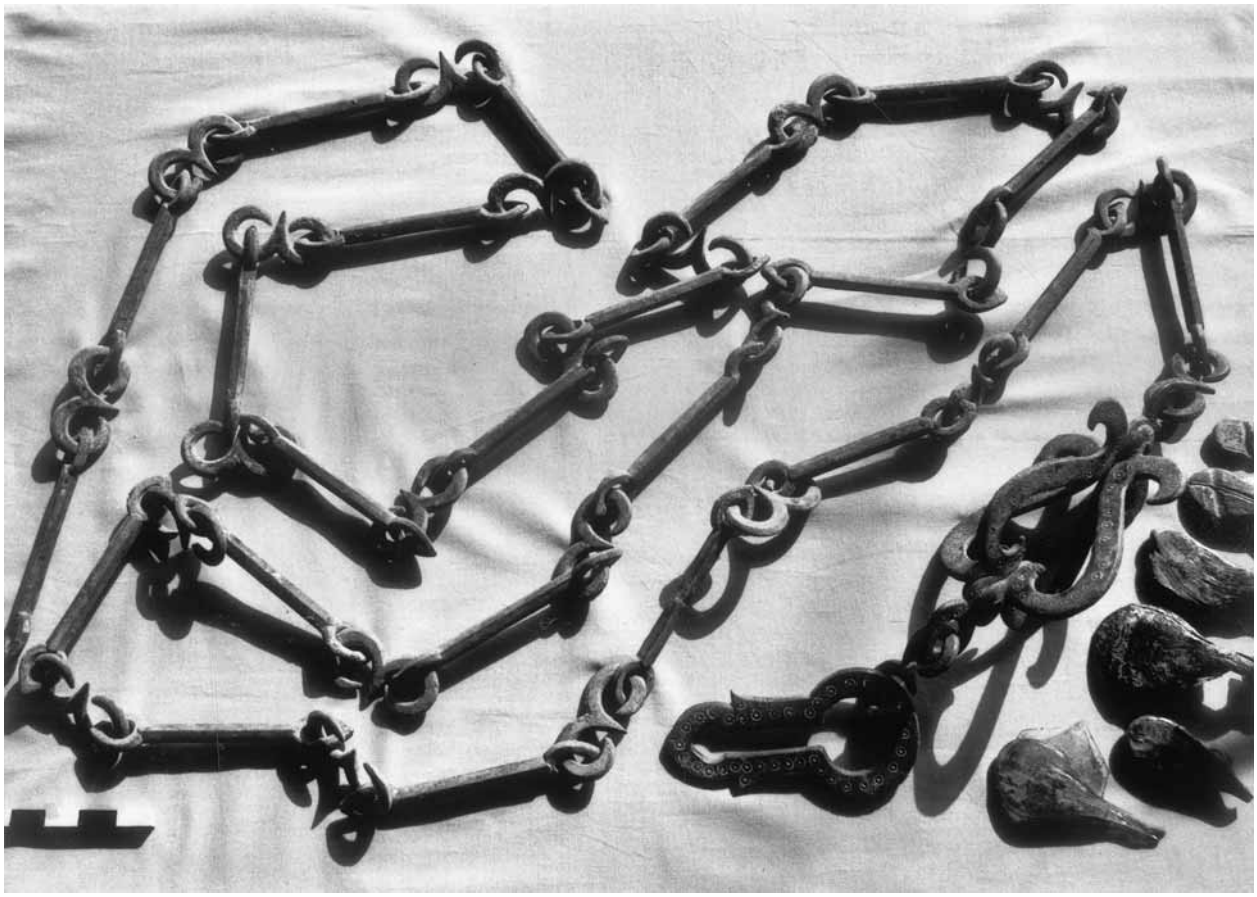

Figure 4. *The chain, with the handles of the glass mosque lamp type on the right.*

