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The Amorium Project: The 1997 Study Season

C. S. LIGHTFOOT ET AL.

INTRODUCTION

The year 1997 was the final one in the second stage of the program of research at Amorium. As a consequence, the season was largely devoted to the consolidation and assessment of work carried out since 1993 (when the present author succeeded the late Prof. R. Martin Harrison as field director of the project). This article, therefore, not only provides a preliminary report on the results obtained in 1997, but also contains an overview of the project's achievements during the last five years, since recent excavations have enabled us to refine as well as substantially expand our understanding of the history and archaeology of the site (Figs. 1, A).

The team spent most of the season studying and cataloguing material excavated in previous years, and little actual fieldwork was carried out.¹ However, a major development of 1997

The work was generously sponsored by the British Institute of Archaeology at Ankara and in part also funded by Dumbarton Oaks, partly by donations from the Friends of Amorium, among whom Yüksel Erimtan (of EMT, Ankara) deserves special mention. The project participants are grateful for the continued support of the Turkish authorities both in Ankara and in Emirdağ, and for the help and advice provided by Prof. Cyril Mango and Dr. Marlia Mango. Special thanks must also go to Melih Arslan, Richard Ashton, Doç. Dr. Ebru Parman, and Dr. Hüseyin Tanrıku for their unstintingly generous support for the project. Visitors to the site during the excavations included Prof. Peter Kuniholm, Prof. Thomas Drew-Bear, Prof. Kenneth Harl, Dr. Stanley Ireland, and Prof. John Devreker (together with other members of the Pessinus team). We were also delighted to welcome Michael Mace (the Canadian ambassador), Thomas Wheeler (the South African ambassador), and Cafer Okray (of UDAŞ, Ankara), all of whom showed great interest in the progress of our work.

¹The team comprised twenty-seven archaeologists and students, of whom nineteen were Turkish, six British, one German, and one Greek: Prof. Dr. Eric Ivison, Assistant

was the initiation of a program of geophysical surveying, conducted by separate teams led by two Turkish geophysicists. Other projects in and around the site included the continuation of the village survey, during which several new carved stones came to our attention (Fig. 2), and the start of a non-intrusive survey of the extensive necropolis that surrounds the ancient and medieval city (Fig. 3). In addition, an ethno-archaeological survey of the modern village was conducted by two anthropology students from Ankara University. This was intended not only to record the physical structure of the village, which is now in an advanced state of decay and depopulation, but also to preserve the villagers' recollections and impressions of the archaeological ruins. As part of the program of site enhancement, work was carried out throughout the season in an area on the southern slope of the Upper City mound, which in recent years had been turned into an unsightly rubbish dump by some of the villagers. The accumulated trash was cleared away and removed entirely from the site,

Director (College of Staten Island, City University of New York), Yalçın Mergen (University of Anatolia, Eskişehir), Dr. Margaret A. V. Gill, Dr. Mahmut G. Drahor (September 9th University, İzmir), Dr. M. Ali Kaya (Süleyman Demirel University, İsparta), Beate Böhlendorf (University of Heidelberg), Nurşen Özkul (Gazi University, Ankara), Olga Karagiorgou (University of Oxford); Mücahide Koçak, Sultan Şen, Ayşe Taşkin, Feruzat Ülker, İrfan Yazıcı, and Hasan Yılmazyaşar (all from the University of Anatolia); Şafak Gürel and Ebru Şengül (both from September 9th University); Betül Şahin, Işıl Bayraktar, Aylan Erkal, and Aylin Zor (all from Ankara University); Fülya Adıyaman, Tolga Gürbüz, Paola Pugsley, Julie Roberts, Yasemin Tok (Selçuk University, Konya), and Simon Young (University of Durham). The team was joined by the government representative, Mevlüt Üyümez of the Afyon Archaeological Museum, who kindly provided much advice, help, and support throughout the season.

thereby enabling us to investigate the pit into which the material had been dumped. It was thus also possible to test the reliability of the information about the pit provided by men who admitted to taking part in the illicit excavation. In this way the work constituted a valuable corollary to the ethno-archaeological survey.

The study of the human remains, largely from the rock-cut tomb excavated in 1995, was completed at the Dig House, while catalogues of the Roman and Byzantine terracotta lamps, the Ottoman tobacco pipes, the study collection of brick and tile, the loom weights, jar stoppers, and tokens were compiled. Many of the small finds were drawn by Paola Pugsley in preparation for inclusion in the final report on the excavations between 1987 and 1997, and at the same time a preliminary survey of the various groups of metal finds was completed.² Work continued on the massive task of recording the carved stone fragments, with the total recorded since 1992 now reaching 1,256 items, while Thomas Drew-Bear gathered together the epigraphic material in preparation for a corpus of Amorium inscriptions. Further progress was also made in the study of the Byzantine pottery. Beate Böhlendorf, assisted by Yasemin Tok, continued her work on a detailed study of the pottery from the Upper City (trenches TT and UU, Fig. A), while Nurşen Özkul completed an inventory of the Ottoman-period glazed pottery.³ One unexpected result of sorting through the pottery shards was the identification of a small number of handmade fragments from the Upper City. These may belong to the Early Bronze Age; if so, they would constitute the earliest finds from Amorium and provide a glimpse of the early history of the settlement on the mound. Twelve coins were recorded as surface finds during the course of the season, thus making a total of 243 coins re-

covered from the site since 1987. In conjunction with the study of the numismatic material at Amorium itself, a study was carried out (together with Richard Ashton) of the coins in the Bolvadin Municipal Museum. The Byzantine material in particular provides a valuable record of low denomination issues that were circulating in the area, further reinforcing the view gained from the finds at Amorium, namely, that a monetary economy survived and indeed flourished in central Anatolia during the Byzantine period. It is to be hoped that such information will enable scholars to move toward a reassessment of the monetary economy in the Byzantine Empire and of the impact that the presence of a major thematic capital such as Amorium had on the local economy.

GEOPHYSICAL SURVEY

(by Mahmut G. Drahor and M. Ali Kaya)⁴

(a) *History and Research Plan*

Since Amorium is a large site, geophysical investigation has long been recognized as the most practical and efficient way of obtaining information about the general layout of the settlement area.⁵ However, such non-intrusive survey work is only of value if one is able to recognize the significance (and probable date) of the buried features that, given the right conditions, it can reveal. While geophysical survey is often seen as a prelude to excavation (with its results only then tested by trial trenches), at Amorium it was possible to use the information obtained from the excavations that had been carried out in previous years to help with the interpretation and understanding of the geophysical results. The area selected for study in 1997 was the so-called enclosure in the Lower City, which lies between the church and the southeastern slope of the Upper City mound.

²In conjunction with the cataloguing of the metalwork, Mücahide Koçak has undertaken a study of bronze belt buckles in the Afyon Archaeological Museum. In addition to the two examples found at Amorium in 1995 (cf. C. S. Lightfoot, E. A. Ivison, et al., "Amorium Excavations 1995: The Eighth Preliminary Report," *AnatSt* 46 [1996]: 101–2, fig. 5), she has recorded a further forty-five examples, all recently acquired. A full report on this group of material is now being prepared for publication.

³C. S. Lightfoot et al., "The Amorium Project: The 1996 Excavation Season," *DOP* 52 (1998): 332–35 and figs. E–H.

⁴All of the equipment used in this work was supplied by the two teams, and it is fitting to record the gratitude of the Amorium Project to both Dr. Drahor and Dr. Kaya and their respective universities for their help and cooperation. Dr. Drahor was assisted by the two students from September 9th University, Şafak Gürel and Ebru Şengül, while Feruzat Ülker from the Amorium team volunteered to act as Dr. Kaya's assistant.

⁵R. Martin Harrison attempted to exploit the use of magnetometry in the very first year of excavation, but, sadly, no results were obtained; cf. R. M. Harrison, "Amorium 1988: The First Preliminary Excavation," *AnatSt* 39 (1989): 171 n. 11.

Part of the surrounding earth-covered bank had been excavated in 1996, revealing the remains of a massive defensive wall. The excavations had shown no sign of any Turkish-period activity in Trench XA/XB (Fig. A), and this encouraged us to believe that the enclosure contained only Byzantine (and earlier) features. Indeed, in the light of the preliminary findings a hypothesis was formulated that the enclosure may have been a middle Byzantine military compound.⁶ The aim of the work carried out during a period of intensive work on 1–16 August was to identify traces of the structures and layout within the enclosure.⁷ This would enable the archaeologists to formulate better a plan for the excavation of the enclosure in future seasons.

