SARDIS, 1981 AND 1982

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The 1981 and 1982 field seasons of the Archaeological Exploration of Sardis, jointly sponsored by the Fogg Art Museum of Harvard University, Cornell University, the American Schools of Oriental Research, and the Corning Museum of Glass, took place during periods of two and a half months each summer.[1] The field program

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The Expedition is authorized by the General Directorate of Antiquities and Museums, a branch of the Ministry of Culture in 1981, of the Ministry of Culture and Tourism in 1982. It is a pleasure to acknowledge the friendly support of officers of the General Directorate, especially Director General Nurettin Yardımcı, Deputy Directors Tanju Özoral, Nadir Avcı, and Önder Bilgi, and Director of Excavations Division Kudret Ata. The Turkish Government Representatives to the Expedition were İsmail Karamut (Deputy Director of the Konya Museum) in 1981 and Attila Tulga (Deputy Director of the Archaeological and Ethnographic Museums in Manisa) in 1982. Before the research and excavation Permit was issued in 1981, Manisa Museum assistants Hasan Dedeoğlu and Mustafa Tümer provided important advisory assistance. The two seasons' achievement is due in no small measure to the sympathetic and tireless efforts of all four.

As in previous seasons, Director of the Archaeological and Ethnographic Museums in Manisa Kubilây Nayır was a strong and steady friend, generously and cheerfully giving his time to resolve the prob-

included environmental studies, survey, excavation, a special reconstruction project, convervation, and study of monuments and arti-

lems and avert the crises that are an excavation season's **leit motif**. As Government Representative for the lake coring operations in 1982 and as a frequent and welcome visitor to the site in both seasons, Kubilây Bey gave invaluable strengths both physical and intellectual to Expedition efforts.

Reports prepared at mid-season and at season's end by all staff members form the basis of this report and will be an indispensible resource for future studies of the season's results. These reports are stored in the Sardis Expedition Office in Cambridge, MA (Busch-Reisinger Museum) and in the Expedition compound at Sartmustafa.

1981 and 1982 staff members were the following (for both seasons where no year is given): C. H. Greenewalt, Jr. (University of California at Berkeley; field director); T. Yalçınkaya (Betonsan, A. S., Manisa; administrative advisor and agent); A. Ramage (1981; Cornell; associate director); D. G. Mitten (1981; Harvard; associate director); J. A. Scott (Harvard; executive director); G. M. A. Hanfmann (1981; Harvard; associate director); I. Hanfmann (1981; registrar emeritus); K. J. Frazer (Egypt Exploration Society; manager); T. N. Howe (Harvard; architect); E. G. Wahle (1981; Harvard; architect); J. Weinberg (1982; Harvard; architect); K. L. Gleason (Harvard; draughtsman, landscape architect); S. W. Shipps (1981; Emerson College; photographer); N. D. Cahill (1982; University of California at Berkeley; photographer); W. E. Mierse (Brown; registrar, archaeologist); A. C. Schmidt (1981; associate registrar); S. D. Fullerton (1982; Harvard; registrar, archaeologist); B. L. Burrell (University of Pennsylvania; numismatist, epigraphist, archaeologist); J. R. Dennis (1981; Harvard conservator); H. W. Lie (1981; Harvard; conservator); D. J. Butterbaugh (1981; University of Pennsylvania; conservator for mud brick); G. Wharton (1982; Harvard; conservator); E. R. Hostetter (1981; Indiana University; Terracotta Reconstruction Project director); M. D. Morris (1981; Terracotta Reconstruction Project associate director); V. B. Soll (1981; Terracotta Reconstruction Project); K. A. Jones (1981; Terracotta Reconstruction Project); M. L. Rautman (Indiana University; Terracotta Reconstruction Project, archaeologist); D. G. Sullivan (University of California at Berkeley; geomorphologist, palynologist); E. Shreeve (1982; Harvard; geomorphologist); J. R. A. Bell (1981; photogrammetrist); B. K. McLauchlin University of California at Berkeley; senior archaeologist); C. J. Ratté (Harvard, University of California at Berkeley; archaeologist); C. G. Simon (University of California at Berkeley; archaeologist); D. T. Mc Guire, Jr. (Cornell; archaeologist); H. M. Biglari (Cornell; archaeologist); E. Erten (1981; University of Ankara; trainee archaeologist, registrar, draughtsman); S. Baç (1982; Aegean University; trainee archaeologist, registrar, conservator); R. Gusmani (1981; University of Udine; specialist for Lydian inscriptions); F. K. Yegül (1981; Unifacts recovered in earlier seasons.[2] Release of the 1981 research and excavation Permit by the General Directorate of Antiquities and Museums in late August affected all aspects of that year's field season and restricted excavation to a period of eight days.

Environmental Studies

As a part of the Urban Survey Project at Sardis, study of the modern and ancient environment continued during the 1981 and 1982 seasons.[3] The major categories of research were geomorphologic and geologic, together with retrieval of lake sediment cores for pollen analysis. Dr. İlhan Kayan (Geography Faculty, University of Ankara) participated for several weeks in 1982; and much of the information on Tertiary and early Quaternary geology and geomorphology presented in this report is taken from his preliminary findings (Kayan, 1982 Sardis field report).

Geology and Geomorphology

The geology and geomorphology at Sardis have been reported on by several researchers in recent years (Belknap in Greenewalt, Sterud, and Belknap 1983: XX - XX; Olson 1970, 1971). As research in the area has progressed, new data has been added and our understanding of the geomorphic history has been further refined. This section summarizes part of the geomorphic history of the site

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versity of California at Santa Barbara; specialist for Gymnasium-Bath Complex); C. W. Foss (University of Massachusetts in Boston: specialist for Lydian geography and Byzantine History); D. B. Stronach (1982; University of California at Berkeley; specialist for Achaemenid Persian studies) .To all these for thorough and meticulous work, cheerful cooperation, and generous, patient support, hearty and heartfelt thanks.

(2) Notably Hellenistic and Roman relief wares, by G. M. A. Hanfmann and I. Hanfmann; Attic black-figure and red-figure pottery, by N. H. Ramage; Lydian and Carian inscriptions and graffiti, by R. Gusmani (for which Gusmani 1982a).

(3) The Sardis Urban Survey Project has been funded by a grant from the National Science Foundation (BNS-7807861). Orhan Kaçan of Sartmustafa was my tireless and good-humored assistant on the often arduous lake coring expeditions. The 1982 Government Representative, Attila Tulga (Deputy Director of the Manisa Museum) was very helpful in securing permission to carry out the coring operations at Sart Mahmut and Mersindere. E. Shreeve and I are particularly indebted to Kubilây Nayır (Director of the Manisa Museum, who served as Government Representative for the lake coring expeditions and whose willing assistance and good humor made our efforts both successful and enjoyable.

with the addition of new data obtained in the 1982 season.

The main geomorphic units in the Sardis region are the Bozdağ mountain range (ancient Mt. Tmolus) south of the site, its foothill zone, including the Acropolis and Necropolis hills, and the alluvial plain of the Gediz River (ancient Hermus River) north of the site.

The Bozdağ range is the northern limb of the Menderes massif. At the end of the Tertiary this metamorphic-crystalline massif was fractured by a series of east-west faults and uplifted, forming a series of generally east-west trending mountain ranges (horsts) separated by down-dropped valleys (grabens). The Gediz River valley is the northernmost graben associated with the Menderes massif orogeny. Associated with the massif are other faults arranged radially around the uplifted mountain ranges. Sardis lies west of the intersection of a major east-west graben and a second graben with a southeast-northwest alignment. As a result, the Gediz Valley is wider to the east of Sardis (ca. 15 km.) than to the west (ca. 4 km.).

The increasing relief resulting from the rising Bozdağ and the sinking Gediz graben encouraged the erosion of the uplands and deposition of alluvial material at the base of the mountain mass. North of the Bozdağ, alluvial fans were deposited in four stages, beginning in the late Miocene and continuing until the early Pleistocene. The older, underlying, units are generally better sorted than the uppermost Pleistocene unit. These alluvial fan deposits are generally poorly cemented and easily eroded, but the Pleistocene unit is better cemented than the older units. As the Bozdağ was uplifted, several faults developed in the accumulated alluvial fan deposits. The southernmost fault is located between the crystalline-metamorphic rock of the Bozdağ and the sedimentary rock of these old alluvial fans. The crushed rock zone associated with this fault is characterized by hydrothermal activity. The hot springs of the Çamur Hamamı and the Kurşunlu Kaplıcaları (southwest of Salihli) are in this zone. The rock along the fault is reddish-purple as a result of hydrothermal painting.

In the mid- to late-Pleistocene, rivers draining the Bozdağ and flowing towards the Gediz Valley began to incise the alluvial fan deposits. Streams like the Sart çayı (ancient Pactolus) and the Tabak çayı (east of Sardis) have cut into the old alluvial fans, carrying sediments downstream to the edge of the Gediz Plain, where the material is being deposited as a new apron of alluvial fans.

The foothills between the İzmir-Ankara highway and the Bozdağ, and including the Acropolis and Necropolis, are the incised remnants of the old alluvial fan deposits. The highest parts of the Acropolis and Necropolis are composed of the poorly-sorted early Pleistocene phase of deposition. The lower flanks of these hills are made up of the softer, earlier deposits.

Streams draining the Bozdağ and the foothills flow along relatively steep courses. The discharge in these streams fluctuates seasonally. With runoff from the winter rains, these streams become torrents, eroding the uplands, and depositing material in alluvial fans at the south edge of the Gediz Plain. These alluvial fans are made up of very poorly sorted sediments. The Gediz River valley is slowly filling with sediments, some of which are deposited along the flanks of the valley, as discussed above; others are deposited by flooding of the Gediz River itself.

Unlike the Pactolus, the Gediz River flows along a gently sloped valley in the vicinity of Sardis. The stream meanders through the flat Gediz Plain. Because the stream gradient is low, the sediments transported by the river are generally fine grained: small gravels, sands, silts and clays. When the river floods, fine sands, silts and clays are carried as suspended load over the banks. Most of the fine sands, and some silt, are deposited on top of the banks as natural levees. The remaining fine material is deposited on the flood plain. Where abandonned channels of the river form depressions, flood waters collect. In this standing water the finest sediment fraction, mostly clays, settle out to form «clay plugs,» or channel fill deposits.

Sediment Cores from the Gediz Plain

The evidence of geomorphic features, vegetation distributions, and landscape configurations shown in aerial photographs suggested that an ancient course of the Gediz River was located just north of Sardis. To test this hypothesis a program of sediment coring was undertaken in the Gediz Plain. Coring was done with hand-operated augers.

Core transects were made in three locations. Eleven boreholes were sampled in two east-west transects approximately 1 km north of a mound immediately northeast of the Gymnasium-Bath complex. Four boreholes were sampled in an east-west line east of Sart Mahmut, ca. 2 km. north of the Izmir-Ankara highway. Twenty borings were made ca. 2.5 km. north of the village of Mersindere (2 km. west of Sardis). The Mersindere cores were arranged in two north-south transects.

The cores north of the mound were made on the northern edge of the Pactolus alluvial fan. The deepest borehole penetrated 3 m. The very coarse nature of the alluvial fan deposits prohibited further penetration, and the base of the alluvial fan deposits was not reached. In most of the boreholes, we encountered two layers of very coarse gravels ,with maximum diameters of 10-15 cm. These two strata probably represent old distributary channels of the Pactolus. These strata slope downward toward the east, parallel to the modern alluvial fan surface. At the present time we are unable to afix a date to these layers.

The location of the Mersindere cores was suggested by vegetation patterns visible from the top of the Necropolis and on air photographs. The arcuate shape of two beds of tall reeds approximated that of an old river course. The Mersindere cores did reveal the existence of two former Gediz River channels. The sediments, sampled to a depth of 2.5 m., included levee sands and silts to the north and south of the reeds, and silty «clay plugs,» or channel fills, beneath the reed beds. Further proof that these deposits represent abandoned Gediz River channels comes from several pieces of pumice found in the sands and gravels underlying the clays. The only local source of pumice is the volcanic zone northeast of Sardis drained by the Gediz River.

The location of the Sart Mahmut cores was also suggested by vegetation patterns, and again, river channel fill deposits were encountered. The alignment of the vegetation zones associated with the Sart Mahmut coring suggests that the river flowed just to the north of the mound northeast of the Gymnasium-Bath complex. The alluvial fan deposits encountered in the cores north of the mound probably overlie, and postdate, the old river course.

It is not yet possible to state when these river channels were active (radiocarbon dates are anticipated). However, it is likely that the «clay plugs» required a long time to accumulate, and it is possible that these channels represent the course of the river in antiquity. It is also reasonable to speculate on the basis of the superposition of the alluvial fan deposits above the former river channel that the progradation of the Pactolus alluvial fan may have been responsible for the northward migration of the Gediz River.

Pactolus Survey

Like many other small streams in the Mediterranean region, the

Pactolus is a rather small stream in the summer dry season, occupying only a small channel in the large stream bed. In winter, responding to the frequently torrential rainfall, the Pactolus swells to become a much larger stream, capable of moving very large coarse sediments and of lateral erosion on a surprising scale. In order to study the recent stream activity, a topographic map of the Pactolus bed, banks, and terraces was made (with the use of a plane table and alidade). The reach of the stream surveyed in this map extends from ca. 400 m. south of the Temple of Artemis to the Izmir-Ankara highway, a stream distance of about 2 km. (Fig. 2).

Some of the Pactolus's lateral erosion is evidently created by tributary wadis, whose channels carry water during heavy rains. A good illustration of lateral erosion as a result of wadi action occurs ca. 250 m. south of the Temple of Artemis, where a deeply eroded arc in the stream's east bank lies opposite the mouth of a large wadi that enters the stream from the west. Where the wadi enters the Pactolus bed, a broad fan of coarse alluvial debris has been deposited. The debris fan has evidently extended far enough into the stream bed to deflect the high winter flow of the Pactolus to the east. Intensive agriculture in the basins drained by the wadis may contribute to the volume of material deposited at the wadi mouth.[4]

Increment Borings

The upper slopes of the Acropolis and Necropolis at Sardis consist of precipitous cliffs. Such landforms are frequently associated with high rates of erosion and cliff retreat. As part of the geomorphic research at Sardis, an effort has been made to determine rates of cliff retreat and slope denudation, using a unique method.