Metal Chains and Lamps in the Islamic Tradition

Traditional sources from the Umayyad period onwards frequently describe the lamps that illuminated the structures on the Haram al-Sharif, such as the Dome of the Rock and the al-Aqsa Mosque. The descriptions relate to the metal chains and the glass lamps that were suspended from them. Elad[9] (2004,48, note 193) describes several traditions regarding suspended lamps. One such description recorded by the 'Abd al-Rahman family, who lived at the end of the Umayyad period, states that "In the Haram, there were 385 chains, of which 285 were in the Haram and the remainder in the Dome of the Rock. In the whole of the Haram there were 5,000 lamps on Friday nights in the half months of – Rajab, Shaa`ban and Ramadan, and on the nights of the two festivals 2,000 candles were also lit". Another source, Sabt ibn Djozi, from the mid-eighth century CE, claims that "In the Haram there were 5,000 lamps, in the Dome of the Rock there were 400 chains that were 40,000 cubits long. Each night, 100 lamps were lit in the Dome of the Rock and an identical number in the al-Aqsa' Mosque" (Elad 2004, 48, note 195). Ibn al-Fakih, in the ninth century CE, relates that there were 500 copper chains in the Haram, and that each night 1,600 lamps were lit there, and that each night 300 lamps illuminated the Dome of the Rock (Elad 2004, 47, note 188). According to the tradition of Ibn A'bd Rabih of the second half of the ninth century and the first half of the tenth century CE, "In the whole of the Haram there were 1,500 lamps and in the Dome of the Rock, 460 lamps" (Elad 2004, 47, note 189).

Historical evidence for the use of chains for the suspension of lamps is found in wall paintings and manuscripts. A wall painting from a Seljuq burial structure in Kharraqan in Iran, dated to 1067–68 CE (Stronach and Young 1966, Fig. 9) depicts a lamp

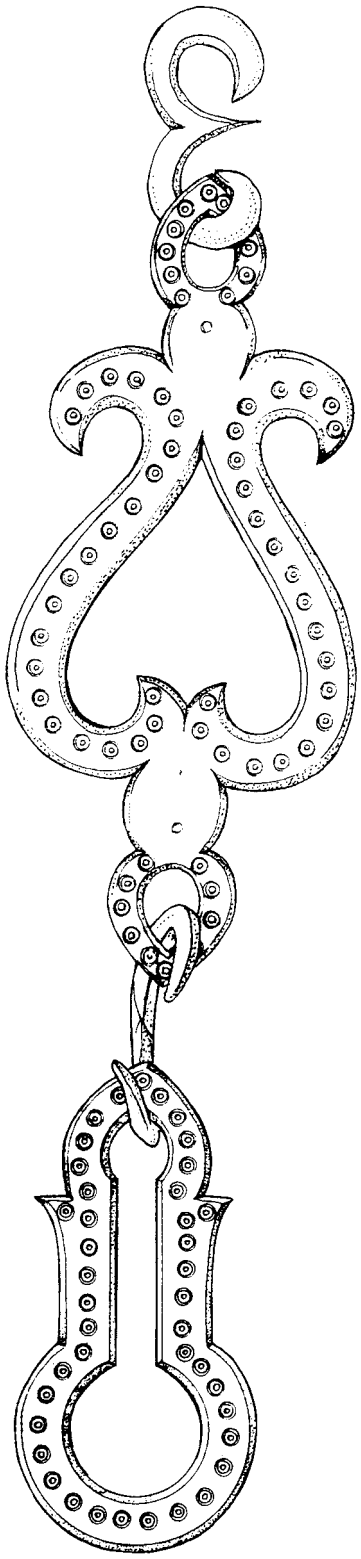

Figure 5. *The two decorated elements at the end of the chain.*

of the mosque lamp type suspended from three decorated chains that are connected by a hook to a central chain. An illustrated manuscript of the *Maqamat* of al-Hariri, dated to the fourteenth century CE (Ettinghausen 1977: 146), depicts the preaching of a sermon in a mosque. The illustration shows two lamps suspended from an arcade, each lamp hanging from three chains connected to a central chain. Additional testimony is provided by a manuscript fragment from Egypt, dated approximately to the twelfth century CE, which shows three lamps suspended from chains (Barrucand and Antoine 1998, No. 96).