Three principal methods of geophysical survey have been adapted for archaeological applications—resistivity, magnetometry, and the self-potential (SP) method—and all three were tested at Amorium during the season's work. They detect either changes in ground resistivity (and, conversely, conductivity) or variations in magnetic intensity. Each method has its own advantages (and disadvantages) and gives different results, which, when all the results are correlated, provides for a more thorough picture of the area surveyed.⁸

Resistivity: Resistivity involves transmitting an electrical current through the ground in order to detect buried features by measuring the varying amounts of resistance that are encountered. It is suitable for most types of sites, but those that have very stony soils or extremely dry (or wet) conditions can give poor and/or misleading readings.⁹ *Magnetometry:* When clay and certain other materials are heated to a temperature of about 700° Celsius, they ac-

quire a magnetic force, or “signature,” of their own. A magnetometer measures the differences of magnetism in buried remains and can thus detect anomalies caused by the presence of material with an individual “signature.” The method is, therefore, particularly useful for detecting features such as kiln sites, rubbish pits containing quantities of ash, and burnt layers.¹⁰ *Self-Potential Method:* The self-potential effect is a natural voltage measured by two electrodes and a voltmeter. Variations in soil porosity caused by digging and backfilling should give rise to variations in the voltage measured by an SP survey. Likewise, using the SP method it should be possible to detect the presence of a relatively non-porous body such as a buried solid stone wall, while a loose stone or brick assemblage that allows water to pass through it should give quite a different reading. Thus, the SP method can be used for mapping disturbed features and buried structures.¹¹

(b) Methodology

The area investigated was divided into ten squares measuring 20 × 20 m (Fig. B). The resistivity survey was carried out using a twin probe array in squares A1, A2, B1, B2, B3, B4, C1, and C2. For this survey the grid intervals were set at 1 × 0.5 m, while the electrode spacing was at 1 m. Geomagnetic data were also collected for squares A1, A2, A3, B1, B2, B3, C1, C2, and C3, with grid intervals set at 1 × 1 m. In addition, self-potential measurements were taken for the area designated as “SP,” where very high resistivity and magnetic values had been recorded. The data for “SP” were collected using a gradient measurement technique, and for this the electrode spacing was set at 3 m, while the grid intervals were 1 × 0.5 m. For the geomagnetic survey, a separate grid of nine 20 × 20 m squares was used, and readings were taken at 1 m intervals. The sensor height of the magnetometer was initially set at a minimum depth of 0.6 m and a maximum of 1.8 m; further readings were then taken with

⁶Lightfoot et al., “1996 Excavation Season,” 335.

⁷Initial attempts to conduct a resistivity survey of another, unexcavated section of the enclosure wall proved unsuccessful, since the density and spread of the stone rubble in the earth bank meant that signals were not transmitted between electrodes.

⁸See M. G. Drahor, “Arkeolojik Alanlarda Jeofiziksel Prospeksiyonun Önemi,” in *IX. Araştırma Sonuçları Toplantısı, Çanakkale, 27–31 Mayıs 1991* (Ankara, 1992), 235–50.

⁹See M. Joukowsky, *A Complete Manual of Field Archaeology: Tools and Techniques of Field Work for Archaeologists* (Englewood Cliffs, N.J., 1980), 48–49. Soil conditions at Amorium are usually very dry in midsummer, so the unseasonal rains facilitated greatly in obtaining good results from the resistivity work.

¹⁰Joukowsky, *A Complete Manual*, 49–50.

¹¹See J. C. Wynn and S. I. Sherwood, “The Self-Potential (SP) Method: An Inexpensive Reconnaissance and Archaeological Mapping Tool,” *Journal of Field Archaeology* 11.2 (1984): 195–204, esp. 195–200.

the sensors set at 0.6 m and 1.2 m, respectively. At daily intervals, readings were also taken at certain points to check if the selected area showed any signs of major fluctuation in its magnetic field.

(c) The Resistivity Survey

Once the readings had been taken, they were processed on site in order to create an apparent resistivity map from the raw data. This map revealed that high resistivity contours were concentrated in the southern and the southeastern parts of the area surveyed, whereas the northern and the northeastern sectors produced low resistivity contour levels (Fig. C). Very high resistivity values indicate that structures lie very close to the surface, and from this it would seem that there is a large building in the southern sector of the enclosure. In addition, a signal detection filter was used to locate features such as walls and to determine the effects of the resistivity signals with regard to the increase of the signal/noise ratio. As a result, a signal detection filter map was produced, which showed clearly the presence of the walls of this large structure (Fig. D).

(d) The Self-Potential Survey

The area in which very high magnetic and resistivity readings were detected was selected for further study using the self-potential method (Fig. E). The data were collected first by the gradient measurement technique with a pair of non-polarized copper-copper sulphate electrodes, then by contact resistance, and finally by the gradient self-potential method using metallic electrodes. The results obtained from the gradient self-potential survey correspond closely to those produced by the contact resistivity survey. The two maps are virtually identical, confirming the accuracy of the various readings with regard to both the polarization focal depth distribution and the horizontal projection of the polarization centers. Although the gradient self-potential map disclosed some deficiencies in the use of this technique for revealing archaeological features, the analysis of anomalies detected by the forward and inversion techniques clearly showed direction lines with some polarities.

(e) The Geomagnetic Survey

Approximately 3,650 points were mapped within the 60-meter square grid, and the readings were processed on site, using different signal analysis methods (Fig. F). Several magnetic anomalies with high amplitudes were detected in the southern, southeastern, and northeastern parts of the enclosure; these indicated the presence of burnt material.

(f) Preliminary Results

First and foremost, the season's work has proved conclusively that the physical conditions at Amorium are conducive to geophysical survey, both resistivity and magnetometry methods. The success of the operation was in part due to the selection of an area that was both large enough to give a clear overall picture and known from surface observation and previous excavation to contain features that in all probability belonged to a specific period and formed part of the same complex; but in part it was also the lucky result of favorable weather conditions.¹² Now that a start has been made, it should be possible to hone the use of equipment and techniques in the future in order to apply the results most effectively to the understanding of the site. Knowledge obtained from the various trenches opened in previous seasons suggests that the best results are likely to come from the Lower City where relatively undisturbed Byzantine structures, often containing burnt strata, have been found. The Upper City mound possesses a much more complex stratigraphy, stretching right up to the eighteenth century, and so is likely to provide a more confused picture. It is hoped, however, that over the coming years a program of survey in the Lower City will supply the archaeologists with a good idea of the layout both of individual structures and of the city as a whole.

The specific results obtained in 1997 were also very satisfactory. Traces of several structures within the enclosure were revealed, although no regular plan was detected in them. A large building, measuring some 20 m square,

¹²One may compare these results with the conclusions drawn from similar work at Sardis; cf. C. H. Greenewalt, Jr., and M. L. Rautman, "The Sardis Campaigns of 1994 and 1995," *AJA* 102.3 (1998): 501.

was identified not far from the northwestern balk of Trench XB. It lies immediately below the modern ground surface; and expectations are that excavations in 1998 may provide evidence that the structure is contemporary with the enclosure wall and give some indication of the role that it served within the compound.

CARBON-14 RESULTS

Two ash samples were taken from Trench XA/XB in 1996 in order to obtain more information about the dating of the enclosure wall.¹³

Sample 1 was taken from Context XA25 in the trench outside the wall. The ash filled a small pit beside the end of the stone trough that protruded from under the enclosure wall (Context 4). The pit was located between the trough (Context 32) and the rubble stone wall foundations (Context 21) running parallel to the enclosure wall. Its fill comprised gray-black ash and a small quantity of bone. The pit was sealed before the robbing of the cross wall (Context 18), and belongs stratigraphically with the trough. The ash sample should, therefore, predate the construction of the enclosure wall. The radiocarbon "BP" age is given as 1480 \pm 100 BP (the Measured Radiocarbon Age with an assumed $^{13}\text{C}/^{12}\text{C}$ ratio of -25 per mil relative to PDB-1). This may be converted into a calendar date of A.D. 470. The calendar calibrated results (2 sigma, 95% probability) are given as cal. A.D. 395 to 720 and cal. A.D. 735 to 760.

Sample 2 (Context XB16) was taken from a thick ash layer in the south section of the trench within the enclosure. This burnt layer spread out in a decreasing thickness from immediately beside the enclosure wall at a depth of 1.54 m below the surviving top of the wall. It was associated with a horizontal row of blackened stones that was noted in the wall, above which there was a new row of larger blocks, taken to mark the foundation course of the Phase 2 wall. The ash deposit lay below Context 15, a layer of packed earth next to the

enclosure wall, which may be interpreted as a surface created during the construction of the Phase 2 wall. Below Context 16 was found another surface (Context 17), which contained many pottery and bone fragments. This lay above the rubble wall (Context 24), which appears to be stratigraphically contemporary with the two troughs found on this side of the enclosure wall. The ash layer is, therefore, placed between the construction of Phase 1 and Phase 2 of the enclosure wall. The radiocarbon "BP" age is given as 1160 \pm 40 BP (the Measured Radiocarbon Age with an assumed $^{13}\text{C}/^{12}\text{C}$ ratio of -26.1 per mil relative to PDB-1). This converts into a calendar date of A.D. 790. The calendar calibrated results (2 sigma, 95% probability) are given as cal. A.D. 785 to 985.