Scattered Calabrian Pines **(Pinus brutia)** are found at the base of cliffs surrounding the Acropolis and Necropolis, and on the narrow spurs radiating from these hills. Fifty-four of these trees were cored with an increment borer, and the annual rings counted. The distance from the tree to the cliff scarp was measured. Where the trees

(4) Several hundred cubic meters of earth were removed from this part of the Pactolus's east bank during the winter of 1980-1981. In the mapped reach of the stream there are also two smaller alluvial fans which may be influencing the course of the Pactolus, though to a far less degree than the example cited above. The local Turkish authorities have recognized the importance of controlling the transport of debris down the wadi channels. In early 1982 they consructed a series of debris dams in the larger wadis.

roots were exposed, the distance from the roots to the ground surface was measured. The age of each tree was calculated by adding two to ten years to the number of rings (the trees were cored at 1.3 m. above the soil surface whether or not roots were showing) The distance from the scarp was divided by the age of the tree to give a maximum rate of cliff retreat at the location of each tree cored.

The date thus far obtained provides only rough estimates, and statistical analysis is not yet completed. It is assumed that factors such as slope aspect and steepness, and the nature of the surrounding vegetation, will influence the rate of cliff retreat at each site. However, the preliminary statistical analysis suggests that the average maximum rate of cliff retreat is on the order of 1 cm./yr.

The oldest trees cored proved to be only 60-65 years old, so this record only reflects cliff retreat rates over a short period. However, if one assumes a constant rate of cliff retreat, these results suggest that the upper Acropolis and Necropolis are not much smaller now than they were in antiquity.

Lake Cores

In earlier work at Sardis it has been suggested that episodes of erosion and deposition at the site are related to human modification of the vegetation (Belknap, in Greenewalt, Sterud, and Belknap 1982: XX - XX; Olson 1970, 1971; Sullivan in Greenewalt et al. 1983: XX - XX). Heavy grazing, clearing woodland and macquis for fields or pasture and cutting timber for fuel or construction material have been proposed as triggering mechanisms for accelerating erosion of the uplands near the site. In order to establish a record of the vegetation history of the area, samples of lake sediments for pollen analysis were retrieved.

Two lakes were cored in 1982. The first lake, Gölçük, is located in an upland valley of the Bozdağ, 18 km. south of Sardis at an elevation of 1050 m. The lake is approximately 1.5 km. long and 0.5 km. wide, and has a maximum depth of 5.5 m. Two cores were retrieved from the lake. The longer of the two was 12.2 m. long. Radiocarbon dates from peat layers in that core indicate that the oldest sediments recovered are about 5000 years old. Both cores contain several distinct peat layers, whose presence may indicate that the lake is very sensitive to changes in local hydrology. These layers may represent low lake levels resulting from drought conditions and record a series of short term dry periods. If so, radiocarbon dates for the numerous peats and pollen analysis should provide supporting evidence.

The second lake cored was the Gygaean Lake (Marmara Gölü), 12 km. north of Sardis. The Gygaean Lake sediments proved to be more difficult to core than those in Gölçük. Two cores were recovered from the Gygaean Lake, the longest being 3.3 m. long. These cores are likely to represent at least two or three thousand years of deposition.

Pollen preparations from both lakes show good pollen preservation and high pollen concentrations. The combination of an upland and a lowland pollen record should provide valuable information on the vegetation history of the region.

Field Trips in the Environs of Sardis

In 1981, as a kind of WPA project for staff archaeologists during the wait for a research and excavation Permit, a program of field trips to ancient sites and monuments in the environs of Sardis was created (and supervised by A. Ramage and D. G. Mitten). Staff members observed the regulation that sites and monuments may not be measured without a Permit. They collected sample surface artifacts, which are now stored in the Sardis Expedition compound. In the following account quotations are from staff members' reports.

In the region of the Gygaean Lake several tumulus graves[5] and four habitation sites were visited. Fig. 1 shows the approximate location of the habitation sites (1 - 4).

(1) Site in the region of Poyrazdamları, near the northeast shore of the Lake, located in the plain «almost directly beneath the more southerly of two high voltage power lines that run north-south from between Durasıllı and Poyrazdamları to Bin Tepe and beyond.» The site is marked by a circular mound with a flat top, ca. 50 m. in diameter and ca. 8 m. high. Observed pottery remains may include some pre-Roman material but were predominantly Late Roman and post Roman.

(2) «Promentory site,» a large site located on an «outcrop of schist that runs south into the Lake» and rises to an height of some

(5) One of the tumuli visited has a chamber complex notable for an unusually long dromos, three chambers in clover-leaf arrangement, and pitched ceilings over the central chamber and antechamber (Greenewalt 1978: 10). This complex was cleared in the winter of 1980-1981 by the Manisa Museum. A terracotta sarcophagus and a limestone sarcophagus were recovered. Expedition members reported two pi-clamps in the masonry construction.

60 m. above the Lake. Just below the summit is a large square or rectangular foundation, oriented to the cardinal points of the compass and built of roughly dressed limestone blocks. The few pottery remains observed near this feature included «indeterminate Roman and a piece of a Lydian skyphos.» Extending for some 200 m. along the promentory's east shore are various ancient building remains: plastered walls of schist and mortar, with mortared floors; walls of unmortared schist; a small furnace or kiln (containing slag); and rectangular structures of burnt mud brick ca. 1.5 m. by 2 m. on a side. Observed pottery remains ranged from Lydian through Roman and Byzantine times, with the heaviest concentrations in Hellenistic and Early Roman times.

(3) Kılcanlar site, a large mound (ca. 227 m. east-west by 220 m. north-south) located near the modern village of Kılcanlar, in the plain ca. 4 km. north of the Lake (Hanfmann 1966: 35). Observed pottery remains ranged from Early Bronze Age through Byzantine and Islamic periods. Much of the Early Bronze Age pottery showed affinities with Troy II pottery types; and with these may be associated a finely polished double-bladed axe head of dark green stone. Some Late Bronze Age pottery and Lydian pottery, whose shapes and decorative conventions (Grey Ware, Black-on-Red, Bichrome, Streaky-glaze, white-ground) are closely similar to those known from Sardis, also were observed. The relative quantity of pottery types suggested occupation peaks at the Kilcanlar site in the Early Iron Age and Lydian periods and in Byzantine times.

(4) Small ,low site located at the southwest end of the Lake, ca. 4 km. west of Ahlatlı Tepecik, 7 km. west of Tekelioğlu Koyu, ca. 0.50 m. above the Lake surface and extending for ca. 150 m. along the shore. Observed architectural remains included walls of schist (0.50-0.60 m. thick) and at least one squarish cist grave. Observed pottery remains suggested occupation in the Early Bronze Age and in Lydian and later pre-Roman times.

Ahlatlı Tepecik (Hanfmann 1967: 40-42; 1968: 7-10; 1970: 12-16) also was visited. Erosion is destroying remains at the edge of the shore. Walls of buildings and one cist grave (lined with schist slabs) were observed. For a graffito in Carian on a pottery fragment recovered at Ahlatlı Tepecik in 1967, Gusmani 1982: 127-129.

For a field trip in 1981 to Asar Tepe, which is located in the Hermus plain some 18 km. west of Sardis and which C. Foss has identified with the Lydian city Tmolus, Foss 1982.

In 1982 an excursion to the south side of the Gygaean Lake was made to locate a site tentatively identified with the **hieron** of Artemis of Koloe (Strabo 13.4.5/626) in a recent guide book (Umar 1981): 30, 57). This site proved to be a small peninsula with a grove of young pines, located at the southwest end of the Lake by the fishing cooperative station of Eski Balıkhane. Its most conspicuous feature is a section of marble colomn shaft: 0.46 m. in diameter, with 20 facets and slight arrises, and with anathyrosis.

> *«The column appears to stand on an artificial terrace, enclosed or supported at the west by a retaining wall. The wall consists of large, roughyl trimmed limestone and smaller fieldstone blocks, apparently unmortared. We were able to trace this wall for a distance of about 8-9 m...*
>
> *Perpendicular to the retaining wall and barely visible on the ground are the traces of an east - west wall, about 1.00 m. wide. The wall ends in an eroded slope at the edge of the sheer bank above the Lake shore. At this point, the worked face of a limestone block is visible..*
>
> *We made enquiries about antiquities in the area and were shown fragments of a large pithos scattered on the shore below and to the north of the pine grove. Our informant pointed out the wave-cut scarp from which the pithos, probably a Bronze Age burial, had been extracted.» (B. K. McLauchlin report. For Early Bronze Age burials at Eski Balıkhane, Mitten and Yuğrum 1971.)*

The site identified with the **hieron** in the 19th century and at that time marked by conspicuous ruins-three Doric columns of weathered marble, colossal stone blocks carved in relief (with a lion's head and an archer wearing a pointed cap) - was evidently located further to the east (Curtius 1853: 150-152; von Olfers 1858: 542, pl. I).

CHG

Sardis East Survey

Intensive exploration of the large area north of Sardis's Acropolis began in 1981. Since this area is east of the regions most thoroughly examined previously, its Sector designation is «Sardis East» (SE). The bath complex at Sector CG is the only building east of Sector MMS that had been subject to major excavation in earlier seasons (Hanfmann and Waldbaum 1975: 129-166; here Fig. 2, no.

28), although minor excavations had been conducted at other locations (Greenewalt 1978: 61-62). Surface investigations of this region undertaken without the benefit of excavation before 1981 include an architectural study of the many well-preserved buildings east of MMS (the theatre and stadium, among others) by R. L. Vann (Vann forthcoming), and a partial survey by E. E. Freedman (Greenewalt 1978: 57-61).

The program of exploration begun in 1981 combines surface and subsurface investigation. The first step was a systematic six-week survey, the second, excavation at selected locations. The boundaries of the area surveyed are: on the north, the modern Izmir-Ankara highway; on the east, the Late Roman city wall; on the south, the uncultivated acropolis slopes; on the west, a wadi just east of MMS. The focus of exploration is the pre-Roman period.

The basic surveying unit employed was the agricultural field. A total of 85 fields was surveyed, making up an area of about 40 hectares. The surveyors (at least two at all times) walked each field in straight lines about 5 m. apart until the whole field had been covered. Five wadis (stream beds) crossed the area surveyed. The surveyors walked the full length of each wadi in single file. Due to the delay of the 1981 research and excavation Permit, rigorous collection of surface finds was not possible.

To date, excavations at two locations chosen on the basis of the survey have yielded parts of an early Imperial pseudodipteral temple and a massive Lydian fortification wall (both discussed below). Further exploration is planned for future seasons.

Sardis East Excavation CJR

Early Imperial Temple

Excavations in 1981 and 1982 at one of two places chosen for excavation on the basis of the Sardis East survey yielded the corner of a building that appears to be an early Imperial pseudodipteral temple (at ca. E. 720/S. 230 on the 'B' grid; Fig. 2 no. 67). The portion of the building now uncovered lies in the bottom of a wadi that issues from the valley between the so-called «Byzantine Fort» hill north of the Acropolis and the next hill to the east (Field #49 in the Sardis East survey; Fig. 2 nos. 23, 68). A fine Ioniç column base and a marble block nearby were the only signs of the building visible before excavation. Since this base seemed Hellenistic in style, this spot was chosen as a promising location to seek traces of pre-Roman Sardis in accordance with the aims of the Sardis East survey.

Although this promise was not realized (the building is Roman, and earlier layers are beyond reach), the results of excavation were hardly disappointing.[6]

The immediate terrain is a broad sloping terrace, which is one of the highest parts of the lower city. The orientation of the northeast stylobate is more or less the orientation of the theatre and stadium, which lie ca. 120 m. to the east on the same terrace.[7]

The corner of the building excavated is preserved to stylobate level, and consists of five columns of the return of a colonnade and a sixth column within the corner aligned with the third column on each side. The only preserved upper parts are the one fine Attic-Ionic base on a plinth (missing upper torus), visible before excavation, in the colonnade (Fig. 3), and the base and lower shaft of the isolated sixth column (Fig. 4).

The construction of the podium of the building is an example of the so-called «combined technique» typical of Roman Asia Minor. the columns are carried by isolated ashlar piers stabilized by an infill of coarse martared rubble. Below this podium there extends a rubble shelf apparently intended to carry a stepped krepidoma. Although the underpinning for the steps has disappeared, the evidence suggests a krepidoma of ten steps with a simple rise of 22 cm. by 44 cm. or 1:2.[8] The top step created a narrow passage at stylobate level outside the colonnade (Fig. 5).

The marble stylobate blocks between the ashlar column piers are bedded in a finer, harder mortar than the mass of the rubble podium. The pavers of the Ptroma are all missing and seem to have been bedded in a layer of clean marble working chips, although it is possible that this layer dates to the breaking up of the building.

Two of the marble stylobate blocks have setting marks for the plinth edges and axes, which indicate an axial spacing of 2.659 m. (9 Attic-Ionic feet)([9] and an interplinth space almost equal to the

(6) Excavated area: ca. 60 m.^{2} Maximum depth of excavations: ca. 5.5 m. below the modern surface level.

(7) Northeast stylobate orientation: 282 +—2° relative to the «B» grid. Theatre and stadium orientation: ca. 278°.

(8) The evidence for the reconstruction of these steps is the dimensions of the shelf relative to the stylobate (rise 2.20 m. over 4.00 m.) and the dimensions of two fragmentary step blocks found in a deposit at the north edge of the shelf (22 cm. by 40-45 cm.).

(9) Based on the foot as derived from Didyma, Priene, and the Artemis Temple at Sardis: 0.2941, 0.2041-45, 0.2952 respectively (von Gerkan 1959: 212-215; Wiegand and Schrader 1904: 86; Gruben 1961: 185).

plinth width (1.254 m. and 1.305 m. respectively).