Material evidence exists alongside traditions and pictorial evidence. The most important evidence is probably the elements of lamps and polycandela from the Great Mosque of Kairouan in Tunis, dated between the ninth and eleventh centuries. The parts are made of metal and originate in the Fatimid period. The lamp bearing the name of the ruler al-Muizz (341-65 AH/1015-61 CE) was hung from a chain made of rectangular elements; Marcais and Poinssot 1952, Pls. LXIII–LXV). Another example is from the David Collection in Copenhagen (Ward 1995, Fig.2; von Folsach 2001, No.459). This is a

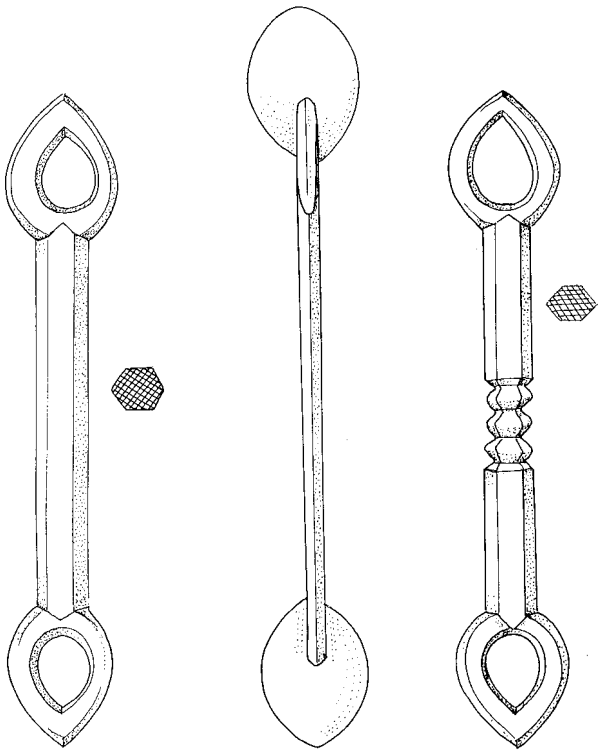

Figure 6. *Drawing of the straight and engraved links with connecting figure 3-shaped links.*

