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EARLY MEDIEVAL ISLAMIC POTTERY:
THE ELEVENTH CENTURY RECONSIDERED

In the spring of 1977, George Bass (then the president and now the archaeological director of the Institute of Nautical Archaeology at Texas A & M University) began in Şerçe Limani, a small natural harbor on the southern Turkish coast just opposite Rhodes, the excavation of a shipwreck lying under one hundred and ten feet of water. The results achieved during the three seasons of retrieval at this beautiful site are revolutionizing our view of early medieval Islamic art owing to the fact that the wreck is not only a time capsule of a single voyage, it is a datable one. Coins of the Byzantine emperor Basil II and gold coins and glass coin weights of the Fatimid caliphs al-Hakim and al-Zahir were among the objects brought up by the team of divers and the latest among these, three of the weights, permit us to pinpoint the ship’s sinking to ca. 1025. Thus, the wreck is serving as an invaluable tool for the archaeologist and art historian alike.¹

The most important cargo on this merchant ship was its glass. However, it was also carrying arms, metalwork, jewelry, wooden objects, two pairs of small rotary millstones, a small amount of arsenic ore, one or more perishable cargoes which have disappeared, and various types of pottery. The largest single ceramic group consisted of one hundred and ten amphoras which are of the Byzantine type in common use between the ninth and eleventh centuries. Besides these and other unglazed wares, forty-four glazed bowls were recovered. Ten of the latter are of the type of pottery known as champlévé and comprise the group on which this article will focus.

After each of these champlévé vessels was thrown in red earthenware, its decoration was created by first applying a slip of light-colored clay to the interior and part of the exterior surfaces. When dry, the slip was carved away, leaving the desired design in relief. Details were then incised in the slip and the vessel was finally covered with a transparent, clear or colored, lead glaze; in some instances, a bowl was further adorned with splashed oxide pigments before firing. Not only is the decorative technique identical on these ten bowls (which, like the other objects excavated at this site, are the property of the Turkish Government and housed in the Bodrum Museum of Underwater Archaeology), but the designs themselves are also very similar. They can be divided into four groups.

A. Group I ("Bisecting Arabesques") consists of GW26, GW27, GW28 and the variant GW19. Each of the four bowls in this group bears two arabesque designs, con-

Fig. 1. Şerçe Limani No. GW26. Ht. 0.065; Gr. D. 0.232.

Fig. 2. Şerçe Limani No. GW27. Ht. 0.063; Gr. D. 0.223.
sisting of one or more palmette leaves, which bisect the interior surface of the object (figs. 1, 2, 3, 4).

B. Group II ("Undulating Arabesques") consists of GW528 and GW529. Each of these two bowls bears an undulating arabesque design which in the case of GW528 covers the entire interior surface and in that of GW529 is circumscribed by a calligraphic decoration (figs. 5, 6).

C. Group III ("Palmette Tree") consists of GW527, GW559 and the variant GW530. The first two bowls bear a single palmette tree as their sole decoration; the variant contains three such trees radiating from the center of the bowl (figs. 7, 8, 9).

D. The final group, Group IV ("Geometric"), comprises only one bowl, GW485. Its decoration combines the principal motifs from each of the other three groups while adding new design elements as well. The interior surface of this bowl is divided into three sections consisting of a large central ogive flanked by two semicircles, each bordered by a wide plain band. The ogive bears a "bisecting arabesque" design in its center on a ground of scale motifs, a "palmette tree" design in each of the semicircles and, in the interstices, "undulating arabesque" designs (fig. 10).

How do these ten bowls confirm or corroborate what is already known about other pottery objects produced at this time? What new information do they provide? Do they alter our thinking in any way about works of art produced in the Islamic world during the early medieval period (1000–1250)?

The three bowls constituting the "Palmette Tree" group and the single bowl in the "Geometric" group all bear a design which is very close to that on an Egyptian luster-painted bowl in the Museum of Islamic Art, Cairo, incorporating in its decoration an Arabic inscription in Kufic script which reads "Power and thriving to the mas-
ter of the masters, the Commander-in-Chief Ghabn, the servant of the Commander of the Faithful al-Hakim bi Amr-i-llah, may Allah’s blessings rest upon him and upon his pure ancestors." The design in question occurs four times on the luster-painted bowl and consists of a highly stylized palmette tree made up of two pairs of leaves that abut at the top and the bottom of the tree and circumscribe an almond-shaped area that contains two pairs of leaves. Since Ghabn had the title of commander-in-chief bestowed upon him on 9 November 1011 and given the fact that he died in November 1013, al-Basha concluded that the fragmentary bowl bearing his name was manufactured under the Fatimid aegis within the two-year period between November 1011 and November 1013.