What survives does not indicate whether the order of the building was Ionic, Corinthian, or a combination of both. The lower torus of the pteron base is carved with an elegant vertical imbrecated leaf pattern (Fig. 3) while that of the isolated column has a triple guilloche. The stylobate under the isolated column appears to be ca. 5-7 cm. higher than the pteron stylobate; therefore the isolated column may have been raised on the same toichobate as the cella wall (Fig. 5). The lower diameter of the columns, as measured across three flutes of the isolated standing column, is 0.886 m., giving an axial spacing of 3.00 lower diameters, or Vitruvian «systyle.»

The date of construction is given only by architectural considerations. The use of mortared rubble as a structural mass should postdate the revolution of the building trades that began in Asia Minor in the reign of Augustus.[10] The pteron base, on the other hand, is carved in an elegant and slightly mannered version of the Hellenistic tradition of modelled carving. The closest parallels are in the imbricated torus on the wall-base of the Augustus temple at Ankara and in the Augustan ornament of Ephesos.[11]

The arrangement and scale of the positions for the six columns correspond to the plan of the corner of a pseudodipteral temple with a prostyle porch. A reconstruction of the building would give a colonnade of 8 by 13 columns, and stylobate dimensions of ca. 20

(10) Ward Perkins 1958: 52-104; Vann 1976; Alzinger 1974: 65-66. These works generally regard the introduction of mortared rubble in Asia Minor to be an adaptation of Roman concrete that dates to the revival of the building industry that began in the reign of Augustus, but they do not exclude the possibility that examples may occur earlier. Vann suggests late Hellenistic precedents in «block and fill» walls, However we should possibly regard the use of mortared rubble as a structural mass to be distinct from the various Hellenistic uses of lime mortar as plaster or bedding for blocks. To use it as structure would have required a major revolution in standard building practices and is not the sort of thing that is likely to have appeared as an isolated experiment.

(11) It is difficult to say just how late this style survived, but at the very least it seems to have disappeared with the development of the commercial trade in precarved ornament and the faceted, light-catching style of carving that led to the «marble style.» Hadrianic classicism does not successfully revive the classical quality of this style. On the wall base torus at Ankara, Krencker and Schede 1936: pl. 24; on Ephesos, Alzinger 1974: pls. 44-49; on the marble style, Ward-Perkins 1948: 59-80; Strong 1953: 118-151; Ward-Perkins 1980: 332 ff.

m. by 32 m. or 38 m.: a plan on a scale that corresponds closely to the early imperial pseudodipteroi at Ankara and Aizanoi.[12]

Among the finds from the excavations were a block that appears to be from the tympanum of the building's pediment[13] and many fragments of marble and bronze sculpture that may also have been associated with the building. The tympanum block (Fig. 6) is only roughly finished with a toothed chisel, but it was plainly set in place, since there are traces of lead and iron in a clamp cutting at the top. On the face there is a well-cut inscription, which C. Foss suggests may help identify the temple. The inscription (leter height: 8 cm.) reads, in two registers, **ADRAMY/THON,** the name of a city in Mysia, conventionally spelled Adramyttium. To the left there is a broken projection from the surface that may be a trace of relief sculpture: perhaps a figure **representing** Adramyttium.[14]

Adramyttium must have been one of several cities so named (and represented ?) in the pediment. A likely reason for the selection of a group of cities cited in this fashion on a Roman building would have been some bond held in common by these cities in relation to Rome. An obvious such connection between Sardis and Adramyttium and between both these provincial cities and Rome is the status of the two Asian cities as **conventus** of the Roman province. If all the conventus of Asia had a place in the pediment, it might follow that the temple was a provincial dedication. The logical recipient of such an honor would have been the emperor.[15]

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(12) Ankara, Krencker and Schede 1936; Aizanoi, Weber 1969. Since the building is Roman in date, we have to consider the possibility that the plan may be an unconventional version of a type of building other than a pseudodipteros. Basilicas and baths in rare instances had columns on this scale. However ,the most innovative experiments in arrangements of the orders in early Imperial times were usually carried on at a smaller scale or in screen architecture.

(13) The upper edge of the block rakes at an angle of ca. 16°, and it has a large egg and dart crown molding (0.10 m. egg and dart over 0.08 m. bevel). The tympanum of the Temple of Artemis Leukophryene at Magnesia is built up of blocks of the same form (Humann 1904: fig. 48).

(14) The vehicle for such a personification may have been the eponymous founder of Adramyttium, Adramys, who represents Adramyttium on Hadrianic coins of the city (Wroth 1892: 2-7).

(15) Inscriptions that name both Sardis and Adramyttium as conventus are: Sherk 1969; no. 52; Robert 1949: 206-207; cf. also Habicht 1975. A relevant literary source is Pliny, **NH** 5. 122. The most important inscription is the one published in Robert 1949 from Didyma. It

The marble sculpture fragments might, judging by scale and workmanship, belong with the pediment, but they are too few to make this identification certain. The bronze sculpture fragments consist of thirty fragments, almost certainly all from the same object (Fig. 7). Three of these fragments join along fresh breaks to form part of an overlifesize lion's paw. Four other fragments bear surface treatment, and twelve of the fragments are gilded. They belonged either to a hollow cast statue in the round or to a monument such as a tripod or decorative table, and may therefore have been part of a votive offering or of the sculptural program of the building. The treatment of the hair on the paw fragments suggests a date no earlier than the Hellenistic period.[16]

The tympanum block and sculpture fragments were found together in a layer of dark grey ash that was deposited when the building was destroyed. Coins from the ash layer date this event to the reign of Antoninus Pius thus indicating that the building was in use for only about a century and a half, and was destroyed during Sardis's most prosperous period.[17] The reason for its destruction is

refers to the construction of a temple to Caligula at Miletus, and records the names of thirteen sponsors, each identified by his ethnic. Robert has shown that each sponsor is a representative of one of the thirteen conventus into which Asia was then divided, and that, as a company, these thirteen men represent the whole province. The temple to Caligula at Miletus was thus meant to be a communal dedication sponsored by the **koinon Asias.** If our temple was also a provincal dedication, was it, too, a temple of the imperial cult? Of the many temples known from literary sources, inscriptions, and coins to have existed at Sardis, one still unaccounted for is Sardis's first neokorate temple. Sardis was made **neokoros** for the second time under Antoninus Pius. Foss notes that it is remarkable that the bestowal of this honor might have coincided with the destruction of the early Imperial temple. Although the present evidence is meagre, it does raise the possibility that this is Sardis's first neokorate temple. If so, the best candidate for the dedicatee is Claudius.

(16) Marble sculpture fragments: S82.11: 8688; S82.12: 8689; S82.13: 8690; S82.14: 8691; S82.17: 8696. Bronze sculpture fragments: M82.14 A-FF: 8706.

(17) The coins are C81.80 and C81.81, both AE Greek, Hadrian 117-138; C81.82, AE Greek, Faustina the Elder d. 141; C81.83, AE Greek, probably a local issue of the second century A. D.; C82.161, C82.164, 1982.222, 1982.223, all four AE Greek Imperial, M. Aurelius Caesar 131-161. Although the coins strictly supply only a terminus post quem, their state of preservation — the Hadrianic coins being rather worn, the Antonine coins in mint condition — as well as the absence of later

still unclear, for the ash layer represents the intentional dismantling of the building immediately after its initial and presumably accidental destruction, rather than the initial destruction itself.

After the destruction, the surrounding area was virtually abandoned, probably because it lay in the path of a natural drainage. Evidence for reuse of the building is slight, but it may include two graffiti (IN 81.9, IN 81.10) carved on a paving block; these are **topos** inscriptions, with the word **topos** in the nominative accompanied by the name of a person or institution in the genitive, but the precise readings and dates are uncertain. About three meters of wind-and-water-laid sediment, apparently carried down in a gradual and to this day almost uninterrupted process from the slopes to the south, covered the podium of the building.

CJR, TNH

«Field # 49» Wall

The other site in Sardis East selected for excavation was a flat-topped hill, or spur of the Acropolis, located just southwest of the theatre and southeast of the early Imperial temple, specifically the crest of the spur at its north end (at ca. E. 820-970/S. 305-310 on the 'B' grid; Fig. no. 68). At this locale the survey party had observed traces of a wall whose large, roughly-dressed stones and apparent lack of mortar suggested a feature of the Lydian period. Subsequent excavation revealed a massive Lydian wall, in places obliterated by Roman construction.

These features were explored in six trenches (Fig. 8). The Lydian wall extends in a straight line for at least 20 m., perhaps as much as 40 m.; is 3.0-3.4 m. thick (Fig. 10); and stands to a maximum height of 2 m. at the face (Fig. 9, 11). The principal face is on the downhill side (to the north); the face on the uphill side, in the 5 m. wide segment exposed, shows poorer construction, with less careful alignment of courses and jointing of stones. The wall is built on sloping ground and appears to rest on an artificial bedding of red clay. It is constructed of large stones: those that make up the core average ca. 0.50 m. in diameter; those at the face are roughly dressed and laid in a mixture of polygonal and ashlar styles (Fig. 11).

Exposed in a 7 m.-wide trench on the steep hillslope immediately in front of the wall were several stratified sloping layers of earthy debris and of loose stone. The lowest stone layer (Fig.

diagnostic material in the deposit strongly suggest that the date of deposition falls within the reign of Antoninus Pius.

«Loose Stone Packing») terminates at the downhill end in a line of roughly-squared and neatly fitted stones of which one course survives and at least one more must have existed (to judge from dislodged stones of similar form nearby). This layer clearly belongs to a planned feature **in situ** (a glacie, or other kind of outwork ?); and the loosely-laid layers above could belong to the same or similar features

Diagnostic pottery remains («Geometric» Black-on-Red, Grey Wares; one Bird Bowl fragment and one Rosette Bowl fragment) recovered from strata that evidently antedate the wall's destruction (to judge from dislodged wall stones that rested over the strata) suggest that the wall was destroyed by the beginning of the second quarter of the 6th century B. C. and that it was built sometime in the 7th century B. C.

The extreme east and west trenches (Figs. 8, 9) which are located on the line of the Lydian wall's north face revealed walls, drains, and artifacts of the Roman period. The presence of large, roughly-dressed stones in the two east trenches suggests that the Lydian wall extended to their location; and the disposition of those stones in the penultimate east trench suggests that there part of the wall's north face survives, tilted outward and partly collapsed.

The construction in the most easterly trench represents either a Roman extension or a Roman rebuilding of the Lydian wall. It makes a right-angle turn to the south. The south continuation was traced at ground surface for a distance of nearly 24 m. Exposed building materials were characteristically Roman (brick, mortar, small stones; one re-used marble frieze block carved in relief with **boukephalion** and swags).

In the most westerly trench the line of the Lydian wall is crossed by a substantial Roman water channel and intersected by a Roman wall. The wall was traced for ca. 12.5 m. down the hillslope.

Excavation: Sectors MMS, MMS-S, MMS-N

Sectors MMS, MMS-S, and MMS-N are located at the northwest foot of the Acropolis, ca. 400 m. east of the Pactolus stream (Fig. 2 nos. 63, 64; Fig. 12). Sector MMS is a low hill mostly created by remains of a huge Lydian building, the Colossal Lydian Structure, and located just south of the modern Izmir-Ankara highway. Sector MMS-S is the area immediately south of the MMS hill; and Sector MMS-N is the area just across the modern highway and to the north of the MMS hill. In these sectors the most conspicuous features uncovered in excavation are Late Roman (3rd through early 7th centuries A. D.) and Lydian (7th and 6th centuries B. C.); there is relatively little diagnostic material of any kind from the intermediate and later time periods.

Sector MMS, Roman Features

On the summit and east side of the hill parts of a Late Roman building complex were uncovered (Fig. 13; for other parts of the same complex uncovered in earlier seasons, Greenewalt, Sterud, and Belknap 1982: XX - XX; Greenewalt et al. 1983; XX - XX). Four rooms were completely cleared, (A) - (D). The remains of these and other partly excavated rooms show a complex building history of major and minor phases. Coins recovered from room (A), from the room partly excavated to the east of (A), and from (B) range in date from the second or third to the sixth centuries A. D.

(A) A trapezoidal, nearly square room with entrances in the north and east walls (Fig. 14). The south and west walls are retaining walls (retaining destruction debris from the Colossal Lydian structure); they stand nearly to ceiling height and contain raised niches. Under the floor near the southeast corner is a small cellar (1.05 m. by 1.25 m.). The floor of the cellar and of the room are paved with tiles, and the same tiles make a baseboard around the walls. The walls are plastered and painted with simple motifs (border bands in black and red, stylized plants in green). The walls of the niches are lined with slabs of colored stone (fastened by iron pins); their ceilings, which are made of brick in the form of ramped pendentive vaults, were plastered and painted, each with the central figure of a bird (feet and legs preserved). The cellar contained several heavy iron implements, a stone bowl, and many bronze coins. On the floor of the room were remains of storage vessels, an implement of thin sheet bronze resembling a double-bladed axe (M 82.13: 8707), covered by a marble column capital or base, and a stone mortar.

(B) Apsidal room with entrances in the north and east walls. The apse is a retaining wall, like the east and south walls of (A); it was covered by a semi-dome (of which the lowest courses survive on the south side; Fig. 15) and contained a shallow niche to the right of center.[18]

(18) The back wall of the niche was built separately from the rest of the apse, and projected slightly beyond the exterior contour of the apse. This wall's lack of integrity with the rest of the apse suggests

The floor was paved with tiles, which survive along the south side of the room. The walls were plastered and painted to suggest opus sectile in veined and brecciated colored stones (yellow veined with darker yellow and brown, white veined with grey, grey veined with black, black veined with white, red dappled with white; ivy-leaf pattern in white, yellow, and blue on a black ground. Figs. 15 - 17 show the decorative scheme of the south and apse walls (shading on either side of the columns of the apse wall suggests semi-cylindrical form; the central roundel was exposed in 1980; Greenewalt et al. 1983: XX - XX, Fig. 4).

A tile-lined drain runs the length of the room below floor level east of the apse. There were at least two older building phases. To one or both of these may belong fragments of painted plaster that were recovered at floor level and below. Some of these fragments have gold leaf, applied in a scheme of gold squares against a dark blue ground.