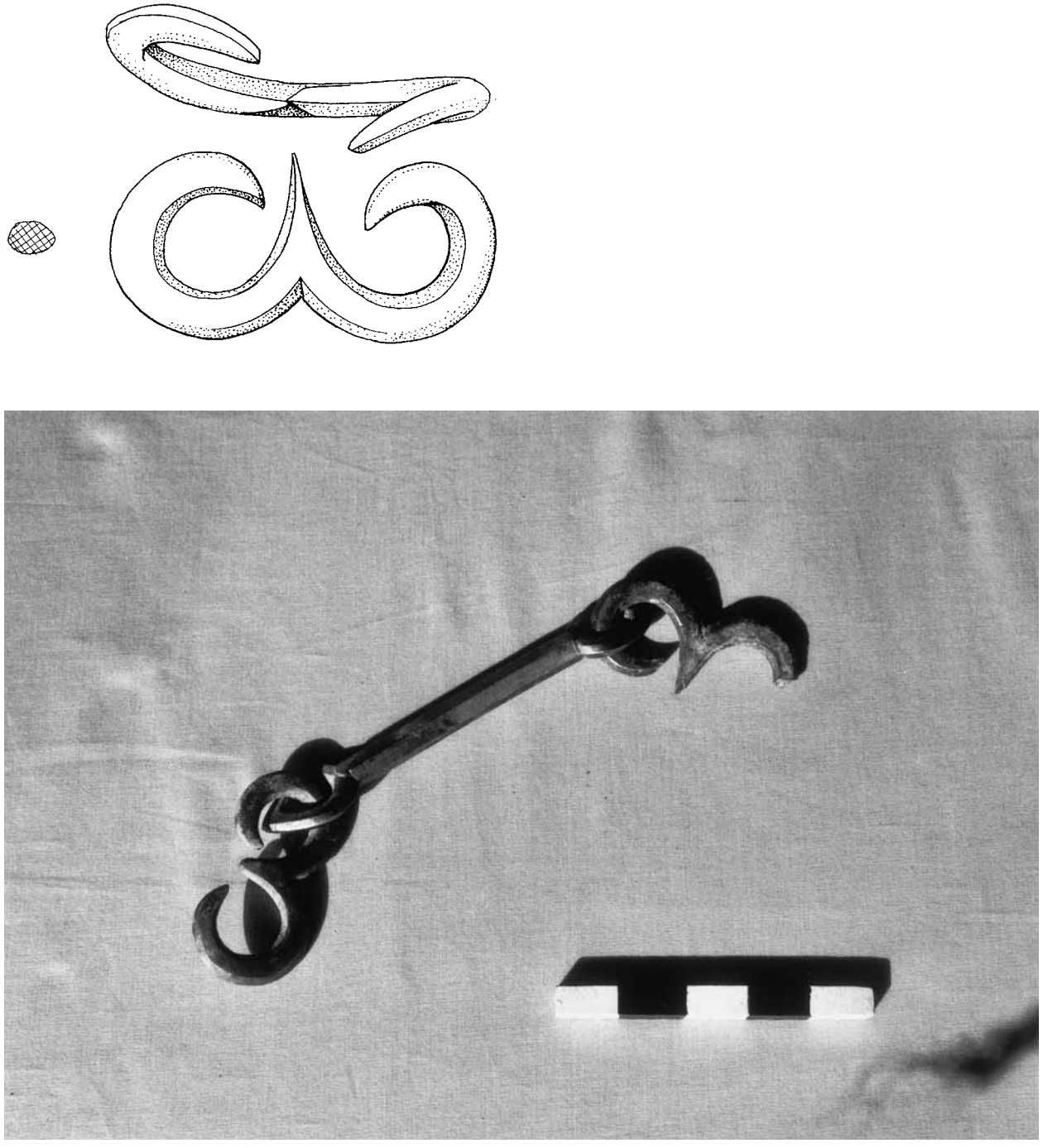

Figure 7. *The straight and figure 3-shaped links (photograph and drawing).*

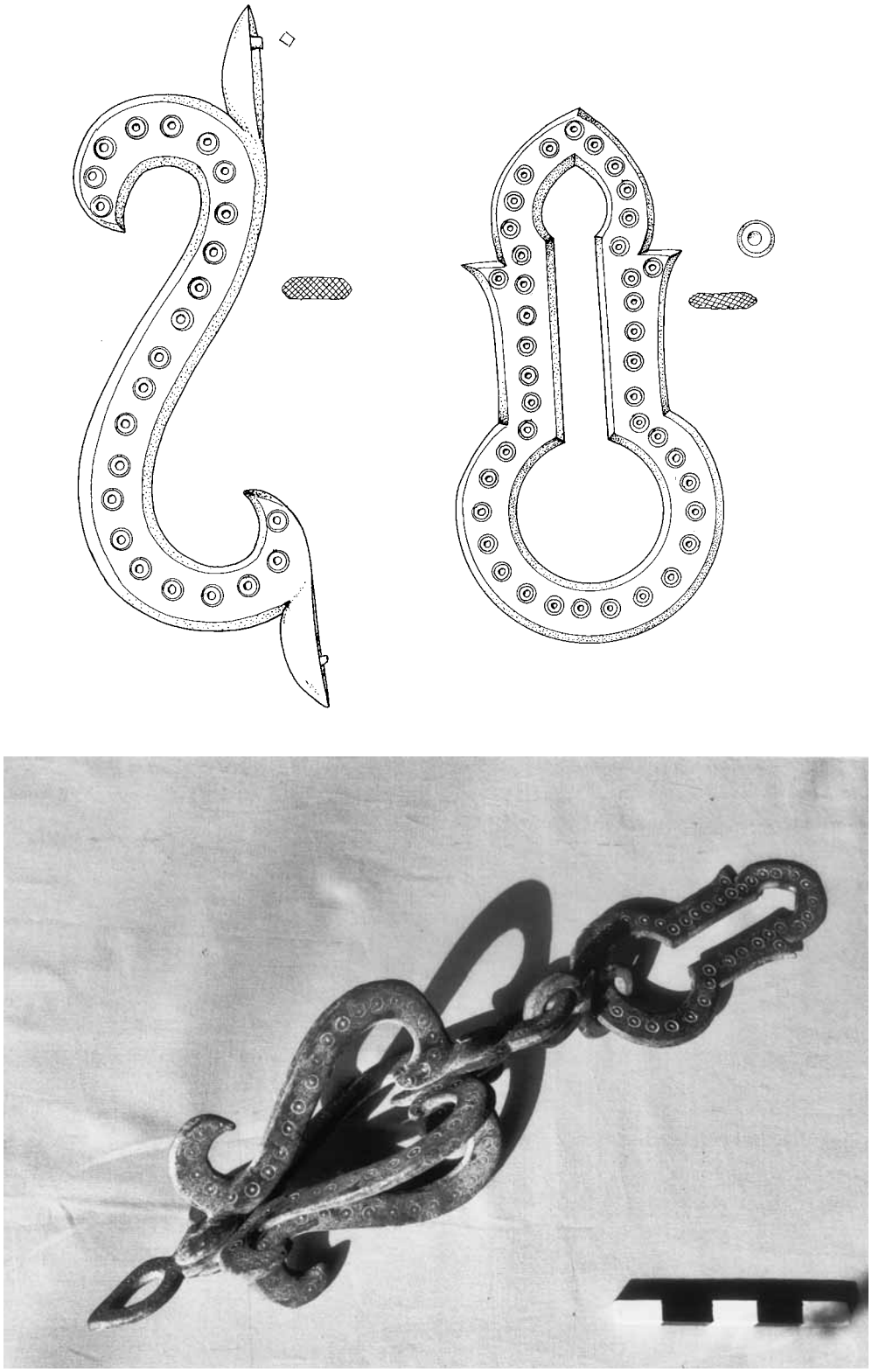

Figure 8. *The decorated flower-shaped element and link (photograph and drawings).*

Figure 9. *The brass chain from Rabani's excavation in the area of the bathhouse.*

metal lamp with three handles and has chains composed of links in the form of half-palmettes that converge on a dome-shaped element.

Dimensions and Weights

The total weight of the chain is 4.75 kg, with the straight links each weighing 100 gm, the figure 3-shaped links weighing 54 gm and the flower-shaped element weighing 1.82 kg. Each of the chain's straight links is 15.3 cm long and 0.9–1.1 cm thick. The 3-shaped links are 7.3 cm long and 0.8 cm thick. The total length of a link of the chain is 4.5 cm and the S-shaped elements are 39 cm high. This gives a total length for the chain of 4.84 m.

The length of the chain may reflect an attempt to relate to the cubit (*dhirăʿ*) as a unit of measurement.