The intercept of the radiocarbon age with the calibration curve offers different dates for the two samples: Sample 1 = cal. A.D. 605, and Sample 2 = cal. A.D. 885. These dates should, however, be regarded as very speculative, and are not to be taken on their own as proof for the dating of the contexts from which the samples were taken. There is obviously a need to clarify these results by taking further samples and also comparing them with the information supplied by the other finds. Indeed, such scientific evidence is valuable principally as a means of providing independent confirmation of the dating sequence that has been arrived at during excavation by close attention to the details of stratigraphy, architectural features, and the various small finds. In this respect, the results of the C-14 tests would seem to support the view that the enclosure is a feature of the Byzantine city and that its defensive wall was probably not built before the eighth century.¹⁴

BONE REPORT (by Julie A. Roberts)

The season's work included the continuation and completion of the analysis of the human remains from the rock-cut tomb (MZ01, Fig. A), located in the west necropolis.¹⁵ Preserva-

¹³The samples were processed by Beta Analytic Inc. of Miami, Florida. The project participants are extremely grateful to John Giorgi and the Museum of London Archaeology Service for arranging the dispatch of the samples to the laboratory.

¹⁴For details of the excavation, see Lightfoot et al., "1996 Excavation Season," 327–28, figs. A–D and 9–15.

¹⁵Lightfoot, Ivison, et al., "Amorium Excavations 1995," 97–102; Lightfoot et al., "1996 Excavation Season," 328–29.

tion of the remains was generally poor, since all the larger fragments had been examined during the previous season. All skeletal elements were represented, indicating that these were probably primary burials of whole individuals; but the assemblage consisted mainly of vertebrae and bones from hands and feet. All data are presently being integrated with the information obtained in 1996 in preparation for a full report.

A total number of 6,256 fragments was recorded, and from these a further twenty individuals were identified, bringing the total number of burials within the tomb to ninety-three. This is a conservative estimate based on the femora and humeri alone; other skeletal elements have yet to be considered, but, once all the data have been processed into an MNI (Minimum Number of Individuals) computer program, it should be possible to ascertain more precisely the number of individuals who found their last resting place in the tomb.

The calculation of age at death was based on epiphyseal fusion, dental development and attrition, the appearance of the auricular surface and pubic symphysis of the pelvis, and the sternal ends of the ribs. Ectocranial suture closure was also taken into consideration but used only as a guide since it can be an unreliable indicator. Wherever specific age ranges could not be assigned, the general categories of Young Adult (18–30 yrs.), Middle Adult (31–45 yrs.), and Mature Adult (46+ yrs.) were applied. In some instances it was possible to state only that an element was Adult or Immature (<18 yrs.). At the present time, fifty-eight of the individuals are thought to be adult, and thirty-five to be sub-adult. The precise number of individuals within each age group has not yet been calculated, but it appears that the majority of the immature individuals were aged between 0 and 5 years at death.

Sex was determined by the identification of morphological differences in the male and female pelvis and cranium, as well as by the consideration of postcranial metric data. A record of the numbers of males, females, and adults of unknown sex was compiled, and it is hoped that the analysis of these figures will reveal any sex-specific mortality patterns.

Each individual fragment was examined for evidence of pathology, which was then classi-

fied according to its cause, as either infectious disease, degenerative disease, congenital abnormality, trauma, dental disease, neoplastic disease, or autoimmune disease. Relatively little pathology was identified, but among the conditions present were osteoarthritis (degenerative joint disease), dental disease, periostitis (superficial bone disease), minor traumatic injury, and cribra orbitalia (evidence for iron deficiency anaemia). Of these, the most frequently occurring conditions were degenerative joint disease and dental disease.

COINS AND LEAD SEALS

Since no proper excavations were conducted this summer, the number of coins recovered during the season was smaller than usual. Only twelve copper alloy coins were recorded, of which all but one were surface finds. The frequent heavy rains that bedeviled the season's work actually aided the recovery of coins and other small objects from the surface of the site. In addition, in Emirdağ another two coins were recorded as having been found in the nearby village of Demircili.¹⁶ These were subsequently acquired by the government representative, Mevlüt Üyümez, and taken to the Afyon Archaeological Museum. Casts were also taken to be added to the project records.

Since the project's conservator, Karen Barker, did not attend the excavations this summer, the coins found at Amorium in 1997 still await cleaning and consolidation. Permission to take the finds directly to Ankara for this conservation work was not immediately forthcoming from the Directorate of Monuments and Museums, and, consequently, all of the coins were deposited in the Afyon Archaeological Museum at the end of the season. The present report thus represents only the results of an initial inspection of the coins, and further work will be required once they have been cleaned. However, it has been possible to identify eight of the coins with some confidence. Of particular note are two further issues of the Amorium mint: one (SF3703) is an Augustan coin bearing the name of the magistrate Kal-

¹⁶The coins were in the possession of Ömer Ünlü, a shopkeeper in Emirdağ, who stated that he had acquired them from a relative living in the village. For the position of Demircili in relation to Amorium, see Harrison, "Amorium 1988," 168, fig. 1.

lippos, while the other, from Demircili, belongs to the reign of the emperor Nero.¹⁷ As in previous years, however, the majority of the finds belong to the Byzantine period; they include issues of Nikephoros I (SF3720), Michael II (SF3705), and Romanos I (SF3709), as well as an anonymous follis of class A2 (SF3704) and two signed folles of Constantine X (SF3700 and SF3707).¹⁸

The other coin from Demircili was also in good condition and was later identified from photographs and casts by Adil Özme. It proved to be of a very unusual type, depicting on the obverse a figure seated on a throne. No exact parallel has been found, but it has been attributed to the Seljuk sultan Kılıç Arslan III, who occupied the throne as a six-year-old child for a mere eight months in 1204–5.¹⁹

In addition, three lead seals (SF3702, SF3711, and SF3719) were found during the season, whereas previously only two examples had come to light in ten years of work at the site. All three probably date to the middle Byzantine period (tenth–eleventh centuries).²⁰ The last (SF3719, Fig. 4), a particularly impressive example, is the only seal recovered so far from the Upper City,²¹ while most of the others have been found in the vicinity of the Lower City church. The obverse depicts a bust of the Virgin Mary holding the infant Christ on her left arm; in the field to the left and right are the letters $\overline{MHP}/\overline{\Theta V}$; there is a border of dots. The reverse bears a six-line inscription, also within a border of dots: $\Theta KER\Theta / [N]IK-H\Phi OPW / [M]AΓICTPW / [R]ETAPXSK / [TE]-ΠANTW / MEΛ[C]N$, that is, $\Theta(\epsilon\sigma\tau\acute{o})\kappa\epsilon, \beta(\omicron\eta)$ -

$\theta(\epsilon\iota)$ Νικηφόρω, μαγίστρῳ, βε(σ)τάρχ(η), (καὶ) κ(α)τεπάν(ω), τῷ Μελ(ι)σ(η)νῷ. The seal can thus be seen to have belonged to Nikephoros Melissenos, who was a *vestarches*, *magistros*, and *katepano*; it may be dated to 1067–78.²² This find is significant because it proves that powerful military men can be associated with Amorium even in the third quarter of the eleventh century; it indicates that the city was still an important enough place to find people there who were worthy of receiving letters from such as Nikephoros.²³

Over thirty years ago Speros Vryonis stated in a lecture delivered in Ankara that “it would be of considerable interest to have a general tabulation of Byzantine coins in the various collections and museums of Anatolia at the present.”²⁴ Despite the importance of such work for the study of the survival of a monetary economy and the continued existence of urban sites in Anatolia during the Byzantine period, little progress was made in that direction until the last few years. Now, however, the Byzantine coin collections in Afyon, Amasya, Fethiye, and Sinop museums have been the subject of study by Turko-British teams.²⁵ To add further to this body of evidence, a short season of work was carried out in Bolvadin at the kind invitation of Muharrem Bayar, the headmaster of the Bolvadin Anatolian High School. The Bolvadin Municipal Museum houses a small but significant collection of coins, most of which are believed to be local finds; it was thought worthwhile to study this material, both to compare finds from the area of ancient and Byzantine Polybotus, which lies 5 km west of Bolvadin, with those from Amorium and to provide a useful supplement to

¹⁷RPC 3231/1 and RPC 3240/1, respectively (A. M. Burnett, M. Amandry, and P. Ripollès, *Roman Provincial Coinage*, vol. 1, 44 BC–AD 69 [London-Paris, 1992]).

