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CATALOGUE OF ROMAN GLASS OBJECTS
FOUND BY THE 2ND CANADIAN TEAM IN CARTHAGE.
(Seasons 1980-1986)

by
Mylene Francescon.

Thesis submitted to the School of Graduate
Studies and Research of the University of
Ottawa in fulfilment of requirements for a
Master of Arts degree.

Ottawa, Ontario, Canada.



Mylène Francescon, Ottawa, Canada, 1990



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ISBN 0-315-60623-1



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To 'Le Bulube', Pap and 'The Marramow'

ACKNOWLEDGMENTS

I wish to thank all of those who were involved with this thesis both up close and from afar. My first thanks to Prof. C.M. Wells, my thesis director, who first introduced me to Carthage and its wonders, and for letting me use the material from his site. Secondly I wish to thank Dr. J.Z. Freed for helping me in setting up the methodology and the frame of the catalogue, by introducing me to her own work on pottery. Thank you to Drs. Hayes, Harden and Stern for kindly clarifying some problems. Thanks to Dr. S.P.Ellis, my husband, who stuck with me through thick and thin during the redaction of the work. Thanks for the guidance, the editing, the typing and most of all the encouragement he gave me (not to mention the cooking and the washing -up!). Thank you to the Departments both of Archaeology and of Town and Country Planning at the University of Newcastle-upon-Tyne, for the use of their facilities. Finally I wish to give special thanks to my parents for encouraging me and believing in me throughout my education. They are the true reason why I ventured onto this project in the first place.

GLOSSARY

Annealing The process of reintroducing a completed object into a secondary part of the glass furnace and slowly cooling the object so that any strain created in the glass during the forming process may be released.

Coil base A separate tnead of glass is coiled around the base of the vessel to form a ring.

Gullet Raw glass or chunks of broken glass from a cooled melt, remelted to form objects; also applied to objects and scraps of glass which are recycled.

Fire-polishing The reintroduction of a vessel into the furnace in order to smooth an irregularity such as a rim or the outer surface of a vessel.

Fritt Product of preheating of raw materials to initiate the glass making reactions and drive off volatile reaction products. It is a granular material.

Knocked-off Sharp, often rough rim which has not been further worked after being cacked off from the blowpipe.

Kick-up A deep concavity in the underside of the base, formed with the aid of a pontil.

Lathe cut The technique whereby blanks of glass in the general shape of a vessel are mounted and turned slowly with the aid of a bow or handled wheel while a tool fed with an abrasive is held against the glass in order to cut sharp profiles or to polish the overall surface.

Marver A flat surface on which the glass is rolled during manufacture. Additions such as decorative threads are rolled or "marvered in" to make them flush with the surface.

Pad base A blob of glass added to the base of the vessel is worked out to form a base.

Pontil A metal rod used for manipulating molten glass.

Pushed-in base While on the blowpipe, the base area of the vessel is narrowed in at the sides and then pushed in to form a concavity at the bottom. (Note that this differs from the kick as there is no pontil mark).

Trail A strand of glass, roughly circular in cross section, which has been drawn out from a small gather of glass. It may be applied hot to a vessel as decoration or may be cooled and broken to form monochrome canes.

True base ring It is formed by addition of a ring of glass underneath the body of the vessel.

Weathering The result of interaction between the surface of a glass and its environment; usually the result of chemical attack whether it be water, air, by water in soil or water vapour in air or soil. Note: The degree (or its absence) of weathering depends upon the chemical composition of the glass itself, its thermal history and the chemical nature of its environment.

The terms in this glossary have been adapted from those in Auth, S.N. (1976), Ancient Glass at the Newark Museum, Newark, N.J., p. 7 and from Goldstein, S.V. (1979), Pre-Roman and Early Roman Glass in the Corning Museum of Glass, Corning, N.Y., pp. 12-14.

INTRODUCTION

History of Roman glass.

Apart from the invention of glass itself, the most important innovation in the history of glass was the invention of glass-blowing. This leap in technology revolutionized the glass industry. By blowing glass, artisans could cut the cost of fabrication, increase their production and therefore reduce the price of what used to be a luxury item. The blowing technique enabled glass makers to manufacture glass vessels of various sizes and shapes, adapting these to uses given to their ceramic predecessors. Blowing made it possible to make thinner and more transparent vessels, rendering glass more acceptable for table and domestic use and also for window panes and medicinal wares, where transparency was most desired.

Although glass making first occurred in the East(1),(Phoenico-Syrian coast line; Egypt, Alexandria),the technique rapidly spread westward. According to Strabo, Rome was contributing most of the new inventions and innovations to the trade in the last quarter of the 1st century A.D.:

"καὶ ἐν Ῥώμῃ δὲ πολλὰ παρευρίσκεισθαι φασὶ καὶ πρὸς τὴν ῥαστώνην τῆς κατασκευῆς, καθάπερ ἐπὶ τῶν κρυσταλλοφανῶν· ὅπου γὰρ καὶ τρύβλιον χαλκοῦ πρίασθαι καὶ ἐκπωμάτιον ἔστιν."

" In Rome also, they say, many additional inventions are made both in relation to colour and to facilitating manufacture, for example for glass as clear as crystal, where one can buy a bowl or a drinking cup for a copper"(2)

This passage does not, however, reveal the nature of these inventions, nor does it imply first hand information, hence the "they say" φασσι(3). The precise date and place for the invention of glass blowing still remains a mystery. Although Pliny the Elder has much to say about glass and glass making in his time, he too leaves these questions unanswered. He does, however, mention glass blowing as a technique but leaves its inventor anonymous:

" et aliud flatu figuratur, aliud torno teritur,
aliud argenti modo caelatur."

" some of it shaped by blowing, some ground on a lathe
and some engraved like silver"(4).

Since literary evidence fails, we turn to archaeology. So far it suggests that the invention took place in Syria or Palestine. Alexandria was another big center for glass-making, although, it seems that the Egyptian glass-makers still preferred casting well into the 1st century A.D.(5). Quantities of glass cullets, deformed fragments and tubes which had been blown were discovered during excavations in the Jewish quarter of Jerusalem. They came from a deposit dated numismatically to around 50 B.C. This evidence provides at least a possible terminus ante quem for the beginning of glass-blowing(6). In the West, the earliest deposits of glass known contains blown vessels such as those from the Regia in the Roman Forum and the House of Livia on the Palatine(7) which dated to the last decades of the 1st century B.C. It is said that mould-blowing was brought to Italy from the East by Ennion(8) in the first half of the 1st century A.D. The Portland vase, which was mould-blown, has been dated to between 30

and 9 B.C.(9) which shows how rapidly glass-blowers mastered the new technique.

The Campanian glass industry profited greatly from the discovery of fine sand in the Volturnus area(10). The quantities of glass excavated at Pompeii and Herculaneum show the size of the glass-blowing industry when these cities were destroyed in 79 A.D.(11) There were several luxury vessels such as fine mould-blown glass and glass ornaments. Most of the material, however, was ordinary household ware made of bluish-green and yellowish glass(12).

In North Italy also, new glass making centers arose fairly early in the 1st century A.D., both in the Po valley and at Aquileia(13). There is no literary evidence for glass manufacturing in those regions but their glass is well known. Two graves in Ornavasso dating to the last decade B.C. produced blown glass(14) Most vessels produced in that area were small forms of varigated and coloured glass.

From Northern Italy, the technique of glass blowing passed to Gaul and Germany. Evidence from Cologne has shown remains of a glass-house where glass-blowing was practiced, dating to the 1st century A.D.(15) and perhaps even earlier than 41 A.D.(16). By the first half of the 1st century A.D., glass manufacturing had reached Spain, producing types not exactly paralleled in Gaul(17). At this time all the most important forms that were known to have been produced in the Roman Empire had already appeared.

The technique of glass-blowing does not seem, however, to have crossed to Britain before the late 2nd or early 3rd century A.D.(18) Colchester is the earliest known production center for glass in Britain(19).

The situation in the eastern part of the Roman Empire seems to have been different from that in the West. In the 1st century A.D. glass workshops in the West produced a greater variety of types of blown glass and experimented more with the medium than in the East where the technique had been invented. In the East free-blown glass is represented by a limited number of types during the 1st/2nd centuries A.D., putting the accent on mould-blown glass(20) eg: the vases with inscriptions, amphoriskoi, perfume bottles, head-vases, date flasks etc...(21)

In the 3rd and 4th centuries A.D. the Syro-Palestinian industry flourished. During this time contact between eastern and western center of glass production must have been fairly constant(22) for we see an integrated Mediterranean market develop. It is not sure whether this was done through the normal process of trade or by migration of workers bringing special skills and new fashions. A number of types of decoration and techniques of decoration appeared simultaneously in the East and in the West, eg: the so-called snake thread of the 3rd century A.D., the "pipette" shaped unguent-bottle of the late 3rd/early 4th centuries A.D.(23), the applied blobs and the glass lamps of the 4th century A.D. Many more decorative techniques tell the same story.

During the 4th century A.D., as the two halves of the Empire grew apart politically and economically, the exchange seems to have diminished. By the end of the 4th century A.D. the political division was eventually reached and the Roman Empire had become politically divided into Eastern and Western parts. The glass workshops too had become more isolated and less innovative. They continued to produce the older range of forms with only minor stylistic variations. However, some complicated techniques like the claw-beaker of the West or the Eastern reblown patterns were developed within their own region.

We have a poor and incomplete picture of glass-houses in the ancient world because the evidence that we have is badly preserved. Some furnaces in glass houses were found in Cologne(Germany), where ruins of five furnaces were found with frit and fragments of bluish green glass(24). One glass workshop was found in Tipasa(Mauretania Caesariensis)(25) and four in Britain(26).

" Six furnaces in Wildespool stood on a platform at different part of the side. They had an oval or rectangular section and were originally domed. One of the oval furnaces was divided into three parts by a floor below the fire-place. Different degree of heat could be achieved and the lower floor probably served for cooling and annealing vessels. A large canal passed through the three platforms to regulate the temperature. In front of each furnace there was a limestone slab probably used for marvering" (27)

We do not know, however, whether this description represents the standard type of glass furnaces for the period.

Review of literature

At the beginning of this century scholars like Anton Kisa (28), and Morin-Jean (29) had already given ancient glass a new importance. However serious flaws with their methods, and publications (e.g.: absence of cross references between text and plates), make their studies of little use to us today.

The first pioneering modern study of Roman glass was Dr. D.B.Harden's Karanis report of 1936 (30). It is one of the largest, best-dated collections from a single excavation.

Another important figure is Fritz Fremersdorf, who produced eight volumes of the Cologne collection between 1958 and 1967(31). Despite the great worth of his work, Fremersdorf wrongly gave Cologne pre-eminence in glass making in the 2nd to 4th centuries A.D. "He never accepted that any other glass-producing area stood in the same class as Cologne" (32).

In 1952 Gladys Weinberg (nee Davidson) produced an important publication on Roman and Mediaeval glass from Corinth (33), which was also a large well-dated site. Olof Vessberg published the glass found in Cyprus in 1952 and 1956, producing his own typology (34). In 1957 Classina Isings (35) produced the first typology of Roman glass throughout the Roman Empire, which is still used today as the basic work on glass forms.

In 1959, the Corning Museum launched the annual Journal of Glass Studies which covers all periods (Pre-Roman to contemporary) and aspects of the study (artistic to scientific). It keeps the glass lover up to date with recent acquisitions and discoveries around the world. Since then the study of Roman glass has grown rapidly. The North of Italy was covered by M.C.Calvi, with her study of Aquilea (36), J.Alarcao specialised in the Iberian peninsula (37), and Dorothy Charlesworth(38) together with Harden surveyed Roman Britain. In North Africa, S.Lancel produced a typology of the glass from Tipasa (39). V.Tatton-Brown has published the glass from the British excavations in Carthage(40), and J.Price has published the Hellenistic material from Tripolitania(41). Harden has kept his interests in Egypt, Syria, Palestine and Cyprus. Elsewhere in the east G.M.Crowfoot published material from Samaria-Sebaste(42), C.Clairmont that from Dura-Europos(43), and A.von Saldern that from Sardis(44). N.Sorokina has published most of the material from the Crimea(45).

I have named only the authors and publications which are most known to glass scholars and which are most used as diagnostic information for certain areas and periods. These are but a few names taken from the growing list of specialists in this field. We should also mention Dr. J.W.Hayes who has also contributed to the study of Roman glass with his ROM collection and whose knowledge of Roman pottery has provided us with a special insight into the Late Roman world and its domestic life(46). D. Grose concentrated his studies on the history and trade of glass in the ancient world, shedding appreciated light on obscure areas of the subject(47).

Carthage and other sites.

The object of this thesis is to describe and catalogue the glass objects found in the years 1980-86 on the site excavated by the Second Canadian team at Carthage in the N.E. sector of the Roman city astride the Theodosian Wall and decumanus VI N. between cardines II and III E(48). Most of the glass comes from domestic occupation inside the Theodosian Wall from around 400 A.D. to the Arab conquest.

This collection, which contains more than 600 fragments and weighed 4.19 kg. uncleaned and 3.75 kg. cleaned has provided us with a full range of Roman glass from the 1st century B.C to the 6th/7th centuries A.D. with most of its material dating to the 4th to 6th century A.D. Out of these 600 fragments, we have selected 171 catalogued pieces which include vessel types, non-vessel types and decoration techniques.

The selection criteria was a simple one. Firstly, all the pieces belonging to the same part of vessels (rim,base) were put together. Secondly, pieces of the same form were gathered as a group, leaving all odd pieces on their own. Thirdly, within each group, the largest or better preserved specimen was pulled out to become the "type piece". If any fragment out of this group, suggested itself a variant to the form, it was also pulled out and placed after the "type piece". After this procedure, we attempted to find parallels and dates for the pieces. We then built up the figures according to the results of the analysis, separated the pieces

into categories (bottles, bowls), and gave them catalogue numbers. When identifiable, the odd pieces were integrated within a category, following the chronology. Other pieces were grouped together as "miscellaneous", or were rejected all together.

The range of forms found on site touches all types : beakers, bowls, plates, dishes, stemmed goblets, lamps, bottles, unguentaria, window glass and various non-vessel types like beads, pins and rods. The bulk of the collection , however, is made of bottle types, 33 to 45% of it. No one form of bottle in particular seems to predominate (since most of the pieces are so fragmentary it is impossible to ascribe them unequivocally to one specific form). The evidence is clear enough, however, to allow us to define this category as bottle types . Another group which makes up a large part of the material consists of the beakers. Hayes had already stated that this form was the most common on our site (49) and had allocated 30% of the bulk of his finds to it. In our collection bottles are more common, even though beakers are present to a similar extent (25%) to those in Hayes' finds. All the other forms are more or less equally represented in the collection. Hayes denies the occurrence of stemmed goblets on our site(50). This observation, however, was made as a result of the analysis of the cistern deposit. This deposits is not a typical one and it is difficult to draw any general conclusions about the material expected to be found on the site. Our collection holds a substantial number of pieces of stemmed goblets which cannot be mistaken for any other form. This is clearly different from the cistern deposit which Hayes has examined.

Methodology

We have organized the catalogue by general forms. For instance the "bottles" section groups together what could have been flasks, jugs or bottles. To distinguish between them was too dangerous considering the state of preservation of the material. We have started with small bowls and progressed from an open shape to a closed one, the unguentarium. We have basically adopted V.A. Tatton-Brown's (51) order of classification with a few modifications.

Two exceptions to this rule are to be found with the category called "colourless" and that which is called "miscellaneous". The colourless group is the only group of glasses which we have put together because of their material and not their forms. Uncoloured glass became popular in the 1st centuries B.C. and A.D. when the technology was rapidly advancing. Many forms were made in this fashion and so we thought that this separate entry would suit them better and give them a higher profile in the collection. The category called "miscellaneous" groups together odd pieces which do not fit in any other file. Either they are non vessel types or only wall sherds with no precise identity.

Within each category the catalogue moves chronologically to give a better overview of the evolution of each form. Of course in certain cases when many forms date to the same period it is difficult to assess which came earlier, but we have tried to be as consistent as possible, especially from one century to the other. Each piece has its own reference

number in accordance with the figures as well as its "catalogue number" in reference to the whole of the deposit. In every case the pieces are provided with a height, and according to their type , a base or rim diameter. All other pieces (walls and non-vessel types) have lengths and widths. Physical description, colour and conservation state is described at the beginning of the text. For each piece, following the description, we mention any other pieces of the type found on site and note any differences with them. Finally, parallels found on other sites are listed, together with the date.

The figures are presented reduced to half the actual size of the pieces. They dictate the sequence of the catalogue. With the description of each piece, we have noted the number of parallel pieces that have been found on site. At the back of the work we have provided tables of concordances, linking the catalogue number to the "site catalogue number"(52) of the pieces analysed. Not all pieces are illustrated or described in the catalogue, so we have not given a second table of concordances presenting the pieces by "site catalogue numbers" versus catalogue number. We have also provided a chart of parallels designed to highlight the profile of the sites, from which parallels for our pieces were found. It will try to show, to what extent the material from Carthage was influenced from the rest of the empire, and possibly shed some light onto the question of glass trade.

- 1- Grose, D. (1977), p. 10.
- 2- Strabo, Geography, 16,2.25.
- 3- Stern, E.M. (1977), p. 150.
- 4- Pliny the Elder, Natural History, 36,190-193.
- 5- Harden, D.B. (1969), p. 46-47.
- 6- Stern, E.M. (1977), p. 149.
- 7- Grose, D. (1977), p. 16-25.
- 8- Ennion was the most famous glass maker who signed his work. Most of his cups have been found in Northern Italy, where it is said he had moved his workshop westward. Auth, S.N. (1976), p. 18.
- 9- Stern, E.M. (1977), p. 151.
- 10- Harden, D.B. (1969), p. 48.
- 11- Stern, E.M. (1977), p. 152; see also the recent catalogue of glass from Herculaneum. Scatozza-Horich, L. A. (1986).
- 12- Isings, C. (1957), pp. 4-5.
- 13- Harden, D.B. (1969), p. 48.
- 14- Stern, E.M. (1977), p. 152.
- 15- Harden, D.B. (1969), p. 50.
- 16- Stern, E.M. (1977), p. 153.
- 17- Harden, D.B. (1969), p. 51.
- 18- We must note here, that all pieces referred to in our catalogue as parallel pieces found in Britain, and dating to the 1st/2nd centuries A.D., were most likely to have been importations. They were brought into Britain by and for Roman troops and civilians during the 3rd and 4th quarter of the 1st century A.D. Harden, D.B., & Price, J. (1971), p. 320.
- 19- The waistlers found there are not likely to be earlier than late 2nd/early 3rd century A.D., Harden, D.B. (1969), p. 51.
- 20- Stern, E.M. (1977), p. 155.
- 21- Head flasks and date-flasks were vessels blown in moulds made in the shape of human heads and dates; other fruit was also copied, such as clusters of grapes.
- 22- Harden, D.B. (1969), p. 54.
- 23- Harden, D.B. (1969), p. 59; Stern, E.M. (1977), p. 156.
- 24- Isings, C. (1957), p. 12.
- 25- Forbes, R.J. (1966), p. 192.
- 26- Forbes, R.J. (1966), p. 192; 1) Wildespool, 2) Caistor-by-Norwich, 3) Wroxeter.
- 27- Forbes, R.J. (1966), pp. 119-120.
- 28- Kisa, A. (1908)
- 29- Morin-Jean (1913)
- 30- Harden, D.B. (1984), pp. 10-11.
- 31- Fremersdorf, F. (1958)
- 32- Harden, D.B. (1984), p. 11.
- 33- Davidson, G. (1952)
- 34- Vessberg, O. (1956)

- 35- Isings, C. (1957)
- 36- Calvi, M.C. (1968)
- 37- Alarçao, J. various publications on Conimbriga since 1964.
- 38- Charlesworth, D. (1959).
- 39- Lancel, S. (1967)
- 40- Tatton-Brown, V.A. (1984).
- 41- Price, J. (1985).
- 42- Crowfoot, G.M. (1957).
- 43- Clairmont, C. (1963).
- 44- Saldern, A. von, (1980).
- 45- Sorokina, N. (1978).
- 46- Hayes, J.W. (1972); Hayes, J.W. (1975).
- 47- Grose, D. (1977).
- 48- Annual reports by C.M. Wells and others will be found in ENC/CNV
(now EMC/CV) from 1977 onwards.
- 49- Hayes, J.W. (1985), p. 116.
- 50- Hayes, J.W. (1985), p. 115.
- 51- Tatton-Brown, V.A. (1984).
- 52- Site catalogue numbers were given at the time of the conservation process.

COLOURLESS GLASS

This section covers a small category of glass which we have grouped together at the start of the catalogue. Unlike the rest of our pieces these are associated together not by form but by type of glass. We call colourless glass, one which has no colour added or left in it. The process of discolouring glass was done by chemical addition to the mass, after purification of the frit. Added in the right quantity, antimony or manganese would render the glass colourless and clear or colourless and opaque.(1)

Colourless glass made its appearance around 70 A.D.(2) At Fishbourne and Camulodunum(3) significant evidence shows colourless glass used in the early levels (65 to 75 A.D.)(4). The early colourless glass is sometimes cast and sometimes blown. It may have been finished on the wheel or blown in its final form. It may have been worked into its final form by grinding and cutting from a cast or a blown blank. The best way to distinguish between the techniques used is by looking at the condition of the inside of the surface. If it is still glossy we may be certain that it was blown. If both surfaces have been polished it is more probable that the piece was cast(5). The vessels were kept plain or decorated by wheel cutting. Two pieces in our collection were left plain (no. 3 and no. 7). Eight were decorated with linear wheel-cutting and might have been mould-blown although we cannot be sure in every case(6).

Colourless glass became widespread in the 2nd/3rd centuries A.D. throughout the Empire. Good, clear, colourless glass, blown very thin with neat and fine cutting, characterises pieces from the 1st/2nd centuries A.D. All except one of our pieces (no. 7) resemble this description.

- 1- Coloured glass was obtained by adding a metal to the purified, molten fritt. In the case of vessels that were not luxury items (eg: bottles for packing), the fritt was not purified and produced aqua-blue or yellowish glass; a result of the iron contained in the sand. Chemical addition to the mass represented an added cost to the artisan, whether to colour or to discolour the final product.
- 2- Alarčao, J. (1974), p. 171.
- 3- Harden, D.B. & Price, J. (1971), p. 330.
- 4- The pieces were most probably imported to Britain. (Harden, D.B. & Price, J. (1971), p. 320.)
- 5- Harden, D.B. & Price, J. (1971), p. 331.
- 6- It has been mentioned specifically where it is certain that the pieces are mould-blown.

No: 1
Fig: 1
Cat.no: G1N079
H: 3.2 cm.
Rim diameter: 6.0 cm.

Rim and part of wall of colourless blown, linear cut beaker. Its walls are very thin but of good quality, slightly pitted on the external surface but still very glossy on the inside. It is decorated by two faint lines: one in the carination, the other underlining the rim's edge. The rim is knocked-off and ground smooth. This category of vessels is well attested in 1st century context in Conimbriga(1) and in Fishbourne(2) in periods 1 to 3, from 75-100 A.D.(3)

Suggested date: late 1st to 2nd centuries A.D.

- 1- Alarcão, J. (1972), no. 126, pl. xxxix, p. 182.
- 2- Harden, D.B., & Price, J. (1971), no. 62, fig. 140, pl. xxvi, p. 350.
- 3- We must remember that these pieces are importation. (Harden, D.B., & Price, J. (1971), p.320.)

No: 2
Fig: 1
Cat.no: G2A161
H: 2.5 cm.
Rim diameter: undetermined.

Rim fragment of moulded bowl. The inside wall at the rim is decorated with a wheel-cut groove. The piece is made of rather good quality glass, weathered and partially covered by a thick coat of iridescence. No other piece of this type was found on site. Similar pieces were found in Carthage on the University of Michigan site(1) dating to the 1st century A.D. In Sidi Khrebish (Libya)(2), 600 of this type were found also, dating to the last 20 to 30 years of the 1st century A.D.

- 1- Hayes, J.W. (1978), no. 1, fig. 1, p. 187.
- 2- Price, J. (1985), nos. 27-34, figs. 24.3, p. 291.

No: 3
Fig: 1
Cat.no: G3B042
H: 2.2 cm.
Rim diameter: 12.0 cm.

Rim and part of wall of colourless vessel. The rim has been knocked-off and ground smooth in bevel. The exterior wall is slightly pitted and scratched; the interior is smooth. It is the only example of this shape found on site. No parallels have been noted for this piece. We can only include it to the category of 1st century A.D. colourless bowls or beakers, like those found in Conimbriga(1).

1- Alarçao, J. (1972), p. 171.

No: 4
Fig: 1
Cat.no: G2U536
H: 0.5 cm.
Rim diameter: 10.6 cm.

Part of outplayed rim of bowl, grooved on the upper side. The lip is approximately 1 cm. wide and is decorated with 2 wheel cut grooves. The piece is made of colourless glass and was probably moulded. No other examples of this form have been found on site.

Parallels have been noted in Conimbriga(1) dating to the second half of the 1st century A.D. Practically complete specimens have been found in Dura Europos(2) dating also to that period. They show that these were resting on a true ring base, slightly outplaying.

1- Alarçao, J. (1972), no. 104, pl. xxviii, p. 173.
2- Alarçao, J. (1972), note 60, p. 173.

No: 5
Fig: 1
Cat.no: G1V142
H: 2.2 cm.
Rim diameter: 9.0 cm.

Rim and part of wall of blown colourless, linear cut beaker. The exterior surface is slightly pitted whereas the interior one is still very glossy. It is decorated by three light and thin grooves; one underlining the rim and two 1cm. down on the wall. The rim is knocked off and ground smooth.

A similar piece is noted in the Fishbourne finds(1) belonging to period 3, 100 A.D.(2) In Conimbriga no. 130 is similar to ours, having the order of the grooves inverted(3).

- 1- Harden, D.B., & Price, J. (1971), no. 55, fig. 140, pl. xxvii, p. 347.
- 2- Alarcão, J. (1972), no. 130, pl. xxxix, p. 182.
- 3- Imported material. (see note 3 of piece no. 1).

No: 6
Fig: 1
Cat.no: G1H055
H: 3.1 cm.
Rim diameter: 11.0 cm.

Rim and part of wall of blown colourless, linear cut beaker. The exterior surface is slightly iridescent and pitted whereas the inside is still very glossy. It has been decorated by two faint grooves on the wall at 0.8 cm. and 2.1 cm. from the rim. The rim has been knocked off and ground smooth. The shape of this vessel is more globular than the others in our collection. Four wall sherds of this type were also found on site.

One piece in the Verulamium collection is rather close in shape and form to our specimen(1). No other parallel has been found yet.

Suggested date: 1st/2nd centuries A.D.

- 1- Charlesworth, D. (1972), no. 56, pl. xxvii, fig. 140, p. 347.

No: 7
Fig: 1
Cat.no: G1V145
H: 1.5 cm.
Rim diameter: 16.0 cm.

Part of rim and wall of wide mouthed vessel of unknown shape. The rim has been knocked-off on its head and ground smooth, giving a flat top to it. It then continues into a thick 'S' shape and widens outward into the wall of the vessel. It is made of colourless glass covered by an iridescent film, flaking at some parts. A large vertical cut was opened through the wall by weathering. No other piece of this type compares to this one on site.

No exact parallel has been found as yet, and no date has been established.

BOWLS, DISHES, PLATES

This second section groups together bowls, dishes and plates. We are calling bowls those vessels whose diameter is too large for them to be called cups and yet whose dimensions are clearly small enough to be used by a single individual at a meal. Dishes are obvious concave vessels that would have been used for containing more than one person's share at a meal. Plates are flat and large, sometimes oval, sometimes resting on a ring base.

The earliest examples of bowls found on the site are pieces of the first half of the 1st century AD. These are mould-pressed vessels made out of coloured, or marbled glass. Six pieces come from those vessels called pillar moulded (1) or, more accurately, with mould blown ribbed decoration (see no. 10 and no. 11). Two of them are slightly carinated, one shallow and one deep. In most cases the ribs reach the bottom of the vessel but a certain type displays ribs only on its side. At first these were made in variegated glass, but soon, at the end of the 1st century A.D. monochrome fashion becomes more common (2).

In the second half of the 1st century A.D. mould-pressed glass continues to be used. Existing forms are made in larger quantities and new ones appear. Simultaneously free-blown glass is proving to be more versatile. The forms of bowls vary considerably. They have straight sides (3), outsplayed sides (4), or horizontal rims and convex sides (5).

They are decorated with ribbed coils on the rim (6). All bowls now have tubular rims (7). Our collection contains one bowl with outsplayed sides (no. 13), one with a coil on its rim (no. 14), and several with tubular rims. These last pieces however are of a later date. The forms did not change much throughout the following centuries. Certain types were used more and therefore lent their characteristics to the glass of the late 3rd/4th century AD. For instance the technique of thickening the rim in a flame was very common on bowls. 31 such pieces were found on site. The tubular rimmed bowl (8) with foot recurs. It is associated with an interesting variant, the flange, built out of two tubes joined by a membrane of glass. Three such pieces were found on site: one whose flange has been scalloped (9) and two which seem to have been only circular. Another variant could have been the overhanging lip (10) so typical of small mortaria types found in ceramic (11). Only four of this type were noted on site.

The introduction of the dish seems to have been made in the second half of the 1st century A.D. It would have been made in the mould-pressed technique, but was only produced in Italy (12). Three types were made: the flat based with outsplaying rim, the cylindrical type (13) and the type with outsplayed sides (14). In most cases the mould-pressed dish was displaced by the free-blown types. The dish without base ring (15), which was mainly produced in Italy, was found in three variants: 1 - with rim folded, 2 - with rounded rim and outsplayed sides, 3 - with vertical sides and without folded rim (16). The forms of the dishes resembled those

of the bowls although bigger, and some had a base ring (17), some were cylindrical (18) and some had outplayed sides (19). The next development was the introduction of low circular and oval dishes (20) in the third century A.D. These rested on a true base, a glass ring designed and formed as a base stuck onto the dish after fabrication. These types of dish were probably Egyptian in origin and they remained in use until very late. They are found amongst the latest Egyptian material from Karanis(21) dated by the associated African Red Slip Ware to the late 5th to early 6th centuries A.D.(22)

In the 4th century one more variation of dishes appeared, the shallow dish with broad collar (23). This type was not common and might have belonged more to the eastern part of the Roman Empire. Its rim is folded outward and downward covering the whole side of the bowl, and producing a tubular hollow at the top and one at the junction with the foot. This type of shape has been seen without the double folds but decorated with an added tube on the side or simply an horizontal wall moulding. In our collection we have noted one dish with double fold, three with straight sides, one with a wide flange, one with an horizontal wall moulding, three with a tubular rim and eleven pieces with flaring walls. Whether these are all bowls or dishes is unknown. Three tubular ring bases were also noted and are thought to have belonged to dishes. One other piece belonging to a dish was found on site. It was paralleled by a very rare type, first mentioned by Harden (24). He has called them bowls on stem, distinguishing between deep and shallow shapes. It is thought that they were made to resemble metal or terra sigillata types. They came from late 5th century A.D. contexts (25).

Some authors have distinguished plates from dishes as being circular rather than oval(26). However we do not consider this distinction to be relevant to the essential character of the vessels. The four pieces which we have recognised as plate forms are all fragments of base and are not complete enough for us to tell if they were circular or not.