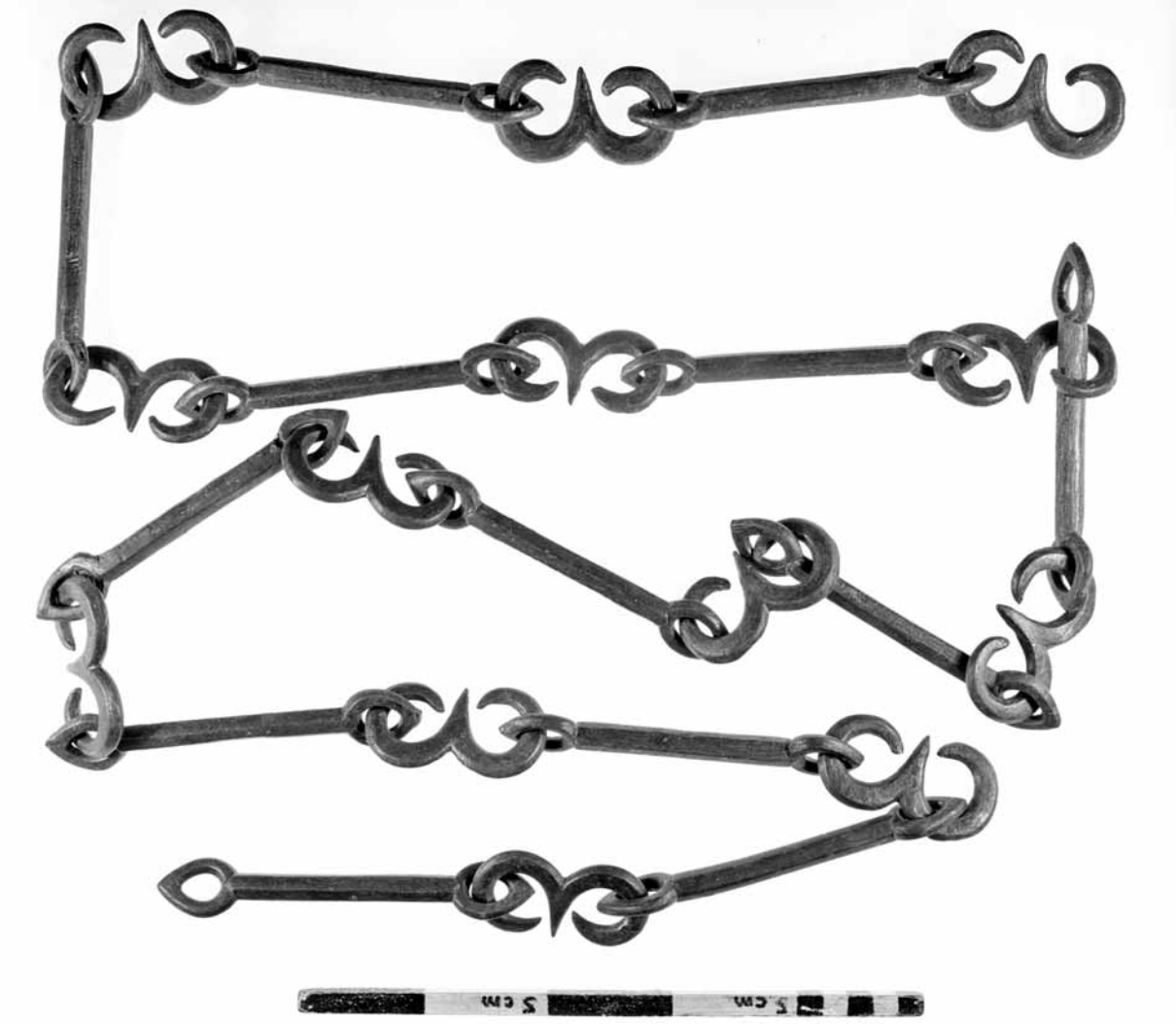

Figure 10. *An additional brass chain from Rabani's excavation.*

There were many different cubits, which varied from place to place and from period to period (Kramers et al. 1965, 231–232). During the rule of al-Ma'mūn (AH 170–218/786–833 CE), the length of the cubit was 48.25 cm, which might be seen as proof that our chain, with its total length of 484 cm was ten cubits long. This may also be confirmed by the testimony of Sabt ibn Djozi of the mid-eighth century CE (Elad 2004, 48, note 193). However, this may be coincidental, since the chain postdates the time of al-Ma'mūn.

The Dating of the Chain – Discussion

An attempt to sum up this finding, from the perspective of historical sources and material evidence, leads us to the following observations: we have a large chain that was connected to a ceiling or an arcade. The other end terminates in a bottle-shaped link from which three chains supported a metal or glass lamp.

Traditional sources from the Umayyad and Abbasid periods refer to similar metal chains with lamps suspended from them. Finds from the Roman and Byzantine periods point to a variety of types of glass lamps. Crowfoot and Harden (1931), Barag (1970), and Hadad (1998) all dealt with this subject. Of interest to us are two types: the suspended lamps, in particular, the Mosque lamp type with a globular body, splayed neck and handles for suspension, and candelabras composed of a flat open-work disc with circular openings holding the glass beakers with

Figure 11. *The terminating flower-shaped elements from one of the chains from Rabani's excavation.*

Figure 12. *A hook from a chain from Rabani's excavations.*

pointed or tubular bases. The use of such lamps is illustrated in the catalog published by Zevulun and Olenik (1987, 80–81).

The glass beakers were filled with water and oil was poured on the surface of the water. A wick was immersed in oil and then placed in a wick holder that rested on the rim of the beaker. Another device used to hold the wick was a metal loop resting on the rim of the beaker. In the case of the mosque lamp type, it possessed a central glass tube containing the oil and a wick[10], or a small glass beaker was placed within the lamp.

Among the findings from the bathhouse excavated by Rabani, are wide metal loops that were probably used to support wicks (IAA Nos. 56-1893/4, 6, 12, 14, Fig. 13). They were made of cut metal sheet and seem to be compatible with the above descriptions.

It is important to point out that illustrated evidence, such as wall paintings and illustrations in manuscripts, represent the Mosque lamp type. The Mosque lamp appears in Mihrabs with religious connotations of Mosque and burial (Cruikshank Dodd 1969, Khoury 1992). The Mosque lamp was sometimes decorated with the Holy Message of the "light" verse from the Koran (Sura 35:34). Consequently, the lamp symbolizes the faith in God and the holy light. This is probably the reason for preference being given to the Mosque lamp type in public buildings such as that in Tiberias.