A second Fatimid Egyptian luster-painted bowl in the Museum of Islamic Art, Cairo, bears palmette trees relatable to those on the Ghabn object. This bowl is also datable to the reign of al-Hakim (996–1021), in this case by means of the incorporation within its decoration of the signature of the ceramist Muslim. These two datable instances of the use of the palmette-tree motif led me to conclude elsewhere that this particular design was current iconography on luster-painted pottery manufactured in Egypt during the reign of the Fatimid caliph al-Hakim. Finding it employed on contemporary pottery of a more provincial nature is, therefore, not at all surprising.

In fact, since this motif as represented on the finer luster-painted ware produced in Fatimid Egypt during the first two decades of the eleventh century is so close to that on the cruder, champlevé ware excavated at Serçe Limanı and manufactured in the third decade of the eleventh century, perhaps it is safe to conclude that the latter ware was made in imitation of the luxury ware produced in the Fatimid capital. Those champlevé bowls covered with a clear, colorless — as opposed to a clear...
green — glaze may even be imitating the coloration of the luster-painted wares since the red body when covered with a colorless glaze assumes a color not unlike the copper-colored luster but without the sheen. If this is the case, the champlévé ware would be imitating luster-painted ware in coloration as well as in decoration.\(^9\)

The close iconographic and stylistic connection between the datable Serçe Limanı champlévé bowls and the datable Egyptian luster-painted bowls from slightly earlier in the century makes it possible to use the decoration these objects have in common to secure in time, with relative certainty, hitherto undatable luster-painted ware.

A luster-painted bowl in the Metropolitan Museum of Art, New York (fig. 11), bears a design that is so similar to the two palmette trees on GW483 in the "geometric" group that the former bowl henceforth must be dated to the first three decades of the eleventh century. The same can be said for a bowl in the David Collection, Copenhagen, one in the Iran Bastan Museum, Tehran, found at Istakhr, one in the British Museum, and another in the Museum of Islamic Art, Cairo.\(^9\) This list must also be expanded to include a group of complete and fragmentary luster-painted bowls, fragments of which have been found as far afield as Madinat al-Zahra in Spain and Nishapur in Iran, as well as their slip-painted imitations which were presumably executed in the latter center.\(^10\)

Not only can Egyptian luster-painted prototypes be found for the "Palmette Tree" group, they can also be found for the "Undulating Arabesques" (fig. 12)\(^11\) and "Geometric" groups as well (fig. 13). Note that the latter bowl incorporates, within the spaces created by the geometric strapwork, all of the motifs found on the champlévé bowl comprising our "Geometric" group, i.e., undulating arabesques, palmette trees, and scale motifs.

On the basis of the parallels cited above, we may suggest that perhaps all Egyptian luster-painted pottery with decoration incorporating any of the particular designs previously discussed, or variations thereof, can be related to the champlévé ware excavated at Serçe Limanı and consequently dated to the first three decades of the eleventh century. As a corollary, it is possible that all champlévé ware incorporating within its decoration any of the particular designs discussed above, or variations thereof, can be related to the finds at Serçe Limanı and similarly dated.\(^12\)

Carrying this theory to its logical conclusion, we might further postulate that all champlévé ware was made in the same pottery-making center and is datable to the eleventh century\(^13\) and was made in imitation of luster-painted pottery produced under the aegis of the Fatimid dynasty. If this statement is true, we could argue con-
versely that any Fatimid luster-painted object which relates closely to one executed in the champlévé technique can be firmly placed in the eleventh century as well. The presence of a number of very compelling parallels appear to support such conclusions.

Set into the Torre Civica in Pavia, Italy, which was built in the second half of the eleventh century, is a luster-painted bowl of the type associated with Tell Minis, Syria, bearing as its sole decoration an ox on a ground with vegetal elements. A luster-painted Fatimid Egyptian parallel for the decoration on this bacino can be found as well as one decorated in the champlévé technique. The style in which the animal is executed, the manner in which it takes up the entire interior surface of the vessel and the way the vegetal elements are drawn and used as fillers all serve to connect these three objects to one another. The bacino serves independently to confirm an eleventh-century date for this particular series of three bowls, while also substantiating that unequivocally applied to the other material discussed above. It likewise serves to broaden the group of datable pieces within the champlévé category to include the large, figural subgroup.