- 1- Isings, C. (1957), Form 3, p. 17.
- 2- Isings, C. (1957), Form 3, p. 17.
- 3- Isings, C. (1957), Form 41a, p. 56.
- 4- Isings, C. (1957), Form 41b, p. 57.
- 5- Isings, C. (1957), Form 42, p. 58.
- 6- Isings, C. (1957), Form 43, p. 59.
- 7- Isings, C. (1957), Forms 44a-44b, pp. 59-60.
- 8- Isings, C. (1957), Form 115, p. 143.
- 9- One African Red Slip form of Oudna, Hayes 97, has a scalloped rim. It is dated to the 6th century AD, and thus may be copied from the glass form. (Hayes, J.W. 1972, pp. 150-1).
- 10- Isings, C. (1957), Form 119, p. 149.
- 11- Riley J. (1975).
- 12- Isings, C. (1957), Form 19, p. 37.
- 13- Isings, C. (1957), Form 22, p. 38.
- 14- Isings, C. (1957), Form 23, p. 39.
- 15- Isings, C. (1957), Form 46, p. 61.
- 16- Isings, C. (1957), Form 46a-46c, p. 61-2.
- 17- Isings, C. (1957), Form 47, p. 62.
- 18- Isings, C. (1957), Form 48, p. 63.
- 19- Isings, C. (1957), Form 49, p. 63.
- 20- Isings, C. (1957), Form 97, p. 117.
- 21- Hayes, J.W. (1975), p. 134.
- 22- Hayes, J.W. (1975), p. 2.
- 23- Isings, C. (1957), Form 118, p.148.
- 24- Harden, D.B. (1936), p. 47.
- 25- Harden, D.B. (1936), p. 129.
- 26- Harden, D.B. (1936), p. 47; Hayes, J.W. (1975), p. 142.

No: 8
Fig: 1
Cat.no: G1N084
H: 2.2 cm.
Rim diameter: 12.0 cm.

Rim and part of wall of mould-blown bowl. A light groove appears below the outplayed flange. The glass is yellowish green, of very good quality, slightly pitted and hardly reduced by weathering. No other pieces of this type has been found on site. These bowls have flaring rims with a groove immediately below to create a flange. The wall slopes in a curve to a base whose nature is still unknown. We may however assume that it could have been a pad-base on the basis of the parallels below.

Parallels can be found in Trier(1) and in Conimbriga(2) dating possibly to the 4th century A.D.

- 1- Göethert-Polaschek, K. (1977), Form 25, nos. 100-101, p. 37, Abb. 11.
- 2- Alarçao, J. (1974), nos. 99-100, pl. xxxvii, p.173-180.

No: 9
Fig: 1
Cat.No: G3A001
H; 1.6 cm.
Rim diameter: 13.00 cm.

Rim and part of wall of small mould-blown bowl. It has a flat flange and it is decorated by a ridge half way down its wall and had a carination probaly leading to the base. This piece is made of very good quality indigo blue glass, slightly iridescent and pitted. One other example of a mould-blown bowl has been found on site. It is made of colourless glass.

No precise parallel has been found for this piece yet. We can only associate it to the coloured mould-blown vessels produced in the 1st century A.D. Such pieces were found in Conimbriga(1) made out of colourless glass. In Fishbourne(2), mould-blown vessels are found as well but no bowls in the collection recall the form of our piece.

- 1- Alarçao, J. (1972), pp. 166.
- 2- Harden, D.B. & Price, J. (1971), p. 337.

No; 10
Fig: 1
Cat.no: G1H059
H: 3.2 cm.
Rim diameter: approx. 14.0 cm.

Part of wall of mould-pressed bowl with ribs . It is made of marbled purple glass of good quality, slightly pitted and iridescent. The rim part is missing, making it difficult to know the exact height of the piece. No other piece was found on site, made of this marbled fabric.

This type is illustrated by Isings' Form 3(1) which she dates to the end of the 1st century B.C./1st century A.D. These bowls were mould pressed and afterwards fire polished externally. Usually the ribs reached to the bottom of the vessel. There exists another variety with ribs only on the sides. The first examples of mould-pressed vessels were made of variegated glass (millefiori glass and marbled). Later, they were made of monochrome glass. As time went by the monochrome types became more common(2) and more in demand.

Complete examples are seen in Aquileia in marbled and monochrome glass, varying in size and diameter(3). They date to the 1st/2nd centuries A.D.

- 1- Isings, C. (1957), Form 3, pp. 17-20.
- 2- Isings, C. (1957), p. 17.
- 3- Calvi, M. (1969), no. 4, Tav. 9; no. 1, Tav. 10.

No: 11
Fig: 1
Cat.no: G2S460
H: approx. 4.0 cm.
Rim diameter: approx. 8.0 cm.

Part of wall of mould-pressed bowl with diagonal ribs. It is made of deep indigo blue glass very pitted and weathered, slightly iridescent, but still very thick and robust. Four other pieces of this type were found on site. The colours vary from indigo blue to aquamarine, ochre and colourless.

This type is illustrated by Isings' Form 3, the mould-pressed bowls, shallow and deep(1). These are said to have appeared in the end of the 1st century B.C./ 1st century A.D.

Complete examples are seen in Aquileia in various colours and diameters(2). One example appears at Carthage in the British Ave. Bourguiba site. It has diagonal ribs and is blue like our piece(3). Examples are said to have been made in the 3rd and 4th centuries A.D. but only as local production(4).

- 1- Isings, C. (1957), Form 3, pp. 17-20.
- 2- Calvi, M. (1969), No. 2, Tav. 9; no. 1, Tav. 10.
- 3- Tatton-Brown, V.A. (1984), no. 1, fig. 65, p. 194.
- 4- Isings, C. (1957), Form 3, pp. 17-20.

No: 12
Fig: 1
Cat.no: G1V151
H: 1.4 cm.
Base diameter: 4.2 cm.

Part of true ring base of possible bowl on foot(1). These were made in the mould-pressed technique as well as in the free-blown one. Our piece is made of the 1st century A.D. indigo blue glass. No other base of this type was found on site, however a few wall sherds of the same fabric are noted (see no. 11 in table of concordance).

For comparison with complete examples see the collection of the Herculaneum finds(2), the Trier(3) specimens; and for a blue glass example, see the Köln collection(4).

Suggested date: second half of the 1st century A.D.

- 1- Isings, C. (1957), Form 20, p. 37.
- 2- Scatozza-Horicht, L.A. (1986), Form 7, Tav. xiii-xxvi, no. 18, p. 32.
- 3- Göethert-Polaschek, K. (1977), Form 18, no. 88, Taf. 33, pp. 34,349.
- 4- Fremesdorf, F. (1959), Taf. 50, p. 37.

No: 13
Fig: 1
Cat.no: G2C210
H: 2.0 cm.
Rim diameter: 11.0 cm.

Rim and part of wall of small tronconical bowl. The sides are outplayed finishing with the rim rounded in a flame and underlined by a faint groove on its inner wall. The piece is made of pale yellow to colourless glass of very good quality. It is slightly pitted with small bubbles and holes. One other piece of this type was found on site, not however decorated by a groove.

The best parallel for this piece is found in Herculaneum(1). Form 11 of this collection is a small outplayed cup on a ring base which seems to have been mould pressed. This could be a variant of Isings' Form 49 where it is noted that the form is often known as Form 23, a mould-pressed type of the first half of the 1st century A.D.(2) Similar pieces have been found in Aquileia(3), where they are made in coloured glass(cobalt, emerald, blue etc...) in Conimbriga(5), in Tipasa(6) and in Fishbourne(6).

Suggested date: 1st/2nd centuries A.D.

- 1- Scatozza-Höricht, L.A. (1986), Form 11, no. 45, Tav. xiii,xxvi, p. 36.
- 2- Isings, C. (1957), Form 23, p. 39, Form 49, p. 63.
- 3- Calvi, M.C. (1968), no. 10, Tav. C, p. 115.
- 4- Alarcão, J. (1974), no. 159, pl. xl, p. 185, 189.
- 5- Lancel, S. (1967), Form 21, fig. 25, p. 19.
- 6- Harden, D.B. & Price, J. (1971), no. 14, fig. 137, p. 325.

No: 14
Fig: 1
Cat.no: G2A163
Length: 4.0 cm.
Rim diameter: 7.0 cm.

Rim part of bowl with crimped bands applied to it. The rim is solid and thickened in a flame. It is made of very pale green glass of good quality. An other piece of this type was found in the same layer (G2A164). This piece however has a rounded tubular rim, it is therefore difficult to accept that they could be part of the same vessel. These

bowls usually rest on a tubular ring base. The bowls are either shallow or deep. The bands are attached in pairs at opposite sides of the rim.

This form of vessel is found in Isings' typology as Form 43(1) dating to the mid 1st century A.D. Parallels have been found in Sardis dating to the 1st to 3rd centuries A.D.(2), in Tarrha and in Cyprus, dating to the 2nd or 3rd century A.D.(3)

- 1- Isings, C. (1957), Form 43, p. 59.
- 2- Saldern, A. von, (1980), no. 94 to 101, pl. 4 and 21, p. 21-22.
- 3- Buechner, T.S. (1960), no. 16, pl. 36, p. 112.
- 4- Vessberg, O. (1956), no. 16, fig. 42, p. 133 ; no. 6, fig. 43, p. 135.

No: 15

Fig: 1

Cat.no: G2N347/348

Rim diameter: 19.4 cm

Part of lip of large dish. The edge has been rolled solid and thickened in a flame. The lip is approximately 2 cm. wide . The junction with the vessel itself is secured by a double fold of the glass sheet. The pieces are made of very dark green glass of very good quality with slightly iridescent flakes. Two other pieces of this shape have been found on site. Both pieces are the edge of the lip. G1V135 is hollow and G1V143 is solid but made out of aquamarine glass.

A close parallel has been found among the Tipasa finds. Lancel's Form 24(1) shows a deep bowl with brim ended by a rolled edge continuing in a double fold of the glass sheet.

One piece in particular coincides almost exactly with ours(2) with a diameter of 19.5 cm. It is made of colourless glass and is in a fragmentary state. A complete profile has been made showing a tubular ring base and a kicked-in bottom. It is dated to the second half of the 2nd century A.D.

- 1- Lancel, S. (1967), Form 24, p. 20.
- 2- Lancel, S. (1967), no. 174, p. 88.

No: 16
Fig: 1
Cat.no: G2S474
H: 0.6 cm.
Rim diameter: 13.6 cm.

Rim part of possible deep bowl. The rim is outplayed to a horizontal position then folded under, flat and almost solid; little bubbles remain. The piece is made of pale yellow glass of good quality, pitted and iridescent; some weathering remains. No other piece of this type was found on site. No exact parallel has been found yet although we might consider one complete piece in the ROM collection as a possibility (1). It is a deep bowl with steep sides, outcurved rim with wide fold on underside. It rests on a tubular pushed-in foot. It dates to the second half of the 2nd/3rd centuries A.D.

1- Hayes, J.W. (1975), no. 196, fig. 7, p. 66.

No: 17
Fig: 1
Cat.no: G2N300
H: 1.5 cm.
Rim diameter: 12.0 cm.

Part of horizontal flange and wall of possible bowl. The rim flares out to an edge thickened in a flame. The flange formed by this measures approximately 2.0 cm. wide. It is made of very dark green glass of good quality, slightly covered with brown weathering. Two pieces similar to this one were found on site: No. 36 which is of larger diameter; G2N347a seems to be part of our piece since the colour and the quality of the glass is the same; no mends can be made.

Similar pieces are found in Cyprus(1) and in Karanis(2) where they are dated to the early 2nd to mid 3rd century A.D. These are complete pieces. The sides are straight tapering from rim to base. The base is flat resting on a true base ring.

1- Vessberg, O. (1956), no. 14, fig. 43, p. 136.
2- Harden, D.B. (1936), no. 247, pls. iii & xiv, p. 110.

No: 18
Fig: 1
Cat.no: G2T470
H: 0.3 cm.
Rim diameter: 18.0 cm.

Rim and part of lip of bowl or plate. The lip seems to slope gently into the wall of the vessel. The edge has been thickened in a flame. The piece is made of pale yellow glass slightly pitted and iridescent. No other piece of this type has been found on site.

Deep bowls with lips are found in the Cyprus collection(1). They are said to be very common there and also in the West but not in Egypt(2). These bowls usually rest on a true base ring. We could associate this with Isings' form 42, bowl with horizontal rim and convex sides(3). Here it is dated to the middle of the 2nd to the 3rd century A.D. A similar specimen to ours, adorned with a small coil under the brim, is found in Luni(4). It comes from a mid 3rd century context and is considered to belong to a bowl.

- 1- Vessberg, O. (1956), no. 10, fig. 42, p. 132.
- 2- Vessberg, O. (1956), p. 196.
- 3- Isings, C. (1957), Form 42, p.58.
- 4- Massari, G. (1977), Tav. 155,13, CM 11770, p. 281.

No: 19
Fig: 1
Cat.no: G2F252
H: 1.5 cm
Rim diameter: 12.4 cm

Rim and part of wall of strongly flaring vessel(bowl?). It is made of very pale green to colourless glass. It is slightly pitted and scratched with some small bubbles. Twelve other pieces of this type were found on site made in glass of colours ranging from pale yellow to green.

Similar pieces were found in Conimbriga(1) belonging to a shallow bowl without a foot. They are said to date to the 4th/5th centuries A.D.

- 1- Alarçao, J. (1974), no. 206, pl. xlii, p. 193.

No: 20
Fig: 1
Cat.no: G2W551
H: 0.5 cm.
Rim diameter: 14.0 cm.

Part of flange of bowl or plate. The glass has been folded, giving two tubular chambers, one at the edge of the flange, the other at the junction with the vessel. This second tube has a partition wall. The edge has been pulled into points (only one remains here). The piece is of pale green glass of good quality, with slight iridescence and small bubbles in its fabric.

No other example of this type has been found on site (no. 15 is similar but has no points). Vessels with scalloped (1) flanges have been found in Carthage on the British Ave. Bourguiba site (2). Another example was noted in Salona (3) and one is also mentioned by Harden as having been found in Syria and now exhibited in Toledo, Ohio (4). All these examples have not been made exactly in the way our piece has but the resulting form is the same. They have been dated to the 4th/5th century A.D.

- 1- Harden, D.B. (1936), p. 97.
- 2- Tatton-Brown, V.A. (1984), no. 10, fig. 65, p. 195.
- 3- Auth, S.H. (1976), no. 67. pl. 32, p. 160.
- 4- Harden, D.B. (1936), no. g, fig. 2, p. 97.

No: 21
Fig: 1
Cat.no: G2T491
H: 1.0 cm.
Rim diameter: 10.0 cm.

Rim and part of possible small bowl. The rim outspreads, rolls out and down to make a tubular edge. The piece is made of green glass, very pitted, abraded and slightly iridescent. Fifteen other pieces of this type were found on site. Similar examples were noted in Conimbriga (1), they are said to belong to small bowls of unknown shape and the exact date had not been established. They are classified with the 4th/5th centuries A.D. glass. A few pieces were found in Carthage, on the University of Michigan site (2) also dated to that period.

- 1- Alarçao, J. (1974), no. 199, pl. xli, pp. 193.
- 2- Hayes, J.W. (1978), no. 11, fig. 1, p. 190.

No: 22
Fig: 1
Cat.no: G2U548
H: 0.7 cm.
Base diameter: approx. 7.0 cm.

Very weathered thick base with part of wall flaring downward to meet a tubular ring foot. Pontil mark appearing on the outside of the vessel. It is made of dark green glass, extremely weathered.

After consultation with Dr. J.W. Hayes, this piece has been identified as a large open bowl on tubular ring foot with tubular flaring rim dating to the 3rd/4th centuries A.D. Such complete pieces are found in the ROM(1) and in Cyprus(2)

- 1- Hayes, J.W. (1975), nos. 464 , 465, 470, 471, fig. 12, p. 119.
- 2- Vessberg, O. (1956), fig. 43, nos. 1 to 14, pp. 134-135.

No: 23
Fig:2
Cat.no: G2P403
Base diameter: 3.8 (approx. at decoration)
Max. thickness: 0.3 cm.
Min. thickness: 0.1 cm.

Slightly concave base of bowl with light kick. Pontil mark. This piece is made of very pale green glass of good quality evenly pitted. Inside the kick, at its center, a flat band of glass decorates the bottom of the bowl. The band is too weathered to recognise its colour. It is the only piece of such form discovered on site. No parallel has been found yet. Our specimen is in too fragmentary a state to decide on its form. All bowl forms starting with Isings Form 41 give us a general idea of how such bases function(1).

- 1- Isings, C. (1957), Form 41, p. 56.

No: 24
Fig: 2
Cat.no: G1H045
H: 0.5 cm.
Rim diameter: 17.4 cm.

Rim of shallow bowl with sloping sides. The rim has an overhanging lip. The glass is colourless to pale yellow and is pitted, scratched and abraded by white weathering. Three other pieces of this type have been identified on site. Two are covered by a white crust of weathering.

One example has been noted on the British Ave. Bourguiba site in Carthage(1). A pale olive specimen was found in Salona also associated with shallow bowls of very large diameter(2). These very large bowls were also found in Luni(3) and Split(4). They are dated to the 4th and 6th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 8, fig. 65, p. 195.
- 2- Auth, S.H. (1975), no. 62, pl. 30, p.160.
- 3- Massari, G. (1977), no. 42, Tav. 155.15, p. 281.
- 4- Demaine, M.R. (1979), no. R2, pl. 7, p. 107.

No: 25
Fig: 2
Cat.no: G2F233
H: 1.6 cm.
Rim diameter: 10.7 cm.

Rim and part of wall of bowl with outsplayed rim bends outwards horizontally and thickened in a flange. It is made of very pale green glass in rather good condition. It is slightly pitted, scratched and has some flakes of white weathering. Four other pieces of this type were found on site.

Similar pieces were found in Sardis in 5th/6th centuries A.D. contexts(1) as well as on the British Ave. Bourguiba site in Carthage(2).

- 1- Saldern, A. von, (1980), no. 394, pl. 24, p. 62.
- 2- Tatton-Brown, V.A. (1984), no. 11, fig. 65, p. 195.

No: 26
Fig: 2
Cat.no: G2M282
H: 1.4 cm.
Rim diameter: 8.5 cm.

Rolled hollow rim of possible small bowl. The rim rolls outwards and downwards; the wall is thin. The piece is made of pale yellow-green glass, pitted, slightly iridescent. Three other pieces of this form were found on site.

Similar pieces were found in Carthage on the British Ave. Bourguiba site(1) in 6th century A.D. contexts.

1- Tatton-Brown, V.A. (1984), nos.6-7, fig. 65, p.195.

No: 27
Fig: 2
Cat.no: G2B175
H: 1.7 cm.
Rim diameter: 13.4 cm.

Rim and part of sides of shallow bowl. The rim is outplayed, rounded and thickened in a flame. It is made of very pale green glass, covered with a white coat of iridescent weathering. Four other similar examples were found on site. They are covered with a white iridescent coat of weathering and were made of very pale glass, almost uncoloured.

Similar pieces were found in Conimbriga(1), belonging to shallow bowls(1). Only one piece found on the British Ave. Bourguiba site in Carthage(2) proved to be akin to our piece. Although it is considered to belong to a deep bowl rather than a shallow one, the basic shape of it is close enough to our piece, to take it into consideration. These are associated with 4th/5th centuries A.D. contexts.

1- Alarçao, J, (1974), no. 206, pl. xlii, P. 193.
2- Tatton-Brown, V.A. (1984), no. 11, fig. 65, p. 195.

No: 28
Fig: 2
Cat.no: G2N311
H: 1.5 cm.
Rim diameter: 9.6 cm.

Rim and part of wall of unknown vessel. Its diameter is too small to be a bowl and yet too large to belong to the spout of a flask. It is made of yellow/colourless glass, covered with an iridescent coat of weathering. Its rim is flaring, rounded and thickened in a flame. Two other pieces compare to this one on site. No precise parallels have been found as yet. Some pieces found in Conimbriga are, however, closest to ours. They belong to shallow bowls with rims thickened in flame, resting on kicked-up base.(1)

1- Alarçao, J. (1974), no. 206, pl. xlii, p. 193.

No: 29
Fig: 2
Cat.no: G2N346
H: 0.8 cm.
Rim diameter: undetermined.

Part of rim with overhanging lip of very large plate or bowl. It is made of good quality dark green glass with patches of flaky brown weathering. Three other pieces of this type were found on site although they were made of paler glass and are covered with white weathering.

A very similar piece, probably belonging to a shallow bowl, was found in Salona(1). Others were found in Luni(2) and in Split(3) dating to the 4th century A.D. In Carthage(4) one piece was found on the British Ave. Bourguiba site and is considered a late type (6th/7th centuries A.D.)

- 1- Auth, S.H. (1976), no. 62, pl. 30, p. 160.
- 2- Massari, G. (1977), no.42, Tav. 155; no. 15, p. 281.
- 3- Demaine, R.M. (1979), no. R2, pl.7, p. 107.
- 4- Tatton-Brown, V.A. (1984), no. 8, fig. 65, p. 195.

No: 30
Fig: 2
Cat.no: G1N080
H: 0.8 cm.
Rim diameter: 11.2 cm.

Rim and part of wall of small shallow bowl. The rim flares gradually then curves outwards, it is thickened in a flame. The piece is made of colourless glass which was probably pale green before discolouration. The weathering has eroded it to the point that we are left with a paper thin specimen. No other pieces of this type have been identified on site yet.

Two examples are noted in Carthage on the British Ave. Bourguiba site(1) and are associated with contexts of the 6th/7th centuries A.D.

1- Tatton-Brown, V.A. (1984), no. 9, fig. 65, p. 195.

No: 31
Fig: 2
Cat.no: G2K266
H: 1.5 cm.
Rim diameter: 16.2 cm.

Rim and part of open form bowl. The rim outspreads in a small brim, thickened in a flame, with a slight bulge under it. It is made of aqua glass of good quality, slightly iridescent and pitted. Two other similar pieces were found on site. These were very fragmentary.

No exact parallel has been established as yet. We can, however, look at a vessel in the ROM collection(1) which has steep sides and a flaring reworked rim. It rests on a tubular ring base. This piece dates to the 3rd century A.D.

1- Hayes, J.W. (1975), no. 296, fig. 9, pl. 18, p. 80.

No: 32
Fig: 2
Cat.no: G2N375
H: 3.3 cm.
Rim diameter: unknown

Part of wall of low "pan" shaped dish. The wall is folded outward and downward covering the whole side of the bowl cleaving tightly together with a tubular hollow at the top. The piece is made of pale green glass of good quality, slightly iridescent. No other pieces of this type has been found on site.

Similar pieces have been found in Corinth(1) dated to the 2nd century A.D., in Karanis(2) dated to the 3rd century A.D. and in Conimbriga(3) dated to the 4th century A.D. Isings had classified this type as form 118(4) also dating to the 4th century A.D. These dishes are rare and belong to the Eastern part of the Mediterranean. They usually have a diameter of around 20 to 30 cm.

- 1- Davidson, G.R. (1952), no. 632, fig. 8, p. 99.
- 2- Harden, D.B. (1936), no. 88, pl. xii, p. 71.
- 3- Alarçao, J. (1974), no. 197, pl. xii, p. 99.
- 4- Isings, C. (1957), form 118, p. 148.

No: 33
Fig: 2
Cat.no: G2W554
H: 1.4 cm.
Rim diameter: 22.2 cm.

Rim and part of wall of strongly splayed vessel(bowl?). The walls taper straight and gently to the base. It is made of very pale yellow glass of good quality. The outside wall is slightly pitted and iridescent, the inside is very smooth, not altered by weathering. Twelve pieces of much smaller diameter were found on site. Whether this piece belongs to an oval dish is unknown to us at this point.

A large number of similar vessels are found in Conimbriga, with smaller diameters(1) and date to the 4th/5th centuries A.D. Complete pieces

are shown in the ROM collection(2) and illustrates Lancel's form 25 from Tipasa(3). In these last two cases the vessels are dated to the 2nd/3rd centuries A.D.

- 1- Alarçao, J. (1974), nos. 206 to 212, pl. xlii, p. 194 & 201.
- 2- Hayes, J.W. (1975), no. 176, fig. 6, p.63.
- 3- Lancel, S. (1967), form 25, p. 20.

No: 34
Fig: 2
Cat.no: G2G173
H: 2.2 cm.
Rim diameter: 18.2 cm.

Rim and part of wall of a wide bowl. The rim is outplayed and thickened in a flame. It is made of a very transparent glass of a greyish tinge. We cannot be sure if this is a result of discolouration or if it is the original colour of the piece. It is the only piece of this colour, shape and diameter found on site. Other vessels of this shape have a much smaller diameter and have been catalogued as beaker types.

A complete vessel with which we can associate our piece is found in the ROM collection(1). It is an open form with steep sides and reworked rim resting on a hollow folded foot. It dates possibly to the 3rd century A.D. A fragment similar to ours is noted in the Fishbourne(2) finds also dating to the 3rd century A.D. This one has a smaller diameter but is still considered a bowl.

- 1- Hayes, J.W. (1975), no. 296, fig. 9, pl. 18, p. 80.
- 2- Harden, D.B. & Price, J. (1971), no. 73, fig. 141, p. 353.

No: 35
Fig: 2
Cat.no: G2A155
H: 2.5 cm.
Rim diameter: 26.0 cm.

Rim and part of wall of 'casserole' type of bowl. The walls are straight, curving lightly at the rim which is thickened in a flame. The piece is made of good quality dark green glass covered with a thin layer of

brown weathering. One other similar piece, not belonging to the same vessel, was found on site(G2K268).

A complete piece shown in the ROM(1) collection, illustrates what could be our vessel even though its rim is not as outplayed as ours. It is dated to the 4th century A.D. Another similar complete piece is seen in the Cyprus(2) collection also dating to the 4th century A.D. In each case the dishes rest on different types of bases. The ROM piece is on a true ring base. No clues are found so as to determine the nature of the base of our piece. One last example is noted in Luni(3), where the diameter of the piece is smaller. This one would date to the 2nd century A.D.

- 1- Hayes, J.W. (1975), no. 472, fig. 12, p. 120.
- 2- Vessberg, O. (1956), no. 14, fig. 42, p. 132.
- 3- Roffia, E., Massari, G., & Chiesa, G.S. (1977), no. 22, tac. 156, p. 285.

No: 36
Fig: 2
Cat.no: G2N367
H: 1.0 cm.
Rim diameter: 28.0 cm.

Part of horizontal flange and wall of shallow dish. The rim flares to an edge thickened in a flange. The flange is 2.5 cm. wide and slopes gently to form the wall of the vessel. Such a form rested on a tubular or true base ring. This piece is made of olive green glass of good quality, slightly pitted and scratched. Two other pieces resembling this one, were found on site, made of very dark green glass and having much smaller diameter.

A complete example is found in Cyprus(1) dating to the 4th century A.D. Another similar piece is noted in Karanis(2) dated to mid 1st to 3rd century A.D.

- 1- Vessberg, O. (1956), no. 11, fig. 42, p. 132.
- 2- Harden, D.B. (1936), no. 166, pl. xii, p. 83.

No: 37
Fig: 2
Cat.no: G1V112
H: 2.7 cm.
Rim diameter: 24.0 cm.

Rim and part of vertical wall of dish with a small convex tooled moulding immediately below the rim. It is made of yellowish green glass of good quality slightly iridescent, with flaking weathering. Such dishes have a broad flattish floor, low wall, rounded at the bottom and continuing almost vertically. They have a low tubular pushed-in foot. No other example of this sort has been found on site.

Parallels have been found in the ROM collection(1) dating to the 4th-early 5th century A.D. One similar piece is also noted in Samaria, this one decorated with a hollow blue coil(2)

- 1- Hayes, J.W. (1975), no. 370, fig. 10, p. 103.
- 2- Crowfoot, G.M. (1957), no. 4, fig. 96, p. 414-415.

No: 38
Fig: 2
Cat.no: G2U535
H: 2.0 cm.
Rim diameter: aprox. 28.0 cm.

Part of hollow rim of deep bowl folded outwards and downwards. The glass is green, slightly iridescent and pitted with some flakes of weathering. It is the only example with a curved wall of this type. Two other pieces are related to large plates but have a straighter wall .

Examples of this type have been found in Carthage on the British Ave. Bourguiba site(1) reaching diameters of 20.0 cm. and 30.0 cm., dating to the 5th/6th centuries A.D. Smaller examples are noted in Conimbriga(2); their date is uncertain. We can associate it to the Karanis oval plates of the 4th/5th centuries A.D.(3) Whether our piece belongs to a oval or round dish is unknown and impossible to find out since it is so fragmentary.

- 1- Tatton-Brown, (1984), no. 4, fig. 65, p. 195.
- 2- Alarcão, J. (1974), no. 198-199, pl. xli, p. 193.
- 3- Harden, D.B. (1936), no. 1 to 17, pls. I and XI, p. 70.

No: 39
Fig: 2
Cat.no: G1V134
H: 2.3 cm.
Rim diameter: approx. 24.0 cm

Part of flat hollow rim of dish folded outwards and downwards; the wall appears to continue straight. The glass is green, slightly iridescent and pitted with some flakes of weathering. Part of the wall remains, showing that the vessel sloped straight at an angle without curving. Two similar piece were found on site.

We can associate these with pieces found on the British Ave. Bourguiba site in Carthage(1) although these seem to have a curved wall. A closer parallel can be found in the Karanis collection(2) where the vessels have a wide conical shape and reach large diameter due to the fact that they are oval. It is not possible to determine whether or not our pieces belong to oval vessels but it is an assumption that we are more inclined to consider. These vessels have been found in 4th to 7th centuries A.D. contexts.

- 1- Tatton-Brown, V.A. (1984), no. 4, fig. 65, p. 195.
- 2- Harden, D.B. (1936), nos. 1 to 17, pls. i to xi, p. 70.

No: 40
Fig: 2
Cat.no: G2W552
H: 2.4 cm.
Base diameter: approx. 14.0 cm.

Pushed-in tubular ring of possible shallow or deep bowl. The piece is made of good quality green glass, slightly iridescent and covered with a light weathering film. Six other pieces of similar form were found on site.

Complete examples of this type can be seen in the ROM collection(1) dated to the 4th century A.D. In Tipasa, dishes with such a base have straight outplayed sides. These are Lancel's form 25(2) dated to the 1st/3rd centuries A.D. Fragments of this type have been found in Samaria (Jordan)((3) dating also to the 4th century A.D.

- 1- Hayes, J.W. (1975), nos. 463 to 472, fig. 12, 13, pp. 119-120.
- 2- Lancel, S. (1967), form 25, no. 181, p. 90.
- 3- Crowfoot, G.M. (1957), no. 5, fig. 98, p. 418.

No: 41
Fig: 2
Cat.No: G2N379/380
Base diameter: approx. 12.0 cm.
Max. thickness: 0.5 cm.
Min. thickness: 0.15 cm.

Flat bottom of shallow bowl probably of the type with folded wall creating tubular ring base. This piece is made of very good quality and well preserved olive glass. Its center is the thickest part of the piece which thins towards the exterior. A piece of folded tubular ring base was found in the same layer (G2N380). It is made of very similar glass with the same diameter and could belong to this bowl. Six other pieces of tubular base ring were found on site Such shallow bowls are very well attested in Cyprus(1) and in Tipasa(2). Complete examples are seen in the ROM and are dated to the 4th/5th centuries A.D.

- 1- Vessberg, O. (1956), nos. 4-5, fig. 42, p. 129, 132.
- 2- Lancel, S. (1967), form 25, fig. 29, p. 20.
- 3- Hayes, J.W. (1975), no. 372, fig. 13, p. 103.

No: 42
Fig: 2
Cat.no: G2N313
H: 5.5 cm.
Diameter: 1.3cm,; 2.8 cm.

Part of large solid stem of dish (or bottle). The piece is decorated with trailing arranged to look like netting or string. The piece is made of yellow/green glass of good quality but partially covered with thick black weathering. The wall flares out at the largest diameter. No other piece of this kind has been found on site nor have we been capable of finding any possible mends.

Harden has noted that vessels with such stems are very rare(1). A few bowls on large stems come from Karanis dating to the 4th to 5th centuries A.D.(2) Harden has divided the forms into deep and shallow bowls, however, he does not find it advisable to detail further divisions. He has also noted that this class is much rarer outside Egypt but that the form was known in the early part of the Imperial period(3).