Examination of the glass found in the vicinity of the chain revealed the remains of lamps intended for suspension, dating from the seventh century and the first half of the eighth century, to the eleventh century CE. Among the finds are detached handles of the ribbon type, generally dated to the late Byzantine period (Gorin-Rosen 2000, 89, Fig. 4:27–28). Together with these, large handles and rim fragments of lamps of the mosque lamp type were found in the same locus, dated to the tenth–eleventh centuries CE (Fig. 13). Other such handles, of different sizes, were found at Tiberias dated to the tenth–eleventh centuries (Lester 2004, 153–157, Fig. 7.12). There are many fragments of handles and rims of mosque lamps among the finds from Rabani's excavations in the bathhouse (IAA Nos. 2002-28–36). Other finds from this excavation were window panes made of turquoise, dark green, crimson and yellow glass.

Summary

The chain recently found at Tiberias testifies to the existence of a large lamp suspended from the ceiling by the chain. This chain enables us to establish the use of the chains found nearby in Rabani's excavations.

Regarding its dating, the chain is typical of the Early Islamic period. The glass and pottery found with the chain permit an accurate dating, to the late tenth to eleventh centuries CE. We can propose, with a high degree of confidence, that the source of the chains was a single workshop in Tiberias, since no parallel was found at any other site. As pointed out in the introduction to this paper, the chains were found in close proximity to a large public building, the remains of which were exposed in the excavations carried out by Rabani and during the present excavation. However, even without these finds, historical evidence together with the present finds is sufficient to prove that the chains were part of a public building, the use of which has yet to be determined.

In any case, this chain joins the other metal vessels and objects found in the various excavations of Tiberias to point to the existence of a flourishing local metalworking industry.

Notes

[1] The excavations (license No. G-10/2004) were conducted on behalf of the Hebrew University of Jerusalem and Brown University (USA) under the direction of Yizhar Hirschfeld and Katharina Galor, in cooperation with the Israel Antiquities Authority and the Municipality of Tiberias. The chain was discovered in Area A by Yoav Arbel.

[2] The numismatic finds were studied by Ariel Berman, the pottery by Anna de Vincenz, and the glass by Ayala Lester and Yael Gorin. The plans are by Dov Porotsky and the drawings of the glass and the chain by Carmen Hirsch.

[3] For a detailed discussion of the development of this motif and its appearance in the Early Islamic period, see the doctoral dissertation in preparation by Ayala Lester.

[4] Excavation license No. G-113/1998.

[5] In his study of the composition of metal vessels of the Fatimid period from Tiberias and Denia in Spain, Ponting (2003) notes that the brass of the Islamic world is characterized by a low level of zinc. In his opinion, the importance of brass in the Islamic world lies in the golden color that it gave to the vessels (Ponting 2003, 95–96).

[6] In his discussion of the origins and production methods of the different alloys in Iran, Allan (1979: 39–45) deals also with brass, the alloys from which it was produced and manufacturing techniques. He presents the testimony of historians such as al-Mukaddasi and al-Biruni who relate that a certain ore and rods or "fingers" of pottery were placed in the furnace; these were covered by the flames and left their traces on the pottery "fingers" after the flames died down (Allan 1979, 40–41). Allan notes that pottery "fingers", up to 30 cm long and 2–4 cm in diame-

Figure 13. *Metal loops to support lamp wicks, from Rabani's excavations in Tiberias (IAA Nos. 56-1893/4, 6, 12, 14).*

ter, have been found in a number of sites in Iran. Shorter pottery "nails" have been found at Tiberias; they are about 18 cm long and conical in shape, with a diameter of 2–3 cm at the base. Such "nails" were found in the synagogue excavated by M. Dothan (Dothan 2000, Fig. 25:51) and in a kiln discovered in south Tiberias and excavated by Stern (Stern 1995, Fig. 1:6). It was believed that these pottery "nails" served as dividers between pottery vessels in kilns, but in view of this evidence from Iran and the finding of such large quantities of metal vessels in Tiberias, one must consider the possibility that they served both in pottery kilns and in the brass industry in Tiberias, although no traces of metal have been found on them.

[7] Licences Nos. &-6/1953, &-9/1954, &-1/1955.

[8] IAA Nos. 1952-1207/1, 990-1278/1–17, 2001-1235/1–7, 2001-1237/1–9, 2001-123/1–17.

[9] We are grateful to Amikam Ela'd for drawing our attention to his article dealing with this subject.

[10] An example of a small lamp of the mosque lamp type with a central glass tube was found at Caesarea dated to the 10th–11th centuries, see Polak 1998, Fig.6:8.

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