Striking similarities exist also between a luster-painted bowl in the Islamic Museum, Cairo, and a champlévé bowl in the Victoria and Albert Museum, London. Not only do the felines on both objects bear close comparison; so do the rinceaux. An Egyptian luster-painted bowl in the Metropolitan Museum of Art, New York, signed by the potter Muslim and bearing as its principal decoration a heraldic eagle can be very closely compared to a champlévé lid in the same collection and to bowls executed in the same technique formerly in the F.M. Gunther and E. M. M. Warburg collections. This latter comparison reinforces those made vis-à-vis the "palmette tree" group in that it compares a champlévé object to a luster-painted one datable by means of the signature of the ceramist Muslim.

Even what is perhaps the most famous champlévé object extant, the animal-headed ewer in the Louvre, has a place in this group of comparisons. The manner in which the gentleman's garment is completely covered with an oversized leaf rinceau and the treatment of its hem, the hairdo with several locks descending well below the rest, and the figural style itself, all bear very close comparison with Fatimid luster-painted examples. Not even champlévé objects bearing purely calligraphic decoration are exceptions to the rule. They, too, parallel very closely luster-painted objects from the Tell Minis group as well as those produced in Egypt (fig. 14).

Where was the site of champlévé pottery production? Using the highly distinctive version of this ware found at

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Fig. 13. Luster-painted bowl. (From Zaki Muhammad Hasan, "Tuhaf Jadida min al-khazaf al-Fatimi dhil-bar'iq al-ma'dani," Bulletin of the Faculty of Arts, Cairo University, 18, 2 [1951])

Fig. 14. Luster-painted bowl. (From Zaki Muhammad Hasan, "Tuhaf Jadida min al-khazaf al-Fatimi dhil-bar'iq al-ma'dani," Bulletin of the Faculty of Arts, Cairo University, 18, 2 [1951])
Serçe Limani as a guide, a Fatimid pottery manufacturing center so strongly indicated on iconographic and stylistic grounds was sought.

Although Islamic ceramic objects bearing decoration executed in the champlée technique are quite common in public and private collections throughout the world, parallels sufficiently close to the ten bowls in question to suggest a common place of origin did not present themselves until I came upon an article written about medieval pottery from Caesarea Maritima, an eastern Mediterranean site which at the time of the shipwreck at Serçe Limani was under the aegis of the Fatimid dynasty ruling from Cairo.24 Not only did three of the fragments illustrated in that article employ a decorative technique identical to that used on our group of ten champlée bowls, but the similarities of the designs on these same three fragments to those on bowls from the wreck, particularly on the single bowl in the “Geometric” group and on those two vessels constituting the “Undulating Arabesques” group, was striking (figs. 15–17).25

I was subsequently able to study thousands of glazed pottery sherds excavated at Caesarea26 and was quickly rewarded. Just a few days of sorting through several thousand sherds produced a multitude of visual parallels for the Serçe Limani glazed pottery, not only for the champlée ware but for that exhibited by the remaining glazed vessels as well.

The color and texture of the clay were similar as were the color of the glazes employed. Precise parallels for the shapes of the bowls were to be found in both rim profiles and foot rings. The objects from the two sites also had in common the method of glazing the exterior of the bowls by allowing a certain amount of the slip to extend over the rim followed by an unintentional running of the transparent glaze from the interior over this slip on the exterior. All of these parallels were in addition to those provided by the techniques of decoration and the decoration itself.

The time finally came to turn to non-visual methods of studying this material to see if what appeared to be close parallels to the naked eye could be claimed to be so scientifically. Using two Serçe Limani sherds taken from GW530 and GW21 and sherds recovered at Caesarea of both champlée and splash decorated wares as well as molds and their products that Bull’s teams had excavated there, three different types of tests were conducted.27

The neutron activation analysis of the two glazed sherds from Serçe Limani and six glazed fragments from Caesarea served to corroborate scientifically the hypo-

esis which up to this point has been based on the very close visual similarity of the two groups, namely that the glazed pottery from the nautical excavation and at least two of the six fragments from the terrestrial excavations were very likely to have the same provenance. However, the archaeologically documented presence of a late-sixth- and early-seventh-century potter’s workshop in Caesarea notwithstanding, the neutron activation analysis of three objects from this industrial area did not provide any evidence for or against Caesarea’s being the common production center.