The western orientation of the apse and the absence of religious symbolism in the wall painting suggest that room (B) might be a triclinium (inadequate as the apse, with a diameter of only ca. 3.70 m., may be for a sigma couch; Åkerström-Hougen 1974: 101-117; Jalabert, Mouterde, and Mondésert 1955: 76 no. 1344 and references; Balty 1969: 27-29). The painted decoration closely resembles that of the hall in **Hanghaus** 1 at Ephesos that was identified by its excavators as a **cenatorium** (Strocka 1977: 16-17, 31-34).

(C) A trapezoidal room with entrances in all four walls, communicating on the north side with a slightly smaller trapezoidal room that was excavated in 1980 (Greenewalt et al. 1983: XX - XX, «Trench II») and on the west side with room (D) (Figs. 13 and 18). The sunken central area of the floor and the stone paving of that area suggest an open court surrounded by a porch; but at the inner edge of the higher pavement there are no dowel holes, setting marks, or signs of wear that would attest porch supports. Near the northwest corner of the «court» is a well, which was excavated to a depth of 3 m. It is lined with coursed fieldstones and brick set in mortar, and has footholes at approximately 0.80-m. intervals.

(D) An apsidal room with an entrance in the east wall. The

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that it was blocking for a doorway, but the niche can hardly have been a doorway: its floor is well above the floor level of room (C), and the presence of debris immediately west of the apse shows that the niche can never have been a portal.

entrance is approximately on axis with the room, and the apse was axially symmetrical with the west end of a part of the room, as de fined by a narrow cross wall or partition. Around the sides of this part of the room are remains of a mosaic paving, with guilloche band and pattern of squares and interconnected circles. The apse contains remains of a tile floor.

Sector MMS, Lydian Features

The Late Roman building complex rests directly on remains of the Colossal Lydian Structure and incorporates or expands part of that Structure.(19) Excavation in 1981 and 1982 exposed two component parts of the Colossal Lydian Structure: a continuation of the Structure's east face that has a vertical facade of stone and a deep jog; and a narrow wall that runs roughly parallel to the east face and some 3 - 9 m. to the east of it (Figs. 19, 20, 23).

The point of transition between the sloped facade of mud brick and the vertical facade of stone has been precisely located but has not been excavated (it is on the line of the south face of a Late Roman wall that rests directly above; cf. Figs. 13 and 20). The stone facade, first exposed in 1980 (Greenewalt et al. 1983: XX - XX) stands to a maximum height of 4.40 m. (Fig. 21). Near the base is a stone shelf, which is evidently a continuation of the shelf that is exposed a few meters to the north below the sloped facade of mud brick. This shelf evidently does not continue south of the stone salient corner (Figs. 19, 20). The masonry of the face consists of uneven courses of roughly hewn blocks (schist and limestone) except for the quoins of the salient corner, which are neatly cut and precisely jointed (mostly limestone; Fig. 21). In front of the face is a massive stratum of destruction debris from the Colossal Structure, mainly consisting of derelict and partly burnt mud brick disposed in fall lines that slope away from the face (cf. Greenewalt, Sterud, and Belknap 1983: XX; Greenewalt et al. 1983: XX - XX). Pottery recovered from

(19) There is a curious structural relationship between the Late Roman building complex and the Colossal Lydian Structure: the back wall of the compler's room north of (C) and of the apse of (D) belong to an extension or remodeling of the Structure's secondary stone wall (for which, Greenewalt et al. 1983: XX - XX); the north wall of the room north of (C) lies directly over the point of transition between the sloped facade of mud brick and the vertical facade of stone of the Structure's east face; and the location of a well in room (C) coincides with that of a solid stone bastion-like feature, probably the most difficult spot on the hill to penetrate (cf. Figs. 12 and 20)

this stratum included fragments of an Eastern Greek orientalizing oinochoe and of a Fikellura amphora (P82.43: 8665; Fig. 22).

> ***According to G. P. Schaus (private communication), the style of the Fikellura fragment is close to R. M. Cook's Lion Group and «probably can be dated quite safely ca. 550 B. C.» This piece and a Little Master cup fragment (P80.21: 8523; Greenewalt et al. 1983: xx - xx) recovered from the same stratum further to the north (in front of the sloped facade of mud brick) suggest that the Colossal Lydian Structure's upper parts were destroyed around the middle of the 6 th century.***

Some 3 - 9 m. to the east of the Structure's socle is a narrow wall, 0.55 - 0.60 m. thick and evidently more than 20 m. long as indicated by aligned segments exposed in three sub-trenches (Figs. 19, 20). This wall has a socle of fieldstone, which stands 1.8 m. high in the intermediate sub-trench (the only place where the full height of the socle has been exposed) and a superstructure of both mud brick and pisê, which stands 1.8 m. high in the south sub-trench (the only sub-trench where the superstructure is preserved). If the heights of these component parts were consistent throughout, the wall would have stood more than 3.6 m. high. Both socle and superstructure show a distinct lean to the east (Fig. 23). In the intermediate subtrench, the east side of the socle is abutted by a stepped shelf or buttress of packed mud and mud brick, 0.5 m. broad (cf. Fig. 19). Destruction debris from the Colossal Structure (mostly derelict and partly burnt mud brick) covered the narrow wall's mud brick superstructure (Fig. 24) and the stepped shelf or buttress behind its stone socle, showing that the narrow wall was a free-standing feature and that it went out of use when the Colossal Structure's upper parts were destroyed. Between the socle of the narrow wall and the Colossal Structure, the south scarp of the intermediate sub-trench (at ca. S. 55 on the 'B' grid) shows several stratified thin layers of water-laid sand and gravel; which suggest that the corridor between the narrow wall and the Colossal Structure had occasionally been a channel for water runoff. The purpose and function of the narrow wall remain to be determined.

Sector MMS-S, Roman Features

The MMS-S trench was expanded to the north in two short extensions to test for the presence of an ancient east-west road (whose existence is suggested by a modern east-west villagers road and by a Roman east-west drain and Roman column shafts similar in size and design to those of road colonnades elsewhere at Sardis (Greenewalt et al. 1983: XX; cf. Hanfmann 1962: 40-46; 1965: 14-16). Parts of three columns **insitu** and several drains, all in an east-west alignment, were exposed.

> *Two column shafts and all three bases survive complete. The bases are dissimilar in desing and size, as are those of the colonnade of Roman Sardis's main avenue (Hanfmann 1962: 40-46). The three columns might belong to a colonnade with an intercolumnial interval of ca. 3.50 m. If so a pier took the place of one of the columns in the series. This pier may have served to support one end of an arch, the other end of which would have been anchored in the long wall that forms the south edge of the trench, where there is an appropriate socket. This wall is now exposed for a total distance of ca. 22 m.*

The columns and drains are appropriate for a colonnaded street but are not sufficient evidence to verify its existence.

On a fragile plastered floor surface between the line of columns and the wall that forms the south edge of the MMS-S trench rested a heap of ca. 650 bronze coins, which included issues of the late 4th century A. D. Cleaning and study of these coins was postponed for another season.

Sector MMS-S, Lydian Features

The preserved top of a monumental Lydian wall (Fig. 25) appeared ca. 0.50 m. below the Roman plastered floor. Only a short segment of one face, oriented northeast-southwest and standing to a maximum height of 2.7 m., could be exposed within the confines of the trench. The face is constructed of large stones of irregular shape and size, with flat or rough, hammer dressed surfaces and tight, occasionally rabbetted joints. The haphazard masonry combines features of ashlar, polygonal, and Lesbian styles. Debris that contained much derelict and partly burnt mud brick filled the space between the wall's face and the southwest corner of the trench. From this debris were recovered miscellaneous Lydian pottery, an Attic black-figure fragment assigned to the Manner of Sophilos by G. Bakır (private communication; P82.10 A and B: 8599-8600) and a plain arcuated stele of limestone, with rectilinear foot and tapering sides (S82.2: 8598; H. 0.37 m., W. 0.23 m., Th. 0.05 m.).

Sector MMS-N

Roman remains were negligible, except for a few marble paving slabs that belong either to the Roman avenue or to the terrace southeast of the Synagogue (at ca. E. 130-131/S. 10-11 on the 'B' grid; cf. Fig. 12), and an important inscription, to be published separately.

IN82.16. The stone, a large marble block (H. 1.66 m., W. 0.72 m., Th. 0.56 m.) was recovered ca. 13 m. east of the Synagogue, at ca. E. 129/ S. 3-4 on the 'B' grid. It rested inscribed face down on remains of a wall constructed of mortared brick and small stones. Whether the inscription block was part of the wall construction is unclear. The disparity in size between it and the stones that are unquestionably part of the wall and a slight difference in alignment between the two features (the stone rested slightly askew to the line of the wall remains - suggests that it was not. Inscription Block and wall had been exposed in 1967 (cf. Hanfmann 1968: 19 Fig. 18, where the wall is shown on the E. 100 line). The inscription evidently had passed unnoticed at that time because plaster on the sides of the wall (mostly fallen away in 1982) concealed the inscribed face, or simply because no one had inspected the underside of the stone.

The block is the base of a statue honoring one Gaius Asinnius Nicomachus Frugianus, an archon of Sardis during the principate of Alexander Severus (222-235 A. D.), cf. Head 1901: 178. The text provides genealogical information about his family, recording names and titles of members spanning five generations. Several members cited are women and some male members are otherwise known from epigraphical or numismatic sources. The text also makes reference to an otherwise unknown locale of Sardis (**en tois tessarsin makellois**) *and to a visit to the city by Marcus Aurelius and Commodus (the two are designated* **theoi**), *otherwise unattested in the sources and to be associated with their return in 176 A.D. from the Syrian campaign against Avidius Cassius.*[20]

(20) The identifications and interpretation were made by C. Foss and B. L. Burrell.

The objective of excavating at MMS-N in 1981 and 1982 was to clarify the date and form of the Lydian building known as Lydian East Wall, or LEW: a structure with an ashlar masonry face (mostly limestone) and a core of large, tightly packed fieldstone (Greenewalt et al. 1983: XX - XX, Fig. 17). To this end a sondage was dug into the core of the building (in the hope of recovering chronological data) and the face was traced to the north and west.

The sondage, ca. 1.50 m. on a side, was dug close to one face of the building (the more easterly west face, at ca. E. 149-150/S. 16 on the 'B' grid), and penetrated 3.30 m. below the surface of the rubble packing. In the upper 3.10 m. two stone layers were distinguished: an upper, 0.30 m. thick, consisting of closely packed stones (mostly schist) with little earth between; and a lower, 2.80 m. thick, consisting of stone rubble in a matrix of earth and clay. Pottery remains (Lydian Grey Ware, Bichrome; one orientalizing fragment) from these layers are compatible with the later 7 th and 6 th centuries (and so seem to provide less precise chronological evidence than pottery from a stratum outside the building, which suggested to excavator V. J. Harward in 1980 a date no earlier than the second quarter of the 6 th century B.C.; Greenewalt et al. 1983: xx - xx). The southwest corner of the sondage exposed a curious pier constucted of substantial limestone blocks in nine courses, some blocks evidently re-used.

Another 23 m. of the face traced to the north and west included a re-entrant and another salient angle (Figs. 26). The outline of the building so far exposed resembles a right-angle W. The masonry of the eastern «V» of the W is mainly limestone; exposed masonry of the other «V», to the northwest, is sandstone. At the re-entrant corner, the junction of masonry in these two materials is very imprecise (Fig. 27), which contrasts with the tight masonry joints and crisp salient corners of the rest of the building. Most of the face traced in 1982 was exposed no lower than the top preserved course (in order to conserve both the external stratigraphy and the monument, whose stone quickly deteriorates when exposed to the elements). One short, ca. 2 m.-wide segment of the south sandstone face near the salient corner, however, was exposed to its foundations (Fig. 28). This segment displays ten foundation courses of roughly-trimmed stones, a euthenteria course of plain ashlar masonry, and five upper courses of ashlar masonry whose faces have chisel-draughted borders and rusticated centers. The centers of these blocks are inscribed with «masons' marks.» Some 16 - 24 individual symbols were distinguished.

On the basis of a transcript of these marks, R. Gusmani has observed (private communication) that one or two may be numbers, two are typically Lydian, three possibly Lydian, two possibly Carian, and two attested in the Sardis Synagogue Inscription (for which Gusmani 1975: 115-132).

Sector MMS-N, Late Hellenistic/Early Roman Feature

A narrow wall or foundation of mortared rubble was exposed just in front of the south sandstone face of LEW, to which it is parallel. This feature, which must be post-Lydian and earlier than the Roman road paving, abuts the west limestone face of LEW at its east end and mergest at its west end with the mortared rubble at the north end of Lydian West Wall, LWW. It is another «oblique foundation» (Fig. 26; cf. Greenewalt, Sterud, and Belknap 1983: XX - XX, XX - XX), but it is bedded some 2 - 3 m. higher than the two to the south and is only one course high. The function of these «oblique foundations,» and indeed of all pre-Roman features at MMS-N, remains to be explained (cf. Greenewalt et al. 1982: XX XX).

Excavation: Lydian Tumulus Tomb (82.1)

Remains of a tumulus tomb (82.1), located on a ridge west of the Pactolus stream, ca. 350 m. southwest of the Artemis Temple (at ca. W. 620/S. 1702 on the «B» grid) were cleared and partly excavated in order to obtain more information about tumulus building materials, techniques, and design. The roofless chamber of this tomb has been exposed since the early 1960's, and probably long before then.[21] Quotations in the following account are taken from excavator B. K. McLauchlin's field report.

«The tomb sits high on the east end of an east-west ridge, which rises gently from the north and slopes steeply to the east

(21) The writer recollects seeing discoloration and lichen on the limestone blocks of the chamber in the early 1960's. A tomb whose condition and setting correspond to that of 82.1 was reported by the first Sardis Expedition (Butler 1922: 165) in connection with its work of 1910-1914; but that tomb is reported as being located much further to the south than 82.1.

and south.» The tumulus mound is partly formed of bed rock.[22] To what extent the rock was trimmed to give the monument a conical shape was not determined.