It is difficult to decide whether or not our piece could be part of such vessels, due to the fragmentary state in which it is found, and to the impossibility of joining other pieces to it.

- 1- Harden, D.B. (1936), p. 128.
- 2- Harden, D.B. (1936), no. j, fig. 2, pp. 129-131.
- 3- Harden, D.B. (1936), p. 130.

No: 43
Fig: 2
Cat.no: G2P397
H: 1.7 cm.
Base diameter: approx. 8.2 cm.

Large tubular ring base made in the folded bubble technique. This base has a very high kick-up and large pontil mark. This might belong to a very wide dish but the evidence is too scarce to be sure of what it is. Eight other pieces similar in shape but smaller in diameter were found on site. These pieces probably belonged to bottle types whereas this one can be part of a bowl or plate.

A complete example which could be associated with ours is found in the ROM collection. It is a wide shallow bowl with long strip handles(1). The bowl is dated to the 2nd or early 3rd centuries A.D. In Karanis, Harden's class II, shallow bowls with pushed-in base ring, produces one example also very close to ours made in the same type of fabric (dark green). This one dates to the late 3rd-early 4th century A.D.

- 1- Hayes, J.W. (1975), no. 195, fig. 7, p. 66.
- 2- Harden, D.B. (1936), no. 117, pl. xii, p. 76.

No: 44
Fig: 3
Cat.no: G1H049
H: 2.0 cm.
Base diameter: 10.2 cm.

Part of true ring base formed by addition of glass ring underneath body of a large dish. It is made of apple-green glass of good quality. The glass of the ring base is pitted with medium sized bubbles on both surfaces. In contrast, the glass forming the plate is smooth and shiny but water stained and eroded in large flakes. This indicates that the parts cooled down at different speeds.

Five other pieces of this type were found on site. The colour varied from ochre, yellow green, apple-green and dark green. Diameters are different indicating that the size of the plates varied as well. Three of them (G2N340-371-382) possibly come from the same piece.

Parallels for this type are found in Sardis(1) and in Carthage on the sites of the British Ave. Bourguiba(2), of the University of Michigan(3), and in other deposits of the Second Canadian Team(4). For complete examples see the collection of the ROM(5).

Suggested date: 4th century A.D.

- 1- Saldern, A. von, (1980), no. 467, pl. 25, p. 68.
- 2- Tatton-Brown, V.A. (1984), no. 23, fig. 65, p. 197.
- 3- Hayes, J.W. (1978), no. 12, fig. 2, p. 190.
- 4- Hayes, J.W. (1985), no. 2742.
- 5- Hayes, J.W. (1975), no. 469, fig. 13, p. 120.

No: 45
Fig: 3
Cat.no: G2B192 & G2F228
H: 0.6 cm.
Base diameter: approx. 20.0 cm.(oval?)

Pushed-in tubular base of what could be an oval dish of an Isings Form 97b(1). This piece is made of very good pale yellow glass slightly pitted and iridescent. It is the only base of this type found on site although other pieces belonging to oval dishes have been identified.

Such vessels were popular in Egypt, dating to the 4th century(2). A series of dishes with low tubular feet are seen in the ROM collection(3). These are not oval, however. One oval dish stands on a true base ring, applied to the dish(4). The round plates date to late 4th-early 5th century A.D. The oval dishes date to second half of 5th-early 6th century A.D.

- 1- Isings, C. (1957), From 97b, p. 117.
- 2- Harden, D.B. (1936), nos. 17 to 26, pl. I and XI, pp. 54-55.
- 3- Hayes, J.W. (1975), nos. 370-372, fig. 10, 13, pp.83-103.
- 4- Hayes, J.W. (1975), no. 594, fig. 19, p. 146.

No: 46
Fig: 3
Cat.no: G2W549
H: 1.8 cm.
Base diameter: 5.0 cm.

Pad base ring of possible shallow plate. The piece is made of very dark green glass of fairly good quality. A coat of weathering is still apparent. The diameter is not uniform and tooling marks are visible. It seems as if the base was stuck onto the dish, heated in a flame and pulled by tools to give it its shape. It is the only example on our site made in this fashion. Four other pieces found on site are closely related to this one. They are, however, in fragmentary state making it impossible to describe them at length. Two pieces are made of pale yellow, one is of aquamarine glass and the last one is colourless. This last piece seems to have been mould-pressed instead of free blown, but this is a mere speculation.

Similar pieces have been found on the British Ave. Bourguiba site (1), in Sardis(2) and in the ROM collection(3) where they are said to date to the 5th-early 6th century A.D. Some are also mentioned in the Luni finds(4) dating to the 3rd century A.D.

- 1- Tatton-Brown, V.A. (1984), no. 25, fig. 65, p. 198.
- 2- Saldern, A. von, (1980), no. 465, pls. 13, 25, p. 68.
- 3- Hayes, J.W. (1975), nos. 595-596, fig. 19, p. 142.
- 4- Roffia, E. (1973), Tav. 81, no. 12, p. 470, no. 18.

No: 47
Fig: 3
Cat.no: G2U534
H: 2.0 cm.
Base diameter: 11.0 cm.

Part of true ring base formed by addition of glass ring underneath body of large dish. It is made of pale green glass of good quality, slightly pitted and bubbly. Although our collection holds several examples of this type, it is the only piece which has an indentation in the inside of the ring and that is angled inwards, towards the bottom rather than flaring out (see no. 44).

A piece with such an indentation is noted in the Sardis finds(1). In reference to the angle of the ring and the fabric we can compare our piece to one of 1st/3rd centuries A.D. found in Luni(Etruria)(2)

Suggested date: 5th/6th centuries A.D.

- 1- Saldern, A. von, (1980), no. 463, pl. 13, 25, p. 68
- 2- Roffia, E. (1973), no. 9, pl. 82, p. 476, no. 33

BEAKERS

On our site, beakers constitute a large proportion of the glass, second only to the bottle types. Hayes' preliminary study of other deposits on site has demonstrated that 95% of the glass fragments belonged to beaker types(1). Our study here shows that most types of glass vessels are well represented on site. The percentage of beakers is not as high as Hayes demonstrates although it is one of the larger ones.

The name "beaker" will have to be understood broadly here, since we are faced with the uncertainty of the use the ancient world gave to these vessels. It has been suggested that some of the containers found in Cyprus, were used as "jars" since they were found with remains of cosmetics still in them(2). In this case they were called "jars" by Vessberg who restricted the name "beaker" to drinking vessels only. On the other hand, other authors(3) have employed the name "beaker" to describe vessels that could have multiple uses (drinking and storing), and have restricted the name "goblet" to the stemmed drinking vessels only(4). In the presence of three different and apparently interchangeable names, we have decided to group all of these similar vessels under the same entry on our site, no kohl sticks were found in a glass recipient of any sort nor have any of these beakers been found with a lid.

The earliest type of beaker found on site is the so-called "indented" beaker or "pinched" beaker, catalogued by Isings as her Form 32(5). It is a tronconical type with flaring mouth and slightly concave

base. The sides are usually convex indented with four depressions, making the vessel look as if it were square. Sometimes they have more than four depressions(6). This type appears in the 1st century A.D. and continues to be in use at the end of the 3rd century A.D. if not later(7). This form then evolved from a type with a flat base to a footed variation. Some bases of this kind were found on site but we can not be certain that they came from this kind of vessel. We also found four beakers with indented sides on a flat base.

The second type of beakers found on site, belonging to a later date, is the conical beaker with rim thickened and rounded in a flame. It rests on a solid base and is decorated by one or more threads running around the wall (8). These beakers are said to be an early variant of those with coloured threads which are contemporaries of the vessels with zig-zag decoration (about second half of the 4th beginning of the 5th(9)). Six vessels decorated with threads were found on site: one which was decorated with 2 threads, none decorated with coloured threads.

A distinctive type of beaker found on this site is the cylindrical or tronconical goblet with slightly bulging rim, knocked off and ground smooth(10). The wall narrows at the bottom to form a pushed-in tubular foot. This type is illustrated by Isings' Form 109(11). It is a typical 4th century form of the western part of the Empire. These vessels were decorated with horizontal wheel incisions placed on the bulging part

of the rim and on the side of the goblet about 1cm. below the rim. Hayes has distinguished these types of beakers according to their bases and their colour(12). The most common beaker is the colourless to aquamarine beaker whose surface is very fragile since it is practically all transformed into a flaky iridescence. This type would have been found with a flat, slightly concave base. The second type is found in a glass of yellow/green tinge where the base is an irregular kicked-up cone. The third type is only distinguished by its green colour and is found in all forms already mentioned above.

It has been impossible to reconstruct any of our beakers. Twenty- three rims of the first beaker type were identified but only three bases resemble those illustrated by Isings' Form 109. Other types of bases that could have belonged to this Form have been placed with the bottle types.

The latest and most common type of beaker we found was the simple cylindrical type with outsplayed rim thickened in a flame. This type had a smooth surface or light mould-blown corrugations. It has also been found in Carthage in 5th century A.D. context and in Sardis in 6th/7th centuries A.D. context(13). We are not sure what type of base this beaker had. We might assume that a pushed-in tubular base or a flat slightly concave one would be most practical and stable. The coil ring base, which we have not mentioned yet, could have been another alternative. Most of

the coil ring bases found on site have been associated with the bottle types(14). Three such pieces with smaller diameter have however been catalogued here. Since none of these bases could be joined to a rim, we cannot be sure of a complete profile. Altogether 39 pieces were found to belong to this last category of beakers.

Two other rims were noted on site representing a slight variant of the type we have just encountered. The first has an outspreading mouth finishing in a thick rim worked in a flame. The second basically has the same profile but is made of very thin walled glass. We can compare the thicker vessel to a jar of the 3rd/4th centuries A.D. found in Verulamium(15). The thinner walled vessel has been paralleled with the cylindrical beakers of Carthage on the British Ave. Bourguiba site (16). They have been found in 5th/7th centuries A.D. contexts.

- 1- Hayes, J.W. (1985), p. 115.
- 2- Vessberg, O. (1956), p. 198.
- 3- Harden, D.B. (1936), p. 132.
- 4- Harden, D.B. (1936), p. 132.
- 5- Isings, C. (1957), p. 46.
- 6- Caron, B. (1985), p. 224.
- 7- Isings, C. (1957), p. 47.
- 8- Hayes, J.W. (1975), p. 83.
- 9- Hayes, J.W. (1975), p. 84.
- 10- Hayes, J.W. (1985), p. 115.
- 11- Isings, C. (1957), p.
- 12- Hayes, J.W. (1985), p. 116.
- 13- Tatton-Brown, V.A. (1984), no. 29, p. 198.
- 14- On the Ave. Bourguiba site, Tatton-Brown has placed all the coil ring bases of various diameter with the bottle types.
- 15- Charlesworth, D. (1972), no. 28, fig. 76, p. 205.
- 16- Tatton-Brown, V.A. (1984), no. 29, fig. 66, p. 198.

No: 48
Fig: 3
Cat.no: G3A019
H: 4.8 cm.
Base diameter: 5.4 cm.

Base and part of wall of indented beaker. It is made of yellow/green glass covered in flaking iridescence. It is pitted and some bubbles show in the fabric. Three other similar pieces were found on site .

This type of beaker is illustrated by Isings' Form 32(1). It is slightly convex with a concave base and a flaring mouth. This type belongs to the second half of the 1st century A.D. A straight sided variety seems to be of a later date reaching the 3rd century A.D. They are common throughout the Empire. Examples are found in Tipasa(2), Cyprus(3) and in Conimbriga(4).

- 1- Isings, C. (1957), Form 32, p. 46.
- 2- Lancel, S. (1967), Form 20c, fig. 24, p. 19.
- 3- Vessberg, O. (1956), no. 25, fig. 44, p. 142.
- 4- Alarçao, J. (1974), no. 189, pl. XLI, p. 191.

No: 49
Fig:3
Cat.no: G3A012
H: 2.2 cm.
Base diameter: 5.0 cm.

Slightly concave base of indented vessel. This piece is of dark green glass evenly pitted on both surfaces. A quarter of the base is all that remains. It does show, however, two distinct indents. Three pieces of this form were identified.

Complete examples are seen in the ROM(1) and in the Karanis collection(2). A single similar fragment is noted in Carthage on the British Ave. Bourguiba site(3). These vessels start appearing in the 2nd century A.D.

- 1- Hayes, J.W. (1975), no.149, fig. 7, p.59.
- 2- Harden, D.B. (1936), nos. 376-393, pl. xv, pp. 145 to 147.
- 3- Tatton-Brown, V.A. (1984), no. 85, fig. 67, p. 205.

No: 50
Fig: 3
Cat.no: G1J079
H: 2.4 cm.
Rim diameter: 12.3 cm.

Rim and part of wall of beaker. The rim splays out from an apparent straight wall. It is rounded and thickened in a flame. It is made of yellow to colourless glass covered by a coat of iridescent weathering. It is the only piece of this particular shape found on site.

Although the parallel is most certain, the form of our piece seem to recall Isings Form 41b, the cylindrical bowl with outplayed sides, as well as Form 37, the one-handled cup, called modiolus. Such pieces were found in Salona(1) in deep blue glass. Several came from Herculaneum(2) made of pale green glass. This particular type is said to be of Sidonian origin, dating to the late 1st-early 2nd century A.D.(3) In Verulamium(4), a similar piece is considered to be part of a jar with rounded rims, dating to the 1st or 2nd century A.D.

- 1- Auth, S.H. (1976), no. 29, pl. 28, p. 153.
- 2- Scatozza-Höricht, L.A. (1986), no. 70, Tav. xxix, p. 42.
- 3- Hayes, J.W. (1975), no.293, fig. 5, p. 67.
- 4- Charlesworth, D. (1972), no. 28, fig. 76, p. 205.

No: 51
Fig: 3
Cat.no: G2F236
H: 2.0 cm.
Rim diameter: 11.0 cm.

Rim and part of wall of cylindrical beaker. This rim section makes a shallow 'S' curve. Its outer portion is rolled-out and thickened in a flame. It is made of yellow to colourless glass of rather good quality slightly pitted and abraded with left over traces of a flaky iridescent coat. It is the only example of this type here. We can associate it with Isings' Form 96, the plain hemispherical bowl; Form 108, the hemispherical cup with base ring; and Form 109, the conical beaker on foot. These originated in the 3rd century A.D. Similar rims and variants of this form has been found all over the Mediterranean: Carthage(1), Salona(2), Conimbriga(3) and the coastal regions of Syria and Cyprus(4).

- 1- Tatton-Brown, V.A. (1984), nos. 26 to 35, fig. 66, p. 198; Caron, B. (1981), no. 11, p. 43.
- 2- Auth, S.H. (1976), no. 64, pl. 30, p. 160.
- 3- Alarçao, J. (1972), no. 225, pl. xliii, p. 202.
- 4- Hayes, J.W. (1975), no. 180, fig. 6, pp. 40, 64.

No: 52
Fig: 3
Cat.no: G2F226
H: 3.3 cm.
Rim diameter: 8.5 cm.

Rim and part of side of cylindrical beaker. Its rim is near vertical and thickened in the flame. At 1.5 cm. and 2.5 cm. below the edge, it is decorated with two fine threads of trailing. It is made of slightly coloured glass. It is uniformly pitted on both surfaces and is covered with a light coat of white weathering. It is the only example of this type found on site. Five other similar beaker rims also found on site were decorated with one single thread.

An example with two coils around its rim is noted in the Karanis collection(1). Similar pieces were found at Conimbriga, decorated however with single threads(2). They are said to come from high beakers with an outplayed pad base. One example with trailing comes from the Cyprus collection(3). These vessels are said to come from the 4th century A.D. contexts.

- 1- Harden, D.B. (1936), no. 370, pl. xv, p. 144.
- 2- Alarçao, J. (1972), no. 171, pl. xl, p. 191.
- 3- Vessberg, O. (1956), no. 8, fig. 45, p. 188.

No: 53
Fig: 3
Cat.no: G2F254
H: 2.5 cm.
Rim diameter: 9.4 cm.

Rim and part of side of cylindrical beaker with single thread of trailing. This piece is made of slightly coloured glass, pitted and covered with a white coat of weathering and iridescence. At 1.5 cm. from the edge there

is a single fine thread of trailing. Four other pieces of this type have been found on site also decorated by single threads.

Similar pieces have been noted in Conimbriga(1) in Cyprus(2) in Salona(3) and in Karanis(4). They have been associated with 4th century A.D. contexts. Similar rims have been found in Carthage but these were not decorated by trailing.

- 1- Alarçao, J. (1972), no. 172 to 174, pl. xli, p. 186.
- 2- Vessberg, O. (1956), no. 8, fig. 45, p. 144.
- 3- Auth, S.H. (1976), no. 60, pl. 30, p. 160.
- 4- Harden, D.B. (1936), no. 348, pl. xv, p. 126.

No: 54
Fig: 3
Cat.no: G2S481
H: 3.5 cm.
Rim diameter: 12.0 cm.

Rim and part of wall of conical beaker. The rim is knocked off and ground smooth with broad wheel-cut marks on the outside of the wall 1 cm. below the rim. Its glass is in very bad condition for it is covered by a thick coat of weathering. Ten other pieces of this type were found on site. These pieces vary in colour from colourless-yellow to olive-green, as well as aquamarine. This type is found with one or two sets of wheel cut marks as well as undecorated.

According to Hayes(1) this form recalls Isings' Form 109(2). We do not have any base that mends to our pieces. Isings' Form 96 has rims treated and decorated in the same fashion as our specimen. It is common in the 4th century A.D. throughout the Mediterranean and the Northern provinces(3).

These pieces were noted on the British Ave. Bourguiba site where they belong to the 6th century A.D.(4). They have been found in the Italian Marches in Castelfidardo(5) and in Verulamium(6).

- 1- Hayes, J.W. (1985), fig. 2, p. 115.
- 2- Isings, C. (1957), Form 109, p. 136.
- 3- Charlesworth, D. (1972), p. 212.
- 4- Tatton-Brown, V.A. (1984), no. 34, fig. 66, p. 198.
- 5- Mercado, L. (1979), nos. 11, 13, fig. 51, p. 139.
- 6- Charlesworth, D. (1972), no. 61, fig. 79, p. 212.

No: 55
Fig: 3
Cat.no: G2K272
H: 3.4 cm.
rim diameter: 9.0 cm.

Rim and part of wall of conical beaker. Rim knocked off and ground smooth with wheel-cut incisions on outside wall. It is made of very thin glass, slightly iridescent and pitted with small holes. It is the only example in our collection with such a short and straight rim.

It compares with those noted on the British Ave. Bourguiba site in Carthage(1), where they are dated to the 4th/6th centuries A.D.

1- Tatton-Brown, V.A. (1984), no. 34, fig. 66, p. 198.

No: 56
Fig: 3
Cat.no: G2T509
H: 2.7 cm.
Rim diameter: 8.0 cm.

Rim and part of wall of beaker. The rim, curving inwards, was knocked off and ground smooth. It is decorated by wheel-cut marks on the outside of it to a width of 1 cm. The piece is made of good quality olive green glass slightly iridescent and pitted. It is the only example of this particular shape found on site.

No exact parallels have been found yet. We can only assume that we have here a variant of the usual conical beaker with an 'S' curved rim, knocked-off and polished. In this light we can place it between the 4th/6th centuries with the other specimens of this style(1).

1- Tatton-Brown, V.A. (1984), no. 35, p. 200.

No: 57
Fig: 3
Cat.no: G2T504
H: 4.6 cm.
Rim diameter: 8.0 cm.

Rim and part of wall of conical beaker. The rim is knocked-off and ground smooth with broad wheel-cut marks on the outside of the rim and in the curve below it. It is made of aquamarine glass of good quality covered with black flakey weathering. Seven other pieces of this type were found on site, made of pale green, green and ochre glass. The bent out rim is typical of Eastern and Western beakers of the 4th/6th centuries A.D.(1)

Similar pieces were found on the British Ave. Bourguiba site(2) in the Italian Marches in Castelfidardo(3) and in Aquileia(4) where its best parallel is found undecorated: they all date to the 4th/6th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 35, fig. 65, p. 200.
- 2- Tatton-Brown, V.A. (1984), no. 35, fig. 65, p. 200.
- 3- Mercado, L. (1979), nos. 11, 13, fig. 51, p. 139.
- 4- Calvi, M.C. (1968), no.1, Tav. P, p. 179.

No: 58
Fig: 3
Cat.no: G2T511
H: 2.6 cm.
Rim diameter: 11.0 cm.

Rim and part of wall of conical beaker with strongly flaring rim which was knocked-off and polished on inward bevel. Its section makes a very strong 'S' curve. It is made of very good dark green glass covered by a very fine coat of brown weathering impossible to remove. One other piece, of a slightly paler shade was found on site with this particular shape.

Several of these were found on the British Ave. Bourguiba site in Carthage dating from before 425 A.D. to well into the 4th/6th centuries A.D.(1)

- 1- Tatton-Brown, V.A. (1984), no. 33, fig. 66, p. 198.

No: 59
Fig: 3
Cat.no: G2U540
H: 3.3 cm.
Rim diameter: 11.0 cm.

Rim and part of wall of conical beaker. The rim is curved outwards, almost flattened horizontally. It was knocked off and ground smooth at its edge. It is decorated by a wheel-cut incision on the wall below the rim. It is the only piece of this shape on site. We must consider this as a variant of the usual conical beaker with 'S' shaped rim (see no. 57).

One piece which resemble ours is found in Carthage on the Ave. Bourguiba site(1) dated to the 6th century A.D. Tatton-Brown has dated her piece in this way because her specimen is wider than the earlier types of this form.

- 1- Tatton-Brown, V.A. (1984), no. 35, fig. 66, p. 198.
- 2- Charlesworth, D. (1972), no. 59, fig. 79, p. 210.

No: 60
Fig: 3
Cat.no: G2P388
H: 5.5 cm.
Rim diameter: 10.0 cm.

Rim and part of wall of cylindrical beaker. The rim is outplayed, rounded and thickened in the flange. The vessel is made of clear glass of very good quality, slightly pitted and scratched. It has a very thin layer of iridescence on it. This piece belonged to a very large beaker. Four other large examples are associated with our piece here.

Two pieces similar to these are noted in Salona(1). The author considers them to be part of deep bowls. We prefer to see them as beakers. Calvi's Bicchieri tronconici(2) are more akin to what we have, even though the rim has not been treated in the same way. The others are considered to date to the 4th century A.D. but we should be prepared to find ours in much later context since they are made of the late Roman ordinary dark green glass(3).

- 1- Auth, S.H. (1976), nos. 29 and 57, pl. 28-30, pp. 153-159.
- 2- Calvi, M.C. (1969), no. 3, Tav. 26.
- 3- Harden, D.B. (1936), pp. 22-23.

No: 61
Fig: 3
Cat.no: G2N342
H: 2.8 cm.
Rim diameter: 7.3 cm.

Rim and part of side of cylindrical beaker. The rim is slightly outplayed and rounded in the flame. It is made of good quality green glass which has been eroded by weathering in scales. It is very thin but still resistant. Eleven other pieces of this type were found on site.

Parallels for this type have been found in Carthage on the British Ave. Bourguiba site(1) and on the University of Michigan site(2). They have also been found in Sardis(3) and in Salona(4). In all cases they were found in 4th to 7th century A.D. contexts.

- 1- Tatton-Brown, V.A. (1984), no. 29, fig. 66, p. 198.
- 2- Hayes, J.W. (1978), nos. 33a-b-c, fig. 4, p. 193.
- 3- Saldern, A. von, (1980), no. 576, pl. 27, p. 160.
- 4- Auth, S.H. (1976), no. 64, pl. 30, p. 160.

No: 62
Fig: 3
Cat.no: G2B195
H: 2.8 cm.
Rim diameter: 7.8 cm.

Rim and part of wall of cylindrical beaker. Its rim slopes slightly outwards from vertical. It is thickened and rounded in a flame. The piece is made of pale yellow to colourless glass slightly pitted and scratched with some flakes of weathering. 19 other pieces found on site resemble this one. Their colour varies from aquamarine blue, pale green to olive green. Similar pieces were found in Carthage on the British Ave Bourguiba site(1) on the University of Michigan site(2) and on the First Canadian team site(3). They have been dated to the 5th/7th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 31, fig. 66, p. 198.
- 2- Hayes, J.W. (1978), no. 31, fig. 4, p. 190.
- 3- Caron, B. (1981), no. 37, p. 48.

No: 63
Fig: 3
Cat.no: G2F219
H: 1.6 cm.
Rim diameter: 12.0 cm.

Rim and part of wall of cylindrical beaker. The rim is thickened in a flame. The piece is made of very thin pale green glass. No other piece on site can be regarded as being of the same form, although some of them are of the same general shape.

In Carthage, on the British Ave. Bourguiba(1) site, several similar pieces came from contexts of the 5th/7th centuries A.D. They were also noted in Sardis(2) coming from context of the 6th/7th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 29, fig. 66, p. 198.
- 2- Tatton-Brown, V.A. (1984), note to no. 29, p. 198.

No: 64
Fig: 3
Cat.no: G2N350
H: 2.3 cm.
Rim diameter: 7.2 cm.

Rim and part of wall of conical beaker. Rim outplayed and thickened in flame. The wall is decorated with diagonal mould blown corrugations. It is made of very good quality dark green glass. One piece, mentioned in the British Ave. Bourguiba(1) site, is treated and decorated in the same way, with straight corrugations. This piece came from a 5th/6th centuries A.D. context. Another possible parallel is found in Trier(2). This piece is dated to the end of the 3rd - beginning of the 4th century A.D. It is difficult to date our piece, but we prefer to give it a later date (5th/6th centuries A.D.) in association with the other Carthage material.

- 1- Tatton-Brown, V.A. (1984), no. 30, fig. 66, p. 198.
- 2- Gœthert-Polaschek, K. (1977), Form 53b, no. 309, Taf. 43, pp. 73, 350.

No: 65
Fig: 3
Cat.no: G2N355
H: 5.3 cm.
Rim diameter: 9.3 cm.

Rim and part of wall of beaker with mould-blown corrugations. The rim is straight, thickened and rolled in a flame. It is made of olive green glass of very good quality, slightly iridescent and bubbly. Four wall sherds of clear and pale green glass were also found on site.

A similar piece was noted on the British Ave. Bourguiba site(1). A wall sherd probably belonging to a similar vessel was noted on the University of Michigan (2) site. Beakers decorated with mould-blown corrugations of different types are seen in the Trier collection(3). There they are said to belong to the beginning of the 4th century A.D.(4) but they were found in 6th/7th century A.D. contexts in Carthage(5).

- 1- Tatton-Brown, V.A. no. 30, fig. 66, p. 198.
- 2- Hayes, J.W. (1978), no. 4b, fig. 3, p. 187.
- 3- Göethert-Polaschek, K. (1977), nos. 253, 259, Taf. 41, p. 76 and 261, Abb. 24, Form 52, p. 67.
- 4- Göethert-Polaschek, K. (1977), Form 52, p. 350.
- 5- Tatton-Brown, V.A. (1984), no. 29, p. 198.

No: 66
Fig: 3
Cat.no: G2G262
H: 1.3 cm
Base diameter: 5.6 cm.

Concave base with bulge created by sagging. This is probably the base of a beaker with grooved decoration. The base is thicker and heavier than the rest of the wall. The glass is transparent with a light tint of yellow. Both interior and exterior surfaces are very pitted and iridescent. Two more examples of this sort were found on site(2C209-G2N356). G2C209 is of the same colour and thickness as our type piece. It is, however, half covered with a thick white coat of weathering and its base is flatter. G2N356 does not sag as much, has a flat base and is aqua/green. A similar fragment is noted in Conimbriga(1). Complete specimens are seen in the collection of the ROM(2). In both cases the authors consider the pieces to be of late 1st century A.D.

- 1- Alarçao, J. (1974), no. 140, pl.xxxix, p. 182.
- 2- Hayes, J.W. (1975), no. 140, fig. 3, p. 57.

No: 67
Fig: 3
Cat.no: G2A159
H: ??
Base diameter: 5.0 cm.

Lower part of free-blown beaker rested on a single coil base ring(1). Both vessels and coil are made of aqua blue glass extracted from the same mass of glass. This is an example of rather good craftsmanship where the dimension of the coil is kept even all around. There is a gap where both ends meet and an overlap of approximately 3cm. Three similar pieces were noted on site, one smaller than our piece and the others made of colourless-yellow glass with a smaller diameter and heavier construction.

Similar pieces were found at Salona(2), in Trier(3), and in Carthage on the British Ave. Bourguiba(4) site and the University of Michigan site(5). All pieces dated to around the 4th century A.D.

- 1- Isings, C. (1957), Fom 85b, p. 102.
- 2- Auth, S.H. (1976), no. 72, pl. 30,32, p. 161.
- 3- Göethert-Polaschek, K. (1977), nos. 342-344, pl. 45, p. 79.
- 4- Tatton-Brown, V.A. (1984), no. 100, fig. 68, p. 208.
- 5- Hayes, J.W. (1978), no. 9, fig. 1, p. 190.

No: 68
Fig: 3
Cat.no: G1H054
H: 2.0 cm.
Base diameter: 3.6 cm.

Base with deep concave pointed kicks with pontil marks. This piece is made of pale green thin and fragile glass. The body seems to continue in a cylindrical cone shape. Two other similar pieces were found on site with slightly larger diameter.

We have chosen to associate these pieces with goblets with cylindrical or tronconical bodies(1) dating to the 4th/5th century A.D. Similar pieces have been noted on the Second Canadian team site from other deposits(2) in larger quantities(3).

- 1- See discussion of no. 112.
- 2- Hayes, J.W. (1985), fig. 3, p. 115.
- 3- This piece was identified by Dr. Hayes.

STEMMED GOBLETS

Stemmed goblets consist of a 'U' or 'V' shape body mounted on a slender stem, which can be hollow or solid, beaded or not(1). Stems drawn from the metal of the cup (2) in the folded bubble technique(3) are hollow and their feet are tubular base rings(4). In the case of a solid stem goblet, stems are made separately from the cup, using the same mass of glass or another, and is applied onto the bottom of the goblet. Afterwards these stems would be shaped by the artisan with his tools to create the bead(5). The feet were normally outslayed with their rim thickened and finished in the flame(6). The shape of the bowls varies from broad with a tapered bottom, to hemi-spherical, and is sometimes decorated on the underside with mould-blown ribs, applied trailing of contrasting coloured glass, or is simply pinched with a tool to create indentations (see below nos. 72, 73 and 74).

It is usual to regard these vessels as drinking cups since they resemble our modern wine glasses. Many authors(7) point out that most of these vessels have been found on sites of ancient sanctuaries, linking them with ritual functions. However on our site and others in Carthage(8) these types of vessels occur in a domestic context and probably had a simpler role.

In the Roman period these vessels are mainly a Mediterranean type(9). Virtually none has been found in the north-western provinces or

northern Italy. They are more common in Near Eastern sites and would have probably originated from there around the end of the 3rd or the early 4th century AD(10).

The hollow stem is considered to be of eastern influence and style(11), whereas the solid stem is more of a late western transformation. It is not surprising then to find such a large percentage of these solid stems at Byzantine Carthage since the city was still mostly influenced by the West at that period.

Altogether 38 stems have been found on the site. 28 of them are of the solid beaded variety, nine are solid but straight, and one single example has a hollow stem. Five of the solid types are decorated as mentioned above. All the pieces come from deposits of the 5th to 6th centuries AD. Eight pushed-in tubular ring bases were found on site, also dating to the same period.