The petrographic analysis of the same material provided scientific corroboration for the hypothesis that all, not just two, of the samples from Caesarea were identical to, and had been made in precisely the same manufacturing center as, the Serçe Limani sherds. Furthermore, the petrographic analysis of three objects from the potter’s workshop proved conclusively to the petrographer that the common production center for the eleventh-century glazed wares was not Caesarea itself. He concluded, instead, that the petrofabric of the nine glazed sherds sampled was very close to that of one of the two types of luster-painted ware being produced in Fustat during the Fatimid period, so close in fact that he tentatively attributed the glazed sherds to Fustat without, however, totally ruling out a Levantine production.28

Support for an Egyptian provenance for the eleventh-century glazed wares is provided by the fact that unglazed pottery filters commonly associated with that country were also found at Serçe Limani and a very charming, so-called Fayyum dish was excavated in Caesarea.29

A Levantine provenance, as opposed to an Egyptian one, for this group of glazed pottery is supported by the fact that, as has been suggested elsewhere, among the other cargo and utilitarian objects on board the ill-fated ship were a number of items for which a Syrian origin could be claimed. They include gold jewelry, a type of metal bucket and jug, cullet and glassware, unglazed pottery, millstones, wine, orpiment, sumac, and dried fruits.

The report by the petrographers on lead-isotope analyses of Islamic glazes determined that “the Fatimid lustre (G7) data are not near those for any Egyptian lead sources, but they are close to ratios for the lead glazes of two bowls, and of four glasses and some lead weights, from the Serçe Limani wreck.”30 It had previously been stated that the nearest isotopic ratio for the objects from Serçe Limani was an ore from Anguran, northwest of Tehran, near Takhti Sulaiman and that the net sinkers “surely must have been made somewhere along a coast-
line, and the pottery probably not far from the coast."31

Whether the glazed ceramic objects from Serçe Limanı were made in Fustat or in a manufacturing center somewhere in the Fatimids’ Syrian province, the implications of this unequivocal identification of two types of glazed pottery (the champlevé ware as well as a variety of the seemingly ubiquitous splash decorated wares) manufactured under the aegis of an Arab dynasty during the third decade of the eleventh century are enormous for future art historical and archaeological research. For example:

1. Because of the identical nature of two types of glazed ceramics from Serçi Limanı and Caesarea, all of the glazed pottery of these two types found at the latter site which had previously been only approximately dated can now be dated with confidence. By extension, this further means that the objects found in close proximity to this pottery at Caesarea (if the stra-

tigraphy has not been disturbed) can be similarly dated.

2. The Serçe Limanı and Caesarea glazed pottery of these two types can be used to date all of the pottery of the same two types found anywhere in the eastern Mediterranean as well as stratified finds associated with them.

3. All of the pottery of these two types, no matter where they are found or where they have ended up, can
Fig. 19. Carved, pierced, and incised bowl. Madina Collection, New York, C0214.

Fig. 20. Luster-painted bowl. Museum of Islamic Art, Cairo, no. 14468.

Fig. 21. Incised bowl. Madina Collection, New York, C0325.

Fig. 22. Luster-painted bowl. Brooklyn Museum, Brooklyn, N.Y., 86.227.187. Gift of the Ernest Erickson Foundation.
safely be dated to approximately the same period. Assuming, as is the general rule, that most decorative vogues do not last for more than a generation or two, all of the champlévé wares which have previously been dated to the late twelfth or early thirteenth century have to be considerably back-dated and the splash-decorated pieces which have been placed as early as the ninth to as late as the twelfth century can now be given a secure time slot in the history of Islamic pottery.

4. If the champlévé decorative technique was confined to the eastern Mediterranean and was not an international style, all of the objects bearing designs so executed must be considered Fatimid.