The rectangular chamber (Figs. 29, 30), oriented approximately north-south with the entrance at the north end, measures ca. 2.85 m. long by 1.90 m. wide by 1.82 m. high. The floor is paved with five limestone slabs, which run the width of the chamber and under the walls. The walls are built of ashlar masonry in four courses. That the fourth course from the bottom was the top course is indicated by a small projecting band at the upper edge of the fourth-course blocks, which is paralleled in complete Sardis tumulus tombs just below the ceiling slabs (Tomb of Alyattes, BK 71.1; Hanfmann 1963: 55, 59 Fig. 41; Ramage 1972 11 - 15). Of the ceiling slabs, nothing was visible. Whether the width of the chamber was meant to diminish from bottom to top, as in some Sardis tumulus tombs (BK 71.1; Ramage 1972: 11 - 15) is unclear because of the displacement of wall blocks, due to exterior pressure; but the narrowing of the door passage from bottom to top is evidently intentional, since the monolithic door jambs are securely based on a floor slab.

In front of the chamber is a shallow vestibule, created by a sixth paving slab and side blocks (one block in situ, the other missing but attested by a smoothed bedding surface at the end of the paving slab.[23] A door block with a thick flange at the sides was recovered a little more than 1 m. in front of the doorway. The block's width (1.12 m.) exceeds that of the doorway (0.80 m. maximum). Can outside pressure have displaced the door jamb blocks by as much as 0.32 m., 0.16 m. on each side; or would the builders of a tomb so crisply finished in other respects have tolerated a mismatched door block and doorway; or was the door block cut for another tomb and re-used here? The block's width closely corresponds to the width of the vestibule.

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(22) Another example of a bedrock tumulus mound (visited by Sardis Expedition members in 1982) is located near Ikiztepe, just northeast of Güre in the Vilayet of Uşak.

(23) That these features probably are not the inner end of a dromos is suggested by the high elevation of bedrock immediately north of the surviving side block. If there had been a dromos, the bedrock ought to have been trimmed to receive the dromos wall. Another example of a vestibule fronting a tumulus chamber evidently appears in the tumulus of Alyattes (Greenewalt et al. 1983: XX - XX).

Inside the chamber «two limestone blocks, similar in size and treatment, stand along the south wall .Each block is probably one of a pair of supports for two slab-type klinai.

East support: L. 0.765 m., H. 0.380 m., Th. 0.220 m. West support: L. 0.765 m. H. 0.430 m., Th. 0.220 m. For couch supports of similar size and arrangement, cf. Tomb 77.1," Greenewalt 1979: 11.

Technical. The door jamb blocks are L-shaped and their horizontal extensions are locked into the side walls (Fig. 29). "At the southeast and southwest corners, the walls are tied together by alternating courses of abutting blocks forming an abbreviated header and stretcher system." "There is no evidence for the use of clamps in either the walls or the paving." "Tool marks are difficult to distinguish due to the weathering of the limestone. Faint traces of toothed chisel marks may be seen on the lower courses of the south wall together with the standard point marks, also visible on the roughened surfaces of the couch supports."

Date. Pottery remains recovered from the chamber ranged from Hellenistic to modern. Pottery from the topsoil of the mound was almost exclusively Lydian and included fragments of two large multinozzle lamps of 6th/5th century type and the foot of a streaky-glaze stemmed dish. Lydian architectural features have not yet been shown to provide reliable dating criteria; but the absence of clamps and of draughted masonry, which seems to be consistent with later Lydian building tradition, and similarities of design and construction to Tomb BK 71.1 (Ramage 1972: 11 - 15), which has been dated on the evidence of kline leg design and pottery remains to the later 6th century, point to a date for Tomb 82.1 in the late 6th or early 5the century B. C.

Miscellaneous: Ancient Oil and an Inscription

Two antiquities of special interest came to the Expedition by chance. One is a Roman glass unguentarium with ancient oily contents, NoEx 81.13 (Fig. 31). This unguentarium was part of a lot of antiqutes recovered by gendarmes from a village house in Sart.[24]

(24) Other items in this confiscated lot included nine empty glass unguentaria (NoEx 81.8 - 81.12, 81.14 - 81.17), a small marble herm head (NoEx 81.21), a Persian siglos (C81.69), a Croesid siglos (C81.4).

C^{14} analysis of a sample of the constent, by Teledyne Isotopes (Westwood, NJ; in January 1982), 1-12,527, calculated according to the Libby half life, gives an age in years B. P. of 1550 $\pm$ 450. The calibrated date (Stuiver 1982) is A. D. 540 $\pm$ 450. This analysis indicates that the substance is ancient. It is highly unlikely that in the Sardis region a glass unguentarium like NoEx 81.13 would have been used as a container as late as the 9th century A. D. or even two or three centuries earlier. The older centureis of the C^{14} analysis time bracket, however, are consistent with the chronology of such glass unguentaria.[25]

The oily contents of the unguentarium consisted of a yellowish colored liquid in the body and a dark brown colored solid in the lower end of the neck. Samples of both were analyzed by J. S. Mills and R. White of the National Gallery in London, Dr. Mills reports as follows on the results of analysis and their interpretation (letters of 13. XII. 1982 and 18. III. 1983).

> *"The oily material from within the vessel gave, on saponification and methylation, a pattern of fatty acids entirely compatible with its being a vegetable oil, most probably olive oil. The black material from the neck of the bottle yielded a certain amount of organic material both by extraction with benzene or by direct saponification. On methylation this showed up some oil components but also a number of higher molecular-weight materials which we have not been able to identify definitively though some individual components have been identified. A high proportion of the black stopper material was not soluble in organic solvents or in acids or alkalis. Under the microscope it contained a good proportion of shining grains which were probably quartz sand and also some amorphous grey-black material. On the whole it seems likely therefore that it is an adventitious rather than a deliberate stoppering material. Quite likely the organic material comprises humic materi-*

(25) Barbara Lawn of the Radiocarbon Laboratory of the University of Pennsylvania kindly provided the calibrated date.

For an unguentarium of similar shape to NoEx 81.13 (i.e., with ovoid body, neck with constriction at base) recovered from a Sardis grave that may date to the 3rd century A. D., von Saldern 1980: 24, 26 no. 130; Hanfmann 1960: 14, 16.

ais from the soil. Nonetheless we wish we could identify the individual components showing up on the chromatogram! We know at least what it is **not**. *It does not contain components of di-or triterpenoid natural resins, nor is it a wax or some natural bituminous material.*

We had a further look at the aqueous phase from the bottle which we had earlier shown to contain glycerol (from natural hydrolysis of the oil) and some diacorboxylic fatty acids (oxidative degradation products from the long chain fatty acids) as the main organic components. The inorganic ions present are: major, Na, Al, Si, Mg; minor, Fe; trace, Cu, Mn. The elements you might expect from glass.

I am afraid that these results hardly enlighten one as to the function of the original contents of the vessel. Culinary, cosmetic, medical? It could be any of these."

For two other Roman glass unguentaria with oily contents and without contexts, Barag 1972 and Basch 1972.

The other chance discovery of special interest is a marble stele with a long inscription in Greek. The stele was exposed by winter rains (January, 1982) in the bed of the Pactolus stream (just west of sector PC, at ca. W. 240/S. 635 on the «B» grid, Fig. 2 no. 13; Fig. 32). The opening lines of text identify the stele as a boundary marker of the Sanctuary of Artemis of Sardis **(horos ieros asylos Artemidos Sardianēs)**, prescribed in Rome by Julius Caesar in the last month of his life. The complete inscription is 76 lines long (possibly longer), and will be the subject of a separate study.

The stele has a total height of 2.02 m. and is 0.45-0.51 m. wide (tapering from bottom to top) and ca. 0.28 m. thick. The back is roughly worked, indicating that the back was intended not to be seen. The top is smooth and featureless, indicating that there was no crowning member. On the inscribed face, lines 11 - 29 were cut down in antiquity, so that traces of only a few letters may now be distinguished. The left side of lines 30 - 76 is badly water - worn.

Reconstruction Project

The aim of this project (properly, a recreation project) was to present the visual effect of complete Lydian roof and revetment tiles in assemblage and in an authentic architectural context and outdoor environment (Hostetter 1981: 56 - 69; Greenewalt 1978: 67 - 70; 1979: 26 - 27; Greenewalt, Sterud, and Belknap 1982: XX-XX; Greenewalt et al. 1983: XX-XX). In 1981 the project (begun in 1976) was completed in its essentials, with the completion of the last tiles and of the display structure, the installation of the tiles, and the designing of landscape planting (Fig. 33).

The display structure (Figs. 34, 35) represents the corner of an hypothetical, functionally anonymous Lydian building. A reinforced concrete frame, which supports the tiles, is masked by the roof tiles (bedded in mud) and by «dummy» walls of authentic Lydian construction materials; a socle of fieldstone and a superstructure of mud brick, covered with mud plaster (for the use of these in Lydian Sardis, Ramage 1978: 4 - 6).[26]

Conservation

Architectural features excavated in earlier seasons at sector HoB and in the Gymnasium-Bath complex (Fig. nos. 1, 4) were consolidated and covered.

> *At sector HoB, with respect to Lydian buildings (excavated between 1961 and 1970), stone socles were capped and pointed with cement (tinted brown to suggest mud brick and to harmonize with the color scheme of ruins and setting) and mud brick parts were encased within dry rubble walls and roofs of cement or tile (easy to dismantle for inspection; Buildings G, H, J, K, L; cf. Hanfmann and Thomas 1971: 10 fig. 3).*
>
> *In the Gymnasium-Bath complex, the sides of the pool in Room BEH were covered with cement (tinted pink to harmonize with Roman brick and mortar). The cement surfaces only approximate the planes of original marble revetment.*

In sector MMS the mud brick of the Colossal Lydian Structure was roofed and treated with a chemical solution that made exposed surfaces hard and water resistant. Parts of three mud brick surfaces were treated with a polymer solution that impregnates the outermost 2 - 5 cm. of the bric. D. J. Butterbaugh, the specialist in charge, summarized the treatment as follows.

(26) The bricks were made to the standard size recognized for the Colossal Lydian Structure at sector MMS: 0.20 m. by 0.40 m. by 0.10 m.

Surfaces "were spray treated with a 3 % toluene solution of Paraloid A-21.

The polymer solution was applied with a coarse, low-pressure spray from a simple garden type, hand pump sprayer. The walls were kept wet to the point of run-off for 40 - 50 minutes, during which time absorption of 11-15 kilograms per square meter of surface had occured. After two days of drying the surfaces were hard, water repelling, and slightly darker than neighboring untreated surfaces. A vigorous scrub with a stiff bristle brush and water produced a surface close in appearance to an untreated wall. Penetration of polymer (as measured by non-wetting) was 4-5 cm. in one wall and 2 cm. in another" (field report). For a fuller discussion of the treatment and its tests, Butterbaugh and Piggot 1980.[27]

In sector MMS, rooms of the Late Roman complex with painted wall plaster (A, B) and fragile earlier features (below the room to the east of room A) were covered with a roof. Wall painting was cleaned, given a protective coating of Acryloid B-72, and edged with dental grade plaster of paris.

Artifacts. In addition to routine cleaning, consolidation, and repair of pottery, coins, and other common artifacts, four handsome painted pots of the Lydian period that had been recovered in earlier seasons were cleaned and restored: Attic black-figure merrythought cup P60, 599: 3116/Manisa Museum 2137 (cf. Ramage 1983); a pair of orientalizing skyphoi decorated with fish and birds,

(27) The mud brick surface areas of the Colossal Lydian Structure that were treated are a 1 m.-wide strip of the east face, a 1.5 m.-wide strip of the west face (upper part), and an 0.7 m. wide strip of scarp in the east foundation trench for the Structure's secondary stone wall (i.e.; built into the original mud brick superstructure in later Lydian times, cf. Greenewalt et al. 1983: XX - XX). The first two surface areas also are roofed. The third area, which unlike the other two is not a proper face and therefore is of less historical importance, was left uncovered in order to allow monitoring and comparison of weathering effects on treated and untreated surfaces. After two winters' heavy rains, frost, and snow (in 1981-1982 and 1982-1983) the treated strip of the third surface area showed no signs of deterioration and intrusion, whereas untreated adjacent surface areas became covered with moss and small grasses.

P61.1: 3130A and B / Manisa Museum 2202, 2203 (cf. Greenewalt 1972: 118-120 nos. 4, 5); cup in the form of two stacked Ionian cups, P60. 450: 3942 (cf. Hanfmann 1962: 15 fig. 10).