- 1- Vessberg, O. (1956), p. 199.
- 2- Isings, C. (1959), p. 139.
- 3- The folded bubble technique consist of flattening a blown sphere of glass, creating a disk like piece, and pushing-out the center to make the stem. (Hayes, J.W. (1978), p. 187.)
- 4- Tatton-Brown, V.A. (1984), p. 200.
- 5- Tatton-Brown, V.A. (1984), p. 200.
- 6- Vessberg, O. (1956), pp. 199.
- 7- Isings, C. (1956), p. 139, mithraeum of Santa Prisca & catacombs from Syracuse; Crowfoot, G.M. (1957), p. 415, churches; Caron, B. (1981), p. 50, the Monument Circulaire (church); Duval, N. & Jeremic, M. (1984) church of Cari in Grad I, fig. 148, p. 142.
- 8- Tatton-Brown, V.A. (1984), p. 200.
- 9- Isings, C. (1959), p. 139.
- 10- Hayes, J.W. (1975), p. 32.
- 11- Hayes, J.W. (1978), p. 187.

No: 69
Fig: 4
Cat.no: G1T089
H: 2.5cm.
Base diameter: 2.0cm.

Short beaded yellow/ochre stem applied separately on cup; pontil marks. The stem is outplayed to construct the base. The yellow/ochre glass is smooth and slightly pitted with some long scratches. Both cup and stem are made from the same mass of glass. Six other specimens of this form and colour have been found on site .

Other pieces similar to this have been found at Carthage on the British Ave. Bourguiba site(1), from other deposits on the site of the Second Canadian team(2) and on the U. of Michigan site(3).

Suggested date: 5th/7th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 46, fig. 66, p. 201.
- 2- Hayes, J.W. (1985), no. 7161, paper before publication.
- 3- Hayes, J.W. (1978), no. 26b, fig. 3, p. 190.

No: 70
Fig: 4
Cat.no: G3A017
H: 2.7cm.
Base diameter: 2.4cm.

Short beaded blue stem applied separately on yellow/ochre cup, splaying out on foot; pontil marks. The ochre glass was cut while still hot, under the cup, leaving a stub so that it should create a cushion when the blue mass was stuck onto it. This should however, be considered as an error in craftsmanship, for the cushion is uneven from front to back. The yellow/ochre glass is smooth, thick and of good quality. The blue glass which forms the stem is very pitted and iridescent; it appears to be opaque.

Two other specimens of this form have been found on site . Comparable pieces have been found at Carthage on the British Ave. Bourguiba site(1) and on the University of Michigan site(2).

Suggested date: 6th/7th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 46, fig. 66, p. 201.
- 2- Hayes, J.W. (1978), no. 33d, fig. 4, p. 193.

No: 71
Fig: 4
Cat.no: G1T092
H: 3.6cm.
Base diameter: 5.0cm.

Short beaded green stem applied separately on yellow/ochre cup; pontil mark. The stem is outplayed to construct foot which is rounded in flame. The foot is made of a quite thin and very weathered pale green glass. The cup is of a very smooth and slightly pitted yellow/ochre glass. Two other pieces of this form have been found on site, although both are slightly thinner and more delicate. Both, also appear to have stems and cups of different colours although the weathering on them is quite advanced.

Similar pieces have been found at Carthage on the British Ave. Bourguiba site(1) and from other deposits on the Second Canadian Team site(2).

Suggested date: 6th century A.D.

- 1- Tatton-Brown, V.A.(1984), nos. 41 & 49, fig. 66, p. 200 and 201.
- 2- Hayes, J.W. (1978), no. 7161, paper before publication.

No: 72
Fig: 4
Cat.no: G2S461
H: 2.5 cm.
Base diameter: 2.0 cm.

Short weathered beaded stem applied separately on cup decorated with vertical mould-blown ribs. The stem is outplayed to make the foot; pontil marks. The glass used to make the stem is very weathered and so does not allow us to determine its colour. We can tell that it is opaque glass. The green glass used to make the cup is very pitted and weathered. Four ribs are distinguishable.

One more piece of this form has been found on site. This piece did not have its stem but more of the cup was preserved, showing 14 ribs. The dimensions of both pieces are almost the same but this second cup is made of yellow glass. A similar example was found on the British Ave. Bourguiba site(1).

Suggested date: 6th/7th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 44, fig. 66, p. 201.

No: 73
Fig: 4
Cat.no: G1T091
H: 4.6 cm.
Base diameter: 5.5 cm.

Short near straight stem of cup, similar to the beaded stem but without the "bead". The base is outplayed to construct the foot which is rounded in a flame. The cup, applied separately onto the stem, has a flat bottom which curves into indented walls; pontil marks. Enough of the wall has remained to show two indents. A rough calculation gives us twelve indents on the complete vessel. Both parts of the cup are made of a yellow/ochre glass, probably of the same mass. It is uniformly pitted on the whole of its surface but shows two very large bubbles in the base.

It is the most complete example of this form found on site. It is larger than most of the other stems in the collection. Two other pieces could be compared on the basis of form and size of the stem. G2N296, although green, is of the same straight form and slightly smaller. G2T497 is also yellow/ochre but larger than our specimen. It is the largest of them all. It is very badly weathered and pitted but shows a remnant of green glass for the cup. No more can be said on these pieces, for they are too fragmentary.

For comparison of the stem, the British ave. Bourguiba site provides us with one example very similar to ours(1).

1- Tatton-Brown, V.A. (1984), no. 52, fig. 66, p. 201.

No: 74
Fig: 4
Cat. no: G1T086
H: 1.0 cm.
Diameter: 5.5 cm.

Tapered base of pale green cup, without stem. Impressions showing evidence of now lost trailing. The trailing was applied on the walls of the cup, giving a zig-zag pattern; pontil marks. The pale green glass is thin, slightly pitted but smooth. A thick crust of weathering covered the piece.

No other piece of this type was found on site, except for the bottom of a pale-green cup which shows a pattern of seven petals. Like the zig-zag trailing, the petals were made of a contrasting

glass which is now lost. One other specimen of this tapered form, without the trailing(1), appears in the British Ave. Bourguiba finds in Carthage. Hayes describes two pieces most similar to our fragment in the Royal Ontario Museum(2).

Suggested date: 5th/7th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 44, fig. 66, p. 201.
- 2- Hayes, J.W. (1975), no 405, fig. , p. 109.

No: 75
Fig: 4
Cat.no: G2U545
H: 4.2 cm.
Body diameter: 4.0 cm.

Solid, slender, plain stem formed by the pulling of the mass of glass before blowing. Remnant of possible foot or cup protruding at right angle from stem; pontil marks. This piece is made of aqua blue glass of good quality with fine pitting and slight iridescence. It is the only example of this form but its glass compares well with no. 76(see below.)

Three other examples have been noted in Carthage; one by Hayes on the University of Michigan site(1), two by Caron on the site of the First Canadian Team(2). In both cases the descriptions given by the authors correspond with our fragment; however the interpretation is different.

Hayes' piece is thought to be the base of an Isings Form 9 unguentarium with foot. Our piece would then be the other way up making the cone the wall and the protuberance the foot. In Caron's two cases, they are seen as "wine glasses" with very flat bottomed cups (joining the stem like ours) with outplayed foot. Both Caron's cups are of aqua blue coloured glass. An other possible reconstruction for this vessel could be one resembling our modern "champagne flute". Although several such vessels have been found at Corinth (3), their contexts are medieval.

It is not possible at this point to determine which of the alternative reconstructions is the correct one, for too little of our piece is preserved. One other similar stem has been found on site. However it is even more difficult to determine what form it represents due to it's fragmentary state.

- 1- Hayes, J.W. (1978), no. 8, fig. 1, p. 190.
- 2- Caron, B. (1981), nos. 10, 14, p. 43-44.
- 3- Davidson, G.R. (1952), nos. 711, 714, 715, fig. , p. 110-111.

No: 76
Fig: 4
Cat.no: G3A022
H: 3.3 cm.
Base diameter: 5.0 cm.

Plain, straight, hollow cup stem. Foot formed by the folded bubble of glass producing a tubular edge, center of bottom pushed up forming a small "bubble" in stem; pontil marks. The piece is made of aqua blue glass of good quality and even thickness. Some pitting, some weathering.

This piece is the only example of this form, however, one other stem like piece has been found on site. It has not been made by the folded bubble technique and therefore is a solid mass of glass (no. 75, see discussion above).

Similar pieces have been found on the Michigan site(1) and on the First Canadian Team site in Carthage(2), and in Cyprus(3), Salona(4), and at Samaria(5).

Suggested date: 5th/7th centuries A.D.

- 1- Hayes, J.W. (1978), no. 30, fig. 3, p. 190.
- 2- Caron, B. (1981), no. 18, p. 44.
- 3- Vessberg, O. (1981), nos. 17-18, fig. 45, p. 145.
- 4- Auth, S.N. (1976), no. 106, pl. 31, p. 165.
- 5- Crowfoot, G.M. (1957), no. 7, fig. 96, p. 415.

No: 77
Fig: 4
Cat.no: G3A016
H: 1.6 cm.
Base diameter: 4.2 cm.

Hollow knob base and foot of drinking vessel. It is a pushed-in tubular base ring with a thick solid conical base wall. The pushed-in bubble does not protrude into the bottom of the vessel but stops in the stem creating a empty chamber. The piece is made of rather good green glass covered by a thin iridescent film and slightly pitted. Eight other pieces of this type have been found on site, however none have the empty chamber.

Similar pieces have been found in Carthage on the University of Michigan site(1), on the First Canadian Team site(2) and in other deposits from the Second Canadian Team site(3). The pieces are said to date to the

5th/6th centuries A.D.

- 1- Hayes, J.W. (1978), no. 24, fig. 2, p. 190.
- 2- Caron, B. (1981), no. 36, p. 48.
- 3- Information given to me by Dr. J.W. Hayes (no. 1532).

No: 78
Fig: 4
Cat.no: G2C208
H: 1.5 cm.
Base diameter: 4.4 cm.

Hollow knob base and foot of drinking vessel. It is a pushed-in tubular base ring with a thick solid conical base wall. The pushed-in bubble protrudes into the bottom of the vessel where we see the pontil mark. The piece is made of very good quality dark green glass hardly altered by weathering. Eight other pieces of this type were found on site. The colours varied from pale green to dark green.

Similar pieces were noted in Carthage on the University of Michigan site(1) on the First Canadian Team site(2) and from other deposits on the Second Canadian Team site(3). Some were also found in Salona(4) in Odessa(Crimea)(5) and in Caricin Grad (Yugoslavia)((6). Drinking cups are found in the ROM collection with such bases(7). This form seems to appear in 5th/6th century A.D. contexts.

- 1- Hayes, J.W. (1978), no. 24, fig. 2, p. 190.
- 2- Caron, B. (1981), no. 36, p. 48.
- 3- Information given to me by Dr. J.W. Hayes (no. 1532).
- 4- Auth, S.N. (1975), no. 104, pl. 31, p. 135.
- 5- Sorokina, N.P.(1978), no. 7, pl. 3, p. 273.
- 6- Duval, N. & Jeremic, M. (1984), fig. 150, p. 142.
- 7- Hayes, J.W.(1975), nos. 382-383, fig. 11, p. 105.

No: 79
Fig: 4
Cat.no: G2T517
H: 1.2 cm.
Base diameter: 5.5 cm.

Hollow knob base and foot of drinking vessel. It is a pushed-in tubular base ring with a thick solid conical base wall. The pushed-in

bubble protudes into the bottom of the vessel. This specimen is flatter than the others from this site. It is made of pale green glass slightly iridescent but of good quality. Eight other pieces of this type were found on site.

Similar pieces were noted in Carthage on the University of Michigan site(1) on the First Canadian Team site(2), and from other deposits of the Second Canadian Team site(3). They are also noted in the ROM collection(4).

Suggested date: 5th/6th centuries A.D.

- 1- Hayes, J.W. (1978), no. 24, fig. 2, p. 198.
- 2- Caron, B. (1981), no. 36, p. 48.
- 3- Information given to me by Dr. J.W. Hayes.(no. 1532).
- 4- Hayes, J.W. (1975), no. 382, fig. 11, p. 105.

No: 80
Fig: 4
Cat.no: G2B176
H: 1.2 cm.
Base diameter: 4.2 cm.

Thick pad base made in the folded bubble technique. The outer wall is much thicker than the inside one where the bubble was brought back. This piece seems to have been mould-blown, for its shape is very homogenous. It is made of very pale green glass of very good quality, slightly scratched and pitted.

It is the only piece of this type found on site. No parallel has been established yet and therefore it is impossible to venture a definite date for the piece.

No: 81
Fig: 4
Cat.no: G3A015
H: 5.0 cm.
Rim diameter: 11.4.cm.

Part of rim and body of chalice type vessel. It is made of very badly weathered glass discoloured by the elements in the soil. Pale-green seems to be predominant in the thickest part of the rim,

whereas the rest of the walls have a certain rosy tinge. It is unlikely to be a two-coloured artifact for some of the rosy colour appears in part of the rim as well. No other piece like this one has been found on site, except for the larger rims of some bowls and dishes (nos. 15-17-36). These are much thicker and have a much larger diameter.

The shape of our piece seems to recall Isings' Form 36a(1). The chalice, the so-called "carchesium" is a small bell-crater, which sometimes has small handles and rests on a beaded stem. It is usually considered a 1st century find but does appear in the 2nd century(2). These pieces are, however, made of coloured glass: emerald green, dark purple and cobalt blue. Some are made of bluish-green glass and occasionally in yellow.

Another form which does appear at a later date proves to be more of a parallel to our piece. Form 24 of the Trier collection(3) is a small bowl or cup on a ring base. The rim flares outward almost horizontally, it is rounded in a flange and marvered at its edge to make it flat. The pieces in the Trier collection are of approximately the same dimensions and are made of yellow to green glass(4). Form 24 has been associated with deposits of the first half of the 4th century A.D.(5) The pottery has dated the layer from which our piece comes to the 4th/5th century A.D.(6)

1- Isings, C. (1957), Form 36a, p. 50.

2- Isings, C. (1957), p. 51.

3- Göethert-Polaschek, K. (1977), Form 24, no 98, Taf 21,225d, pp. 36-37.

4- Göethert-Polaschek, K. (1977), nos 97 to 99, pp. 36-37.

5- Göethert-Polaschek, K. (1977), Form 24, p. 349.

6- Layer 3A2, Dr. J.Z. Freed.

LAMPS

In Late Antiquity the use of standing and hanging lamps of glass for illuminating buildings became very common. Many specimens have been found in churches. At Jerash (Jordan) where there were several churches, one large hoard was found dating to the 8th century A.D. in an annex-building of the church of St-Theodore(1). Many pieces of lamp have been found in other churches such as in the 6th century church of Caricin Grad(2) as well as in the synagogue in Sardis(3) and at the Circular Monument in Carthage(4). A few pieces were found on other types of site, on the Salona Forum(5) and in Samaria on the town site(6). In Conimbriga they occurred in occupation levels of the 5th/7th centuries A.D.(7), in Karanis they were from the 4th/5th centuries A.D. levels(8) and finally in Carthage on both British Ave. Bourguiba(9) and University of Michigan(10) sites in 5th/6th centuries A.D. levels. Thus it is clear that these lamps were not used only in churches, and spread right across the Mediterranean, even reaching Trier(11).

At least five basic variety of lamps were used in the Late Antique period. In Karanis(12) two types were isolated(13). The commonest type is conical with a rim either plain-cut or rounded in a flame. The sides are straight and taper gradually to the

base, which is pointed, slightly flattened or finished with a coil. The glass is the ordinary late-Roman variety, slightly bubbly, impure and varying in colour from very pale greenish/yellow to a deeper shade of the same. The decoration, when it occurs, consists of applied coils, horizontal wheel-incisions and added blobs of blue glass marvered when still hot. The blobs occur only on this conical type of lamp, whereas other styles of decor are found on the other type of lamp.

The second type of lamp found at Karanis is a hemispherical bowl much rarer than the first type. In technique, fabric and decoration, these bowls are equal to the conical version.

The three other types of lamps were first identified in Jerash. They are however the most common types found throughout the Mediterranean. The first Jerash type is shaped as a shallow bowl, with three handles and tubular rim bent inward or outward. They seem to have a flat or concave base with slanted wall(14). The handles are usually of darker blue or green colour than that of the bowl. Such specimens have also been found in Italy in catacombs(15). An Early-Roman fragment was found in Ostia(16). Another form of lamp was probably developed from this last type. It has a shallow-bowl shape with three handles and a tubular rim, but it is stemmed and on a base. This version is considered a separate type of lamp by other authors. In this case it is unnecessary to

do so. The pieces in our collection are so fragmentary, that it is not possible to distinguish between them. For further discussion of this type see Caron(17) and Crowfoot-Harden(18).

The second Jerash type is the bowl-shaped vessel on a solid stem, beaded (or not), without base. The rim is rounded-off in a flame, the sides of the bowl are vertical, either straight or convex, and meet at the bottom in a strong curve. The stem is solid and sometimes beaded. In Jerash all examples have beaded stems. The Carthage examples. Both the Michigan and First Canadian team finds are those with a smooth toe or one which is grooved down on each side(19) and finishes in a bulge(20).

The third type of lamp found in late antique contexts consist of the bowl-shaped vessels with plain hollow stems. This type does not have a base to stand on. Variants of these occur in which the stem is constricted at the junction of body and stem or when the stem creates a kick in the bowl before coming down in a point. This type was probably the most popular from Roman Imperial times throughout Byzantine, Islamic and Western Medieval periods. In the Near East it is still in use today(21). The lamps were either suspended by chains or set in hoops or metal candelabra and polycandela. Holes were cut out in the sheet of metal and the lamps slotted in. At Sardis a simple hoop with six cutouts and triple chain was found in an early 7th century A.D. house(22). This type of lamp was found in Samaria(23), Cyprus(24), Sardis(25), Caričin Grad(26) and in Conimbriga(27).

In Carthage, however, the use of glass lamps between the 4th and 6th centuries A.D., seems to have been more restricted. Some authors attribute this to the fact that the African Red Slip lamps were probably flooding the market(28). Some glass lamps have, however, been found there all the same. On the British Ave. Bourguiba site 14 lamp fragments have been noted representing three types; bowl with handle, conical body with coil base, and bowl on hollow stem(29). On the University of Michigan site small scrapes, slender solid toes, and folded rims with handles are recorded and are said to come from surface levels(30). From the Circular Monument two fragments of the type with folded rim and handle were noted, and seven of the bowl-shape type with solid toe(31).

On our site three fragments of the bowl-shape type with hollow toe have been identified, three of the type with a solid toe, three of the conical beaker type and five of the handled type with rolled rim. One fragment was found, which could be considered as a bell-shaped lamp(32)

- 1- Crowfoot, G.M. & Harden, D.B. (1931), p. 198.
- 2- Duval, N. & Jeremić, M. (1984), p. 140, fig. 145.
- 3- Saldern, A. von, (1980), p. 47.
- 4- Caron, B. (1981), p. 50.
- 5- Auth, S.H. (1975), p. 166.
- 6- Crowfoot, G.M. (1957), no. 112, p. 415.
- 7- Alarčao, J. (1972), no. 229-231, p. 156.
- 8- Harden, D.B. (1936), p. 156

- 9- Tatton-Brown, V.A. (1984), nos. 57 to 60, p. 202.
- 10- Hayes, J.W. (1975), p. 187.
- 11- Göethert-Polascheck, K. (1977), Form 54, no. 314, p. 74
- 12- We are using the Karanis types here, because they were first found there and were in a large enough quantity to provide us with a homogeneous group easily datable.
- 13- Crowfoot, G.M. & Harden, D.B. (1931), p. 197.
- 14- Saldern, A. von, (1980), type I, nos, 234-235, p. 45.
- 15- Auth, S.H. (1975), p.166.
- 16- Isings, C. (1957), p. 162.
- 17- Caron, B. (1985), Form 211,2, p. 296.
- 18- Crowfoot, G.M. & Harden, D.B. (1931), p. 199.
- 19- Hayes, J.W. (1975), no. 32, p. 193.
- 20- Caron, B. (1981), nos. 24-26-29, p.46.
- 21- Saldern, A. von, (1980), p. 49; Crowfoot, G.M. & Harden, D.B. (1931), pls xxix, xxx, p. 203.
- 22- Saldern, A. von, (1980), p.50.
- 23- Crowfoot G.M. (1957), no. 6, fig. 96, p. 415.
- 24- Vessberg, O. (1956), nos. 12-14, fig. 51, p. 173.
- 25- Saldern, A. von, (1980), nos. 274-284, pl. 23, p. 51.
- 26- Duval, N. & Jeremić, M. (1984), nos. 5-7, fig. 145, p. ??
- 27- Alarçao, J. (1972), nos. 229-231, pl. ??, p. 196.
- 28- Hayes, J.W. (1985), p. 126.
- 29- Tatton-Brown, V.A. (1984), nos. 57-60, fig. 66, p. 202.
- 30- Hayes, J.W. (1975), p. 187.
- 31- Caron, B. (1981), nos. 23, 31, p. 45-46.
- 32- Crowfoot, G.M. & Harden, D.B. (1931), p. 202

No: 82
Fig: 4
Cat.no: G2S446
H: 4.0 cm.
Diameter at base: 2.0 cm.

Complete tubular handle of lamp. This piece is completely covered with brown/black weathering which has replaced the yellow glass almost entirely. A paper thin layer of glass remains at the center of the brown coating. This is a very well made handle with no ridges. A little piece of the folded rim still remains attached to the top of the handle and part of the glass of the body can be seen at its bottom part.

This is the only example of this type found on site. Four other pieces were found to be lamp handles and are being discussed on their own(see no 83).

Similar pieces have been found in Salona(1), in Carthage on the British Ave. Bourguiba site (2), on the First Canadian Team site (3) and in Sardis(4).

- 1- Auth, S.H. (1976), no. 112, pls. 31-33, p. 166.
- 2- Tatton-Brown, V.A. (1984), no. 57, fig. 66, p. 202.
- 3- Caron, B. (1981), no. 23, p. 45.
- 4- Saldern, A. von, (1980), no. 234, pl. 23, p. 45.

No: 83
Fig: 4
Cat.no: G2T498
H: 4.5 cm.

Almost complete pale green ridged handle, probably belonging to a lamp. It is very abraded and weathered. The handle protrudes from its base slanted instead of vertical, which means it must have been stuck at an angle onto the wall of the vessel. Four other similar pieces have been found on site, comparable to this one for their fragmentary state. Their colours range from very pale green to very dark green. One piece (no. 82) has been discussed separately and is in a much better state of preservation and of slightly different type.

Similar pieces have been noted in Luni(1) and in Sardis(2) with the same slanted angle as ours.

- 1- Massari, G. (1977), no. 12, Tav. 156, CM 5812, no. 60, p. 284.
- 2- Saldern, A. von, (1980), no. 246, pl. 23, p. 48.

No: 84
Fig: 4
Cat.no: G2N335
H: 2.9 cm.
Rim diameter: 7.3 cm.

Rim and part of wall of globular cup like vessel. Its rim is rounded and thickened in a flame, constricting at the top as if to close the vessel. It is made of very good olive green glass, slightly pitted and scratched. Three other examples similar to this one were found on site. G2S487 in aqua blue glass, G2N316 in pale green, and G2T510 in olive green glass which has escaped all sorts of erosion process, showing its original shine and state.

The general appearance of this form can do no other than remind us of our modern wine glasses. No stem has been found to belong to any of these rims making it impossible to decide on their true nature. Furthermore, we have found no parallel for our piece in association with wine glasses or related vessels. If we investigate towards vessels of different use we might find that the bowl shaped lamp on solid beaded stem(1) of the 6th/7th century is very close in shape to our piece. The rim is rounded off in a flame and the sides of the bowl are vertical, straight or convex. Again, since our piece is so fragmentary we can only speculate on the possible forms associated to our piece.

- 1- Crowfoot, G.M. & Harden, D.B. (1931), no.22, pl. xxix, p. 198.

No: 85
Fig: 4
Cat.no: G1N082
H: 1.2 cm.
Max. diameter: 0.6 cm.

Part of folded toe of possible bowl-shaped lamp on a solid stem without base. These toes are sometimes beaded and have either a concave or

convex bowl with vertical sides. Toes with solid stems have been found without beading but with a groove on their sides. This piece is made of very good aquamarine glass, slightly iridescent and pitted. A large bubble appears at the center of this piece, implying that it could have been hollow. Two other pieces on site were found to be of similar form.

Similar pieces have been found in Carthage on the First Canadian Team site (1) and on the University of Michigan site(2). They have been dated to the 5th/7th centuries A.D.

- 1- Caron, B. (1981), no. 24, pp. 46-55.
- 2- Hayes, J.W. (1978), no. 32, fig. 3, p. 193.

No: 86
Fig: 4
Cat.no: G2A167
H: 2.7 cm.
Base diameter: 1.4 cm

Base of hollow stem of bowl-shaped lamp(1). This piece is made of dark olive green glass, scratched and slightly covered with white weathering. A pontil mark shows at the very end of the butt. One other piece of the same dimension was found on site in a much more fragmentary state.

This form is very popular and well attested all through the Empire from the 5th to the 8th century A.D. We can see these in Cyprus(2), Samaria(3), Split(4), Caričin Grad(5) and in Sardis(6). They are also found on the British Ave. Bourguiba site(7).

- 1- Crowfoot, G.M. & Harden, D.B. (1931), p. 198.
- 2- Vessberg, O. (1956), nos. 12 to 14, fig. 51, pp. 173-174.
- 3- Crowfoot, G.M. (1957), nos. 2,3,6, fig. 96, pp. 414-415.
- 4- Demaine, M.R. (1979), no. R58, pl. 11, p. 116.
- 5- Duval, N. & Jeremić, M. (1984), nos. 6-7, fig. 145, p. 140.
- 6- Saldern, A. von, (1972), nos. 274-280, pl. 23, pp. 49-52.
- 7- Tatton-Brown, V.A. (1984), no.59, fig. 66, p. 202.

No: 87
Fig: 4
Cat.no: G2U547
H: 3.2 cm.
Base diameter: 1.3 cm.

Solid straight toe of bowl-shaped vessel on a solid stem without base. These toes are sometimes beaded and either have a concave or convex bowl with vertical sides(1). Toes with solid stems have been found without beading but with a groove on their sides. This piece is made of good quality apple green glass, pitted and iridescent. The pontil mark appears at the bottom end of it. Two other pieces on site were found to be of similar shape.

Pieces of this type have been noted in Carthage on the University of Michigan site(2) and on the First Canadian Team site(3). In both cases they have been dated to the 5th to 7th centuries A.D.

- 1- Crowfoot, G.M. & Harden, D.B. (1931), p. 198.
- 2- Hayes, J.W. (1978), no. 32, fig. 3, p. 193.
- 3- Caron, B. (1981), no. 24, pp. 46,55.

No: 88
Fig: 4
Cat.no: G3B035
H: 3.7 cm.
Base diameter: 2.3 cm.

Solid conical toe of cup-shape lamp. This piece is made of aqua glass, slightly pitted. The pontil mark appears inside the cup at the head of the toe. No. 75 is a similar fragment to this one. We have however decided to include it to the cup section for it showed a number of characteristics, more similar to that category.

Lamp toes of this type have been noted in Carthage on the First Canadian team site (1). They have been dated to the 5th and 7th centuries A.D.

- 1- Caron, B. (1981), nos. 27-28, p. 53.

No: 89
Fig: 4
Cat.no: G3A028
H: 1.3 cm.
Max. diameter: 2.3 cm.

Base of conical beaker type lamp. This type is very uniform and differs in rim and base treatment(1). The rim is plain cut and smoothed in the flame. The sides are straight and taper to a pointed or slightly flattened base.

This piece is of the type with flattened base. It is made of pale green glass with small bubbles and slight pitting. Three other pieces, although in a much more fragmentary state, could be associated to our type. Two of them are aquamarine, the third one is marbled grey/blue, probably a result of non purified frit.

In Isings' classification, this shape appears under Form 106a and is said to belong to the 4th century A.D.(2) Complete examples have been found in Trier(3).

- 1- Crowfoot, G.M. & Harden, D.B.(1931), no. 26, lp. xxix, p. 198.
- 2- Isings, G. (1957), Form 106, p. 127.
- 3- Goëthert-Polaschek, K. (1977), Taf. 42, nos. 292-293, p. 70.

No: 90
Fig: 4
Cat.no: G2X559/2T523
H: 4.0 cm.
Base diameter: 4.0 cm.

Large thick conical base of unknown vessel. The piece is made of thick yellowish glass, very pitted, and weathered. The piece recalls the shape of a short amphora toe flaring to a conical body. A join has been made between separate pieces found in squares 2X and 2T, the west wall of house 2 and cardo II. No other pieces of this type have been found on site. Two similar pieces were noted in Conimbriga(1). They were identified as feet of lamp following Harden's description of similar objects. In fact he mentions the existence of a bell-shaped beaker with outplayed sides and knobbed base(2) dating to the early 5th century A.D. No actual specimen is known other than the representation of the type in the dome of the Church

of S. George at Salonika. Other knobbed lamps are noted in Karanis(3). These, however, are much smaller than our piece, with diameters ranging between 1.1 cm. and 0.5 cm. They date to the 4th/5th centuries A.D. In Carthage on the British Ave. Bourguiba site(4) three similar pieces were identified as bottoms of flasks. They are of the late 3rd early 4th century A.D.

- 1- Alarçao, J. (1972), nos. 229,230, pl. xliii. pp. 196,202.
- 2- Crowfoot, G.M. & Harden, D.B. (1931), p. 202.
- 3- Harden, D.B. (1936), nos. 446-447, pl. xvi, pp. 164,165.
- 4- Tatton-Brown, V.A. (1984), nos. 88-89-90, fig. 67, pp. 205-206

"Bottles"

In this section we shall discuss a type of vessel to which we have decided to attribute the title "bottles". Other authors have distinguished between jugs, flasks and bottles. Our pieces are so fragmentary that such a distinction is not easy to establish here. However, to render the identification process easier for each piece listed hereafter, we shall try to allocate specific form names which other authors have suggested. All the vessels will hold "bottle" as their first descriptive name. A slash will link it to the name of the modern type used also as a complimentary description (eg: bottle/jug, no. 95). Because we cannot be certain whether flasks, jugs and bottles would have had different functions in Roman times, we must keep in mind that these names are associating the shape of the vessel with a modern use.

Those vessels which are called flasks usually have a spherical or pear-shaped body with a cylindrical neck which finishes in a folded rim,(1) a simple unworked rim(2), or a funnel mouth(3). The necks usually outplay at their base, into the body. One category, however, shows a constriction at the base, to somehow define the neck from the body(4). Some of these funnel mouth vessels are decorated by one or more thick coils winding down from the rim to the neck(5). The basic shape with folded rim appeared early in Augustan times, whereas the other types

started in the 3rd century A.D., and were made well into the 7th century A.D. Flasks do not usually have handles but some handled vessels have been called flasks(6). The existence or lack of foot does not seem to be decisive though most of what we call flasks appear to lack a foot or have a kicked-in base(7).

To improve or simply to develop the basic shape of the "flask", artisans have decorated them in many different ways. Wheel-cut lines(1st century A.D.), pinched ribs and trailed-on ribs (both starting ca. 3rd century A.D.) were the more frequent decorations found on these vessels(8). Perhaps the most intriguing of all were the mould-blown type of vessels made to resemble human heads, mostly negroid(9) or a Medusa (10). Sometimes they even reproduced fruit or shells. Of course we must remember that the technique of mould-blowing allowed the artists to produce all sorts of oddities and that other shapes are probably still unknown to us. Painting on glass is another type of decoration found on these vessels, but less frequently(11).

Vessels which are called jugs resemble the flask but are more decorated.. They may have one handle or two. They rest on a stemmed foot or a base, and have an outplayed rim possibly designed for pouring(12). The shape of the body begins with a globular form (1st century A.D.)(13) and develops into an ovoid, pear-shaped, and amphora style in the 4th century A.D. However the bulbous jug with squat shoulder (Ising Form 52) remains the most popular type and enjoys a longer life span (1st to 7th centuries A.D.)(14).