¹⁸After the close of the dig season, several more coins were picked up from the surface of the site by the excavation guard, Bilâl Eryiğit; they included an issue of the emperor Arkadios, a class 1 follis of Theophilos, and another anonymous follis. These will be properly recorded and studied in the next season.

¹⁹A report on this coin has been prepared for publication separately; see A. Özme and C. S. Lightfoot, “Afyon Müzesi’deki Figürlü Bir Anadolu Selçuklu Sikkesi Üzerinde Etüt,” in *Türk Arkeoloji Dergisi* (forthcoming).

²⁰In the identification of these, help was received from Olga Karagiorgou, who plans to prepare the final report on all the seals found so far.

²¹It was found on the surface in Trench TT on 12 August; it had clearly washed out of the balk during the heavy rain on the previous day. It measures 29 mm in diameter and weights 14.6 g.

²²G. Zacos and A. Vegler, *Byzantine Lead Seals* (Basel, 1972), 1.3:1480–81, no. 2697 and pl. 180. By a strange coincidence, another example was recently put up for auction in New York; see *Classical Numismatic Group*, sale catalogue (2–3 December 1997), lot 1815.

²³Another seal with an identical obverse but different reverse legend indicates that Nikephoros was also a *dux* of Triaditza (Serdica); cf. Zacos and Vegler, *Byzantine Lead Seals*, 1481, no. 2697bis. It is possible, therefore, that the letter sent to Amorium by Nikephoros had come from Bulgaria.

²⁴S. Vryonis, “Problems in the History of Byzantine Anatolia,” *Ankara Üniversitesi Dil-Tarihi-Cografya Fakültesi Tarih Araştırmaları Dergisi* 1(1963): 113–32, esp. 126.

²⁵S. Ireland, “The Ancient Coins in Amasra Museum,” in *Studies in Ancient Coinage from Turkey*, ed. R. Ashton (London, 1996), 115–37.

the catalogue of the coin collection in the Afyon Archaeological Museum, being prepared by Ashton and John Casey. Indeed, the impression was gained from the material still in Bolvadin that the best coins from the area had probably been transferred to Afyon some years earlier. The Bolvadin collection thus forms part of a larger corpus of numismatic finds from this part of the Afyon province. In addition, the visit to Bolvadin provided the opportunity to view coins in two private collections, from which a number were selected for study, so that in total 285 coins were recorded (with dimensions, weight, and die axis) and casts were made for future use and photographic purposes.²⁶ Of these, eighty-four were identified as Byzantine coins from the sixth to the eleventh century, and, as at Amorium, a large proportion are anonymous and signed folles of the late tenth and eleventh centuries. There are, however, also a fair number of issues from the reigns of Anastasios, Justin I, Justinian I, and Maurice Tiberios, whereas at Amorium coins of the sixth century are extremely rare.

GLASS FINDS (by Margaret A. V. Gill)²⁷

The site continues to produce large numbers of bangle fragments, both from the excavation trenches themselves and as surface finds, making this one of the most important collections for the study of medieval glass bracelets. With such a large sample, it has been possible to assemble a group of pieces illustrating a variety of different types, colors, shapes, and sizes, and by careful inspection of each fragment to identify features that help to explain how the bracelets were formed, which is a process that is still imperfectly understood.

In all, fragments from some 1,284 bracelets

²⁶R. Ashton, C. S. Lightfoot, and A. Özme, "Ancient and Mediaeval Coins in Bolvadin (Turkey)," in *Anatolia Antiqua* (forthcoming).

²⁷For earlier reports, see R. M. Harrison et al., "Amorium Excavations 1991: The Fourth Preliminary Report," *AnatSt* 42 (1992): 219, 221, and fig. 6, nos. 18–30; R. M. Harrison, N. Christie, et al., "Excavations at Amorium: 1992 Interim Report," *AnatSt* 43 (1993): 161 and fig. 4; C. S. Lightfoot et al., "Amorium Excavations 1993: The Sixth Preliminary Report," *AnatSt* 44 (1994): 123–26 and fig. 3; Lightfoot, Ivison, et al., "Amorium Excavations 1995," 107–9 and fig. 8; C. S. Lightfoot and E. A. Ivison, "The Amorium Project: The 1995 Excavation Season," *DOP* 51 (1997): 296 and fig. C.

have come to light so far, including 527 from earlier seasons, which will be published in the final excavation report for the years 1987 to 1992, and 105 surface finds collected after the close of the main 1997 season and still waiting to be examined. Of the 652 pieces from the 1993–97 seasons, 103 showed traces of painted decoration; and among these, of particular interest are a small group of fragments that provide further evidence for the process of manufacture. These suggest that some (probably most) middle Byzantine painted bracelets were decorated at the straight-rod stage, before being reheated, curved into a circle, and having the overlapping ends fused. In seven cases, it is the section of the overlap that has been preserved. As soon as a softened rod was removed from the heat, the surface began to lose its viscosity more quickly than the interior so that, when the overlapping ends were pressed together, glass from the more fluid interior spread out beyond the edge of the surface. On one such fragment (Fig. G, no. 1) the tail of the tadpole-like blob of paint coincides exactly with the end of the rod; the overlap, however, extends further (with the weathering of the surface emphasizing the flow of the more viscous interior), indicating that the join was made after the application of the paint. Similarly, on a second fragment (Fig. G, no. 2) the lines on one side of the join terminate abruptly at the original end of the rod but at a distance from the edge of the overlap, while on the other side of the join, the tip of the cross-and-quirk pattern is just visible as it disappears under the spread from the interior of the rod. A similar feature was noted on other fragments; the central zigzag line on one (Fig. G, no. 3) and the ends of two lines on another (Fig. G, no. 4) are clearly visible beneath the overlap, while the patterns on two further examples (Fig. G, nos. 5–6) disappear beneath the overlapping end of the bracelet. On the former fragment (Fig. G, no. 5), the final spiral has been distorted by tooling associated with work on the join. When a straight rod was held to the heat, it was attached at its midpoint to a pontil, the scar from which is visible on many of the Amorium fragments. On four examples (Fig. G, nos. 7 [not illustrated] and 8–10), part of the design has been damaged and obliterated by the application of the pontil and its

subsequent removal, thus confirming that the painted decoration was applied before the pontil was used to form the rod into a bracelet. More indirect evidence for the painting of bracelets at the straight-rod stage is provided by two further fragments (Fig. G, nos. 11–12), with elaborate decoration completely encircling the rods: such ornamentation would have been difficult to execute had the bracelets already been formed, yet there is no hint on either of the surviving pieces of any problem that the craftsmen might have experienced in dealing with what would have been the less accessible inner faces.

Finally, one fragment (Fig. G, no. 13) demonstrates not only the craftsman's skill but also his fallibility. It is of a more common type, of square cross section, decorated on three faces with a series of ovals between groups of end-lines on either side of the overlap and with a reserve area on the opposite (pontil) side. This type was probably intended to be worn on its own so that all three painted faces would be visible; it was unnecessary for the fourth face to be decorated, as it would be unseen against the wrist. The actual painting of this example is characteristic, but the orientation of the sides is peculiar: while one of the three exposed faces is plain, one of the patterned faces is hidden on the inside. Clearly, the rod was painted as a normal bracelet, and the error took place after the rod had been decorated and while it was being bent into a circle, with a careless craftsman inadvertently giving it a 90° twist. This fragment, found in a secure middle Byzantine context in Trench XA just outside the Lower City enclosure wall, also indicates that such malformed bracelets were not always rejected by the manufacturer but were sent for sale, and indeed found a purchaser who was clearly not very fastidious. One can assume that it would have been easy for the craftsman to spot his error and discard the object, putting it in a pile for recycling. The fact that he did not do so may have economic implications: perhaps, the craftsman who formed the bracelet was different from the one(s) who created the glass rod and painted it. This may go some way toward explaining the general uniformity of Byzantine painted bracelets and their wide distribution, and it may not be too wild to hazard the suggestion that the rods

were created and decorated at a limited number of centers, from which local glassworkers purchased stock to turn into bracelets. This would certainly explain why the maker of the present example was reluctant to reject it despite his clumsy error: he would not have been able to reuse the piece of glass himself but would have had to write it off as waste. However, it is, of course, possible that some completely different reason explains the fortuitous survival of this malformed bracelet.