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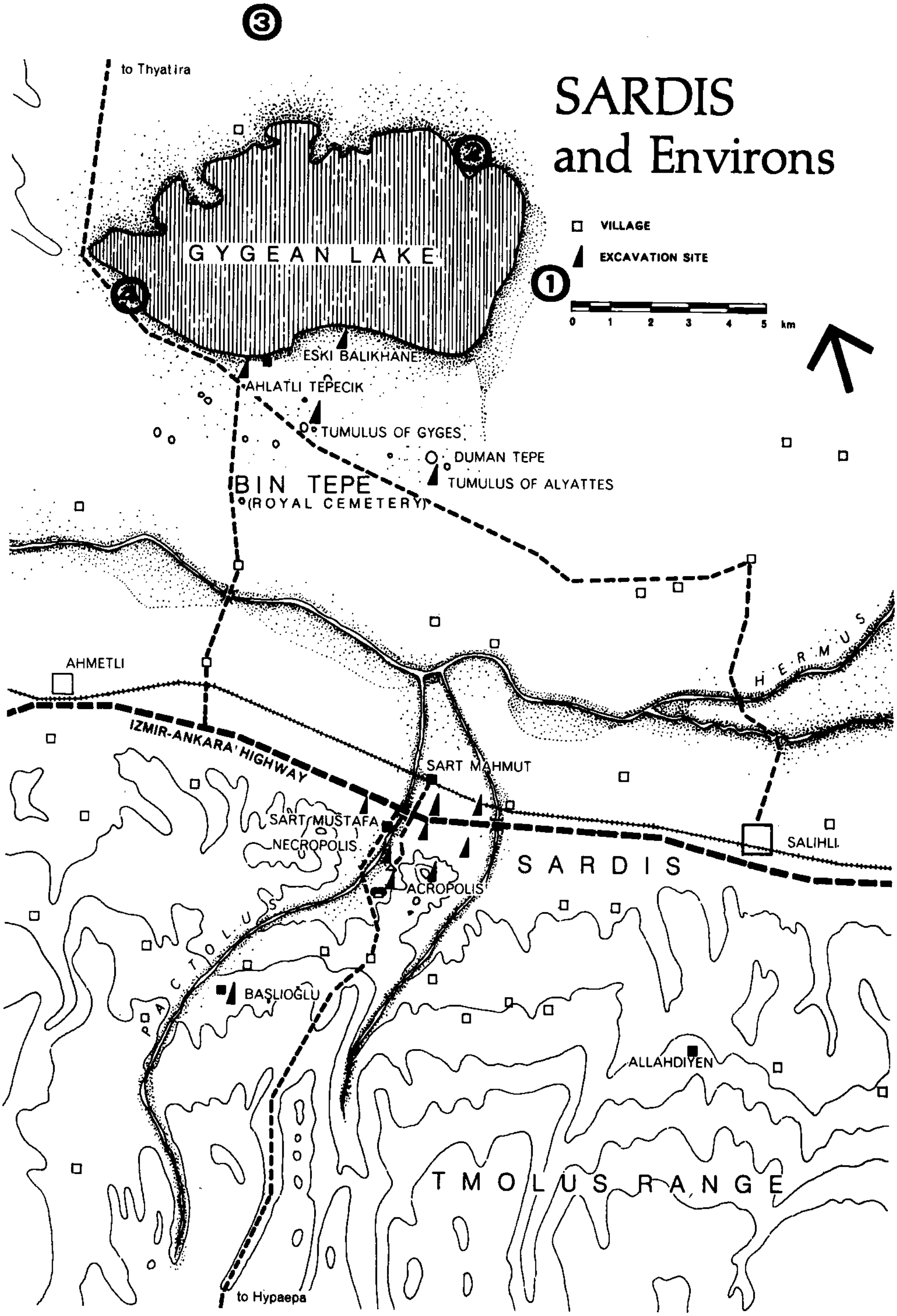


Fig. 1. Sardis and its greater environs, showing approximate location of habitation sites visited in 1981. (1) - (4).

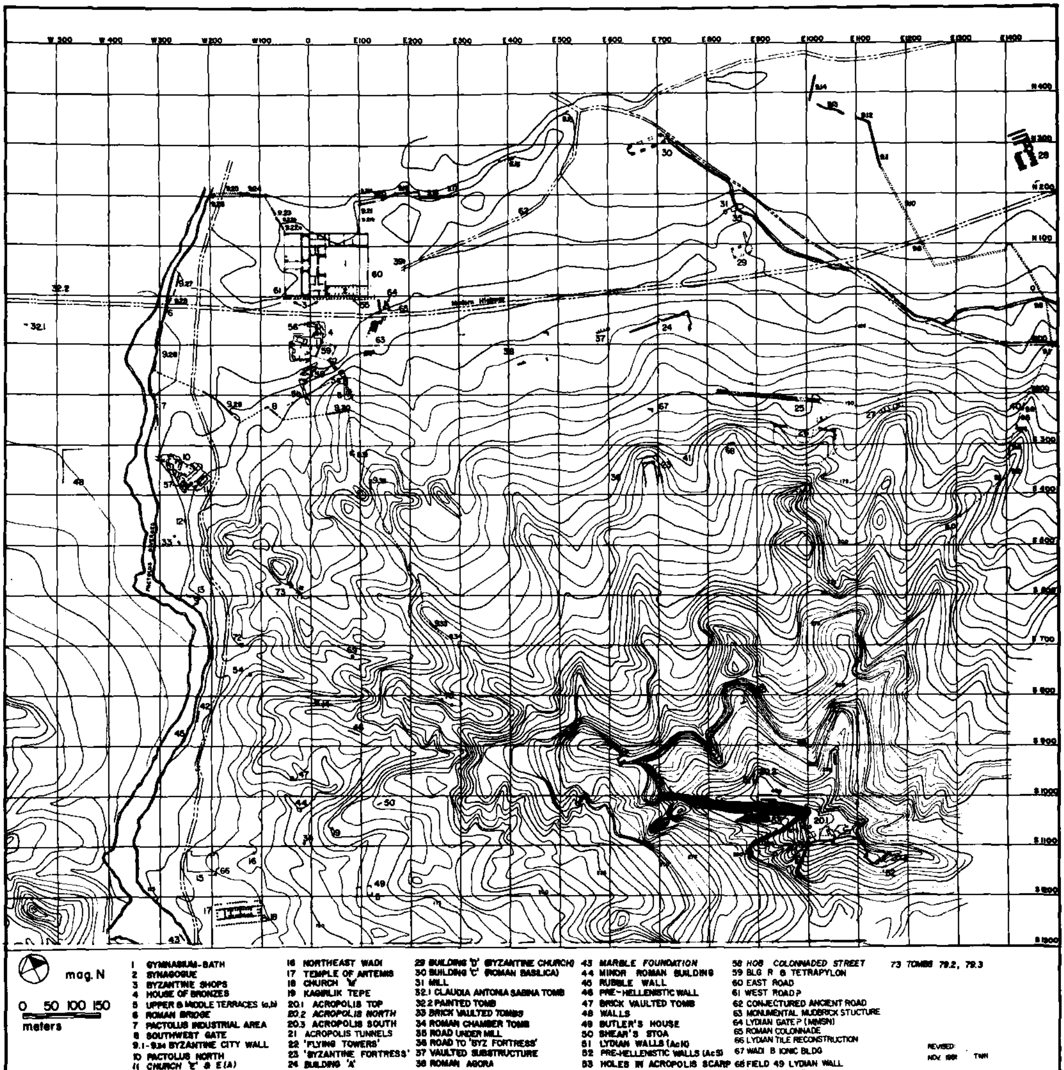


Fig. Sardis, general site plan.

Fig. 3. Sardis East, Early Imperial Temple, base of pteron column.

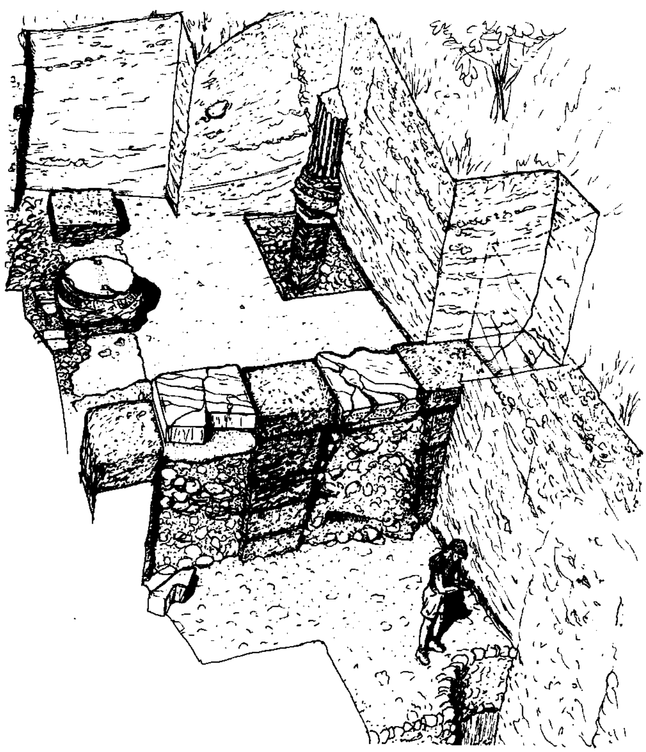


Fig. 4. Sardis East, Early Imperial Temple, perspective view of remains.

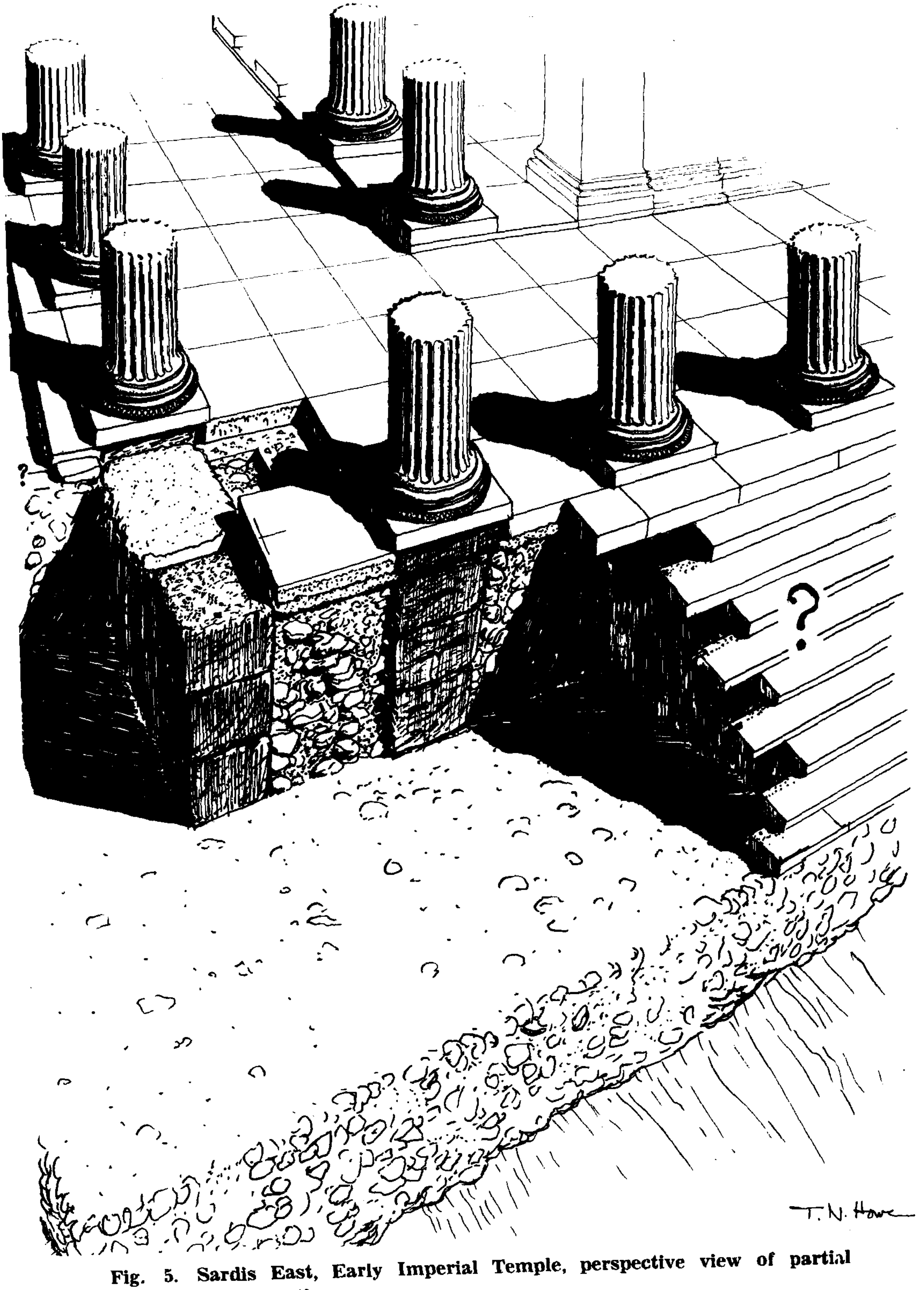


Fig. 5. Sardis East, Early Imperial Temple, perspective view of partial reconstruction.

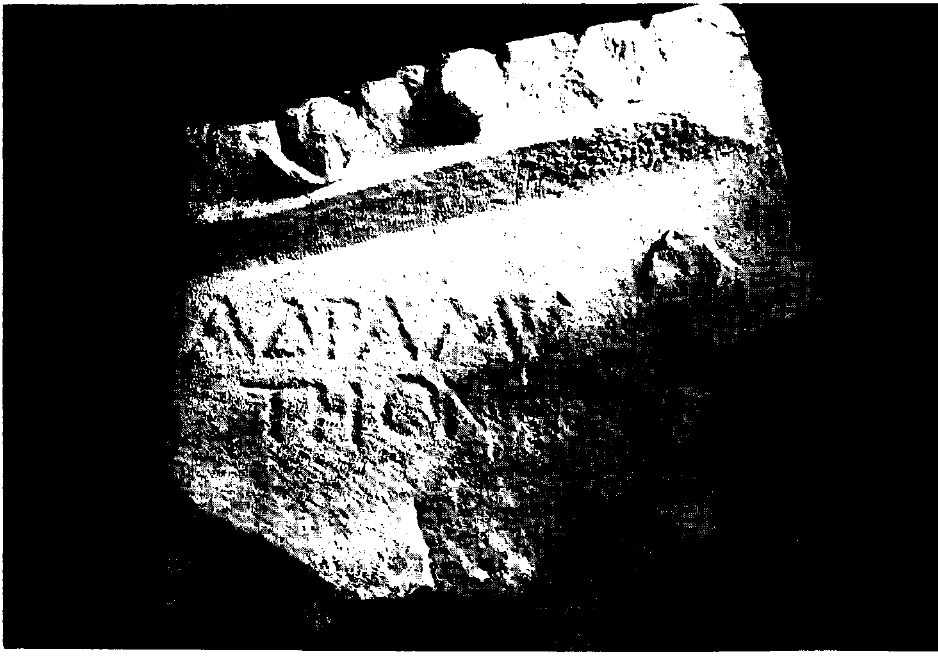


Fig. 6. Sardis East, Early Imperial Temple, tympanum block.