5. Finally, this foundation which has been securely laid from the point of view of both time and space will perhaps serve henceforth as a pivot for the dating, on stylistic and iconographic grounds, of other media such as rock crystal, wood, illumination, and textiles. Although there is not the space here to discuss all the ceramic parallels encountered for the ten champlévé bowls, it appears very clear that their discovery in an unequivocally dated context as well as their attribution to a Fatimid pottery center is bound to alter our thinking about early medieval Islamic pottery (11th–mid-13th century). Taking as an example just one compelling parallel, that between the champlévé ware and luster-painted decoration, it must be conceded that the date and provenance of many well-known ceramic types are no longer as secure as they seemed to be and will have to be reconsidered. To cite only a few problems which must be addressed:

1. The long-accepted date and provenance for a group of carved and monochrome glazed ceramics are called into question when one compares a bowl in the Metropolitan Museum of Art, New York (fig. 18), with a Fatimid luster-painted vessel in the al-Homaizi Collection, Kuwait. The comparison cannot help but focus attention on the so-called taqabi ware since not only does this pottery share principal decorative motifs but body profiles as well as a peculiar rim design with the carved and monochrome glazed ceramic vessels. The technique employed in executing the decoration on both of these ceramic types is identical to that used on the champlévé group except that on the former groups it is the body itself that is carved away and not simply the slip.

2. The date of another carved and/or incised monochrome glazed group — this one associated with Tell Minis, Syria — must also be reconsidered when one is confronted by the comparison of two bowls from this...
group bearing palmette tree designs in the Madina Collection, New York (figs. 19, 21) and a luster-painted bowl in the Museum of Islamic Art, Cairo (fig. 20), and one in the Brooklyn Museum, Brooklyn, N.Y. (fig. 22). Not only is the principal decoration on these two pairs of bowls extremely close, the secondary designs are close as well.

4. Should these three different groups of carved ware, after careful study and reconsideration, prove to date from the eleventh century, the imprecise dating of the rediscovery of faience in the Islamic world could then be securely back-dated.  

5. The so-called Aghkand pottery group contains examples bearing decoration that is so close to that found on the champlevé type such as the lid in the Metropolitan Museum of Art discussed above that the place of origin and dating of the former group must also be reconsidered.

6. The very close relationship between the Aghkand and champlevé groups calls into question the date of another well-known type of luster-painted pottery (figs. 23, 24).

Until the discovery of the shipwreck at Serçe Limanı and the excavation of its pottery vessels, our knowledge of ceramic production in the Islamic world in the eleventh century was extremely meager. In fact, the only type of pottery that could be discussed with any degree of certainty at all as having been made during this time was the Fatimid luster-painted pottery produced in Cairo. Where were the other types of ceramic objects that we could assume were being produced then? Based on the foregoing, I am tempted to speculate that to some extent its scarcity may have been due to a faulty art historical "filling system" and that many of the pieces now classified for example as "Iranian, 12th–13th century" are in fact of the eleventh century and from the Fatimid realm.

Some solid new foundations have been laid here and questions resulting from these securely grounded points of reference have been raised. Has the early medieval ship that became a victim almost a millennium ago of the sudden, unpredictable, and swirling winds of which beautiful Serçe Limanı was capable opened a window on the renaissance of eleventh-century Arab pottery?