A study of the glass vessel fragments from the early excavation seasons showed that the most common form used at Byzantine Amorium (second only to wine glasses) was the blue coil bowl. Blown in paler shades of bluish green and light green metal, the vessels are roughly hemispherical in shape, with a blue coil base ring, a fire-polished blue or light blue coil around the edge of the rim, and occasionally further trails lower down the side. However, more recent finds prove that Blue Coil Ware was produced in a wider range of body color, including colorless and various shades of yellow, that in some instances two techniques of decoration were combined, and that forms other than bowls were also manufactured in the ware.²⁸ There are a few shards from Amorium with a band of relief decoration just below the rim; in one case the repeat impressed pattern was clearly made using patterned tongs, but in other cases the technique is less certain. Three of these shards are from blue coil bowls, with relief decoration below the blue coil rim. The outlined ellipse motif (Fig. H, no. 15) appears on both plain and blue coil rims. Despite the apparent difference in color (which is due to a difference in the thickness of the glass), it is possible that the base fragment (Fig. H, no. 16) may belong to the same vessel as one or another of the rim fragments (Fig. H, nos. 14–15). Another fragment (Fig. H, no. 17) represents a form new at Amorium. The lobed mouth was probably from a jug or, possibly, a small quatrefoil beaker; while one

²⁸ Similar fragments of Blue Coil Ware have been found in the excavations at St. Nicholas church, in Demre, Lycia; see Y. Olcay, "Cam Buluntular," in S. Yıldız Ötügen, "1995 Yılı Demre Aziz Nikolaos Kilisesi Kazısı," in *XVIII. Kazı Sonuçları Toplantısı II, 27–31 Mayıs 1996* (Ankara, 1997), 477 and ill. 7; S. Yıldız Ötügen, "Demre Aziz Nikolaos Kilisesi Kazısının Ortaçağ Araştırmalarına Katkıları," *Ege Üniversitesi Sanat Tarihi Dergisi* 9 (1998): 95–96 and fig. 2.

lobe is certainly spouted and the neck appears narrow, the mouth is not a regular trefoil shape and the lobed sides are more characteristic of a beaker. There is another enigmatic shard with blue trail decoration: it is completely flat, which suggests that the fragment may have come from the wall of a square bottle.

Another type of luxury glass from middle Byzantine contexts is represented at Amorium by a mere dozen shards that are fragments from at least two different shapes of goblet. This Red Streak Ware (Fig. I, nos. 18–23) is characterized by a bluish green translucent metal streaked with red. One fragment (Fig. I, no. 23) from the belly of the bowl in addition has remains of yellow enamel decoration in two wavy bands around the circumference; it may have come from the same vessel as the base fragments (Fig. I, nos. 20–21).

Selected Glass Finds

Glass bracelets: painted decoration (Fig. G)

1. (B30) Upper City, Trench L, Context 369. Fragment. Estimated diameter: 8 cm. Cross section flattish; with tooling at join. Light green with painted decoration in red: spiral linked to part of a second spiral; dab of paint in the tooled indentation above the overlapping join.
2. (B35) Upper City, Trench L, Context 370. Fragment. Diameter uncertain. Cross section flattish rectangular; with tool mark at join. Greenish blue with opaque red thread and painted decoration in white: St. Andrew's cross with quirks between arms on one side of the join, and two curved lines on the other side.
3. (B274) Upper City, surface find. Fragment. Estimated diameter: 8 cm. Cross section rectangular; with join. Mid-green with painted decoration in red and white: white zigzag along the center, red zigzag on one side, and a line probably with beginning of a second zigzag on the other side.
4. (B193) Upper City, Trench TT, Context 59. Fragment. Estimated diameter: 5.5 cm. Cross section flattish oval; with tool mark at join. Surface of rod uneven. Pale green with painted decoration in red and white: part of a white spiral with tendril, red angular spiral, and red hatched oval; crudely painted.
5. (B92) Upper City, Trench L, Context 409. Fragment. Estimated diameter: 4.5 cm. Cross section flattish triangular, with inlaid thread along carination; one end flattened with tool mark at join. Green with opaque red thread and painted decoration in white: row of running loops on either side of inlaid thread.
6. (B291) Dig House, surface find (from earth used in roof of dismantled out-house). Fragment. Estimated diameter: 7.5 cm. Cross section flattish oval, with exterior groove; band shaped with shoulders and constriction toward join. Reddish brown with painted decoration in uncertain color, probably originally silver: row of running spirals, with groups of two or four end-lines on either side of the groove.²⁹
7. (B87) Upper City, Trench L, Context 409 (not illustrated). Fragment. Estimated diameter: 7.5 cm. Cross section semicircular; with pontil scar. Light blue with painted decoration in uncertain color: parts of three oval medallions, with traces of tendril in one.
8. (B506) Upper City, Trench UU, Context 89. Fragment. Estimated diameter: 8.5 cm. Cross section round; with pontil scar. Greenish blue with painted decoration in creamy white: two (possibly three) oval medallions with line-and-dot borders, containing cross-pommées.
9. (B391) Lower City, Trench LC4, Context 6. Fragment. Estimated diameter: 8.5 cm. Cross section semicircular with flanges; with pontil scar. Light blue with painted decoration in creamy white: series of five medallions with knots and sprigs in spandrels; leafy scrolling motifs in three medallions, with intervening medallions probably left blank; row of dots along each flange.
10. (B111) Upper City, Trench L, Context 417. Fragment. Estimated diameter: 7.5 cm. Cross section round; with pontil

²⁹Lightfoot, Ivison, et al., "Amorium Excavations 1995," 108, no. 5 and fig. 8, no. 5 (where a misprint occurs in the description).

scar. Mid-blue with painted decoration in white: parts of two elongated lozenges containing scrolls and tendrils, with leafy filling scrolls between.

11. (B670) Upper City, surface find. Fragment. Estimated diameter: 7.5 cm. Cross section round. Dark blue with painted decoration encircling rod, in gold, red, and yellow: two registers with similar designs, consisting of two medallions and part of a third containing crosses in quatrefoils; interstices between medallions filled with dotted lozenges; to side of medallions, two panels containing spiraling sprig motifs. Pattern in gold with red crosses and yellow dots.
 12. (B38) Upper City, Trench L, Context 377. Fragment. Estimated diameter: 7 cm. Cross section round. Opaque appearing black with painted decoration encircling rod, probably in gold: panel delimited by end-line, containing spiral and curvilinear elements.
 13. (B433) Lower City, Trench XA, Context 11. Fragment. Estimated diameter: 7.5 cm. Cross section square; with twist at either end of fragment. Light green with painted decoration in creamy yellow: similar design on three sides, consisting of a series of five or six ovals between pairs of end-lines; reserve section; hastily painted with some ovals linked and others open.
- Glass vessels: Blue Coil Ware (Fig. H)
14. (L380b) Upper City, Trench L, Context 380. Fragment from upper part of bowl. Estimated diameter of rim: 8 cm. Greenish yellow with blue coil. Rim rounded and thickened; colored coil at edge and relief decoration below: part of wavy line with superimposed ellipse.
 15. (L/surface97a) Upper City, Trench L, unstratified (from surface in pithos pit). Fragment from upper part of bowl. Estimated diameter of rim: 8 cm. Greenish yellow with blue coil. Rim rounded and thickened; colored coil at edge and relief decoration below: parts of two outlined ellipses. Side convex, almost vertical.
 16. (L419a) Upper City, Trench L, Context 419. Base of bowl. Diameter of base ring: 3.5 cm. Yellowish brown with blue coil.
- Flat bottom with thickened center and pontil mark; colored complex coil base ring; inner spiral linked to surrounding circle.
17. (LC4/4g) Lower City, Trench LC4, Context 4. Fragment from mouth of jug. Estimated width of rim: 4 cm. Purple colorless with blue coil. Quatrefoil mouth; flaring wavy edge, and one lobe more pinched and pressed down to form spout. Rim folded in; colored coil at edge. Neck cylindrical.
- Glass vessels: Red Streak Ware (Fig. I)
18. (UU107a) Upper City, Trench UU, Context 107. Fragment from upper part of goblet. Estimated diameter of rim: 6 cm. Bluish green, streaked with red. Rim rounded and thickened, outsplayed. Concave neck; sloping shoulder.
 19. (XB14a) Lower City, Trench XB, Context 14. Fragment from upper part of goblet. Estimated diameter: 6 cm. Bluish green, streaked with red. Tubular rim, folded inward; side flaring upward.
 20. (TT56a+TT76a-b) Upper City, Trench TT, Contexts 56, 76. Three joining fragments from base of goblet. Estimated diameter of base: 6 cm. Colorless bluish green, streaked with red. Splayed foot with rounded edge.
 21. (TT67a) Upper City, Trench TT, Context 67. Fragment from base of goblet. Colorless bluish green, streaked with red. Splayed foot with rounded edge. Probably from the same vessel as the preceding fragments.
 22. (Surface96g) Lower City, surface find. Fragment from base of goblet. Estimated diameter of base: 4.5 cm. Bluish green, streaked with red. Tubular foot with pushed-in bottom and pontil mark.
 23. (TT86d) Upper City, Trench TT, Context 86. Fragment from bowl of goblet. Bluish green with touch of red. Opaque yellow decoration: wavy festoon around circumference of bowl; traces of the second festoon below.