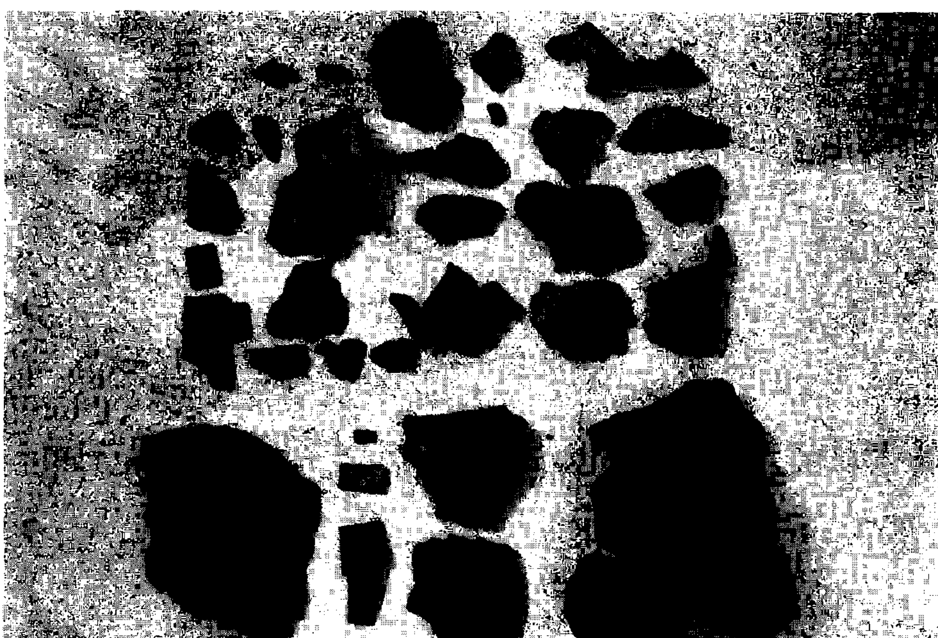


Fig. 7. Sardis East, Early Imperial Temple, bronze sculpture fragments.

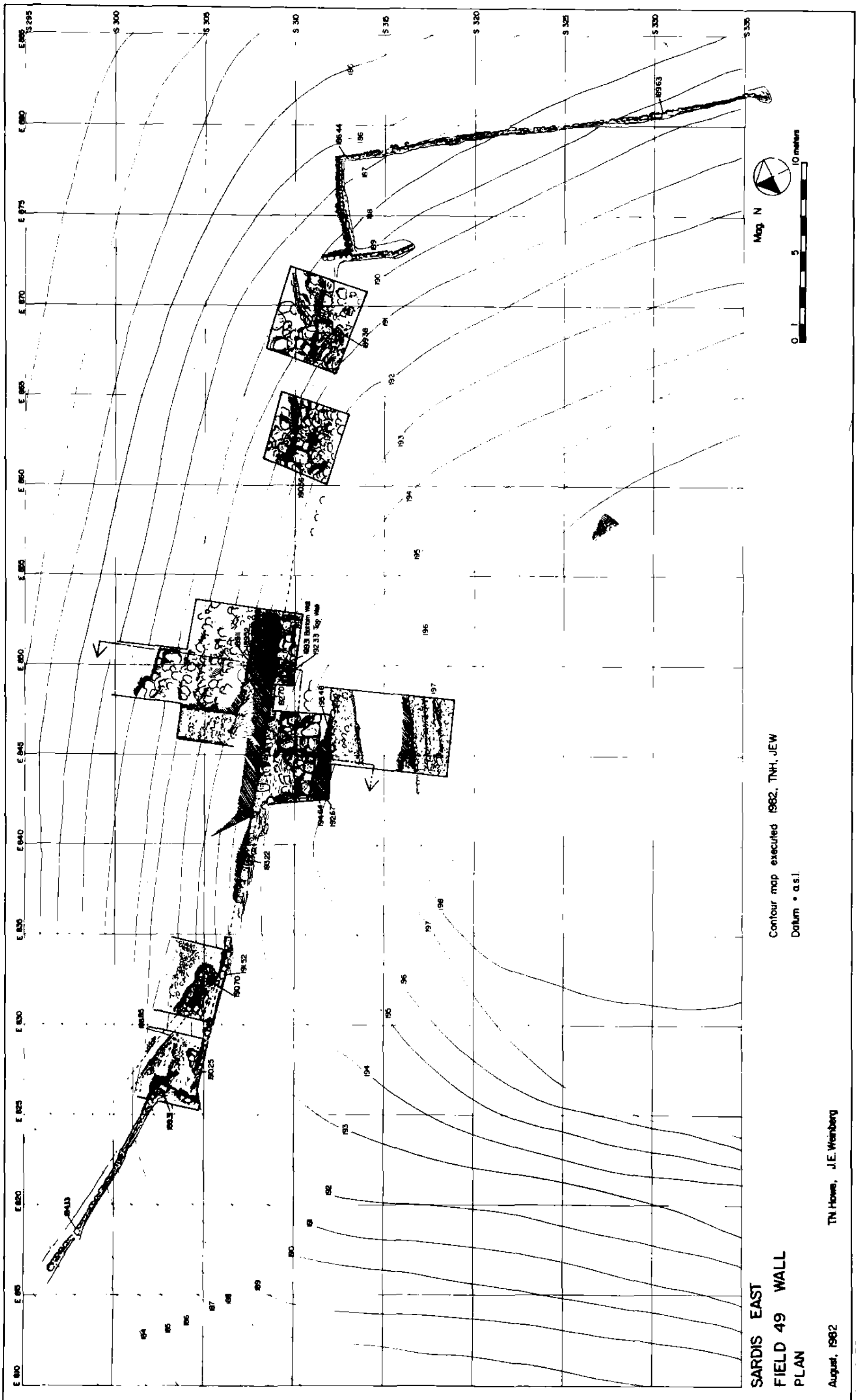


Fig. 8. Sardis East, «Field # 49» wall, plan.

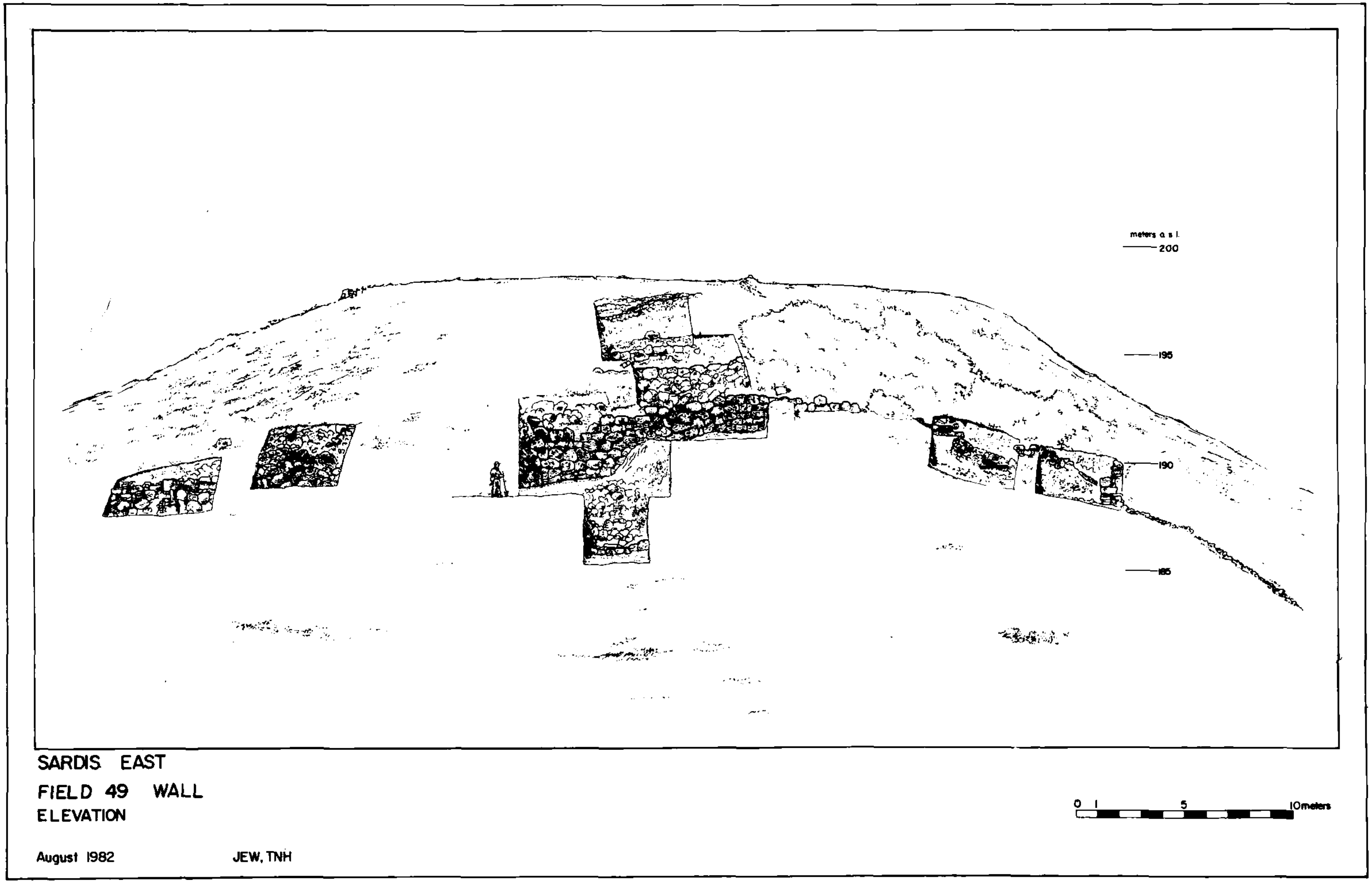


Fig. 9. Sardis East, «Field # 49» wall, elevation.

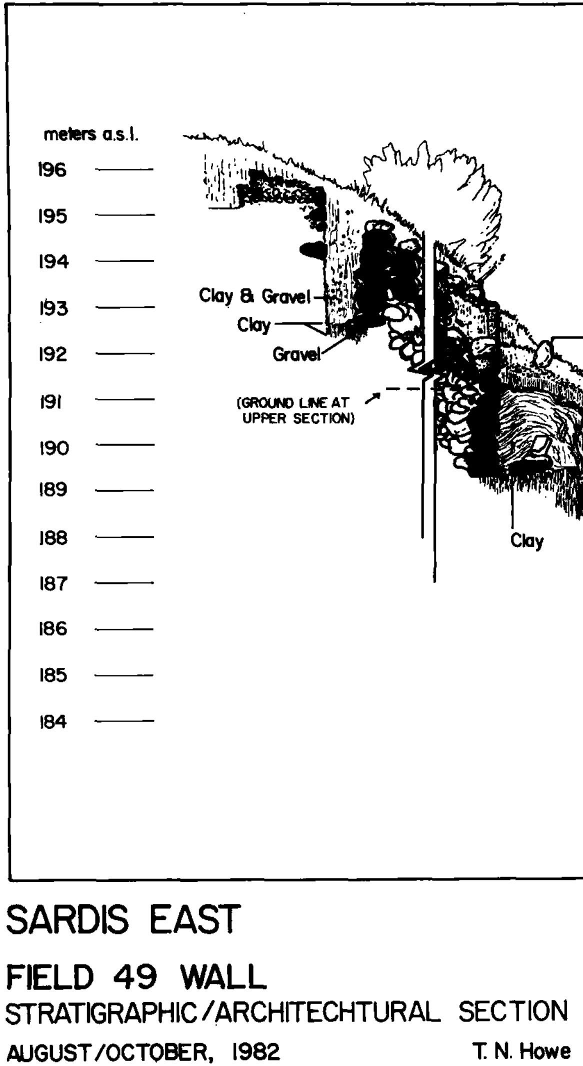
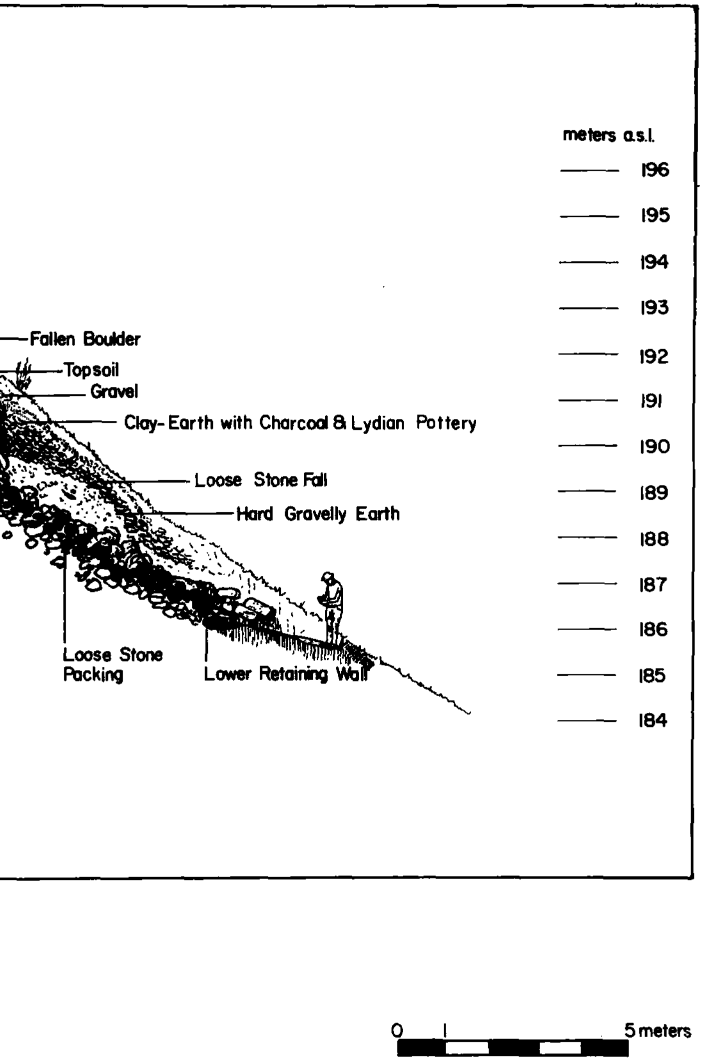


Fig. 10. Sardis East, «Field # 49» wall, section.



meters a.s.l.
196
195
194
193
192
191
190
189
188
187
186
185
184
Fallen Boulder
Topsoil
Gravel
Clay-Earth with Charcoal & Lydian Pottery
Loose Stone Fall
Hard Gravelly Earth
Loose Stone
Packing
Lower Retaining Wall
0
1
5 meters

Fig. 11. Sardis East, «Field # 49» wall (photograph taken at the end of the 1981 season).