Some of the handles on these vessels have thumb pieces at the top. Trailing is found under the rims, continuing down onto the neck on later vessels (4th/7th century A.D.) Some vessels have trefoil rims or distinct spouts that look very much like our modern jugs.

The bottle as an individual form and accepted by general consensus(15) has sometimes overlapped the jug category. Bottle and jug forms developed towards each other to a point where both types were almost undistinguishable. In this case, the experts have used either names to describe the vessel being analysed. Bottles are considered to be a packing recipient for liquids(16), for shipping and/or storage. This seems to be their distinguishing characteristic.. These bottles have cylindrical, square, rectangular or even polygonal bodies. They vary in size and height but bear common characteristics. In fact, they are usually made of very thick glass, not deliberately coloured, but varying from blue-green to green, due to the impurities in the sand or the silica(17). They have short solid necks finishing in a folded rim able to receive some kind of cork. These bottles most certainly have one or two short ribbed handles but some specimens are known to be handle-less(18). Some of these bottles have been mould-blown into their square shape whereas others were manually fashioned into it(19). The mould-blown variety often have a decorated relief on their base and sometimes even bear a trade-mark(20). Name-stamps are a western fashion, whereas geometric and linear patterns are eastern(21). These bottles are widely distributed through the Empire and their use

varied from liquid containers to funerary furniture and cinerary urns(22), as a secondary purpose. A small square bottle first appears in the 1st century A.D. and continues to be used in the 4th century A.D. Towards the end of the 1st century A.D., the large square bottle appears and also goes on until the 4th century A.D. Cylindrical bottles in both squat and high forms, are contemporary with the square bottles and are often decorated with trailing or lathe-cut patterns(23). Rectangular bottles lasted in the East and the West throughout the Imperial period and, like the cylindrical bottle, were reused as cinerary urns(24).

Altogether, 14 (nos. 91-92; 102-105; 110 + concordances) pieces identified as necks of bottle type vessels were found on site. Although all of them were fragmentary, 7 pieces bore enough characteristics to allow discussion. Most of the pieces date to the 5th to 6th centuries A.D. but there are a few earlier pieces from the 2nd century A.D.

Out of 27 handle pieces 15 (nos. 129 to 135 + concordances) were identified as bottle type handles dating to the 1st/4th centuries A.D.

Altogether 14 (nos. 124 to 128 + concordances) coil ring bases were found on site. 11 were of single, double or triple coil forming the base of a vessel. One appeared to be of the single coil type, but

was fragmentary. One was a smooth, rolled coil of better quality, probably belonging to a different type of vessel altogether(no. 128).

Twenty-four rims types were identified on site. Six were flat folded tubular rims of packing bottle types (nos. 93, 94 + concordances). Five of these belonged to the type with outplayed and folded rim, adorned by a coil winding from the rim down onto the neck(nos 95 to 97 + concordances). Two of these probably belonged to the ovoid bottle/flasks types (nos. 95, 96). Seven (nos. 98 to 100 + concordances) were of the type with strongly angular rim and a thick single coil applied under it. All these types were dated to the 4th/6th centuries A.D. according to the parallels found and their provenance on site.

- 1- Isings, C. (1957), Form 16, p.34.
- 2- Isings, C. (1957), Form 103, p.121.
- 3- Isings, C. (1957), Form 104b, p.123.
- 4- Isings, C. (1957), Form 103, p.121.
- 5- Isings, C. (1957), Form 102, 120a and 120b, pp.149-150; Lancel, S. (1957), Form 10, fig. 12, p. 15.
- 6- Isings, C. (1957), Form 129, p.159.
- 7- Again, where all of Isings' flasks seem to be lacking bases, she clearly mentionned the possibilities of having a pad-base on Form129
- 8- These correspond to Isings Form 16, p. 34 and Form 71, p. 90; Tatton-Brown, V.A. (1984), no. 85, fig. 67, p. 205.
- 9- Isings, C. (1957), Form 78b, p. 93.
- 10- Saldern, Von, A. (1980), p.203.
- 11- Isings, C. (1957), Form 103, p.121.
- 12- Isings, C. (1957), Forms 52 to 58, 88, 120 to 125.
- 13- Isings, C. (1957), p. 69.

- 14- See examples from AquileiaA, Calvi, M.C. (1968), no. 1, Tav. C;
Verulamium, Charlesworth, D. (1972), no. 24, fig. 76, p. 204;
Magdalensberg, Czurda-Ruth, B. (1979), no. 1013, Taf. 8; Cyprus,
Vessberg, O. (1956), no. 4, fig. 46, p. 146.
- 15- Vessberg, O. (1956), nos. 1 to 8, fig. 47, pp. 148-149.
- 16- Isings, C. (1957), Form 50, p. 63.
- 17- Charlesworth, D. (1972), p.202.
- 18- Isings, C. (1957), Form 102, p. 120.
- 19- Hayes, J.W. (1975), p.47.
- 20- Isings, C. (1957), Form 50, p. 64.
- 21- Hayes, J.W. (1975), p.47.
- 22- Harden, D.B. (1936), p. 236; Calvi, M.C. (1969), tav. 14 , hydria,
Tomb of Postumius Hylarius, 1st century A.D.; Yacoub, M. (1970), p.109.
- 23- Harden, D.B. (1936), p.236.
- 24- Harden, D.B. (1936), p.238.

No: 91
Fig: 4
Cat.no. G2S488
H: 4.1 cm.
Rim diameter: 3.0 cm.

Part of cylindrical neck outsplying to a bulbous body of medium size bottle/flask. There are faint lines of tooling or wheel incisions on the body of the vessel at approximately 1cm. interval. No lines appear on the neck.

It is made of a good quality glass, slightly iridescent, with no pitting inside or outside. Small bubbles are visible in the glass itself. This vessel is made of a blue/green, almost teal colour, fabric. This colour is very rare in our collection.

No other piece on site compares to this one, in shape, ornament or colour. Its form is similar to an Isings 92(1) or 104(2). Both forms are bulbous flasks with funnel mouth. Form 92 has good quality glass and wheel-incised patterns on the body. It appears mainly at the end of the 2nd century A.D.(1). Form 104 is a larger vessel which is also sometimes decorated with wheel-incisions. It is a very popular flask in the 4th century A.D.(2). However, our closest parallel to this vessel is found in the ROM collection, no. 491(3). Although this piece may not have a strictly bulbous body, its fabric, colour and especially the position of the wheel-cut decorations incline us to associate them together.

Suggested date: 2nd century A.D., residual material.

- 1- Isings, C. (1957), Form 92, p. 110
- 2- Isings, C. (1957), Form 104, p. 124
- 3- Hayes, J.W. (1975), no. 491, fig. 14, p. 125

No: 92
Fig: 4
Cat.no: G2T500
H: 6.0 cm.
Rim diameter: 3.2 cm.

Flat folded tubular rim of small bottle/flask, continuing in a straight cylindrical neck outsplying to a possible pear-shape or cylindrical body. Half of this piece is still made of very weathered glass whereas the other half is mainly of brown opaque weathering concealing a very thin layer of yellow glass. Faint marks of tooling still show under and over the rim.

Four other examples of this form have been identified on site. Only the rim and part of the neck of G1U109 remains in a much better state than our piece here. Two pieces (nos. G1V141 & G2F231) have a solid rim as opposed to a tubular and hollow one.

Examples resembling these pieces have been found in Carthage on the British Ave. Bourguiba site dating to the 6th century A.D.(1) and on the U. of Michigan site(2). For similar better preserved examples we can look at nos. 225, 226 and 228 of the ROM collection(3).

A precise date for such a piece is rather difficult to define, for this sort of shape exists throughout the history of glass blowing.

- 1- Tatton-Brown, V.A. (1984), no. 69, fig. 67, p. 204
- 2- Hayes, J.W. (1978), no. 20, fig. 2, p. 190
- 3- Hayes, J.W. (1975), nos. 225, 226, 228, fig. 8, p. 70

No: 93
Fig: 4
Cat.no: G2F231
H: 0.6 cm.
Rim diameter: 5.5 cm.

Tubular rim and part of neck of unknown closed form. The rim outspreads and folds inwards at the lip. The piece is made of pale yellow glass very pitted and iridescent. Four other pieces of this form were found on site.

Similar pieces were found in Carthage on the British Ave. Bourguiba site dating to the 6th century A.D.(1) and on the University of Michigan site(2). Complete vessels with such rims are found in the ROM collection(3). The dates vary from 2nd to 6th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 69, fig. 67, p. 204
- 2- Hayes, J.W. (1978), no. 20, fig. 2, p. 190
- 3- Hayes, J.W. (1975), nos. 226 to 228, fig. 8, p. 70

No: 94
Fig: 4
Cat.no: G2F230
H: 1.1 cm.
Rim diameter: 5.5 cm.

Rim and part of collar of cylindrical/square bottle. The rim is folded outwards and inwards pressed so not to have an air-space. It is made of aqua-green glass of good quality, pitted and slightly iridescent. It is the only piece of this type found on site.

This piece resembles the Isings bottle forms that start appearing in the 1st century and become more common later(1). Forms 50 to 52c are small square bottles to large cylindrical ones. Such bottles are found in Verulamium in 2nd century contexts(2). In Aquileia we find 2nd/3rd century candlestick unguentaria with rims treated in this way(3). For more complete examples of this type we can look at the pieces collected in the ROM also dating to the 2nd/3rd centuries A.D.(4)

Suggested date: early 2nd to 3rd century A.D.

- 1- Isings, C. (1957), Forms 50 to 52c, p. 63 to 71
- 2- Charlesworth, D. (1972), no. 14, fig. 75, p. 200
- 3- Calvi, M.C. (1968), Tav. L, no. 6, p. 163
- 4- Hayes, J.W. (1975), no. 577, fig. 18, p. 140

No: 95
Fig: 4
Cat.no: G2S453
H: 2.5 cm.
Diameter at rim: 4.0 cm.

Part of neck curving outwards, towards the rim with very fine trailing, possibly belonging to an ovoid bottle/jug. It is made of pale yellow glass, now practically all disappeared. Most of what is left is made out of brown weathering hiding a paper thin layer of glass in its center. Five very fine lines of trailing cross the exterior of the wall at irregular intervals originating from a small blob at the base of it. No other example of this sort was found on site.

Such a style of decoration can be found on jugs with ovoid bodies referred to by Isings as Form 120a(1) and by Lancel as Form 10(2). Four

matching pieces were found in Carthage on the Ave. Bourguiba British site(3). These pieces start appearing in the 4th century A.D., and keep on being produced well into the 6th. century A.D.

- 1- Isings, C. (1959), Form 120a, p. 149
- 2- Lancel, S. (1967), Form 10, fig. 12, p. 15
- 3- Tatton-Brown, V.A. (1984), no. 73-74, fig. 67, p. 204

No: 96
Fig: 4
Cat.no: G2T516

Part of slightly flaring rim thickened in the flame and circled by three thin coils. It is made of very pale green glass almost completely covered with white and brown weathering. One other piece, in very dark green was found on site. Its trailing has been lost.

These pieces could be associated to Isings' Form 120a(1) and to Lancel's Form 10(2). In both cases we are dealing with ovoid bottle/jugs with small base rings. They are said to have appeared in the second half of the 2nd century A.D. although they came from contexts not clearly dated(3). Isings mentions specimens which come from 4th century A.D. contexts(4).

Both our pieces are too fragmentary to allow us to decide on the actual form of the complete vessel. Keeping in mind the two forms already mentioned we are inclined to date our piece to the 3rd and 4th centuries A.D. rather than earlier, due to the context from which they came.

- 1- Isings, C. (1957), Form 120a, p. 149-150.
- 2- Lancel, S. (1967), Form 10, fig. 12, p. 15.
- 3- Caron, B. (1985), Form 1812,1, p. 179.
- 4- Isings, C. (1957), Form 120a, p. 150.

No: 97
Fig: 4
Cat.no: G1V118
H: 2.0 cm.
Rim diameter: 7.4 cm

Part of rim of bottle type, flaring outwards and inwards, solid. One coil encircles it four times, starting at the edge of the rim moving downwards. It is made of pale green glass with some small bubbles and scratches. This type of rim may have belonged to a vessel with a ovoid or rounded body. Such vessels are illustrated by Isings in her typology by Forms 120b and 121(1). Both date to the 3rd-4th centuries A.D. One other example of this type was found on site.

Parallels have been found on the British Ave. Bourguiba site(2) in the town site in Samaria(3) in Split(4) and also in Odessa(5). In all cases the pieces have been dated to the 3rd- 4th centuries A.D.

- 1- Isings, G. (1957), Forms 120b-121, p. 150-152.
- 2- Tatton-Brown, V.A. (1984), no. 93, fig. 68, p. 207.
- 3- Crowfoot, G.M. (1957), no. 9, fig. 96.
- 4- Demaine, M.R. (1979), no. R35, pl. 10, p. 112.
- 5- Sorokina, N.P.(1978), no. 18, pl. 3, p. 273.

No: 98
Fig: 5
Cat.no: G2S483
H: 1.5 cm.
Rim diameter: 7.0cm.

Part of rim of bottle type, flaring outwards and inwards, solid. One large coil encircles it starting below the rim. It is made of pale green glass, pitted and abraded by thick coating of weathering. It is associated with three other specimens found on site.

Such pieces have been found all over the Mediterranean. They usually belong to vessels with ovoid or rounded bodies and even to cylindrical bottles(1). Some can be seen in Carthage(2), Samaria(3) and in Yugoslavia at Split(4).

Suggested date: 4th century A.D.

- 1- Hayes, J.W. (1975), nos. 363-364, pl. 24, p.102.
- 2- Tatton-Brown, V.A. (1984), no. 93, fig. 68, p. 207.
- 3- Crowfoot, G.M. (1957), no. 9, fig. 96, p. 416.
- 4- Demaine, R.M. (1979), no. R35, pl. 10, p. 112.

No: 99

Fig: 5

Cat.no: G2N354

H: 1.2cm.

Rim diameter: 8.2 cm.

Part of rim, outplayed and thickened in flame, with thick coil applied just below. Piece made of very pale green glass, bubbly, pitted, and affected by weathering. Such rims have been found on largish bottles with globular or cylindrical bodies on a concave base(1). They are usually dated to the 4th/6th century A.D.

Three other pieces of this form have been found on site. G3A010 has a smaller diameter and is made of smoky ochre glass. G2S484 has a larger coil and G2A160 is thinner. Its angle is more accentuated and its coil is finer.

Parallels for these pieces have been found in Samaria with a globular body, dating to the 3rd. century A.D.(2). In Sardis similar rims were found without the rest of the vessel(3). These were dated to the 4th/6th centuries A.D., which corresponds more closely to our site. Equally, in Carthage on the British Ave. Bourguiba site, some 20 specimens of this type were found in deposits dating to 425-533 and 533-600A.D.(4)

- 1- Isings, C. (1957), Form 102, p. 120.
- 2- Crowfoot, G.M. (1957), no. 8, fig. 94, p. 409.
- 3- Saldern, A. von, (1980), no. 633, pl. 15, 27, p. 85.
- 4- Tatton-Brown, V.A. (1984), no. 77, fig. 76, p. 204.210.

No: 100
Fig: 5
Cat.no: G2A168
H: 1.6 cm.
Rim diameter: 8.1 cm.

Part of rim, outplayed and thickened in flame with thick coil applied just below. This piece is made of pale yellow to colourless glass. It is pitted, scratched and slightly iridescent. One other piece made in this way was found on site (G1V148). It is also made of near colourless glass, but is covered with an iridescent coat showing very uniform pitting. These rims are usually found on bottles with globular or cylindrical bodies(1). They sometimes have handles (as in Ising Form 126-127)(2). They usually date to the 4th. century A.D.

- 1- Isings, C. (1957), Form 102, p. 120.
- 2- Isings, C. (1957), Forms 126, 127, pp. 156-157.

No: 101
Fig: 5
Cat.no: G3A033
H: 1.1 cm.
Rim diameter: 7.4 cm.

Rim and part of wall of bottle mouth. The rim of the vessel has been knocked off and a coil of glass was applied to the edge. The coil was then beveled flat on the inside. It is made of pale yellow, bubbly, very iridescent glass. The coil still has some black weathering on it. One other piece in our collection compares with this one, solely in the treatment of the rim. No. 97 whose coil applied at the edge of the rim, continues to wind around the mouth and neck of the vessel. No parallel has been found for our piece yet. We shall assume, though, that it dates to the 4th/5th centuries A.D. on the basis of the technique used to make it.

No: 102
Fig: 5
Cat.no: G2U533
H:4.8 cm.
Smallest diameter: 3.0 cm.
Diameter at coil: 4.5 cm.

Remains of base of neck of bottle/jug, adorned with thick uneven coil. The glass used for the bottle is of a dark olive green, of a good quality and even thickness. The coil is also made of dark olive green glass, and is opaque. Flakes of thick white weathering are still covering parts of the coil. No other pieces of this sort have been found on site. Opaque bands of green glass occur but there is no evidence proving whether or not these were decorative coils.

We may speculate that our piece is an Isings Form 120d, jug with zig-zag collar, handle and foot(1). The position of the coil on 120d appears to be like ours. From what little neck we have, it is difficult to imagine what form the body would have had. Some jugs from Karanis have coils around their neck (no. 593 & no. 612)(2), with globular bodies and without handles. A few examples of vessels with collars are also found at the ROM. Some are jugs, small amphorae types and flagons .

All these pieces range from the 3rd- late 5th centuries A.D. More precise dating will depend on the results of the pottery dates for this layer.

- 1- Isings, C. (1957), Form 120d, p. 152.
- 2- Harden, D.B. (1936), no. 593 & no. 612, pl. viii, p. 208 & 211.
- 3- Hayes, J.W. (1975), no. 287, pl. 20, p. 79; no. 336, pl. 23, p. 96; no. 411, pl. 25, p.110.

No: 103
Fig: 5
Cat.no: G2S447
H: 6.2cm.
Rim diameter: 2.0 cm.
Shoulder diameter: 8.0 cm.

Remains of outplayed rim continuing in a very narrow cylindrical neck flaring out again in a wide body, squat at the shoulder. This piece is made of very dark green glass of rather good quality. Its thickness diminishes from the rim to the body, giving it a clearer and more fragile wall. Diagonal streaks are visible on the neck where the glass was pulled in a rotating movement.

This bottle/flask compares well with our no. 105, although the shoulder is different from it. The dark green glass is very common throughout the glass finds. We can associate this vessel with various forms already catalogued by other authors. Isings' Forms 121(1) and 126(2) both have this same type of neck and squat shoulder. Both forms are found in the 4th/5th centuries A.D. Calvi's bottiglia tipo A (3) however, decorated with light trailing on the neck, recalls also our vessel. The cylindrical bottles gruppo C(4) could also be a possibility, given that we do not have the body of our bottles to prove otherwise. Both Calvi types date to the 3rd century A.D.

The discussion shows that no single exact form can be isolated, but that we can only attribute it to a general shape common to all the forms shown above. The same problem occurs when we try to date the piece. However, the colour and workmanship of our piece would incline us to place it toward a late era of production; 4th/5th centuries A.D.

- 1- Isings, C. (1957), Form. 121, p. 152.
- 2- Isings, C. (1957), Form 126, p. 156.
- 3- Calvi, M.C. (1968), no. 1, Tav. N, p. 166.
- 3- Calvi, M.C. (1968), no. 5, Tav. N, p. 166.

No: 104

Fig: 5

Cat.no: G2B180

H: 4.5 cm.

Diameter above constriction: 3.3 cm.

Base of cylindrical neck with constriction. This piece is made of good quality ochre glass with slight iridescence at inside and outside surfaces. Diagonal streaks show as a result of the blowing of the piece.

We might want to consider Isings Form 103(1) where we have a bulbous bottle/flask with cylindrical neck constricted at the base, with an unworked rim. However, bottle/flasks with other shapes of bodies can also be found with constricted necks. Too little remains of the body of our piece to venture any speculation on its shape nor on a general form.

No other piece with such a constriction has been found on site (although the groove on no. 110 could be considered a constriction, it is not akin to our piece here).

Complete examples of flasks with constricted necks, either on a

bulbous body on or an other shape, can be seen in Trier (bulbous flask)(2) and in Cyprus (pear-shape flask)(3).

- 1- Isings, C. (1957), Form 103, p. 121.
- 2- Göthert-Polaschek, K. (1977), no. 902, Tafel 15,165b, p. 150.
- 3- Vessberg. O. (1956), nos. 24,26,27-30, fig. 48, pp. 156-157.

No: 105
Fig: 5
Cat.no: G1T085a & G1T085b
H: 15.5 cm.
Rim diameter: 5.0 cm.
Base diameter: 9.0 cm.

Remains of funnel neck and base of globular bottle/flask. This vessel is made of thin yellow glass, evenly pitted with small bubbles. Some large bubbles appear in the fabric. Heavy weathering still remains in the interior wall of the neck showing that 50% of the glass has been flaked off. Pontil marks appear on the base of the vessel, which has no tubular base ring.

This is the only example found with its base, allowing us to reconstruct the rest of the vessel. Both pieces were found in the same layer (1T56) and are made of the same fabric. Two other pieces (G3B086 and G2S482) should be mentioned with this vessel, although they are only bases of necks. No. 103 compares well with this piece, although the shoulder is different from it.

This form is an Isings 104b(1), flask with funnel mouth, unworked rim and a globular body which sometimes had a tubular base ring. Eight of these specimens have been found on the British Ave. Bourguiba site in Carthage(2). Two complete vases are shown in the ROM collection, nos. 301 and 310(3). A green example, unpublished, is found in the collection of the Museum of the Department of Classical Studies at the University of Ottawa. Two are noted at Cyprus(4).

This form is very popular in the 4th century A.D. and is found both in Eastern and Western provinces(5). They are usually made of yellow to green coloured glass, and sometimes have a coil around their funnel. This characteristic, however, is mostly an Eastern one (6).

- 1- Isings, M.C. (1957), Form 104b, p. 122
- 2- Tatton-Brown, V.A. (1984), no. 66, fig. 67, p. 204

- 3- Hayes, J.W. (1975), no. 301, pl. 21, p. 91; no. 310, pl. 21, p. 92-93
- 4- Vessberg, O. (1956), nos. 13-14, fig. 48, p. 155
- 5- Tatton-brown, V.A. (1984), no. 65, fig. 67, p. 204
- 6- Isings, C. (1957), p. 125.

No: 106
Fig: 5
Cat.no: G1T094
H: 3.1 cm.
Rim diameter: 9.2 cm.

Rim and part of outplayed funnel mouth and neck of bottle/flask. Its rim is rounded in a flame and slopes gently to the cylindrical neck of what could be a vessel with globular or cylindrical body. It is very thin, pale green glass, slightly iridescent and pitted. It is the only example of this type found on site.

A very similar piece is noted by Hayes found in an other deposit on the Second Canadian team site (2G25)(1). Other examples are noted in Samaria(2) and in Diocletian's Palace at Split(3).

Suggested date: 4th/5th centuries A.D.

- 1- Hayes, J. W.; personal copy of lecture for the Trois-Rivieres conferences on Carthage.
- 2- Crowfoot, G.M. (1957), no. 1, fig. 98, p. 417.
- 3- Demaine, M.R. (1979), no. R22, pl. 9, p. 110.

No: 107
Fig: 5
Cat.no: G2P400
H: 2.2 cm.
Rim diameter: 5.2 cm.

Rim and part of funnel mouth of possible bottle/flask. The rim is solid, rolled inward. The piece is made of green glass, pitted and slightly iridescent. One other similar piece has been found on site, made of aquamarine glass. Such a rim has been noted on a candlestick unguentarium in the ROM collection(1). It is dated to the second half 2nd-early 3rd century A.D. The form has also been found in Conimbriga(2),

belonging to flasks dating to the 3rd/4th centuries A.D.

- 1- Hayes, J.W. (1975), no. 503, fig. 19, p. 127.
- 2- Alarçao, J. (1974), no. 236, pl. xliii, pp. 197, 203.

No: 108
Fig: 5
Cat.no: G2M284
H: 3.3 cm.
Rim diameter: 8.4 cm.

Rim and part of wall of funnel mouth of bottle/flask. The rim is thickened and rounded in a flame, and probably marvered on its outside edge to produce a bevel. It is made of pale green glass, pitted, iridescent and scratched. It is the only piece of this type found on site. Such a rim can be found on bottle/flasks with globular bodies on kicked up bases. They are not uncommonly found on cylindrical bottles.

Similar examples are found in Sardis(1) where the rims are rolled as well as finished in a flame. These are dated to the 5th/7th centuries A.D. Some are also found in Samaria in a 4th/5th centuries A.D. cemetery(2). It is difficult to be precise about the date of this piece since we find it over a period of 400 years. In this light we prefer to associate our piece with the period around the 4th and 5th centuries A.D. where the parallel pieces are closest in form.

- 1- Saldern, A. von, (1980), nos. 476 to 488, pl. 14, p. 70-71
- 2- Crowfoot, G.M. (1957), nos. 4,7.9.10, fig. 95, p. 412

No: 109
Fig: 5
Cat.no: G2U531
H: 2.8 cm.
Rim diameter: 3.8 cm.

Rim and part of wall of small open mouth vessel. It is made of dark green glass iridescent on the outside wall but still shiny inside. It is the only piece of this form found on site.

One piece found in Carthage on the First Canadian Team site (1) has been described by the author as a beaker with constricted neck and no date was associated to it. In Aquileia(2), the shape of a small ochre vasetto of the 3rd/4th centuries A.D. is very close to our piece though it seems to have a larger rim. Finally, if we look at the rim and shoulder of Isings' rhyton Form 73b(3), we might recognise the shape of our piece (this last example dates to the end of the 1st century A.D.) We are inclined to regard this piece as a 4th/5th centuries A.D artifact solely on the basis of the quality, the colour and the treatment of the glass which compares well to the other pieces of this period. The form, however, remains unknown. We have chosen to put it in this section since our parallel pieces are found with bottle types, and because we are not sure of the complete form of the vessel.

- 1- Caron, B. (1981), no. 40, p. 48-54.
- 2- Calvi, M.C. (1969), no. 1, Tav. 24.
- 3- Isings, C. (1957), Form 73b, p. 91.

No: 110
Fig: 5
Cat.no: G1H050
H: 3.5 cm.

Base of neck outspaying into shoulder at almost 90'. A slight groove marks the junction of the two parts on the exterior wall. This vessel is made of a thick yellow to colourless glass, now very weathered with a white opaque crust covering both the inside and outside walls, (the colour was visible in the break). No other specimen in our collection matches this form. One piece is however comparable to this one in thickness and colour of glass(G1V132). This specimen is not weathered and shows medium sized bubbles in its fabric. It is an ordinary outspaying base of neck of a rather large jug or bottle.

No other parallel has been found for our piece. We may want to consider the many different versions of the "square" and the "cylindrical" bottles, illustrated by Isings with the Forms 50, 51, 89, 90, 126, 127, 128(1). These forms were all more or less matched in Calvi's(2) and Lancel's(3) typologies.

- 1- Isings, C. (1957), pp. 63, 66, 68, 107, 108, 156, 157, 158.
- 2- Calvi, M.C. (1968), nos. 5,6,7,8, Tav. D; no. 1, Tav. E; no. 6, Tav. N.
- 3- Lancel, S. (1967), Form 8-9, fig. 10-11, p. 15.

No: 111
Fig: 5
Cat. no: G1V139
H: 5.9 cm.
Base diameter: 6.2 cm

Slightly concave base of cylindrical vessel. This piece is made of good quality green/aqua glass. Some medium to small bubbles appear in the thickest part of the base. The surfaces are evenly pitted by weathering and very iridescent.

So many forms of vessels are provided with such bases that it would not be helpful to list them all here. However Isings Form 126(1) gives a good general picture of the form. On site 49 bases were identified belonging to this type. Some had pontil marks in their kick, some with a more concave base, but all were too fragmentary to venture any further description.

Similar fragments were noted in Carthage on the British Ave. Bourguiba site (2) in 4th century context, on the First Canadian team site(3) and on the Second Canadian team site (4) from other deposits dating to the 4th/5th centuries A.D. They appear in 5th century context in Conimbriga (5) but are common in all periods.

- 1- Isings , C. (1957), Form 126, p. 156, cylindrical bottle-jug.
- 2- Tatton-Brown, V.A. (1984), no. 97, fig. 68, p.207.
- 3- Caron, B. (1981), no. 32, p. 47.
- 4- Hayes, personal reflection and studies on Second Canadian team in Carthage glass from other deposits.
- 5- Alarcão, J. (1972), nos. 232-233, pl. xliii, p. 197.

No: 112
Fig: 5
Cat.no: G1H051
H: 2.0 cm.
Base diameter: 4.3 cm.

Base with deep concave pointed kick with pontil mark. This piece is made of solid apple-green glass, scarred on its inner and outer surfaces by weathering. The body seems to have been cylindrical. Nine other pieces of this type were found on site in similar glass and in similar diameters. The bodies of these pieces vary between cylindrical and globular.

Similar pieces were found in Carthage on the British Ave. Bourguiba site(1), on the First Canadian team site(2) and on the Second Canadian team site from other deposits(3) The Carthage specialists view these bases as belonging to different forms of vessels. Tatton-Brown and Caron associate these with flasks with funnel mouth or constricted necks and to tall necked globular variety of flasks. Hayes associated these to cylindrical or tronconical beakers of Form Isings 109(4)

In this case our pieces are very fragmentary and offer little help in the debate. However, if the thickness and the heaviness of the objects could be looked upon as clues we could speculate that the fragile and light pieces were goblets and the heavier and more sturdy bases belonged to flasks or bottles, In this case our pieces would be in this last category, dating to the 4th-6th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no 84, fig. 67, p. 205.
- 2- Caron, B. (1981), no. 33, p. 47.
- 3- Hayes, J.W. (1985), fig. 2, p. 115.
- 4- Isings, C. (1957), Form 109, p. 136.

No: 113

Fig: 5

Cat.no: G2A157

H: 1.7 cm.

Base diametre: aprox. 7.0 cm.

Thick flat base of square bottle/jug(1). It is made of pale yellow to colourless weathered glass. After reconstruction of the piece by drawing it would be possible to assume that it had four to six sides and might have been mould blown. One other piece, much more fragmentary, compares with this one in thickness and craftsmanship (mould-blown). It is made of the usual green glass produced to make this type of bottles(2).

One hexagonal jug was noted on the U. of Michigan site in Carthage (3). Although made of a thinner glass it is the only parallel found for our piece.

- 1- The identification of this piece was provided by Dr. Hayes upon consultation.
- 2- Ising, C. (1957), Form 50, p.63.
- 3- Hayes, J.W. (1975), no. 15, fig. 3, p. 90.

No: 114
Fig: 5
Cat.no: G1H053
H: 1.2 cm.
Base diameter: 7.7 cm.

Concave base with mould blown ribs. This piece is made of pale apple-green glass, very weathered and iridescent. The ribs are 0.5 cm. wide and regular around the whole base. It is the only example of this type found on site.

Similar fragments have been noted on the British Ave. Bourguiba site in Carthage (1) and associated to bottle/flasks with funnel or constricted necks of the 5th-6th centuries A.D. Complete examples of these can be seen in the Karanis collection(2). Too little remains of our piece to be precise in identifying a form, however according to the discussion above, Form 133 in Isings' typology would depict more closely the vessels we have mentioned, a bulbous bottle/flask with cylindrical neck and funnel-mouth. It seems to have continued until the 6th century A.D. This form is said to have first appeared in the 3rd century A.D.

- 1- Tatton-Brown, V.A. (1984), no.82., fig. 67, p.205.
- 2- Harden, D.B. (1936), no. 579, pl. vii & xviii, p. 205.
- 3- Isings, C. (1957), Form 133, p. 161.

No: 115
Fig: 5
Cat.no: G1V129
H: 1.8 cm.
Base diameter: 3.8 cm.