MOSAIC TESSERAE, TERRACOTTA LOOM WEIGHTS, AND TOKENS (by Feruzat Ülker)

The study and conservation of the large quantity of glass mosaic tesserae recovered

from the site during the excavations were begun in earnest in 1994. In that year more than 17,800 individual tesserae were cleaned, sorted, and counted.³⁰ Since then, however, further material has been found, again principally in the church during work undertaken in 1995 and 1996. From the recorded contexts it was observed that the majority of tesserae came from the area of the apse and the south aisle; noticeably fewer were found in the north aisle. This distribution suggests that certainly the eastern sanctuary and, perhaps, the eastern bays of the aisles had vaults decorated with glass mosaics. Colorless gold-glass and opaque red tesserae are prevalent. The proportion of tesserae found elsewhere on the site was relatively small, but the fact that the majority of these finds came from the Lower City suggests that other large, richly decorated Byzantine buildings were located in this part of the city.³¹

In addition to loose individual tesserae, the depots contain a number of small pieces of mosaic, which are fragments of ceiling mosaic that had presumably fallen as chunks into the accumulating debris on the floor of the church.³² Among these one example is noteworthy: the glass tesserae are arranged in tiered rows in the mortar bed, indicating that the piece came from a curved or arched section of the ceiling. Each tessera is thus set at an angle in order to display its face to the viewers standing below. Other fragments from the Lower City church appear as solidified blobs or drips of glass that are embedded in mortar. They would seem to have been formed when the ceiling mosaics suffered damage from a fire (or a series of fires) lit within the ruined church by its later Turkish occupants. A number of individual tesserae show the effects of a similar phenom-

non, having melted and then solidified into teardrop shapes or amorphous blobs (Fig. 5).

Forty-six objects, provisionally recorded as loom weights, have been recovered from the site since 1993. In a preliminary study carried out in 1997, these finds were divided into four different groups according to their shape, fabric, and manufacturing technique. Most are circular, flattened disks with a central hole, but several have a rounded, globular body.³³ Round and "doughnut-shaped" loom weights are said to have been used in Europe until the fifth century, after which the warp-weighted loom was replaced with the vertical two-beamed loom.³⁴ It is likely, however, that the older type of loom, and therefore loom weights too, continued to be used in Anatolia until much later.³⁵ Oddly, only one example of the other common form of loom weight, namely, the pyriform type with a horizontal hole for suspension in its upper part, has been found at Amorium.³⁶ It may be that some of the "doughnut-shaped" objects found at Amorium, particularly those from secure Byzantine contexts (for example, SF3124 and SF3654 from Trench LC, and SF3651 and SF3658 from Trench XA, both in the Lower City), are in fact not loom weights at all. A recent study carried out in Israel concluded that such objects were probably stoppers for wine jars, with the central hole serving to allow gas produced during fermentation to escape.³⁷ Further study of the different groups found at Amorium, their contexts, and the associated material is required before firm conclusions can be drawn about their date and purpose.

Another enigmatic group of small finds consists of the forty-four items found since 1993 that belong to a class of objects described variously as disks, tokens, stoppers, or gaming

³⁰C. S. Lightfoot, E. A. Ivison, et al., "Amorium Excavations 1994: The Seventh Preliminary Report," *AnatSt* 45 (1995): 130–31 and fig. 7.

³¹A total of 5,573 tesserae, from all contexts, were sorted and counted.

³²For further observations about the collapse of the church's superstructure, see Lightfoot et al., "Amorium Excavations 1993," 108, and Lightfoot, Ivison, et al., "Amorium Excavations 1995," 97. In addition, during the excavations in 1993, traces of what appeared to be thin pools of glass mixed with gold were noticed adhering to the surface of the templon stylobate on the south side of the bema. These were taken to be the remnants of gold-glass tesserae that had melted and dropped onto the stone slab.

³³Similar objects have been recorded from the Phrygian highlands; see C. H. E. Haspels, *La cité de Midas: Céramique et trouvailles diverses*, vol. 3 of *Phrygie: Exploration archéologique* (Paris, 1952), 91 and 108, pl. 38b.

³⁴E. Broudy, *The Book of Looms* (London, 1979), 23–27; R. J. Forbes, *Studies in Ancient Technology* (Leiden, 1956), 4:195–98.

³⁵Forbes, *Ancient Technology*, 199–202. Elsewhere it is claimed that this is not the case; see Z. Gal, "Loom Weights or Jar Stoppers?" *IEJ* 39.3–4 (1989): 281.

³⁶For this type, see Haspels, *La cité de Midas*, 92 and pl. 38c-d. The Amorium example, found before 1993, is now in the Afyon Archaeological Museum.

³⁷Gal, "Loom Weights," 281–83, esp. nn. 11–12.

pieces. Such disks, of terracotta or stone, are plentiful on most ancient sites but are infrequently published.³⁸ It is hoped that a detailed catalogue of the Amorium examples will be published in the final report for the years 1993 to 1997. All but one of the tokens were made of terracotta and produced by recycling broken pottery. Some shards were carefully selected to fit the purpose; thus, for example, SF2722 (a surface find) was chipped out of the flat base of a pottery vessel. The majority of the Amorium examples, however, were fashioned out of body fragments, which usually were heavily scratched and weathered pieces of red- and black-slip ware. These, although all roughly circular, are sometimes crudely made and of quite irregular shape. A number of other finds from Amorium (for example, SF2731 and SF2803) bear a close resemblance to these plain tokens, but they have two drilled holes near the center.³⁹ Similar examples are known from Corinth.⁴⁰ In addition to the uncertainty about the use of these small but ubiquitous objects, there is the question of whether suitable shards were collected specially by someone who made a living from creating these disks, or whether they were merely produced randomly by members of the household.

TILE AND BRICK (by İrfan Yazıcı)

Another category of material is baked brick, which is relatively unknown and rarely studied, despite the fact that on most Roman and Byzantine sites tile and brick fragments constitute some of the most common finds.⁴¹ In

³⁸G. Davidson Weinberg, ed., *Excavations at Jalame: Site of a Glass Factory in Late Roman Palestine* (Columbia, Mo., 1988), 253, no. 181a-h, pls. 8–13, for eight terracotta examples that are very similar to some of those found at Amorium.

³⁹Another find (SF2729) has a single central hole. For parallels, see Haspels, *La cité de Midas*, 91 and pl. 38b.

⁴⁰G. R. Davidson, *The Minor Objects*, vol. 12 of *Corinth: Results of Excavations Conducted by the American School of Classical Studies at Athens* (Princeton, N.J., 1952), 297, 304, nos. 2631 and 2632. Gladys Davidson is probably correct in stating that the objects' crude appearance precludes their use as dress buttons.

⁴¹Published examples are scarce; see, for example, C. Foss, "Sites and Strongholds of Northern Lydia," *AnatSt* 37 (1987): 84 and pl. XIXa (intact roof tile, measuring 1 m by 0.3 m, roughly curved, found at Şahan Kaya, possibly of late antique date); B. Özcan, "Sulusuray—1990 kurtarma kazısı," in *II. Müze Kurtarma Kazıları Semineri, 29–30 Nisan 1991, Ankara* (Ankara, 1992), 172 and fig. 18a-b (square bricks found during the excavation of a church at Sebasto-

polis). Discussion of the material is even more scarce; see H. Dodge, "Brick Construction in Roman Greece and Asia Minor," in *Roman Architecture in the Greek World*, ed. S. Macready and F. H. Thompson (London, 1987), 106–16; for ancient roof tiles, see Ö. Özyiğit, "Alaturka Kiremidi Oluşumu," *Ege Üniversitesi Arkeoloji-Sanat Tarihi Dergisi* 5 (1990): 149–79, esp. 159–67 (for Byzantine tiles).