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NOTES

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cional Ceramics Museum, Faenza, Italy, no. A.B. 1231.
5. Ibid.
6. Jenkins, "Palmette Tree."
7. Arthur Lane, Early Islamic Pottery: Mesopotamia, Egypt and Persia (London, 1965), p. 26, suggested that champlevé ware imitated "the fine lustre-painted pottery of Rayy, in the later part of the twelfth and the thirteenth centuries." My contention that this ware is imitating luster-painted pottery was thus suggested twenty-five years ago. However, in view of the finds at Serçe Limanı, the time and place of this phenomenon must be revised.
8. Slip-painted ware executed in Nishapur during the Samanid and Ghaznavid periods in imitation of luster-painted ware made in the Abbasid capital of Baghdad and in the Fatimid capital of Cairo copied not only the decoration but the color scheme. Thus the wholesale borrowing suggested here is not unique in Islamic pottery. Charles Wilkinson, Nishapur: Pottery of the Early Islamic Period (New York, n.d.), pp. 179–204 and color plate 8.
10. Ibid., fig. 5 and 8–18.
11. See also Helen Philon, Early Islamic Ceramics, Ninth to Late Twelfth Centuries (London, 1980), fig. 317.
13. Ernst Grube in Islamic Pottery of the Eight to the Fifteenth Century in the Kees Collection (London, 1976), pp. 108–9, clearly saw the need for a clarification of the date and provenance of this ware when he stated, "I am not fully convinced that the present tendency to date the ware to the twelfth or even the thirteenth century rests on as solid grounds as it would appear.... The possibility that slip-carved ware was already made [in the tenth-eleventh centuries] should therefore be seriously con-sidered." In an accompanying footnote he gives good reasons for questioning the attribution to Yasskand and Takhti Sulaiman. Professors Robert Nelson and Frederick Donner of the University of Chicago kindly offered to study the champlevé comptor in the Art Institute of Chicago, said to bear a date as part of its decoration (A.U. Pope and Phyllis Ackerman, eds., A Survey of Persian Art [Oxford, 1939] vol. 2, p. 1508). The object does not appear to bear a date, and I am grateful for this information.
14. Francesco Aguzzi, "I bacini della Torre Civica," Sibirium 12 (1973–75): 187–95, fig. 4. Splash-decorated and Egyptian luster-painted wares were found on this monument as well.
15. Zaki Muhammad Hasan, "Tuhaf jadida min al-khazaf al-Fârîmî
dhî 'l-bariq al-ma'dâni," Bulletin of the Faculty of Arts, Cairo University, 18, 2 (1961), pl. 12, fig. 23.
17. Lane, Early Islamic Pottery, figs. 25B and 33B.
19. Pezard, La céramique archaïque, plate 54.
20. Pope and Ackerman, Survey, vol. 5, pls. 612 and 614B.
21. Ibid., vol. 5, 620B.
22. Hayward Gallery exhibition catalogue, fig. 276, and Lane, Early Islamic Pottery, fig. 26A.
25. I would like to thank Naama Brosh, Israel Museum, Jerusalem, for providing the illustration for fig. 15.
26. Barbara Rivolta of the Islamic Department at the Metropolitan Museum of Art, New York, introduced me to Professor Robert Bull of Drew University in Madison, New Jersey, who had been the director since 1971 of the Joint Expedition to Caesarea Maritima, a consortium of as many as twenty-two colleges, universities and universities in the United States and Canada. Professor Bull put at my disposal all of the sherds and kiln material he and his teams had brought back to Drew for study over the years. I would also like to take this opportunity to thank Mrs. Rivolta for drawing the profiles of the Caesarea sherds I studied for this research project.
27. Robert Mason, Ceramic Petrographer, Royal Ontario Museum, Toronto, Ontario, Canada, examined thin sections by petrographic methods; the United States Bureau of Standards determined the lead isotope ratios of the samples and neutron activation analysis was done by Dr. V.J. Robinson, Department of Chemistry, University of Manchester. Richard Stone, Conservator, Metropolitan Museum of Art, New York, supervised the taking of the thin sections and samples for these tests.
28. He also found a similar petrofabric "in a group of ceramics found at Fustat and considered to be imports from North Africa." However, until it is precisely determined where this group was manufactured, this information is not useful to us.
30. Robert B. Mason et al., "Lead-Isotope Analysis of Islamic Glazes," following in this volume.
31. I. L. Barnes, R. H. Brill, E. C. Deal, and G. V. Piercy, "Lead Isotope Studies of Some of the Finds from the Serçe Liman Shipwreck," Proceedings of the 24th International Archaeometry Symposium (Washington, D.C., 1986), pp. 1-12. This identification with an ore from Anguran does not preclude another lead source altogether. It simply means that among the ores sampled by the investigators, the ratios of the Serçe Liman objects were the closest to that of the ore from northwest Iran.
32. See above, n. 13.
33. Lane, Early Islamic Pottery, p. 12; Philon, Early Islamic Ceramics, p. 36.
34. Louisiana Review 27/3 (March, 1987), p. 78, fig. 51.
35. For example, see Pope and Ackerman, Survey, vol. 5, pls. 605-6, and Pezard, La céramique archaïque, pls. 84-85.
36. See above, n. 14, for further proof for the dating of the pottery associated with Tell Minis.
37. An eleventh-century date for the rediscovery of faience would not be at all surprising given the fact that splashed sgraffito ware found in Fustat, Samarra, Siraf, and Yemen has a slip consisting of angular quartz in a glass matrix. The discovery that stoneware was used in slabs in the ninth and tenth centuries, in Iran and now also Egypt, indicates that the technology was always part of the potter's repertoire, but was not utilized for making entire vessels until conditions were favourable," R. B. Mason, and E. J. Keall, "Petrography of Islamic Pottery from Fustat," Journal of the American Research Center in Egypt, 27 (1990), p. 75.
38. Pope and Ackerman, Survey, vol. 5, Plate 611B.
39. Lane, Early Islamic Pottery, p. 25, Plate 611B.
40. Lane, Early Islamic Pottery, p. 25, Plate 611B.