Small concave base of cylindrical vessel. It is made of dark green glass slightly weathered and iridescent. It is decorated with four sets of festoons. These might have been made by early application of the glass trailing, marvered and then pulled by the action of blowing(1). Only marks of the festoons remain on the vessel because the glass used for decoration in this case did not resist weathering like the rest of the vessel. The four festoons cover most of the wall of the piece but there is one part of the wall which is undecorated. We might assume that a handle was placed there covering the empty space. It is the only example of this particular type found on site.

No parallels have been found. We may however, associate it with small flat based, handled cylindrical bottle/flasks, designed to hold semi-precious liquids.

Vessels of this type are found in Trier dating to the first half of the 4th century A.D.(2). The nearest comparable piece with such decoration is no. 484 in the Royal Ontario Museum collection(3) which is roughly the same date.

- 1- This information was provided by Dr. Hayes.
- 2- Göethert-Polaschek, K. (1977), Form 124a, no. 1292, Taf. 70, p. 212.
- 3- Hayes, J.W. (1975), no. 484, pl. 31, p. 122.

No: 116
Fig: 5
Cat.no: G2S465
H: 1.2 cm.
Base diameter: 5.0 cm.

Pushed-in tubular ring base with slight inward convex kick. This base has a short wall. There is a slight kick in the otherwise flat bottom where we can see the pontil mark. It is made of very good dark green glass, slightly iridescent. Three other pieces of this type were found on site. The colours vary from aquamarine to green.

Similar pieces were found in Carthage on the British Ave. Bourguiba site(2), on the First Canadian team site(2), on the University of Michigan site(3) and in other deposits of the Second Canadian team site(4). They date to the 4th/5th century A.D. and could have belonged to medium size bottle/flasks or bottle/jugs as seen in the Tipasa catalogue(5).

- 1- Tatton-Brown, V.A. (1984), no. 20, fig. 65, p. 197.
- 2- Caron, B. (1981), no. 35, p. 47.
- 3- Hayes, J.W. (1978), no. 13, fig. 2, p.198.
- 4- Information given by Dr. J.W. Hayes.(1H7).
- 5- Lancel, S. (1967), Form 10, fig. 12, p. 15.

No: 117
Fig: 5
Cat.no: G2A154
H: 1.6 cm.
Base diameter: 5.2 cm.

Pushed-in tubular ring base with slight convex kick and pontil mark. The piece is made of pale yellow-green glass, slightly pitted, with some brown weathering. Part of the bottom of the vessel still remaining. Fourteen other pieces of this type were found on site varying in colour from colourless to very dark green.

Similar pieces of this type were found in Carthage on the British Ave. Bourguiba site(1), coming from 5th/7th centuries A.D. context and on the University of Michigan site(2). Some were found in Sardis, also dating to that period(3). It is a common type of base found all around the Mediterranean.

- 1- Tatton-Brown, V.A. (1984), no, 19, fig. 65 p. 197.
- 2- Hayes, J.W. (1978), no. 14, fig. 2, p. 190.
- 3- Saldern, A. von, (1980), no. 451, pl. 25, p. 66.

No: 118
Fig: 5
Cat.no: G2N306
H: 1.0 cm.
Base diameter: 4.6 cm.

Tubular ring base made in the folded bubble technique. The base has a very high kick in its center. The piece is made of green glass, pitted, iridescent and impure; some dark inclusions are visible. Seven other pieces on site are similar.

Similar pieces have been found in Carthage on the British Ave. Bourguiba site(1) and also in Sardis(2). They date to the 5th/7th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), no. 21, fig. 65, p. 197.
- 2- Saldern, A. von, (1980), no. 462, pl. 25, p. 67.

No: 119
Fig: 5
Cat.no: G2Q409
H:1.0 cm.
Base diameter: 2.5 cm.

Very small pushed-in tubular ring base with convex kick and pontil marks. The piece is made of pale green glass of good quality slightly pitted with some flakes of brown weathering. It is the only piece of this type found on site, fifteen others were larger (see concordances under no. 117). The base could have belonged to a toilet bottle or small unguentarium.

Complete examples can be seen in the ROM collection(1). They are dated to the second half of the 4th-first half 5th century A.D.

1- Hayes, J.W. (1975), nos. 345-346-353, fig. 10, pl. 23, pp. 98,100.

No: 120
Fig: 5
Cat.no: G1V113
H: 1.2 cm.
Base diameter: 4.3 cm.

Tubular ring base made by the folded bubble technique. The base has a kick in its center. The piece is made of colourless to pale yellow glass of good quality, thin and iridescent. Seven other similar pieces were found on site. Their colour varies between colourless, green and very dark green.

Similar pieces were found in Carthage on the British Ave. Bourguiba site(1) and on the University of Michigan site (2). They are also noted in Sardis(3). They are said to come from 5th/7th centuries A.D. contexts.

1- Tatton-Brown, V.A. (1984), no. 21, fig. 65, p. 197.
2- Hayes, J.W. (1978), no. 14, fig. 2, p. 190.
3- Saldern, A. von, (1980), no. 462, pl. 25, p. 67.

No: 121
Fig: 6
Cat.no: G1V137
H: 1.1 cm.
Base diameter: 5.0 cm

Part of pushed-in tubular base ring of vessel of unknown shape. The tubular chamber of the foot is larger than on other pieces found on site. It is made of very pale green glass of good condition, slightly bubbly and pitted. No other piece on site compares exactly to this one. No parallel has been found as yet. We have put this piece in this section on the basis of the technique of fabrication used to make it.

No: 122
Fig: 5
Cat.no: G2F251
H: 1.3 cm.
Base diameter: 7.2 cm.

Tall pushed-in tubular ring base made in the folded bubble technique. This base is much straighter than others of the same style. It is made of very thin colourless to pale yellow glass. It is slightly iridescent and still has some black flakes of weathering. Three other similar pieces were found on site. No parallel has been found. We may consider these pieces as being variants of nos. 116 to 120.

No: 123
Fig: 6
Cat.no: G2F258
H: 1.9cm.
Base diameter: 7.3 cm.

Part of pushed-in tubular ring base of vessel of unknown shape. The piece has a smaller diameter than those found elsewhere on site though its other dimensions are much larger. It is made of what was yellow to colourless glass. It is now covered with a thick opaque coat of white weathering. No other piece on site compares to this one.

No parallel has been found as yet, although we may suppose that it belonged to a bottle or flask that needed a solid base.

No: 124
Fig: 6
Cat.no: G2N384
H: 0.8 cm.
Base diameter: 7.0 cm.

Single coil ring base in pale-green glass. The glass is very weathered and is partially covered by a white flaky film. A break has been mended between it and no G2N393. Two other pieces (G2N359 and G2N299) are also part of this same base although no mends have been possible. Four other pieces of this type were found on site.

Several similar pieces have been found on the British Ave. Bourguiba site(1) dating to the 3rd/4th centuries A.D. Vessels of this form have also been found in Sardis dating to the same period(2)

- 1- Tatton-Brown, V.A. (1984), nos. 100 to 105, fig. 68, p. 208.
- 2- Saldern, A. von, (1980), nos. 193 to 199, p. 30-31, pl. 22.

No: 125
Fig: 6
Cat.no: G2A172
H: 1.8 cm.
Base diameter: 8.0 cm.

Lower part of bottle/flask sloping towards coil base. This specimen is made of pale-green glass, very weathered, mended in three places. There seems to be a single coil winding around the base of the flask, however it is difficult to be precise.

It is the only example of this sort found on site. A similar piece is noted on the British Ave. site in Carthage(1) dated to the 4th century A.D. This type is also found in later context in Egypt(2)

- 1- Tatton-Brown, V.A. (1984), no. 101, fig. 68, p. 208.
- 2- Harden, D.B. (1936), no. 638, pl. xviii, p. 215.

No: 126
Fig: 6
Cat.no: G1V128
H: 0.8 cm.
Base diameter: 5.0 cm.

Part of two-coil base of bottle/flask, decorated by a thin trail. The fragments are made of apple-green glass. The coil is made from the same mass as the vessel proper. One other example was found on site, also made with three coils. This piece is much affected by weathering. It is possible to see that it is made of pale-green glass.

A similar piece was found on the British Ave. Bourguiba site(1), dating to the 6th/7th centuries A.D. A vase with a similar coil base is noted in the finds from Samaria(2), dated to the 3rd. century A.D.

- 1- Tatton-Brown, V.A. (1984), no. 105, fig. 68, p. 208.
- 2- Crowfoot, G.M. (1957), no. 13, fig. 94, p. 410.

No: 127
Fig: 6
Cat.no: G2S464
H: 1.4 cm.
Base diameter: 6.0 cm.

Bottom part of bottle/flask sloping into coil base. Both parts are made of dark green glass extracted from the same metal. The vessel is of good quality, hardly altered by weathering. The coil is of equally good quality and has not been marked by weathering. It is slightly iridescent but not pitted. A small trail was wound around the large coil.

One other piece of the same colour has been found on site. This piece, however, is larger and has an approximate diameter of 11.0 cm. Remnant of the vessel also appears on this piece.

Similar pieces are noted on the British Ave. Bourguiba site although not of the same colour(1). They have also been found on the Carthage site of the Second Canadian team from other deposits(2).

These types are dated to the 4th-5th centuries A.D.

- 1- Tatton-Brown, V.A. (1984), nos. 102-103, fig. 68, p. 208.
- 2- Information given by Dr. Hayes.(1H7).

No: 128
Fig: 6
Cat.no: G2C211
H: 0.7 cm.
Base diameter: 10.0 cm.

Solid flat coil base, pulled and rolled, giving it a smooth finish. This piece is made of amber coloured glass of good quality. A remnant of the vessel is visible. It has been made of the same metal. It is the only piece of this type found on site.

A similar piece is noted on the British Ave. Bourguiba site(1). This type of base is said to belong to bottle/flasks, bottle/jugs and to bowls and beakers of the 3rd to 4th century A.D.(2).

- 1- Tatton-Brown, V.A.(1984), no. 100, p. 208, fig. 68.
- 2- Isings, G. (1957), Form 85b, p. 102.

No: 129
Fig: 6
Cat. no: G2N287
Length: approx. 3.5 cm.
Width at top end: 1.1 cm.

Complete semi-circular flat handle. This piece is made of extremely pale green glass. It is quite weathered and uniformly pitted on half of the surface. The bottom part still has remains of the body of the vessel which seems to have been clear as well. The top end is folded back on itself only once. It is the only example of this type in our collection.

This type of handle might have been found on small bulbous bottles with long or short necks. The handle was fixed onto the neck below the rim and on the shoulder of the vessel. Complete examples of this type of vessel with these handles, are found in the ROM collection(1). They date to the 1st-early 2nd century A.D. Hayes associates these 'handled flasks' with the arybaloi, Isings' Form 15(2), also of the 2nd century A.D.

Suggested date: 1st/3rd. century A.D.

- 1- Hayes, J.H. (1975), no. 128, pl. 8, p. 55.
- 2- Isings, C. (1957), Form 15, p. 32.

No: 130
Fig: 6
Cat.no: G2N349
Length: 3.5 cm.
Width of handle: 1.3 cm.

Top half of ridged handle, made of green glass homogeneously pitted on its surface with some brown flakes of weathering. The top end is folded twice to adhere to the wall of the vessel. Such handles are found on small bottle/jugs (also called flagons) with long necks and sometimes spouted mouths. They are usually fixed onto the neck below the rim and on the shoulder of the vessel.

Two other pieces of this type were found on site. Less of the handle remains on both of them, but the top end of G1V133 is complete, showing three folds and remains of the neck of the vessel. The lower part of G2S458 is all that remains, showing two large ridges.

Parallels were found in Carthage on the University of Michigan site(1), and in Magdalensberg(2). They are illustrated by Kisa(3), Isings(4) and Calvi(5) in their typologies.

Suggested date: 4th/6th centuries A.D.

- 1- Hayes, J.W. (1978), no. 22, fig. 2, p. 190
- 2- Czurda-Ruth, B. (1979), no. 1255, Taf. 10
- 4- Kisa, A. (1968), nos. 254 to 258, Taf. E
- 5- Isings, C. (1957), Form 13-14, pp.30-31; Form 52, p. 69.
- 6- Calvi, M.C. (1968), no. 8, Tav. B, p. 112

No: 131
Fig: 6
Cat. no: G2Y566
Length: 5.5 cm.

Complete ridged handle with thumb-part on top(1). The piece is made of very dark green glass, weathered and slightly iridescent. This handle could have belonged to a small bottle/jug or amphoriskos with one or two handles(2). Remains of the rim of the vessel show that it was also made of dark-green glass. This handle might have belonged to a lamp type resembling a deep bowl with handles(3)(see section on lamps, no. 83).

Three more pieces, although in a more fragmentary state, can be associated with this one. The first one is made of pale green glass and

is very weathered. It is also a straight handle whose base must have rested on the shoulder of the jug. The top part of it is missing, therefore no more can be said of it. The two other pieces are the bases of larger handles with ridges.

One similar handle has been noted in the finds of Portorecanati in the Marches of Italy(4). The lamp types are well illustrated in Sardis(5) dating to the 4th/5th century.

Suggested date: 3rd/4th century A.D.

- 1- The thumb-part is the vertical flange at the top of the handle. This feature might originate from those found on larger vessel, where a thumb-part had the fonction of helping with the action of pouring. With our piece, this fonction is redundan. We must ,therefore, look at the thumb-part as a derorative feature.
- 2- Isings, C. (1957), Form 121, p. 152
- 3- Isings, C. (1957), Form 60, p. 78
- 4- Mercado, L, (1979), no. 7, fig. 156,f, p. 246
- 5- Saldern, A. von, (1980), no 237, pl. 11, 23, p. 48.

No: 132
Fig: 6
Cat. no: G2N314
H: 4.2 cm.
Width: 1.0 cm.

Straight handle almost completely made of brown opaque weathering. This is a very unusual piece, for which no parallels has been found. Instead of the usually pulled handles this piece seems to have been made out of a sheet of glass wich was then cut in strips. On one side of the handle we can see a thin edge apparently resulting from the pinching of the soft mass by a cutting tool. No other piece on site compares to this one.

No: 133
Fig: 6
Cat.no: G2P395
H: 9.0 cm.
Width at base: 3.0 cm.

Lower part of dark green, solid handle, pulled smooth without

ridges but not uniform. Flakes of weathering and iridescence still apparent. Remains of body at end of handle, showing a yellow/green glass.

No other handle in our collection compares with this item. It could have belonged to a large jug(1) or a large cinerary urn(2). We are not able to reconstruct the rest of the piece, therefore its identification remains unknown.

- 1- Most jugs are found with ridged handles; this example is more unusual.
- 2- Göethert-Polaschek, K. (1977), no. 1460, Taf. 12,140e, p. 246

No: 134
Fig: 6
Cat.no: G1H043
Preserved length: 4.5 cm.
Max. thickness: 1.7 cm.

Top part of handle in very thick pale green glass, folded three times. Remains of aqua blue glass; probably the neck and rim. The handle is made of good quality glass, slightly weathered at its inside wall. It probably belonged to a large jug or bottle, similar to a type found in Karanis(1), a cylindrical bottle with outplayed rim where the handle is attached to it in many folds.

No other piece compares closely with this one in our collection, except for G1T093 which is a thick pale green piece of ridged handle. It is not however, part of this piece, for this glass is not of the same quality and treatment.

Suggested date: 5th/7th centuries A.D.

- 1- Harden, D.B. (1936), no. 732, pls. xi & xix, P. 245
- 2- Calvi, M.C. (1969), tav. 14, Hydria gr. A

No: 135
Fig: 6
Cat.no: G2P243a
H: 5.5 cm.
Width: 4.5 cm.

Complete flat handle of bottle made of good quality pale green

glass with even pitting, iridescence and medium bubbles. Folds at the top are made to accommodate the neck and rim whereas the fold at the bottom rested on the shoulder where some of its glass still remains.

Two similar pieces were found in our collection. G1U108 is the top part of a bottle handle with remainder of the neck and rim of the vessel. This piece is very weathered and still shows traces of iridescence. G2S414 is of a darker green glass. Only the middle part of the handle remains, it is very weathered and has lots of large bubbles.

This is a typical handle for square and cylindrical bottles. Similar examples can be found in the collection of the ROM(1), in the finds of the Fishbourne excavation(2), Conimbriga(3) and many in Trier(4).

Suggested date: 1st/4th century A.D.

- 1- Hayes, J.W. (1975), no. 208, pl. 13, p. 68
- 2- Harden D.B. & Price, J. (1971), no. 105, fig. 144, p. 366
- 3- Alarçao, J. (1972), no. 233, pl. xliii, p. 202
- 4- Gœthert-Polaschek, K. (1977), Forms 114-115-118a-118b-119-121.

UNGUENTARIA

This section groups together eleven pieces which have been recognised as unguentaria. It is impossible for us to know how many more pieces should have been classified here because of the fragmentary state of most of our material. The eleven vessels represented here are those whose profile was unmistakable. All dubious pieces will be found in the bottle classification with appropriate discussion.

Among the first vessels to have been made by glass blowing were small unguentaria (1) of the first half of the 1st century A.D. (mould blown cups were also produced at this time). They were mostly made of coloured glass, and had a rounded or polished rim. The first unguentaria were bulbous and short necked (2). From this other forms evolved such as those with a carinated body (3), a tubular body (4), a bulbous body with pointed base (5), and a globular body (6). One form even took the shape of a bird (7).

In some cases these vessels were found still containing a red or pink powder substance thought to have been used in cosmetics (8). Whatever the contents, these bottles had such small apertures that it is thought that they might have been closed in the fire after being filled (9). The owner had to break the small point to empty the contents, much like the phials used in modern pharmacies. Such an idea derives from the fact that most nearly complete unguentaria of globular or bird shape were found

with the necks or the end of the tails broken off (10). Of course most of the complete vessels were found in graves, and were placed there as offerings. The contents are then presumed to have been emptied at the time of burial (11). Some walls of indigo blue glass, which could belong to such vessels, have been noted on our site (they have not been catalogued).

In the second half of the 1st century A.D. the shapes of the unguentaria were much the same as their earlier counterpart, except for the treatment of the rim. They became outspread and folded inwards, a characteristic which was kept all through the evolution of this type. The bulbous body started to take one half of the total height (12), or one quarter of the total height (13). It is during this period that the 'test tube' type was invented (14). Six rims with inwardly folded edges were found on site (nos. 136, 137 + concordances). One "drop/tubular" shaped unguentarium was found, made out of very good quality aquamarine glass. Coloured glass was used less during this period, slightly tinted to colourless glasses predominated.

With the 2nd century A.D. came the so-called 'candlestick' unguentarium (15). This form was subdivided by Isings into four shapes: A) with constriction at the base of the neck and, 1 - bell-shaped body, or 2 - flat conical body. B) without constriction at the neck and, 1 - club-shaped, or 2 - flat conical body. These unguentaria were extremely common

and spread throughout the empire. The form, which lasted to the end of the 4th or the beginning of the 5th century A.D., is basically a long-necked vessel with a small body. Its base is slightly pushed in and concave. Six of our pieces were identified as candlestick unguentaria. One of the Isings Form 82A1(no. 141). Four of Form 82A/B2(no. 136 + concordances), and two of Form 82B1(no. 136 + concordances).

One last piece from our collection was catalogued with the unguentaria although none of the forms we have described here resembles it. It is mould-blown with straight ribs on its side. we have chosen to place it here, more because of its general shape rather than its decoration (see no. 143).

The 2nd century forms continued to be produced until the 5th century A.D., without any changes in design.

- 1- Isings, C. (1957), p. 22.
- 2- Isings, C. (1957), Form 6, p. 22.
- 3- Isings, C. (1957), Form 7, p. 23.
- 4- Isings, C. (1957), Form 8, p. 24.
- 5- Isings, C. (1957), Form 9, pp. 24-5.
- 6- Isings, C. (1957), Form 10, pp. 25-6.
- 7- Isings, C. (1957), Form 11, p. 27.
- 8- The substance was analysed at the laboratory for Organical chemistry at Utrech. The powder was a mixture of wine and some resinous material. (Isings, C. (1957), p. 26.)
- 9- Isings, C. (1957), p. 26.

- 10- Calvi, M. (1969), no. 2, Tav. 18; Fremersdorf, F. (1958), Taf. 33, p. 15; Carrington-Smith, J. (1982), No. 2, Fig. 4, Pl. 36b, p. 270; Fortunati-Zucala, M. (1979), no. 6, Fig. 41, p. 57, nos. 1bis, 2bis, Fig. 49, p. 67.
- 11- Carrington-Smith, J. (1982), p. 270.
- 12- Isings, C. (1957), Form 28a, p. 42.
- 13- Isings, C. (1957), Form 28b, p. 43.
- 14- Isings, C. (1957), Form 27, p. 41.
- 15- Isings, C. (1957), Form 82, p. 97.

No: 136
Fig: 6
Cat.no: G2K274
H: 1.5 c.m.
Rim diameter: 3.8 cm.

Rim and part of neck of small unguentarium. The rim outplays and folds inwards, round and hollow. It is made of pale aquamarine glass, very abraded by weathering, pitted and scratched. Three other pieces of this type were found on site.

These pieces probably belong to Isings' Form 82a1 to 82b2, the candlestick unguentaria of the 2nd century A.D.(1). This type of rim is seen in the ROM collection, nos. 507 to 534(2). They are dated to the 2nd-3rd century A.D.

- 1- Isings, C. (1957), Form 82a1-82b2, p. 97 to 99.
- 2- Hayes, J.W. (1975), nos. 507 to 534, fig. 15-16, p. 127 to 130.

No: 137
Fig: 6
Cat.no: G2F215
H: 2.2 cm.
Rim diameter: 3.8 cm.

Rim and part of wall of unguentarium. The rim outplays and initiates a fold which it does not finish since the glass seems to have been knocked off and ground smooth on the inside. It is made of pale aquamarine glass. It is the only example with such a rim found on site together with G1T106, which also has an unfolded rim and belongs to the unguentarium category, (G1T106 has not been catalogued here).

These pieces probably belong to Isings' Forms 6 to 9(1) where the shape of the body varies, but the rim is rounded and polished. We must also include Isings' Form 27, the "test-tube" type, and Form 28 where the body takes one half to one third of the total height(2). These are usually Roman finds of the first century. A very good collection of these is found in St-Lambert of the via per Alpes Maritimas. The glass dates from the 1st century to the beginning of 3rd. century A.D.(3)

Suggested date : 1st-2nd centuries A.D.

- 1- Isings, C. (1957), Form 6 to 9, p. 22 to 25.
- 2- Isings, C. (1957), Form 27 and 23.
- 3- Béraud, I. et Gébara, C. (1985) no. 1 to 22, p. 39, photo 68, p. 24 .

No: 138
Fig: 6
Cat.no: G2N358
H: 5.1 cm.
Base diameter: 6.0 cm.

Lower part of straight wall which sags to create the bulge of a concave base of unguentarium. The bottom is missing. This piece is made of very lightly tinted green glass, thin and fragile. It is of the candlestick-unguentaria category, those qualified "club" shaped by Isings(1). Three other examples have been found on site.

Comparable pieces appear in Calvi's(2) and in Lancel's typologies(3) Both associate these pieces with the 1st-2nd century A.D. but Isings says that they can appear in the 4th century A.D.as well.(4)

- 1- Isings, C. (1957), Form 82b1, p. 97.
- 2- Calvi, M.C. (1968), Balsamari gr. A, Tav. A, nos. 4-5.
- 3- Lancel, S. (1967), Form 15, fig. 18, p. 17.
- 4- Isings, C. (1957), Form 82b1, p. 97.

No: 139
Fig: 6
Cat.no: G1J071
H: 2.7 cm.
Base diameter: 9.0 cm.

Base of candle-stick unguentarium slightly concave with "bell" shape body and cylindrical neck. This piece is made of very good quality aqua marine glass, homogeneously pitted on its exterior surface. The interior surface is very shiny and not altered by weathering.

Two other bases of the same form have been found on site. These are of the same diameter and of the same quality.

This form is well attested in Aquileia in the 3rd century A.D.(1). It is found as funerary furniture in tombs at Frejus(2), Sardis(3) and Trier(4) dating to the 1st/3rd centuries A.D.

- 1- Calvi, M.C.(1968), Balsamario C , Tav L, no. 4-5-6.
- 2- Béraud, I. et Gébara, C. (1985), photo p. 24, no. 12, p. 39.
- 3- Saldern, Von, A. (1980), nos. 110-120, pl. 21, p. 25.
- 4- Göethert- Polaschek, K. (1977), nos. 639 to 644, Taf. 52, p. 117-118 .

No: 140
Fig: 6
Cat.no.G2B197
H: 4.5 cm.
Base diameter: aprox 11.0 cm.

Base of neck and shoulder of sagged body of unguentarium. Very iridescent and weathered glass barely showing its pale yellow colour. It is rather thick and its base is missing. This could be one of the vessels reproducing the candle-stick unguentarium shape with a wider neck and mouth.

It is the only example of this type recognised on site. Such vessels have been found in Tipasa in a much larger version(1). In Aquileia this type is said to be of typical Aquileian production(2) of the 3rd century A.D.

- 1- Lancel, S. (1967), Form 3, fig. 3, p. 11.
- 2- Calvi, M.C. (1968), Balsamario tozzo, gr. D, Tav. M, no. 3.

No: 141
Fig: 6
Cat.no. G2B182
H: 3.6 cm.
Base diameter: 10.0 cm.

Base of large candle-stick unguentarium. The base is concave and has a bell shape body. It is made of very weathered but robust apple green glass. It is the only example of this type with such a large diameter. According to Isings' typology, this would be a Form 82a1(1). It is a popular form in Roman times and is found practically all over the Empire. This form has been found for example in Aquileia in the 2nd century A.D.(2), in Tipasa(3), in Herculaneum(4) and in Conimbriga in the 1st century A.D.(5). It is difficult to attribute a specific date to our piece but it is unlikely to be later than the 4th century A.D.

- 1- Isings, C. (1957), Form 82a1, p. 97.
- 2- Calvi, M.C. (1967), Balsamario tipo C, Tav L, nos. 7-8.
- 3- Lancel, S. (1967), Form 12, fig. 14, p. 16.
- 4- Scatozza-Höricht, L.A. (1986), Form 49, Tav. xxxvi, nos. 214, p. 64.
- 5- Alalçao, J. (1974), no. 87, pl. xxxvii, p. 170, 179.

No: 142
Fig: 6
Cat.no: G2N386
H: 1.5 cm.
Base diameter: 4.0 cm.

Concave base with straight wall, sagging to create the bulge of the foot. This piece is made of thin green glass of good quality, slightly iridescent. Such a base can be found on those pieces called club-shaped(1) candlestick-unguentaria and on indented beakers with a high foot(2). Three examples resembling this one have been found on site. (see no. 138).

In Calvi's typology(3), we can see an example of the candlestick-unguentarium with straight wall sagging to make the foot. These pieces date to the 1st/2nd century A.D. The olive green glass of our piece inclines us to think that we may have a 4th/5th century A.D. object. We find a footed beaker in Isings' typology dating to this period (Form 114b)(4) and an indented "flute-flask", Form 107, in the Trier collection(5). These examples are however too rare to develop this as a possible alternative. Our piece is too fragmentary to associate with a specific form and date, but we should note these three related forms because of their particularities.

- 1- Isings, C. (1957), Form 82b1, p. 97.
- 2- Isings, C. (1956), Form 114b, p. 142.
- 3- Calvi, M. (1969), nos. 4-5, Tav. A.
- 4- See note 2.
- 5- Göethert-Polaschek, K. (1977), Form 107, Taf. 63, p. 184.

No: 143
Fig: 6
Cat.no: G3B038
H: 1.0 cm.
Base diameter: 3.5 cm.

Small, flat, mould-blown "toilet-water" unguentarium base. The vessel seems to have had six ribs on its side. This is, however, somewhat speculative due to the fragmentary state of our piece. It is

made of pale yellow to uncoloured glass with even pitting on the exterior surface. No similar pieces have been found on site. No parallel has been found. We can only associate it with the small handled cylindrical flasks designed to hold perfumes or oils(1) which have been found in 1st century A.D. tombs

1- Calvi, M.C. (1969), Tav 1, no. 1-4, balsamari a forma di anforetta con base piatta.

No: 144

Fig: 6

Cat.no: G2A158

H: 4.5 cm.

Rim diameter: 2.5 cm.

Base of "drop" shape unguentarium. This piece is made of aquamarine glass. It is slightly pitted on its outer surface and smooth on the interior. It appears to have a cylindrical neck constricted at the join with the body. It is the only piece of this form found on site. Such pieces are illustrated in Calvi's typology as Balsamario gruppo E(1). They are dated to the 1st-2nd century A.D. Similar pieces are noted in Salona also dating to this period, although it is a form which continues through Roman times.

1- Calvi, M.C. (1968), Tav. A, nos. 11-12-13.

2- Auth, S. (1976), no. 95, pl. 31 and 33, p. 163.

MISCELLANEOUS

This section collects all the less common pieces that could not be placed in any of the major chapters above. In some cases the pieces could not be identified positively. Most of the pieces are discussed on their own. We shall not repeat that discussion here unless additional comments are necessary.

The last three vessel types which were found on site are 'jars'(or aryballoi), trulae and rhytons. Two rims (no. 145 & no. 146), probably belonging to jars were identified to 1st and 2nd century A.D. types. It is difficult to decide at which point the beaker or small bottle types stop and at which point the jar type starts. To settle this question we have decided to adopt Vesberg's answer to the problem. He has used 'jar' (or aryballos)for all vessels of this form whose use as drinking-vessel is out of the question(1).

One piece (no. 147) was identified as the possible rim of a rython and one piece (no. 148) has been catalogued as a trulla handle of the 1st/2nd centuries A.D. Both pieces have been thoroughly discussed individually.

Window glass is the first entry on non vessel types in this catalogue. Two pieces were identified on site; G1J066 a square remnant of flat window glass and no. 149, the edge of a window pane. Two types of

Roman window-pane have been identified by Harden(3), the open blown-out cylinder variety(4) and the crown-glass(5). The cylinder method is described as follows: A gathering is blown into a broad bulb that is given a cylinder form. The end can be removed and the cylinder cut open and flattened-out.(6). This is, however, contested(7), some scholars put forward the alternative idea of the pouring into a mould(8) hence producing the rounded thick edges(9). The crown glass was made by blowing glass into a globular, shape transferring it onto the pontil, knocking off from the blow-pipe, and then opening it out and flattening the disk by spinning until, by centrifugal force, it attains a wheel-like shape. This was then used whole or cut into pieces(10).

The cylindrical method for producing window-pane was apparently developed at the end of the 1st-beginning of the 2nd century A.D. This glass bears a particular characteristic referred to as the matt/glossy(11) type. One side is matt, probably a result of being the side laid on a bed of sand(12) or a surface of some sort. A later type was produced giving a double-glossy finish. This is thought not to have appeared before the 3rd century A.D. (13) Crown-glass appeared in the 4th century A.D.

Sheet glass does not seem to have been restricted to the use for windows. It was also stuck onto walls as decoration(14). Some fragments show traces of mortar.

Mosaic cubes or tesserae form the second non vessel entry. Seventeen cubes were found on site; all except two came from trenches within House 2. Eleven of these were made of the common translucent green or blue glass. The others vary in colours. The tesserae were knocked-off with a hammer from glass "cakes"(15). It seems that they would have been used as wall decoration combined with stone cubes. It is not known whether tesserae were produced locally and if workshops specialized in their production, or produced both vessels and tesserae. Glass tesserae appear mostly in late Roman context (after 400 A.D.) but some earlier examples have been found(16).

A series of ornamental objects were found on site. Five ring insets (one gaming piece, no 151), three beads (nos. 153-154) (one core-made, no. 152), three parts of bracelet(nos. 155 to 157), one part of a stirring rod(no. 158) and two parts of pins(nos. 159,160). All are discussed on their own, no more needs to be added here.