1994, a study collection was formed at Amorium, and during the 1997 season another sixty items were recorded and added to the catalogue.⁴² A number of intact or nearly complete examples have been found (Fig. 6), and fragments were likewise selected for addition to the collection on the basis of their unusual shape, decoration, or other distinguishing features.⁴³ Several of these objects display marks that had been made accidentally before firing, such as foot marks, both human and animal; the paw marks of large dogs are particularly prevalent. Several more stamped and inscribed fragments have been recovered from the site since four examples were published in 1993.⁴⁴ There is now a total of six fragments bearing the stamp +EAIAN[O]Υ (Αιλιανοῦ), all but one of which were found in the Lower City church (Fig. 7).⁴⁵ A new example of another brick stamp, which reads [E]ΥΓΕΝΙ[OY] (Εὐγενίου), has been recorded, while two roof tiles, also from the church, display a small circular stamp that contains a monogram composed of the letters HA.⁴⁶ Since the latest brick stamps in Constantinople belong to the reign of Maurice Tiberios in the 580s–590s, the Amorium examples can in all likelihood be placed before this date; they presumably belong to the first phase of construction at the Lower City church.⁴⁷ One final tile fragment has a finger-impression inscription, with the letters EO

polis). Discussion of the material is even more scarce; see H. Dodge, "Brick Construction in Roman Greece and Asia Minor," in *Roman Architecture in the Greek World*, ed. S. Macready and F. H. Thompson (London, 1987), 106–16; for ancient roof tiles, see Ö. Özyiğit, "Alaturka Kiremidi Oluşumu," *Ege Üniversitesi Arkeoloji-Sanat Tarihi Dergisi* 5 (1990): 149–79, esp. 159–67 (for Byzantine tiles).

⁴²K. Barker, "Brick and Tile," *AnatSt* 45 (1995): 131–32.

⁴³B187: wall brick with protruding dogteeth and traces of mortar on all surfaces; length 0.269m, max. remaining width 0.257m, thickness 0.050–0.045m.

⁴⁴C. Mango, "Brickstamps," *AnatSt* 43 (1993): 155 and fig. 1.

⁴⁵Cat. no. B093: +E[AIANOY], found in the narthex in 1994; length (as extant) 0.141 m, width 0.102 m, thickness 0.035 m.

⁴⁶Cat. nos. B097 and B098; diameter of stamp 0.043 m.

⁴⁷From information kindly provided by Dr. Jonathan Bardill (personal communication). The (tentative) association of the +EAIAN[O]Υ stamp with Aelianos who was a *praefectus praetorio Orientis* of the emperor Zeno (Mango, "Brickstamps," 155) would push the dating of some of these bricks back to ca. 480; cf. J. R. Martindale, *The Prosopography of the Later Roman Empire*, vol. 2, A.D. 395–527 (Cambridge, 1980), 14, s.v. "Aelianus 4."

drawn on its surface; similar objects have been recorded at the neighboring city of Pessinus.⁴⁸

TOBACCO PIPES (by Simon F. Young)

During the course of the season, the thirty-five Ottoman pipe fragments that had been found at Amorium since 1987 were studied in detail. The main purpose was to create a comprehensive cataloguing system for the material, and subsequently to analyze the relationships of style within the assemblage and the implications of the location and context of the objects' discovery. Furthermore, although Ottoman clay pipes are fairly ubiquitous, very little published material is available for sites in Anatolia.⁴⁹ The work was thus intended to provide additional material for a proper study of the production, distribution, typology, and dating sequence of this interesting group of objects. Most of the fragments belong to clay pipe bowls, but two examples are made of meerschaum (Fig. 8) and so provide evidence for local use of the stone found exclusively near Eskişehir, some 100 km from Amorium.⁵⁰

The majority of the fragments (18 of the 35 pieces) originated as topsoil or surface finds, while eight came from mixed subsoil deposits

and only nine so far have been recovered from firmly sealed contexts. In addition to indicating the necessity for further discoveries, this evidence also suggests that a number of the finds relate to the modern village of Hisarköy. The refugees from the Balkans who founded the village in 1892 presumably left their share of material in the years until the introduction of cigarettes after the First World War. An iron tobacco tin, found in the subsoil in Trench ST on the northern slope of the Upper City mound, may be associated with these modern deposits.⁵¹

Despite this, the present assemblage has some important implications. First, the presence of tobacco pipes in post-Byzantine Amorium is a firm indication of the late nature of the Turkish occupation at the site. The introduction of tobacco to the region has been dated to the beginning of the seventeenth century.⁵² Secondly, the overwhelming concentration of pipe finds, from both the surface and deeper stratigraphy, on the Upper City mound (33 of the 35 pieces) would seem to suggest strongly that the Turkish settlement, which had preceded the modern village, had been located there and not in the Lower City.

Two fragments found in Trench UU bear a close stratigraphic relationship to a silver coin of Mustafa III, dated to 1769, which was recovered from a room that also contained a large number of charred beams from the collapsed roof.⁵³ Dendrochronology has also supplied a date of 1768 for the felling of the timber used in the construction of the roof.⁵⁴ On present evidence, therefore, the final phase of habitation on the Upper City mound should be dated to the late eighteenth century. Given William Hamilton's assertion that the site of Amorium was totally deserted in 1836, it would suggest that many of the other pipe fragments may belong to the eighteenth rather than the nineteenth century.⁵⁵ In and around Trench L, three pipes of very similar construction have been found. They vary marginally in terms of shank decoration and dimension, as

⁴⁸Cat. no. B217; length (as extant) 0.134 m, width 0.117m, thickness 0.034m. See J. Devreker, "Nouveaux inscriptions et monuments de Pessinonte (V)," *Epigraphica Anatolica* 28 (1997): 99, no. 4 and pl. 20.

⁴⁹M. T. Tarhan, "Van kalesi ve Eski Van şehri kazıları, 1987," in *X. Kazı Sonuçları Toplantısı I, Ankara, 23-27 Mayıs 1988* (Ankara, 1989), 378 and pl. 50; T. Mikami and S. Omura, "1986 yılı Kaman-Kalehöyük kazıları," in *IX. Kazı Sonuçları Toplantısı II, Ankara, 6-10 Nisan 1987* (Ankara, 1988), 3 and pl. 8, 8-12 (dated to the 17th century); R. Meriç, "1986 yılı Alaşehir kazı raporu," in *IX. Kazı Sonuçları Toplantısı II, Ankara, 6-10 Nisan 1987* (Ankara, 1988), 243 and pl. 3 (a large number of examples, recovered from the Roman theater that had been used as a rubbish dump until the 20th century); H. Karpuz, "Konya Dokuzun Hanı Kazı ve Restorasyon Çalışmaları, 1993," in *XVI. Kazı Sonuçları Toplantısı II* (Ankara, 1995), 382 and fig. 6; Y. Garlan and İ. Tatlıcan, "1994 ve 1995 Yılları Zeytinlik (Sinop) Amphora Atölyeleri Kazıları," in *XVIII. Kazı Sonuçları Toplantısı II, Ankara, 27-31 Mayıs 1996* (Ankara, 1997), 340.

⁵⁰AM94/TT004/SF2852 and AM94/TT003/SF2881 (now in the Afyon Archaeological Museum). For the Eskişehir mines and the use of meerschaum for pipes, see R. C. W. Robinson, "Tobacco Pipes of Corinth and of the Athenian Agora," *Hesperia* 54.2 (1985): 167-68. The same article includes a catalogue containing eleven examples from Corinth (pp. 192-93, nos. C127-C137) and two from the Athenian agora (p. 210, nos. A43-A44). However, these Greek examples, most of which are dated to the 17th and the early 18th century, probably derive from mines at Thebes (p. 170).

⁵¹The object is recorded as AM93/ST006/SF2524 (unpublished).

⁵²Robinson, "Tobacco Pipes," 151-52.

⁵³AM96/UU072/SF3432 and AM96/UU087/SF3433.

⁵⁴From information kindly provided by Peter Kuniholm (personal communication).

⁵⁵W. J. Hamilton, *Researches in Asia Minor, Pontus and Armenia* (London, 1842), 1:449-51.

well as the presence or absence of a stamp, but are otherwise apparently indicative of a single style. The presence of a pipe fragment in the deeper contexts of the Lower City church probably indicates intrusive activity.

THE UPPER CITY SONDAGE (UCS)

There are a number of pits and piles of disturbed earth across the site that testify to a certain amount of illegal digging activity at Amorium prior to the start of the present excavation project in 1987. One such scar appears on the southern side of the Upper City mound, close to the principal track up onto the *höyük* (Figs. 1, right, and A). According to some of the village elders, a deep pit was dug here in either 1947 or 1948, revealing a number of walls laid out in the form of a square. The bottom of this structure was apparently not reached, and the excavation was abandoned at a depth of some 6 m when water began to appear at the bottom of the pit. Apart from the discovery of some large blocks of masonry, claimed by some to bear inscriptions, no significant or valuable finds are reported to have been made. It is clear, however, from the surface material on the nearby spoil heaps that a considerable amount of Roman sigillata was thrown up in the course of the digging. The pit was then partially backfilled, and later came to be used as a refuse dump by the inhabitants of the nearest village houses; this practice continued right until the start of the present work.