We have included in this section eight wall sherds whose form is unknown but that display different types of decoration used in Roman glass. We have chosen to mention them here since no other piece in the catalogue displayed these decoration techniques. We feel that their omission would create a void in the chronology and undermine the quality of the collection.

Finally, we have presented three pieces whose nature or form remains uncertain. They have been described in full although no speculation about their form or date has been made.

- 1- Vessberg, O. (1956), p. 198.
- 2- We must note here that Vessberg has separate entries for jars and aryballoi since his collection is large enough to allow him to. Both forms have slight differences. In our collection we might consider no. 145 an aryballos and no. 146 a jar , but the distinction between the two pieces is not clear enough.
- 3- Forbes, R.J (1966), p. 185.
- 4- Harden, D.B. (1969), p. 45.
- 5- Forbes, R.J. (1966), p. 185.
- 6- Forbes, R.J. (1966), p. 185.
- 7- Harden, D.B. (1969), note no. 6.
- 8- Isings, C. (1971), p. 95.
- 9- Isings, C. (1971), nos. 300 to 330, pp. 96-97.
- 10- Forbes, R.J., (1966), p. 185.
- 11- Harden, D.B. & Price, J. (1971), p. 367.
- 12- Hypothesis stated by Dr. Harden upon consultation with him.
- 13- Harden, D.B. & Price, J. (1971), p. 368.
- 14- Isings, C. (1971), p. 95.
- 15- Saldern, Von, A. (1980), p. 93.
- 16- Saldern, Von, A. (1980), p. 93.

No: 145
Fig: 7
Cat.no: G2F227
H: 1.6 cm.
Rim diameter: 4.1 cm.

Tubular rim of possible jar or aryballos. The rim folds out, down and the edge goes up again to create a ring around the neck. Pale green glass, iridescent and thinned by weathering. It is the only piece of this form found on site.

Its form recalls those of Isings Forms 62, 67b/c and 68(1). These are jars with square or bulbous bodies; Form 68 is a small ointment jar. The rims of these vessels are folded in the same fashion as ours. We are inclined to associate our piece with the small ointment jar, Form 68, because of the size of the diameter of the rim. Similar pieces were found in Conimbriga(2) dating to the same period as Isings' vessels, the end of the 1st century A.D.

- 1- Isings, C. (1957), Form no. 62, p. 81; no. 67a/b, p. 87; no. 68, p. 88.
- 2- Alarcao, J. (1972), nos. 80-81-82, pp. 170,179.

No: 146
Fig: 7
Cat.no: G2P232
H: 1.6 cm.
Rim diameter: 9.8 cm.

Rim and part of neck of a possible aryballos/jar type of vessel. The rim which splay out flat from an outward-angled short neck, is thickened in a flange. The jar is made of thin pale yellow glass slightly bubbly and iridescent. No other pieces of this type were found on site. No parallel has been found for it yet.

The top part of Lancel's jug Form 4b(1) recalls the shape of our piece, although the dimensions for it are too big and the glass used to make it is very different. It is dated to the 2nd century A.D. Another piece similar in shape but not in technique of fabrication, is noted in Conimbriga(2). The Conimbriga piece is made of aquamarine glass and the edge is rolled inward creating a hollow tube. It belongs to a pot with globular body, dating to the end of the 1st-beginning of 2nd century A.D.

The author compares it with Calvi's balsamari gruppo C(3), also dating to that period. We are more inclined to accept this last comparison because of the nature of the fabric which resembles more that of a vessel of an earlier period.

Suggested date: 2nd century A.D.

- 1- Lancel, S. (1967), no. 27, p. 38.
- 2- Alarçao, J. (1972), no. 90, pl. xxxvii, pp. 171-180.
- 3- Calvi, M.C. (1968), no. 8, Tav. A.

No: 147

Fig: 7

Cat.no: G1V119

H: 2.0 cm.

Rim diameter: 5.2 cm.

Rim and part of wall of possible funnel-shaped mouth of vessel; the body may have been tubular. Its rim is outplayed, rounded and thickened in a flame. The wall is decorated by mould-blown corrugations. A second set of fainter corrugations seems to appear between the others. These could be the remains of a first attempt at moulding, when the piece was pulled out and repositioned a second time. The piece is made of green glass of rather good condition, slightly pitted and scratched on the outside. The inside is very glossy like most mould-blown vessels(1). No other piece of this type has been found on site.

Very little remains of our piece, restricting speculations on its actual form. None the less, one form does come to mind when looking at its profile. The "horn-shaped" vessel with a tube-like body and outplayed mouth seem to bear enough resemblance to our fragment to allow us to associate them.

Complete examples of "horn-shaped" vessels are displayed in the ROM collection(2). One piece is ribbed and two are not. They are dated to the 3rd/4th centuries A.D. and are part of Hayes' Later Syro-Palestinian series. Isings' "drinking horn"(3) is also similar to these vessels. She mentions that the rims are unworked(4); our piece has clearly been finished in a flame. She dates these "horn-vessels" to the 4th century A.D. Lastly we must mention the zoomorphic rhyton whose shape is akin to the previous vessels we have identified. An example may be seen in the Aquileia collection dating to the 2nd century A.D.(5) It is corrugated. Its end is made to resemble the head of a snail-like creature, while its corrugated

body, continues on to the mouth of the vessel, very much like the piece in our collection. No such head, that could be associated to our piece, has been found on site.

- 1- Harden, D.B. & Price, J. (1971), p. 331.
- 2- Hayes, J.W. (1975), nos. 480 to 482.
- 3- Isings, C. (1957), Form 113, p. 141.
- 4- Isings, C. (1957), p. 142.
- 5- Calvi, M.C. (1969), no. 1, Tav. 19.

No: 148

Fig: 7

Cat.no: G2F257

H: 3.3 cm.

Width at base: 3.5 cm.

Base of handle in aquamarine blue glass. It is a thin flat handle widening at the base which slightly curves. There is a groove at the base probably continuing around the rim. A band of green in the glass seems to imply that the mass was not completely purified.

The general shape of this piece is best paralleled by the handles found on trullae of the 1st/2nd centuries A.D. They are flat-bottomed bowls with slightly curving sides and upright handles. Similar pieces are found at Herculaneum(1) and in the collection of Wheaton College(2). D.E. Strong suggest that the form is based on gold and silver prototypes(3).

Two other pieces similar to this one have been found on site. They are made of coloured glass. These two pieces could be horizontal handles instead of upright and could belong to one-handled cups (Isings Form 75)of the 2nd century A.D.(4).

Suggested date: 1st/2nd centuries A.D.

- 1- Scatozza-Höricht, L.A. (1986), nos. 56, 59, 61, Tav. xxvii, pp. 38-39.
- 2- Dusenbery, E.B. (1971), no. 13, pp. 9-33.
- 3- Strong, D.E. (1966), fig. 29, pp. 143-144.
- 4- Isings, C. (1957), Form 75, p. 92.

No: 149
Fig: 7
Cat.no: G1V140
Length: 1.5 cm.
Width: 3.0 cm.
Thickness: 0.8 cm.

Square piece of dark green window. This piece is actually the edge of the pane, hence the rounded finish of one rim. This example could belong to the later double-glossy cylinder variety that appears in the 3rd century A.D.(1) in Roman Britain and that is also made from the 5th to 7th centuries A.D. in Sardis(2). The closest parallels for our piece are found in large quantity in Sardis, where numerous examples of rounded edges in dark green glass came from the Byzantine shops(3). Too little remains of our piece to associate it with Byzantine buildings with assurance. On the British Ave. Bourguiba(4) site in Carthage, a window pane of this type was noted, also in a fragmentary state.

- 1- Harden, D.B. & Price, J. (1971), no. 111, p. 367.
- 2- Saldern, Von, A. (1980), p. 91.
- 3- Saldern, Von, A. (1980), p. 91.
- 4- Tatton-Brown, V.A. (1984), p. 208.

No: 150
Fig: not drawn
Cat.no: G1J066
Length: 4.2 cm.
Width: 1.7 cm.
Thickness: 0.4 cm.

Square remnant of flat window glass. This piece is made of good quality aquamarine glass. It is pitted and rough on one side and very smooth on the other. The typical glass of the 1st/2nd centuries A.D. No other flat pieces of this colour were noted on site, except for the flat walls of square bottles. Window glass of this type was found in Roman Britain in Fishbourne(1) and in Verulamium(2).

- 1- Harden, D.B. & Price, J. (1971), no. 111, p. 367.
- 2- Charlesworth, D. (1972), pl. xviii, p. 213.

No: 151
Fig: 7
Cat.no: G2N377
H: 0.7 cm.
Diameter: 1.6 cm.

Complete ring inset or gaming piece, plano-convex. It is opaque appearing black. Four others were found on site (G3A023 clear green, G2B196 colourless/aquamarine, G2N363-G2U546 opaque.) Rings and game stones were particularly common in Roman times. They were often engraved on their flat underside, like gems(1).

Similar examples were found in Carthage on the Ave. Bourguiba site(2). They date to the 1st century A.D. onwards.

- 1- Saldern, A. von, (1980), note 1, p. 104.
- 2- Tatton-Brown, V.A. (1984), no. 116, fig. 69, p. 209.

No: 152
Fig: 7
Cat.no: G2P405
H; 1.8 cm.
Diameter: 2.0 cm.

Complete glass bead made in the core-glass technique. It is made of black opaque glass decorated by a white wavy line of also opaque glass. Parallels have been found in Sardis(1). According to Saldern such pieces belong to the 8th century B.C.(2) No typology or history of the piece has been made which would help in the classification of beads. It has been suggested (3) that an all-inclusive survey of the beads would prove impossible to compile since very large numbers of beads can be found on any given site varying in type, style, fabrication, technique and provenience, as they were frequently exported.

- 1- Saldern, A. von, (1980), nos. 827-828, pl. 19, p. 107.
- 2- Saldern, A. von, (1980), p. 106.
- 3- Saldern, A. von, (1980), p. 105.

No: 153
Fig: 7
Cat.no: G2N291
H: 0.6 cm.
Diameter: 1.0 cm.

Complete cylindrical undecorated bead. It is made of aquamarine glass, pitted, iridescent and partially covered by a white film. It is the only piece of this type on site. Parallels have been found in Carthage on the British Ave. Bourguiba site (1) and in Conimbriga(2). The dates vary from the 1st century A.D. (if not much earlier, as noted by Saldern(3)) and go on throughout Byzantine time.

- 1- Tatton-Brown, V.A. (1984), no. 111, fig. 69, p. 209.
- 2- Alarçao, J. (1974), no. 319, pl. xlvi, pp. 211-213.
- 3- Some cylindrical beads were found in Sardis resembling our piece. They were dated to the 5th century B.C. according to the context in which they were found. As we have stated earlier(see G2P405) the history and chronology of these objects is virtually unknown. Comparison between sites may mislead our judgment.

No: 154
Fig: 7
Cat.no: G2N368
H: 0.9 cm.
Diameter: 1.0 cm.

Complete "melon-bead" with slightly abraded ribs. The piece is made of indigo-blue glass, iridescent and partially covered with brown weathering. Yellow flaking iridescence is lodged between the ribs. It is the only bead of this type although a cylindrical bead was found on site and is discussed on its own (no. 153). Parallels have been found in Carthage on the British Ave. Bourguiba site(1), in Sardis(2) and in Conimbriga(3). The dates vary from 1st to 4th centuries A.D., according to the context in which the pieces were found.

- 1- Tatton-Brown, V.A. (1984), nos. 109-110, fig. 69, p. 202.
- 2- Saldern, A. von, (1980), no. 839, pl. 19, p. 107.
- 3- Alarçao, G. (1974), nos. 327,328, pl. xlvi, p. 214.

Nos: 155-156-157.

Fig: 7

Cat.nos: G2N320-G2A165-G2Q414.

Diameter: aprox. 8.4 cm.

Three parts of bracelet, not necessarily related to each other. They are made of spun glass flattened on inside. The glass is very dark and opaque, possibly blue or black. A slight film of brown weathering covers it in parts. We have chosen to place these together for they are made of the same type of fabric. Parallels were found in Carthage on the British Ave. Bourguiba site(1) and in Karanis(2) dating to the 3rd century A.D.

1- Tatton-Brown, V.A. (1984), no. 107, fig. 69, p. 208.

2- Harden, D.B. (1936), no. 846, pl. xxi, p. 283.

No: 158

Fig: 7

Cat.no: G1V117

L: 4.8 cm.

Diameter: 0.8 cm.

Part of stirring rod of twisted glass. It is made of pale green glass of good quality covered with a light film of iridescence. One deep groove decorated the piece by winding around it at 1.6 cm. interval. The groove seems to have had white opaque glass in it like candy cane. One other piece of twisted glass was found on site. it is made of apple green glass. Parallels have been found in Carthage on the British Ave. Bourguiba site(1). The candy cane type is well illustrated by a complete example in Aquileia(2). The date of such pieces vary between the early 1st to late 4th centuries A.D.

1- Tatton-Brown, V.A. (1984), no. 113, fig. 69, p. 209.

2- Calvi, M. (1969), no. 3, Tav. 2.

No: 159
Fig: 7
Cat.no: G2P394
H: 0.9 cm.
Diameter: 0.7 cm.

Round head of glass rod or pin. It is made of pale green glass of good quality partly covered by white iridescent weathering. It is the only piece of this type found on site. In Carthage on the British Ave. Bourguiba site, a similar piece was found(1). Its head was more conical than ours. It came from a 5th/6th centuries A.D. context.

1- Tatton-Brown, V.A. (1984), no. 115, fig. 69, p. 209.

No: 160
Fig: 7
Cat.no: G2N376
L: 1.5 cm.
Diameter: 0.2 cm.

Part of very thin amber coloured glass pin. The mass of glass was probably rolled on a marver after being pulled to the desired length. The quality of the glass is very good, hardly altered by weathering. No other piece of this size or style has been found on site. A straight pin of larger diameter was found in Sardis in early Byzantine levels (5th/7th century A.D.)(1) In Carthage a "rod" was found on the British Ave. Bourguiba site. Again its diameter is larger than our piece and its end is curved like that of a hook. No date is given for this piece.

1- Saldern, A. von, (1980), no. 675, pl. 16, p. 90.
2- Tatton-Brown, V.A. (1984), no. 114, fig. 69, p. 209.

No: 161
Fig: 7
Cat.no: G2N343
H: 1.7 cm.
Width: 1.7 cm.

Part of wall of green vessel decorated with a blue zigzag band marvered smooth when still hot. It is of very good condition although covered by some brown scaling weathering. No other piece was found on site decorated in this way. GIT086 was probably once similar, but has lost its coloured decoration.

This form of decoration appeared in the eastern Mediterranean in the 4th century, on various vessels. In Karanis, conical lamps(1) or jars(2) were decorated in this way. Some "Galilee" fabric, part of the Syro-Palestinian glass catalogued by Hayes in the ROM glass collection, also demonstrates this type of decoration for the same period. It was found on practically every form of vessels, from bottles to jars, to plates and dishes.

- 1- Harden, D.B. (1936), no. 465, pl. v, pp. 159-164.
- 2- Harden, D.B. (1936), no. 508, pp. 171-84.
- 3- Hayes, J.W. (1975), no. 405, pl. 26, p. 109.

No: 162
Fig: 7
Cat.no: G2F239
H: 2.5 cm.
Width: 3.4 cm.

Part of wall of "snake-thread" decorated vessel. The piece is made of white, opaque glass that could have been clear and transparent originally. The opaqueness seems to be a form of weathering which does not flake. One other piece of similar fabric was found on site, although not joining to our piece here.

The so called "snake-thread" trailed ware was considered a western phenomenon until Fremersdorf and Harden discovered eastern examples(1). Evidence now shows that this variety of trailing began in the East, probably Alexandria(2) in the 2nd century A.D. and was adopted in the Rhineland to be developed with alterations. Snake-thread ware reached Belgica later and continued for 100 years or more thereafter. In the East the trailing tended to be the same colour as the vessel (in most cases it

was were colourless) whereas in the West the trailing was of a different colour or colours from that of the vessel. It was usually yellow or blue(3). The design was non figurative, only making undulations on the side of the vessel although foliage sometimes appeared among the trailing(4).

In this light we are inclined to believe that our piece is an Eastern product, because of the type of trailing used on the vessel. A very close parallel can be seen in Conimbriga(5).

- 1- Harden, D.B. (1969), p. 59.
- 2- Harden, D.B. (1936), p. 169.
- 3- Alarçao, J. (1974), p. 188.
- 4- Alarçao, J. (1974), p. 188.
- 5- Alarçao, J. (1974). no. 185, pl. xli, p. 191.

No: 163
Fig: 7
Cat.no: G3A031
H: 2.2 cm.
Width: 2.8 cm.

Part of wall of colourless vessel decorated with small thorn-like pimples or warts(1). The surface is covered by a flaky thick crust of iridescent weathering. No other piece of this type was found on site.

Parallels found in Sardis are said to have belongd to pear-shapes bottles with short necks. It could have also belongd to a shallow or spherical bowl with out-turned rim. This last type is frequent in the Syrian-northern Mesopotamian region and are datable to the 3rd century A.D.(2)

- 1- Saldern, A. von, (1980), no. 81, pl. 3, p. 20.
- 2- Saldern, A. von, (1980), pp. 19-20.

No: 164
Fig: 7
Cat.no: G1T095
H: 2.2 cm.
Width: 1.8 cm.

Part of wall of vessel decorated by medium-size blobs probably applied to the inside surface of the wall. The resulting effect must have been that of cut crystal without the cutting. The outside wall was smooth although the vessel seemed to shimmer with the light. This piece is made of pale green glass of good quality, slightly pitted and covered by a flaking iridescence. It is the only piece of this style found on site. We have no parallel for it.

No: 165
Fig: 7
Cat.no: G2N387
H: 3.0 cm.
Width: 2.5 cm.

Part of wall of vessel decorated by small polka-dot blobs, arranged in triangular formation and made of a glass of a different colour from the body, which is yellow. The dots are no more than 1 mm. in size. It is impossible to determine the colour of the dots since they have deteriorated into a very flaky brownish iridescence. We can still see the traces left by the dots where the iridescence has flaked off. No other piece of this type has been found on site, nor have we established any parallel.

No: 166
Fig: 7
Cat.no: G2N383
H: 3.0 cm.
Width: 3.0 cm.

Part of base and wall of vessel decorated by pushed-in ridges. The marks were made by a straight edge while the mass of glass was still soft, hence the ribbing on the inside wall. The piece is made of good quality green glass, slightly iridescent, scratched and pitted. No other piece of this type was found on site nor have we found any parallel for it.

No: 167
Fig: 7
Cat.no: G2U372
H: 3.5 cm.
Width: 2.0 cm.

Part of wall covered by a large apple-green blob. The wall of the vessel seems to have been completely transparent and colourless. The blob itself was made of impure glass since we can see streaks of red, blue and yellow in it. It is pitted and slightly iridescent. It is the only example found on site.

The decoration by "blob" started appearing in the East towards the end of the 3rd century A.D. mainly on conical lamps(1). It was introduced in the West in the 4th century and the first pieces were direct copies of the eastern types. This style of decoration was then used on all forms of vessels, from beakers to bottles(2). In Frankish times(3) the type achieved a wide popularity.

- 1- Harden, D.B. (1936), pp. 157-158.
- 2- Göethert-Polaschek, K. (1977), no. 233, Taf. 25, 302a.39, p. 61.
- 3- Harden, D.B. (1936), p. 158.

No: 168
Fig: 7
Cat.no: G2S479
H: 1.3 cm.
Base diameter: 4.0 cm.

Part of base and wall of globular vessel decorated with wheel-incised circles. This piece is made of very good pale-green glass slightly pitted and scratched. The incisions are approximately .2 cm. deep and 5 cm. long. They protrude on the inside wall. It is the only piece decorated in this way found on site.

This type of decoration appeared on bulbous flasks with a constriction at the base of the neck in the 4th century A.D. (Isings' Form 103 (1)) Sometimes a whole scene was depicted inside the circles. Such decoration also appeared on bulbous beakers(2). Four large circles would cover the sides of the vessel, a fifth one might adorn the bottom. Our piece does not have a circle at its bottom since it seems to be flat.

- 1- Isings, G. (1957), p. 122.
- 2- Fremesdorf, F. (1958), Taf. 118, p. 19.

No: 169
Fig: 7
Cat.no: G1V127
H: 2.5 cm.
Rim diameter: 7.4 cm.

Rim and wall of vessel of unknown shape. The diameter suggests that it could belong to a very small beaker or be the funnel mouth of a large jug. It is made of very good pale green glass, probably moulded and decorated by seven wheel cut incisions. The rim was knocked off and ground smooth. No other piece has been found on site. No parallel has been established nor can we give it a date.

No: 170
Fig: 7
Cat.no: G2B193.
H: 2.5 cm.
Rim diameter: 11.5 cm.

Rim and part of wall of vessel of unknown type. The rim is thickened in a flame and rolled outwards. The straight wall slopes at an angle towards the exterior and then curves inwards; no base has been associated with it. The piece is made of very weathered uncoloured glass. It is covered by a crystallising iridescent coat. One other piece which probably belongs to this one, was found elsewhere on site; no mends have been possible. No parallel has been found as yet nor can we associate a date to it.

No: 171
Fig: 7
Cat.no: G2T493
H: 3.3 cm.
Base diameter: 4.0 cm.

Part of very large solid stem with five marks, looking like small festoons, indicating lost trailing. The piece is of good quality green yellow glass, iridescent and pitted. Part of the vessel remains, showing that it was made of the same metal. No other piece similar to this one was found on site and no mends were possible. As yet, no parallel has been noted in other collections.

Since tesserae are not illustrated on the figures we have not given them a number in the sequence.

Seventeen glass tesserae were recorded on site. Their sizes varried from aproximately 0.5 cm. cube to 1.0 cm. cube. Seven were made of green glass, four of blue, two of black and four, each colourles, beet-red, rust and brown, (G3A014-G1T107-G2C204-G2N322-323-324-366-378-G2S424-435-436-437-438-439-454-G2T527).

All but two tesserae(G1T107-G3A014) came from the trenches within House 2 (2S,2T,2N,2C & 2A). five came from layer 2S31 and three came from layer 2N56. They might have belonged to mosaics found in these three rooms. They probably date to the 5th century A.D., date of the occupatiion of the Houses.

CONCLUSION.

This thesis has established a chronological and typological sequence for some of the glass material found in the N.E. sector of the Roman city of Carthage. The study shows that the material analysed here belonged to the types found on sites with domestic occupation. This is, therefore, in accordance with the nature of our site. The work has also shown that the glass objects correspond with the chronology and datation drawn from the study of the other artifacts present on site (lamps, carved bone objects and pottery).

We know that glass manufacturing existed at Carthage, since the remains of a furnace have been found, to the south of the city. Large quantities of blue/green fritt were discovered and excavated. This was done, however, without proper recording techniques, disregarding all possible relevant materials and forms associated with it. No publication was produced. It is, thus, impossible to draw any conclusions concerning glass manufacturing in Carthage, or to know to what extent there existed such an industry.

It is difficult to decide whether Eastern or Western influence is stronger at Carthage. As in many other respects Carthage must have been influenced by both sides of the empire, through trade and various exchanges. We can not assess the importance of the glass trade that might have existed in Carthage, since it is difficult to recognise the

truly Carthaginian glass types and forms. We cannot see whether our pieces are importations or good copies of Eastern and Western types.

The chart of parallels placed at the end of the work, was designed to help us find an answer to the question of trade. Unfortunately, too many missing links have distorted the profile drawn by it. It has shown us that most early pieces found on site, had parallels in Western sites, and that most late pieces were paralleled with pieces from Eastern sites. Of course, most sites excavated in the West are early ones, and those excavated in the East are late ones. If we could have the material from late Western and early Eastern sites, our vision would be greatly improved. Not all glass from excavated sites has been studied, nor have some excavated sites been published. Again, this lack of information has inhibited us from painting a general picture of the trade situation in Carthage. We can not consider that, the largest number of pieces, or the largest number of forms, apparently influenced by one part of the Empire or the other, might be the key to the answer. We have no way of knowing which forms were most popular and in demand in Roman times.

It is impossible to talk about the evolution of glass at Carthage solely on the results of this thesis. Our site is not representative of the whole of the city, and, therefore, we should look at the material from all other excavated sites in the city. These sites, however, are not necessarily domestic ones, nor are they all fully published. The only team which has published its glass in full, is the British team. We still can not consider their site and ours as representative of the city.

Apart from other sites excavated in Carthage, our collection can be paralleled at Sardis mainly in terms of the chronological framework(1). Slight differences occur as far as the forms are concerned. We do not have facet decorated and cut decorated glass on our site. Bottles, unguentaria and bowl-plates-dishes are quite similar. Long globular flasks occur more frequently at Sardis; this is primarily an eastern form. Where Sardis really sets itself apart is with the lamps and stemmed goblets. Its collection is very large and varied, illustrating a wide range of forms.

Tipasa has the only fully published material from North Africa. In Tipasa, though, we find a deceptive ally. Not many forms there are paralleled with ours. Apart from some dishes and some beakers (we do not need to mention unguentaria since this form does not change throughout the empire). Tipasa displays a series of urns, large jars and square bottles which are typical of it and that do not appear on our site; this is mostly due to the fact that the glass studied at Tipasa is funerary material. We might expect Carthage to have more imported material than Tipasa (or indeed other North African sites) because it is a major trading centre and others are not but we are unable to know if this is the case, due to the nature of the material. Glass forms, unless they are moulded, are difficult to reproduce in series of exact copies. It has also been shown that chemical analysis is unable to distinguish with accuracy between glass materials from different sites(2).

A lot more work remains to be done, however, in order to render the study of glass more homogeneous. An up-dated and revised typology for all Roman glass in the Mediterranean is probably long overdue. We must avoid the problem faced by pottery specialists - a multiplicity of typologies for the same material. Dr. B.Caron, for instance, has suggested a new typology and chronology for Roman glass from Africa, in his doctoral thesis for the University of Grenoble in 1985. Although his system of cataloguing proves to be a flexible and extensible one (in the sense that any new form can be inserted between two old ones without disrupting the order) it is complicated to use and his description of shapes is somewhat subjective. Nonetheless Caron's work must only be praised since he has managed to bring to light some unknown or forgotten pieces from many North African museums and private collections. Not only has he accomplished this, but most importantly, he has managed to provide us with a study which deals with the material in a single homogeneous group.

Since Lancel has published his Tipasa material, the study of Roman glass has taken a more scientific turn. In the French speaking world there is a great lacuna in this field. A whole new technical vocabulary has emerged in English, German and Italian. No French publication has attempted to become a major guide in this matter.

1- Saldern, A. von, (1980), p. 1

2- Brill, R.H. (1975), p.176.

TABLE OF CONCORDANCES

This table lists the reference numbers of the catalogue in accordance with the Cat.nos. of the pieces. It also relates all other parallel pieces found on site to the individual diagnostic pieces. We have chosen not to give the reverse table (Cat.nos. versus reference number) because the list would be too long and that the sequence is often interrupted.

Colourless glass.

- 1 = G1N079
- 2 = G2A161
- 3 = G3B042
- 4 = G2U536
- 5 = G1V142
- 6 = G1H055 (G1H062-G1V146-G2N352-G2T495)
- 7 = G1V145

Bowls-Dishes-Plates.

- 8 = G1N084
- 9 = G3A001 (G2U539)
- 10 = G1H059
- 11 = G2S460 (G1J072-G2F255-G2K278-G2P393)
- 12 = G1V151 (G1H044-G2F245-G2P393-G2S460)
- 13 = G2C210 (G1V110)
- 14 = G2A163
- 15 = G2N347/348 (G1V135-G1V143)
- 16 = G2S474
- 17 = G2N300 (G2N347a-G2N367)
- 18 = G2T470
- 19 = G2F252 (G3A034-G1N077-G1T096-097-G1V122-G2F237-G2N381-G2S429-430-463-485-G2W554)
- 20 = G2W551
- 21 = G2T491
- 22 = G2U548
- 23 = G2P403
- 24 = G1H045 (G1H063-G2K273-G2N346)
- 25 = G2F233 (G1J069-G2B194-G2F234-241)
- 26 = G2M282 (G2G202-G2K271-G2W553)
- 27 = G2B175 (G1H060-067-G2A162-G2F247)
- 28 = G2B311 (G2F250-256)
- 29 = G2N346 (G1H045-063-G2K273)
- 30 = G1H080
- 31 = G2K266 (G2N357-G2S427)
- 32 = G2N375
- 33 = G2W554 (G3A034-G1N077-G1T096-097-G1V122-G2F237-252-G2N381-G2S429-430-463-485-)
- 34 = G2G173

- 35 = G2A155 (G2K268)
- 36 = G2N367 (G2N300-G2N347)
- 37 = G1V112
- 38 = G2U535 (G1V134-G2N333)
- 39 = G1V134 (G2N333-G2U535)
- 40 = G2W552 (G3A002-029-G1V126-G2K269-G2N379/380-G2S426)
- 41 = G2N379/380 (G3A002-029-G1V126-G2K269-G2S426-G2W552)
- 42 = G2N313
- 43 = G2P397 (G1V113-G2B177-G2C206-G2N306-307-352-G2S421-G2U523)
- 44 = G1H049 (G3A006-G2N340-371-382-G2S415)
- 45 = G2B192 & G2F228
- 46 = G2W549 (G1H047-G2F220-G2N364-380)
- 47 = G2U534

Beakers

- 48 = G3A019 (G3A012-G2F223-G2G259)
- 49 = G3A012 (G3A019-G2F223-G2G259)
- 50 = G1J074
- 51 = G2F236
- 52 = G2F226
- 53 = G2F254 (G1V149-150-G2B174-189)
- 54 = G2S481
- 55 = G2K272
- 56 = G2T509
- 57 = G2T504 (G1H057-G1V112-G2F221-G2K263-G2T505-526-G2X560)
- 58 = G2T511 (G2S428)
- 59 = G2U540
- 60 = G2P388 (G2Q410-G2S473-476-G2T507)
- 61 = G2N342 (G3A004-024-030-G1T098-099-100-101-G2B190-G2N303-342-G2T496)
- 62 = G2B195 (G1T102-G1V120-123-136-G2G207-G2F235-G2M281-G2N344-369-G2P407-G2Q412-413-G2S444-459-477-G2T524-G2U538-G2X562-563)
- 63 = G2F219
- 64 = G2N350
- 65 = G2N355 (G2N317-G2T501-G2U541-542)
- 66 = G2G262 (G2C209-G2N356)
- 67 = G2A159 (G1V111-114-G2T518)
- 68 = G1H054 (G2P289-G2X558)

Stemmed goblets

- 69 = G1T089 (G3A013-20-26-G1T090-G2N305-G2S419)
- 70 = G3A017 (G1T088-G2T494)
- 71 = G1T092 (G3A025-G2S443)
- 72 = G2S461 (G1T087)
- 73 = G1T091 (G2N296-G2T497)
- 74 = G1T086 (G1H078)
- 75 = G2U545
- 76 = G3A022

- 77 = G3A016 (G1V124-G2C208-G2N341-351-373-G2P391-G2S486-G2T517)
- 78 = G2C208 (G3A016-G1V124-G2N341-351-375-G2P391-G2S486-G2T517)
- 79 = G2T517 (G3A016-G1V124-G2C208-G2N341-351-373-G2P391-G2S486)
- 80 = G2B176
- 81 = G3A015

Lamps

- 82 = G2S446 (G1V116-G2N297-385-G2T498)
- 83 = G2S498 (G1V116-G2N297-385-G2T446)
- 84 = G2N335 (G2N316-G2S487-G2T510)
- 85 = G1N082 (G3B035-G2U547)
- 86 = G2A167 (G1V138)
- 87 = G2U547 (3B035-G1N082)
- 88 = G3B035
- 89 = G3A028 (G1J075-G1V144-G2B171)
- 90 = G2X559/G2T523

Bottles

- 91 = G2S488
- 92 = G2T500 (G1U109-G1V141-G2F231-G2M286)
- 93 = G2F231 (G1U109-G1V141-G2M286-G2T500)
- 94 = G2F230
- 95 = G2S453
- 96 = G2T516 (G2D213)
- 97 = G1V118 (G3A003)
- 98 = G2S483 (G1V118-G2N338-G2Y564)
- 99 = G2N354 (G3A010-G2A160-G2S484)
- 100 = G2A168 (G1V148)
- 101 = G3A033
- 102 = G2U533
- 103 = G2S447
- 104 = G2B180
- 105 = G1T085a/85b (G3B086-G2S482)
- 106 = G1T094
- 107 = G2P400 (G1T070)
- 108 = G2M284
- 109 = G2U531
- 110 = G1H050 (G1V132)
- 111 = G1V139
- 112 = G1H051
- 113 = G2A157 (G2U543)
- 114 = G1H053
- 115 = G1V129
- 116 = G2S465 (G1V125-G2F244-G2G260)
- 117 = G2A154 (G3A011-G2B181-183-186-199-G2F225-229-238-242-246-253-G2P392
G2Q409-G2S469)
- 118 = G2N306 (G2B177-G2N307-352-G2P397-G2S421-G2U532-G1V113)

- 119 = G2Q409
- 120 = G1V113 (G2B177-G2N306-G2N307-352-G2P397-G2S421-G2U532)
- 121 = G1V137
- 122 = G2F251 (G2B187-G2N308-G2T530)
- 123 = G2F258
- 124 = G2N384 (G2C200-G2F216-G2N299-359-393-G2S423-G2T499)
- 125 = G2A172
- 126 = G1V128 (G2S452)
- 127 = G2S464 (G2N332)
- 128 = G2C211
- 129 = G2N287
- 130 = G2N349 (G1V133-G2S458)
- 131 = G2Y566 (G2N345-G2T506-513)
- 132 = G2N314
- 133 = G2P395
- 134 = G1H043 (G1T093)
- 135 = G2P243a (G1U108-G2S414)

Unguentaria

- 136 = G2K274 (G1N081-G2F243b-G2S480)
- 137 = G2F215 (G1T106)
- 138 = G2N358 (G2D212-G2N327-386)
- 139 = G1J071 (G2N328-G2P406)
- 140 = G2B197
- 141 = G2B182
- 142 = G2N386 (G2D212-G2N327-358)
- 143 = G3B038
- 144 = G2A158

Miscellaneous

- 145 = G2F227
- 146 = G2P232
- 147 = G1V119
- 148 = G2F257 (G2N301-G2N360)
- 149 = G1V140
- 150 = G1J066
- 151 = G2N377 (G3A022- G2B196-G2N363-G2U546)
- 152 = G2P405
- 153 = G2N291
- 154 = G2N368
- 155 = G2N320
- 156 = G2A165
- 157 = G2Q414
- 158 = G1V117
- 159 = G1P394
- 160 = G2N376
- 161 = G2N343 (G1T086)

162 = G2F239 (G2F240)
163 = G3A031
164 = G1T095
165 = G2N387
166 = G2N383
167 = G2U372
168 = G2S479
169 = G1V127
170 = G2B193 (G2F249)
171 = G2T493

CHART OF PARALLELS.