The initial purpose was to clear away the accumulated rubbish, which formed an unsightly blemish in what is otherwise a very clean and attractive village. In the process, it was hoped both to enhance the appearance of the site and to investigate the nature of the structures found fifty years ago. During the course of the season, the pit was cleared to a depth of approximately 4 m; at the bottom, modern rubbish (plastic, paper packaging, tin cans, etc.) was still being encountered. A roughly square area was exposed, flanked on all sides by walls of differing construction and date (Fig. 9). These can be defined as follows:

Phase 1: The west wall, made of four courses of large, well-dressed blocks, continuing behind the north cross wall.

Phase 2: The north cross wall, comprising two courses of finely dressed limestone blocks

with moldings at top and bottom, apparently hollow behind.

Phase 3: A rubble-and-mortar wall built on top of Phase 2 and cutting Phase 1, perhaps the foundations of a defensive wall.

Phase 4: A rough rubble-and-mortar wall above and behind Phase 1.

Phase 5: Another rubble wall facing of small flattish blocks in front of Phase 4 and on top of Phase 1.

Phase 6: The east wall, comprising large, roughly dressed blocks and mortar, built across in front of Phase 2, perhaps also foundations.

Phase 7: A number of large limestone blocks on top of Phase 6, placed loosely and irregularly together. Similar blocks are located near the west side of the trench, while others are visible on the slope of the mound further to the east and west. They may all, perhaps, form part of the Upper City's outer circuit wall.

Phase 8: A stretch of rubble-and-mortar wall, not apparently connected with Phases 1–7, running from southeast to northwest and undercut, appearing as a vault or an arch.

Phase 9: A number of large blocks lying either flat or in disturbed positions within the trench, evidently moved from their original location when the illegal digging was carried out.

The dating and interpretation of these various elements remain problematic, not least because of the lack of any proper stratigraphy from premodern times. Several fragments of Eastern Sigillata Ware of early imperial date were recovered from the pit, but, since one of these was heavily encrusted with mortar, it would seem that this material had been residual and was reused during the construction of one or other of the structural phases. The fine masonry blocks, however, bear witness to the existence of a substantial (public?) building that cut deep into the side of the mound. Phases 1 and 2 may, therefore, date back to Roman or even Hellenistic times, but the later walls provide further evidence for the long and complicated multiphase building history of the site.

CONCLUSIONS

The first ten years of excavation have provided a wealth of new information about Amorium. The archaeological history of the site can now be seen to stretch from the Early Bronze

Age to the late eighteenth century. Despite the fact that Amorium has been associated with the Hittite town of Aura, there is as yet no clear evidence from the Upper City mound that it was occupied in the second millennium B.C.⁵⁶ However, it is likely that the site had existed in the Phrygian period and gradually developed into a thriving urban settlement in Hellenistic times. Thereafter it was continuously occupied throughout the first millennium, constituting one of the more important Roman cities in Phrygia and then becoming the capital of the Byzantine province of Anatolikon. The finds indicate that the city retained its strategic importance well into the eleventh century, but went into a rapid decline in the last quarter of the same century as a result of the unsettled conditions that affected central Anatolia in the wake of the Battle of Manzikert and the First Crusade. It is likely that a large proportion of the population fled from both the city and the surrounding countryside, taking the opportunity to find safer homes further west. So far, no pottery, coins, seals, or other objects have been recovered from the site that would provide evidence of occupation at the end of the eleventh and in the twelfth century. The total abandonment of the site during that period would help to explain why the long-standing name of Amorium was forgotten. After the site was re-occupied by Turkish settlers, probably in the early thirteenth century, it was given the new name of Hisarcık, which is later attested in the Ottoman archives.

Apart from the use of prominent ruined buildings in the Lower City (as evidenced by the church), the Turkish settlement was confined to the Upper City. The newcomers took over and adapted for their own use the fortifications and dwellings of the middle Byzantine city on the mound. But it is also clear that during the Byzantine revival in the tenth and eleventh centuries occupation had not been restricted to the Upper City. The people of Amorium had spread out to occupy, perhaps in a rather scattered manner, the whole site (as encompassed by the ruined Lower City walls), and several major middle Byzantine public buildings were located in the Lower City area

rather than in the refortified Upper City. Since there is evidence for pottery and tile production at Amorium in the tenth and eleventh centuries, it can be assumed that the city continued to act as a center for trade and commerce. It is likely that several other industries existed at Amorium—the most obvious candidate is a glass workshop where the extremely abundant bracelets would have been made. Amorium presumably also played a part in the marble- and stone-carving trades that continued to be a source of revenue for the Afyon region in Byzantine times. The large numbers of copper coins that have been found on the site confirm the fact that the local economy was thriving between 970 and 1080.⁵⁷

The evidence from the necropolis may also be taken to show that parts of the site continued to function in Byzantine times in much the same way as they had in the Roman period. The rock-cut tomb had been originally built for only three occupants, so the discovery of skeletal remains belonging to no less than ninety-five individuals is remarkable and requires explanation. Detailed analysis of the bone material shows clearly that it cannot be taken as evidence of a mass burial, since there are no signs of traumatic injuries that could be associated with a violent end such as a massacre. Rather, the massive quantity of human bones indicates that the tomb had been used over a very long period, probably extending from the Roman to the middle Byzantine period (second-eleventh century).⁵⁸ This accords well with the sparse amounts of shards found mixed in with the bone; some of these pottery fragments may well be of middle Byzantine date. Such late reuse of the tomb would be highly unusual, for at most sites extramural burials cease in the early seventh century; but the survival of Amorium as a major urban center in the Dark Ages may help to explain this anomaly.

As yet, however, the excavations have failed to reveal a great deal of the Dark Age city. This is largely due to the unexpected extent and

⁵⁷Of the 243 coins found so far (i.e., between 1987 and 1997), 81—or precisely a third—have been identified as anonymous or signed folles.

⁵⁸Eric Ivison has expressed scepticism on this point, believing that the tomb did not continue in use much after ca. A.D. 600.

⁵⁶See R. M. Harrison, "Amorium 1987: A Preliminary Survey," *AnatSt* 38 (1988): 175 n. 1.

richness of the middle Byzantine remains. The devastating effect of the siege of 838, which has been attested in finds from the Lower City fortifications and church, may also partly explain the meagre nature of the archaeological remains. There are also some puzzling lacunae in the material found at Amorium. Perhaps the most surprising is the complete absence of Early Christian funerary stelae. Simple tombstones with a standard formulaic text are widespread in Anatolia; examples exist, for example, in the Bolvadin Municipal Museum (presumably from Polybotus) and are recorded in the Phrygian highlands, northwest of Amorium.⁵⁹ By contrast, the only Christian funerary monuments known from Amorium are much more sophisticated. One is the inscribed sarcophagus, dated 591/2, which was found on the southern slope of the Upper City mound in 1933; the other, probably originally from Amorium, is the erudite verse epitaph of Pientios, now built into the minaret of the village mosque at Ağılıçık.⁶⁰ Other groups of material

are also noticeable by their absence, such as, for example, Byzantine reliquary crosses. On the other hand, the site has already supplied some important examples of unique material, among them the first excavated middle Byzantine potter's kiln in central Anatolia, the first published example of a new class of anonymous follis, and a fortified middle Byzantine compound, discovered in the Lower City, that was possibly used as the headquarters of the "Army of the Anatolics."

The lesson of the last ten years is that a large site such as Amorium, with its long and complex history, holds many surprises. Despite the best-laid plans, it is not always possible to achieve objectives that have been set, since discoveries in the field have conspired to deflect attention away to other goals. Nevertheless, the priorities for the coming seasons are clear. On-site, the main objective is to investigate further the central area of the Lower City in and around the enclosure, while off-site it is essential to push forward the program of publication as rapidly as possible so that the results of the past decade's work can be made available to others.

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⁵⁹C. H. E. Haspels, *The Highlands of Phrygia: Sites and Monuments* (Princeton, N.J., 1971), 342, no. 114 and fig. 629 (found at Sandık Özü, ca. 25 km west of Seyitgazi/Nacoleia).

⁶⁰The sarcophagus is now on display in the garden of the Afyon Archaeological Museum (Inv. no. E1440); see W. H. Buckler and W. M. Calder, *Monuments and Documents from Phrygia and Caria*, *Monumenta Asiae Minoris antiqua*

6 (Manchester, 1939), 134–35, no. 386, pl. 68. For the Pientios inscription, see Lightfoot, Ivison, et al., "Amorium Excavations 1994," 135–36 and pl. XXb.