This chart was designed to highlight the profile of the sites, at which parallels were found for our pieces. It is trying to show, from which part of the empire, the material from our site was most influenced .

At the top of the chart, we have enumerated all the sites where a parallel was found, starting with the most westerly site, to the most easterly one. At the center, we have placed Carthage, divided in the four excavations, (1CC= First Canadian site; 2CC= Second Canadian team from other deposits; Mich.= Michigan team; Brit.= British Ave. Bourguiba site.) On the right side, we have listed our pieces, by their catalogue number. The entries, 'no parallels' and 'museum', mean that no parallels have been found or the parallels come from a museum collection, without any definite provenience. We have separated the catalogue pieces by categories, to make the reference easier.

Conimbriga		Magdalensberg		Aquileia		Luni		Salona		Carthage		Corinth		Dura		Karanis	
Fréjus	Verulamium	Trier	Köln	Gropello	Castel. Herculaneum	Portora	Split	Caridin	Tipasa	100 200 High. Brit.	Tarrha	Sardis	Cyprus	Samarria			
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28																	

Colourless

Bowls Dishes Plates

MUSEUM.

NO PARALLELS

Conimbriga			Magdalensberg		Aquileia		Luni		Salona		100 200 Mich. Brit.		Corinth		Dura		Karanis		
Fréjus	Verulanium	Fishbourne	Trier	Köln	Gropello	Castel. Herculaneum	Fortore	Split	Tipasa	Carthage	Tarrha	Odessa	Sardinia	Cyprus	Sanaria				
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MUSEUM.

Lamps	Combriga			Mogdalenaberg			Aquila			Luni			Salona			Corinth			Dura		Karanis	
	Fréjus	Verulamium	Fishbourne	Trief	Köln		Gropello	Castel. Herculaneum	Portore	Split	Tipasa	ICC	2CC	Mich.	Brit.	Tarrha	Sardis	Cyprus	Samarra			
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112																						

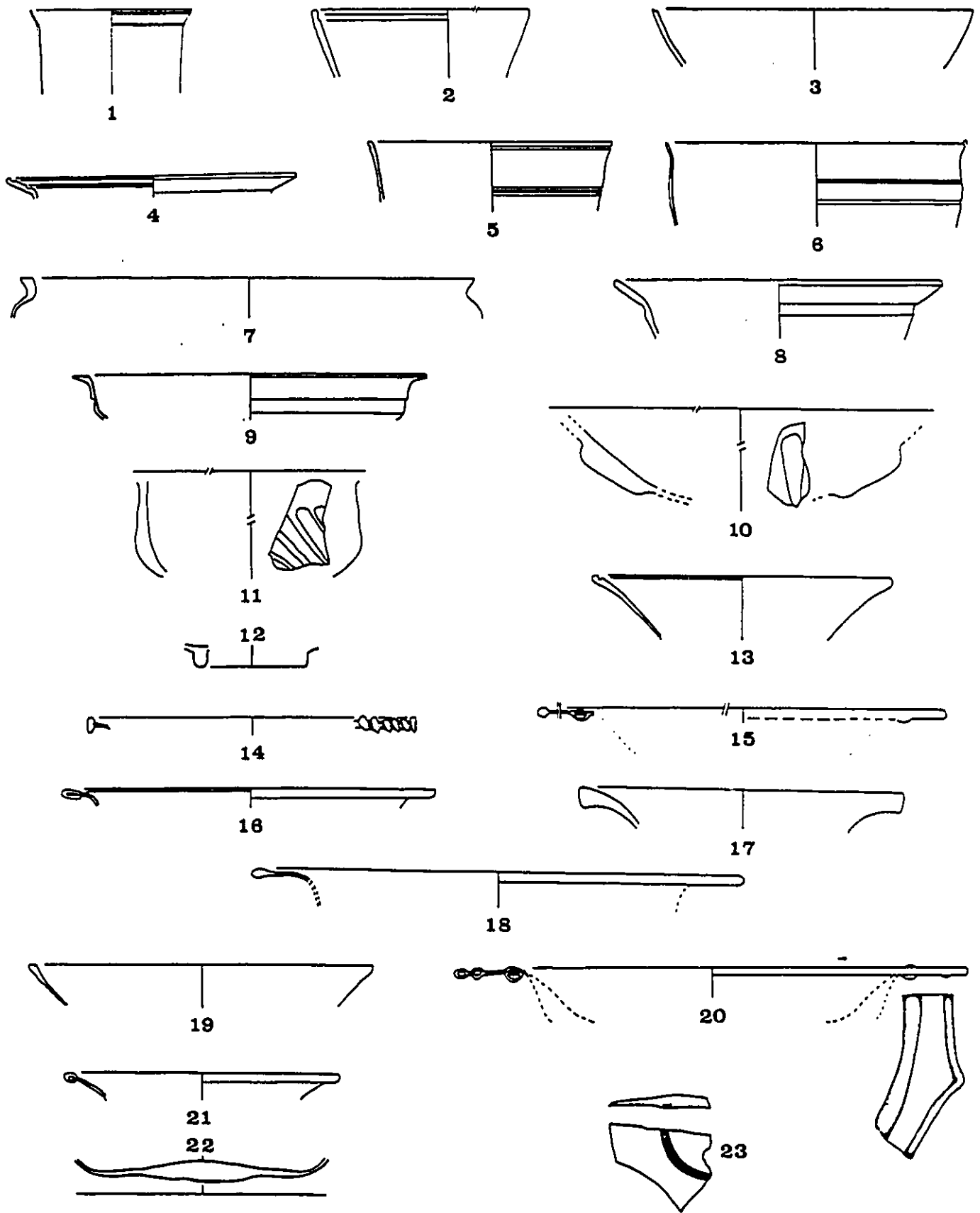
Lamps

Bottles

MUSEUM
NO PARALLELS
MUSEUM

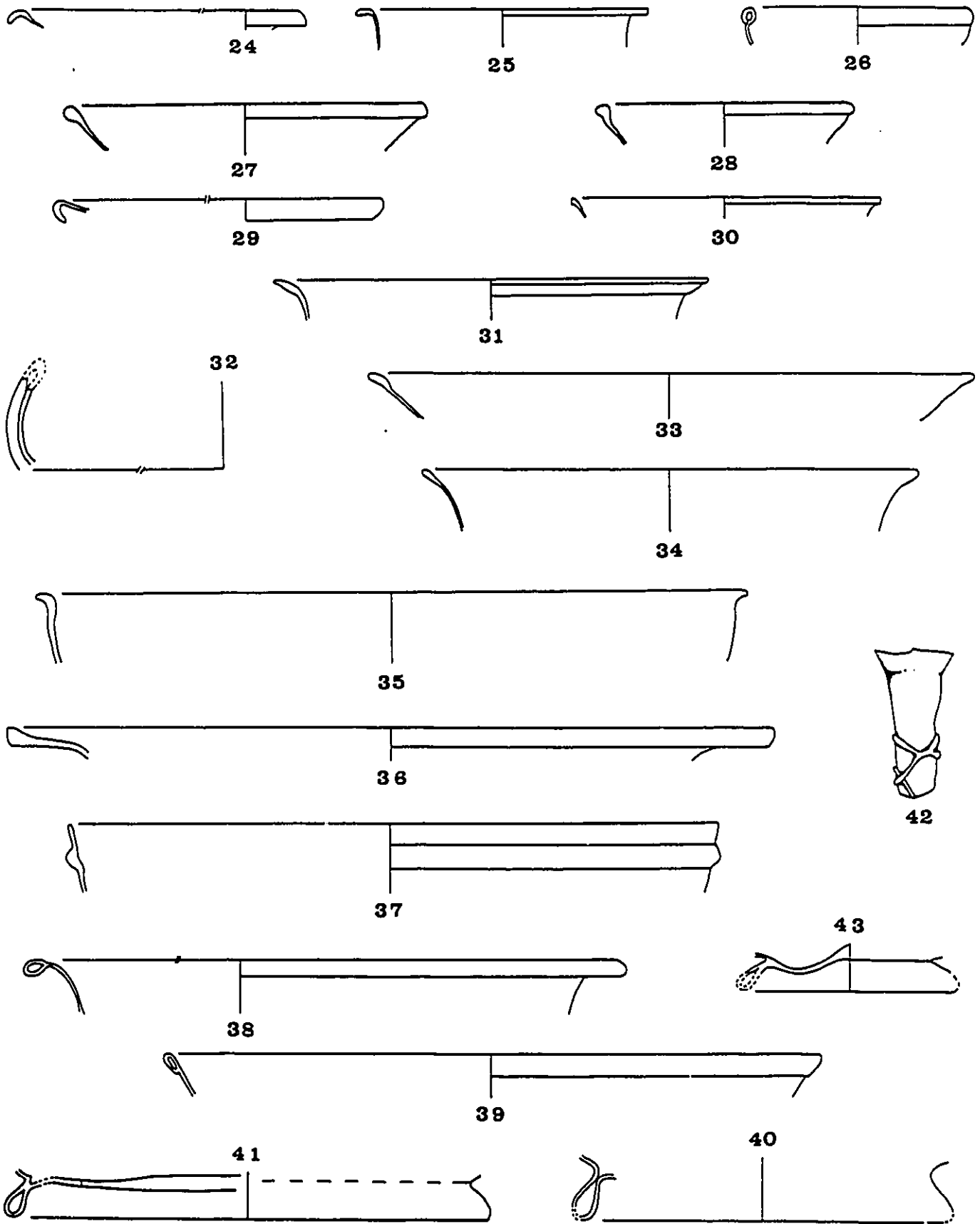
Conimbriga		Hagdalenberg		Aquila		Luni		Salona		Carthage		Corinth		Dura		Karanis	
Fréjus	Verulamium	Trilec	Köln	Gropello	Castel. Herculanum	Portore	Split	Carizim	Tipasa	1CC 2CC	10ch. Brit.	Tarcha	Sardis	Cyprus	Samaris		
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142																	
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Miscellaneous



1 : 2

FIG: 1



1 : 2

FIG: 2

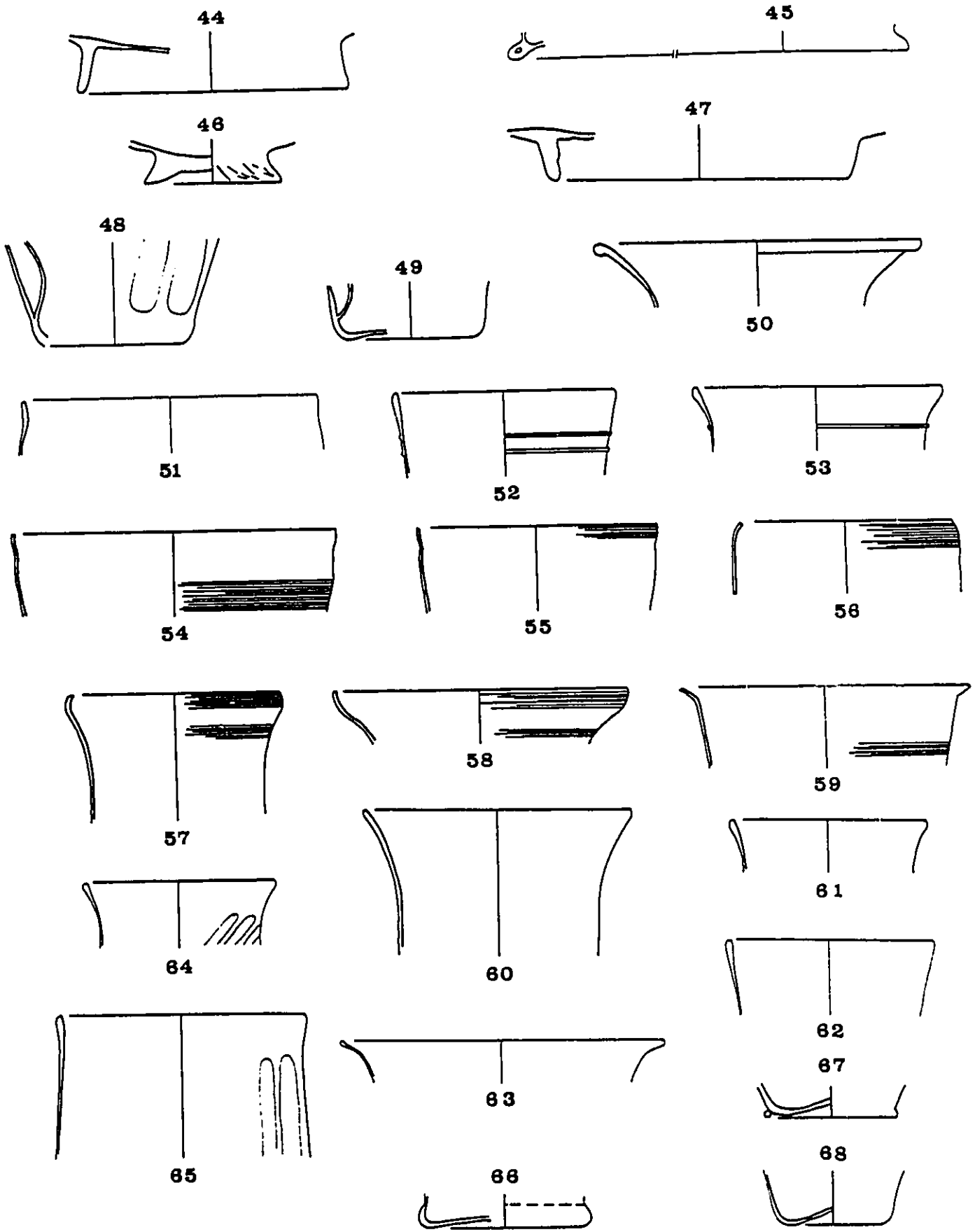
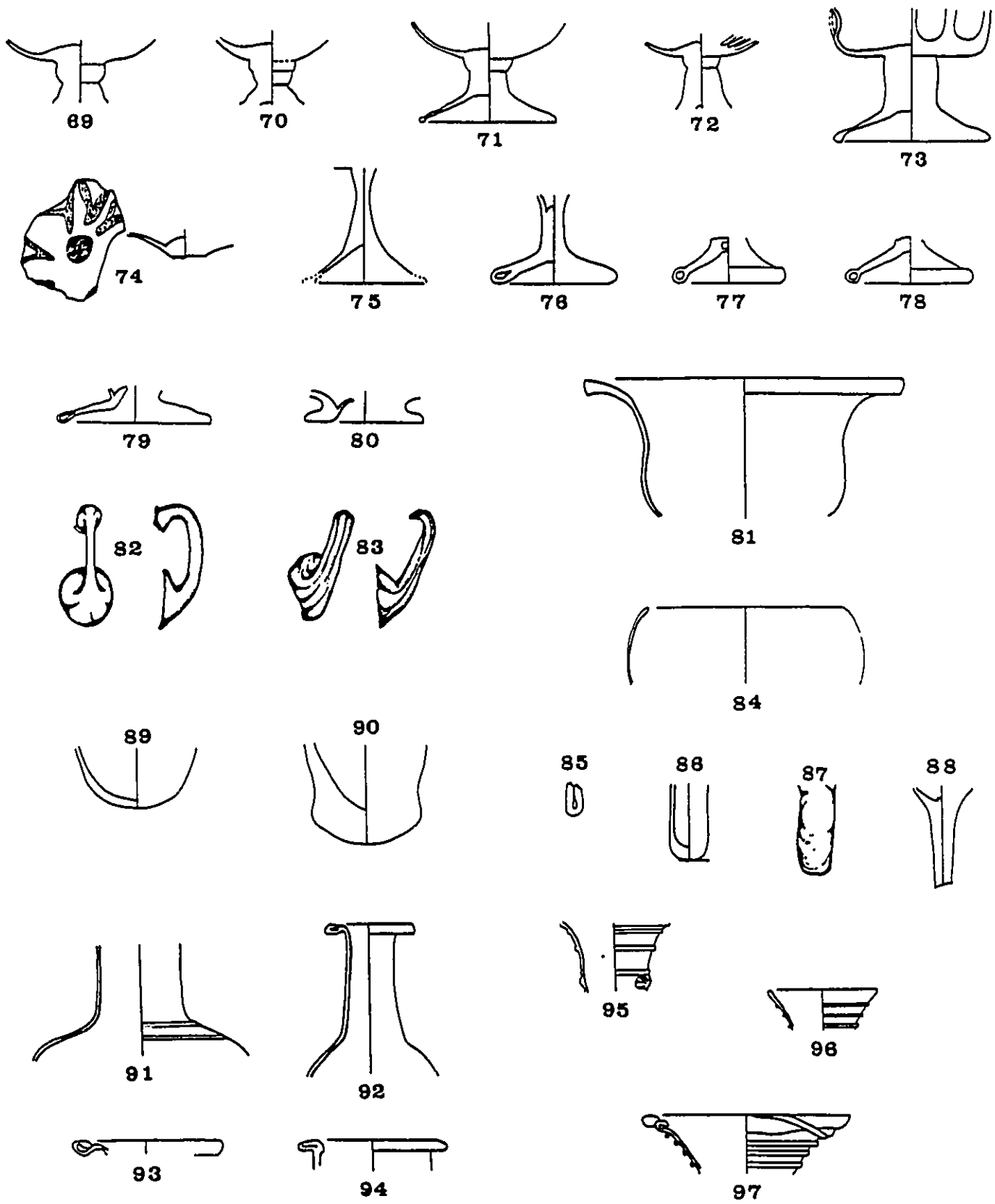


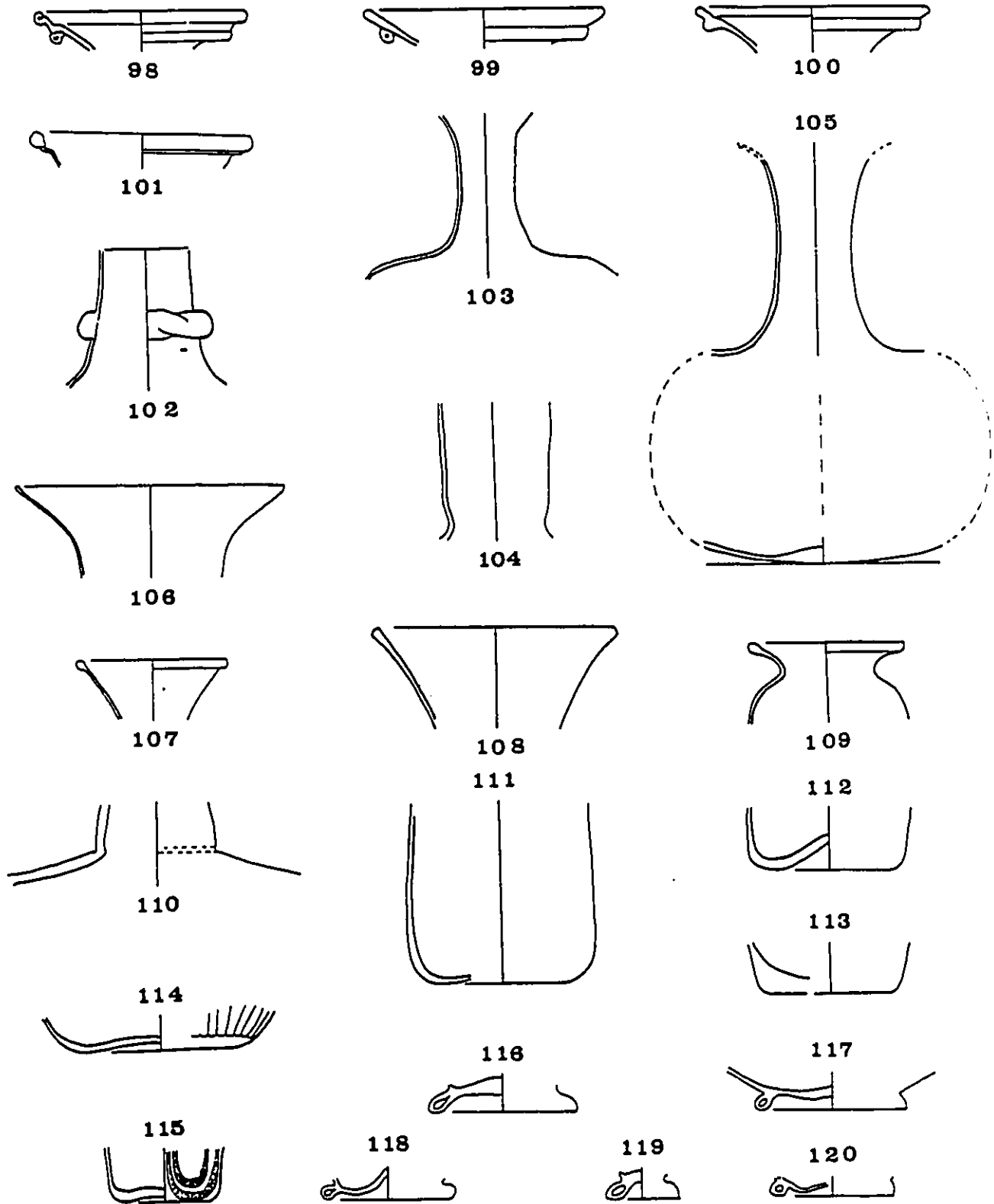
FIG: 3

1 : 2



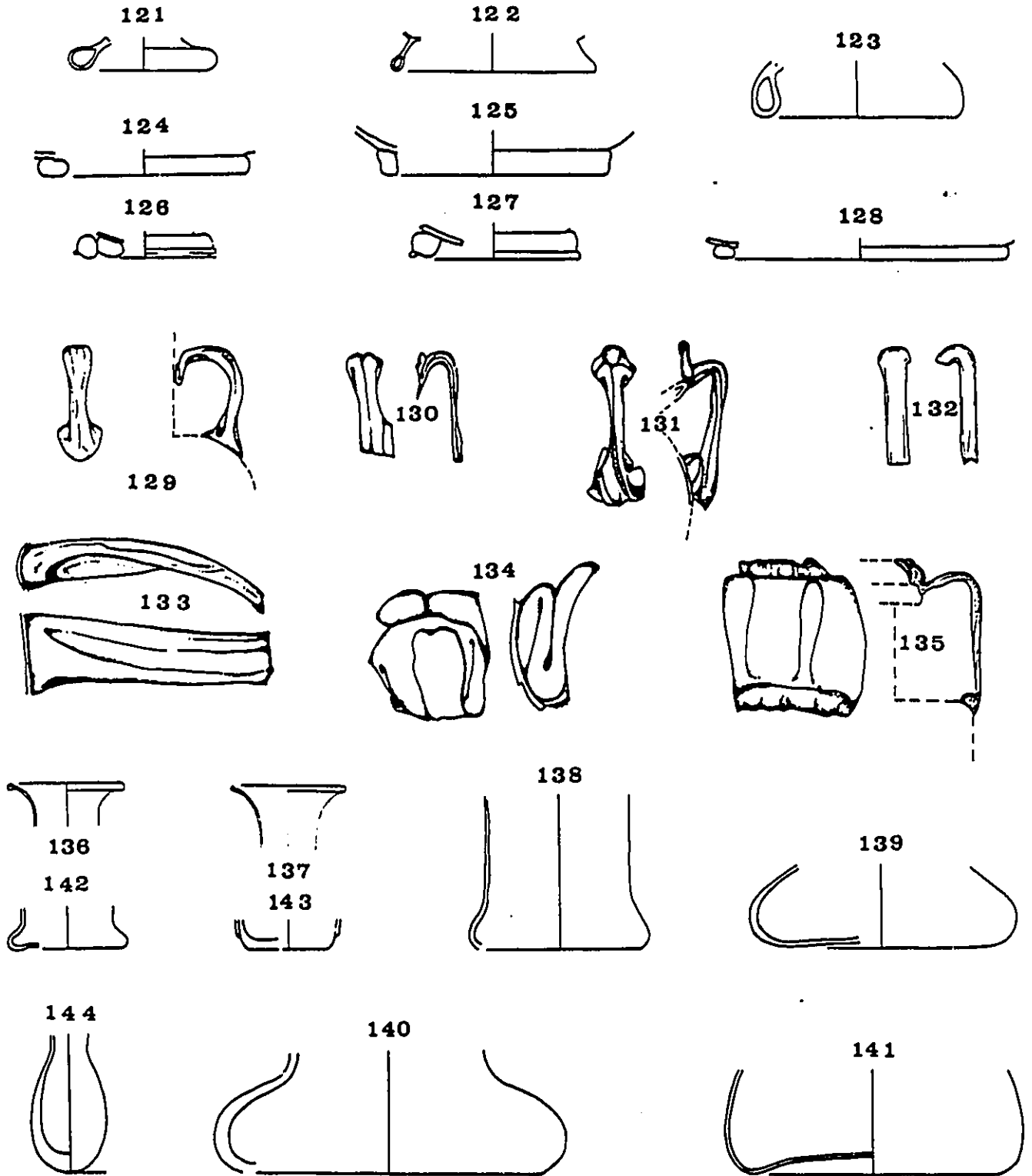
1 : 2

FIG: 4



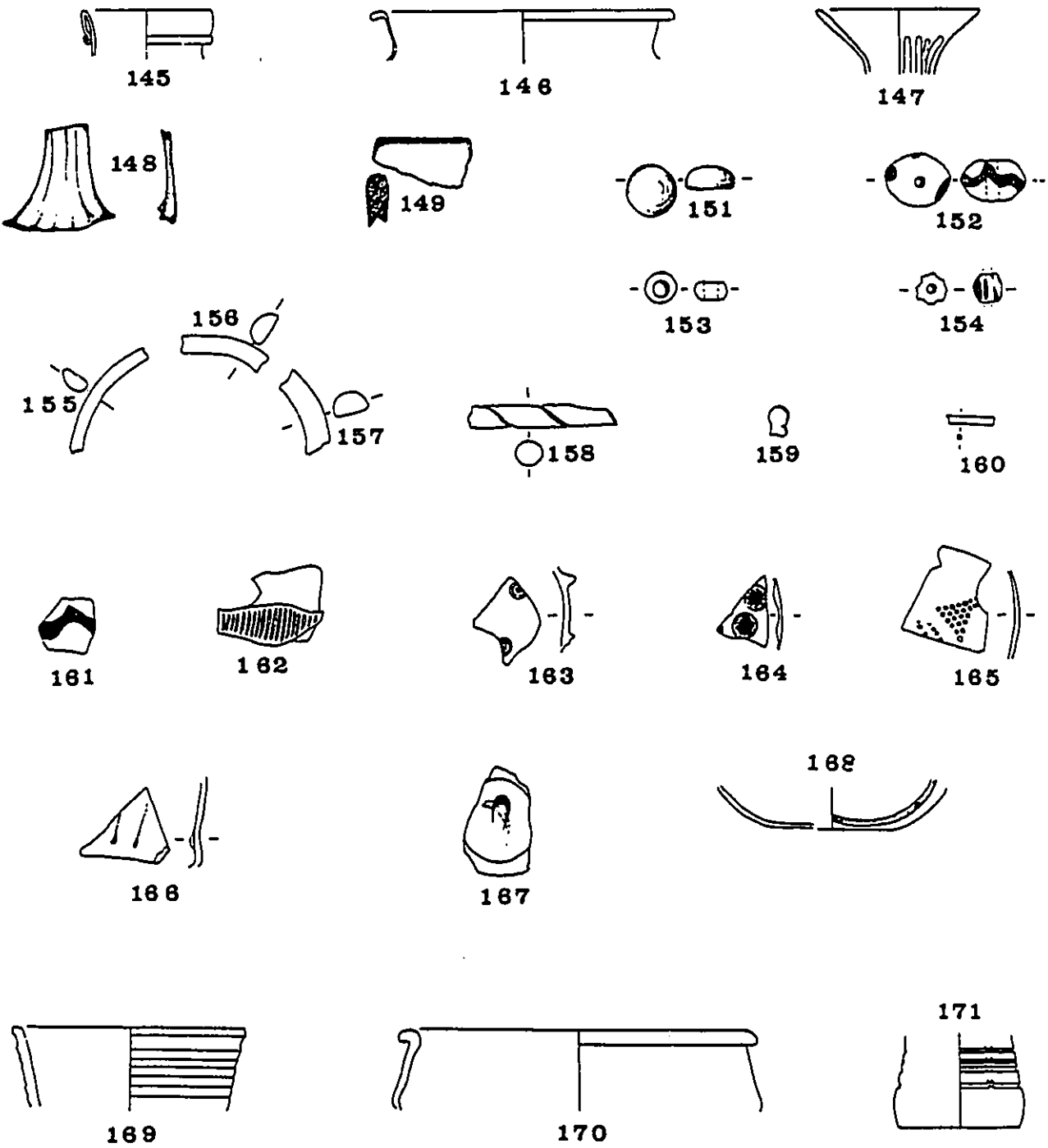
1 : 2

FIG: 5



1:2

FIG: 6



1:2

FIG: 7

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