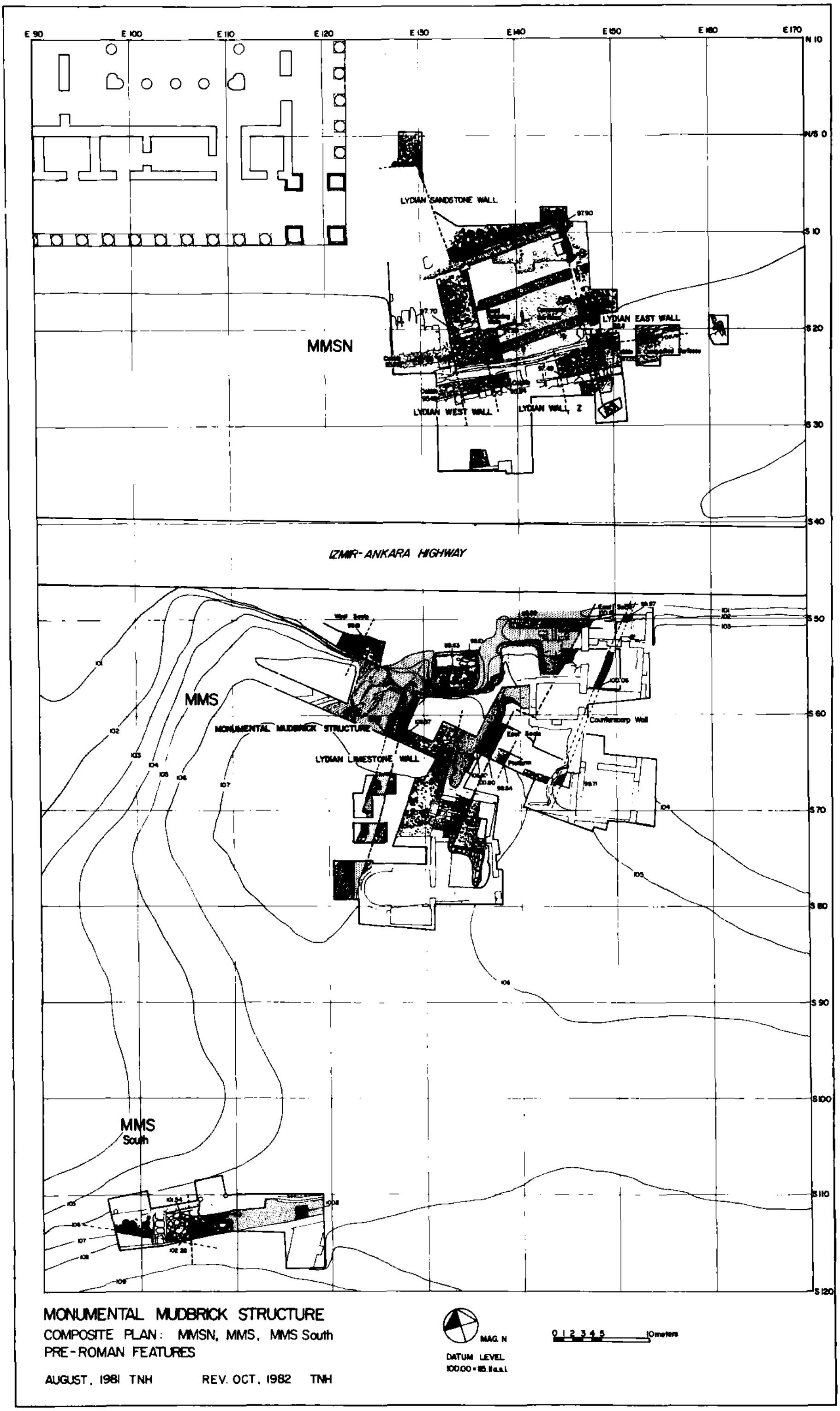


Fig. 12. Sectors MMS, MMS-S, MMS-N, plan.

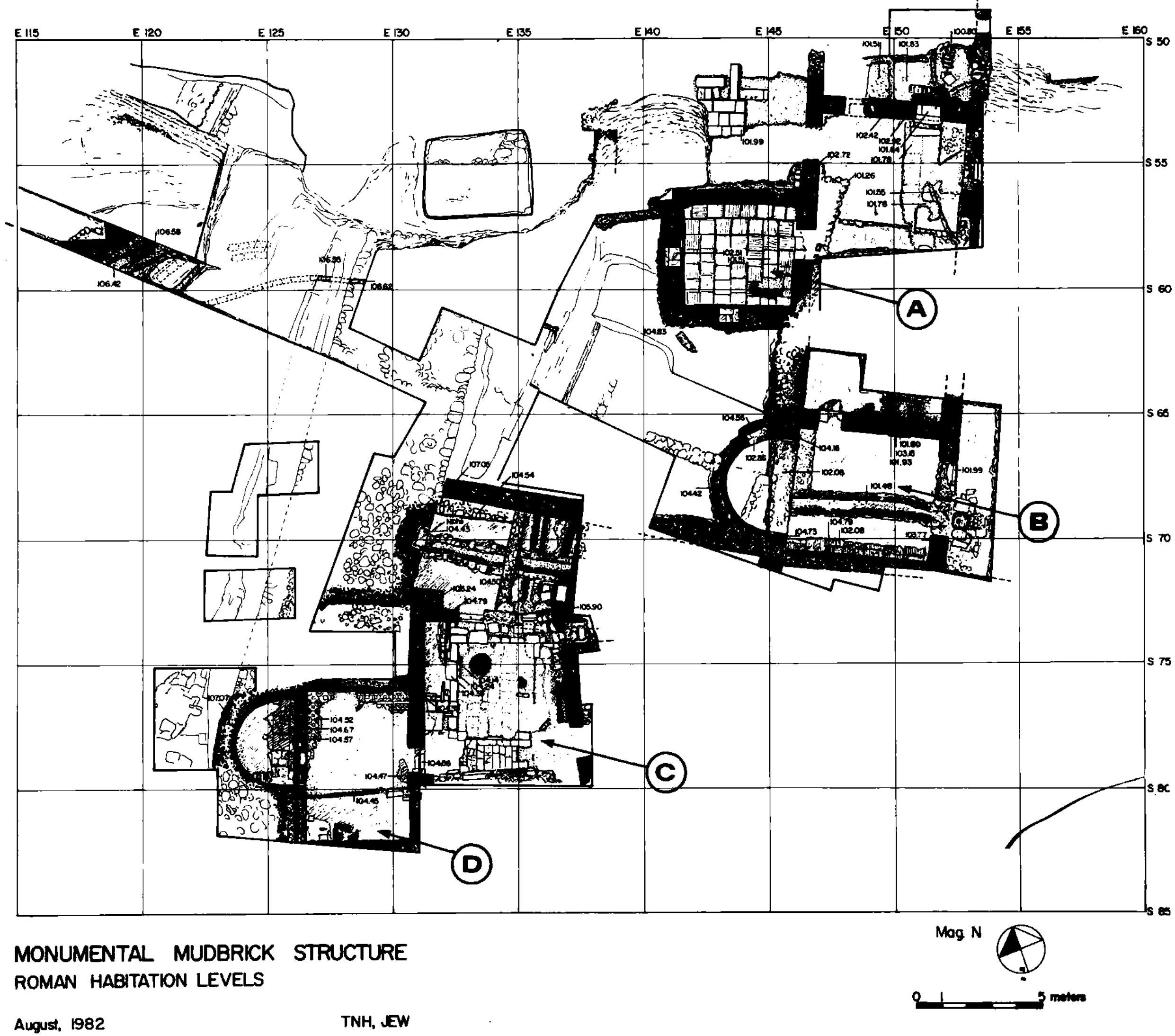


Fig. 13. Sector MMS, Late Roman features, plan.

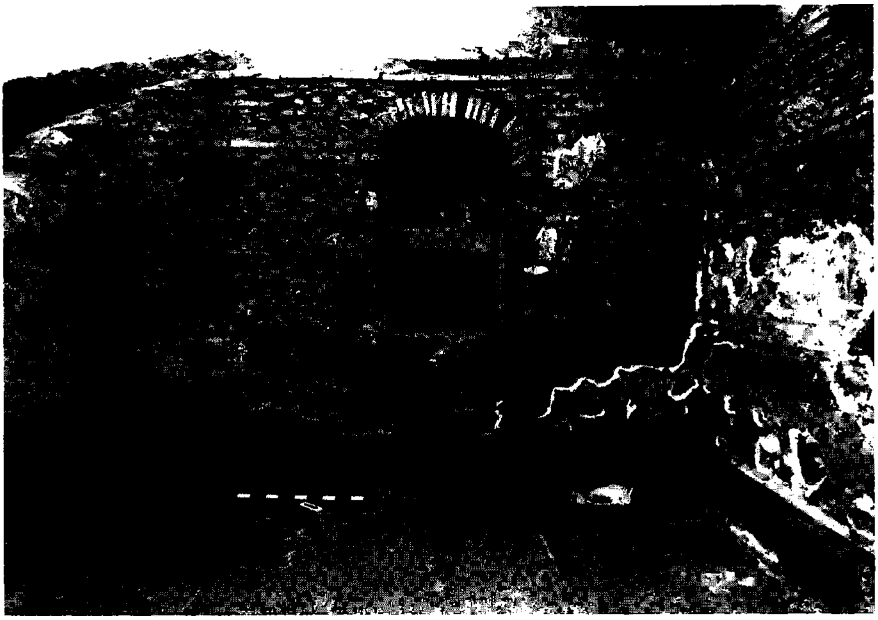


Fig. 14. Sector MMS, Late Roman features, room (A), view towards south wall.

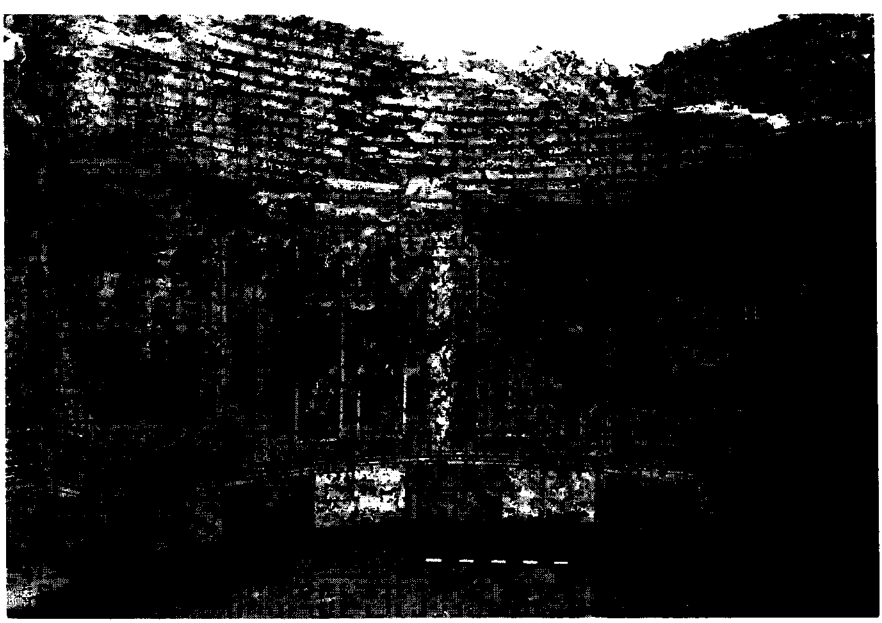


Fig. 15. Sector MMS, Late Roman features, room (B), apse, looking west.

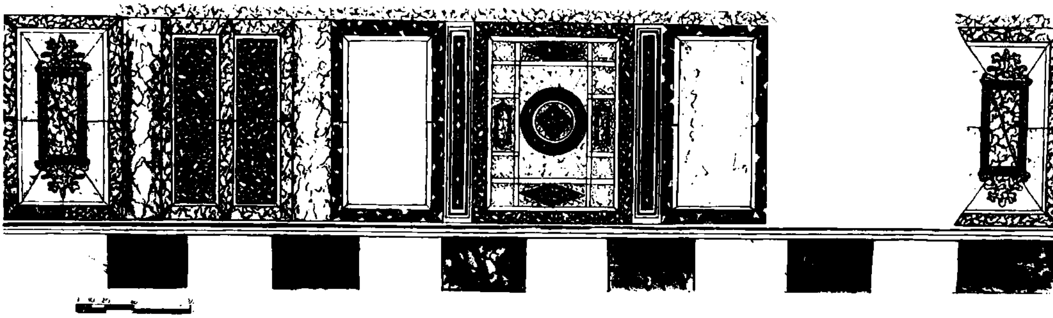


Fig. 16. Sector MMS, Late Roman features, room (B), watercolor of painting on apse (by K. L. Gleason).

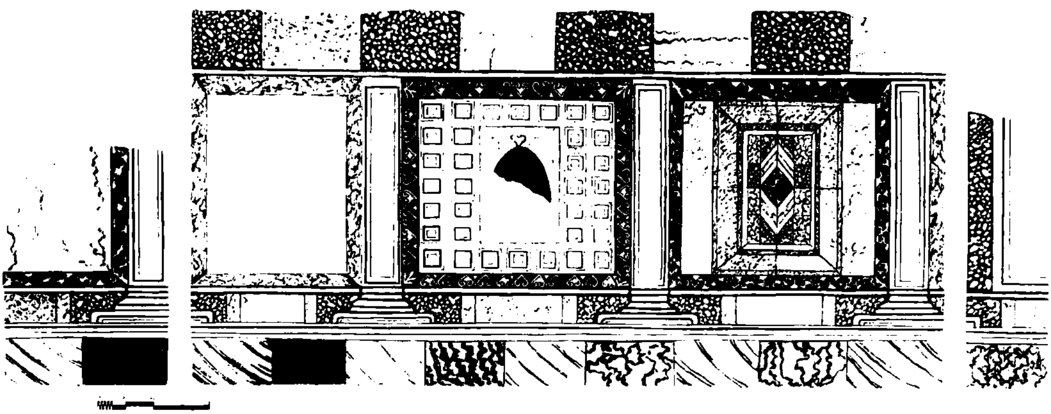


Fig. 17. Sector MMS, Late Roman features, room (B), watercolor of painting on south wall (by K. L. Gleason).

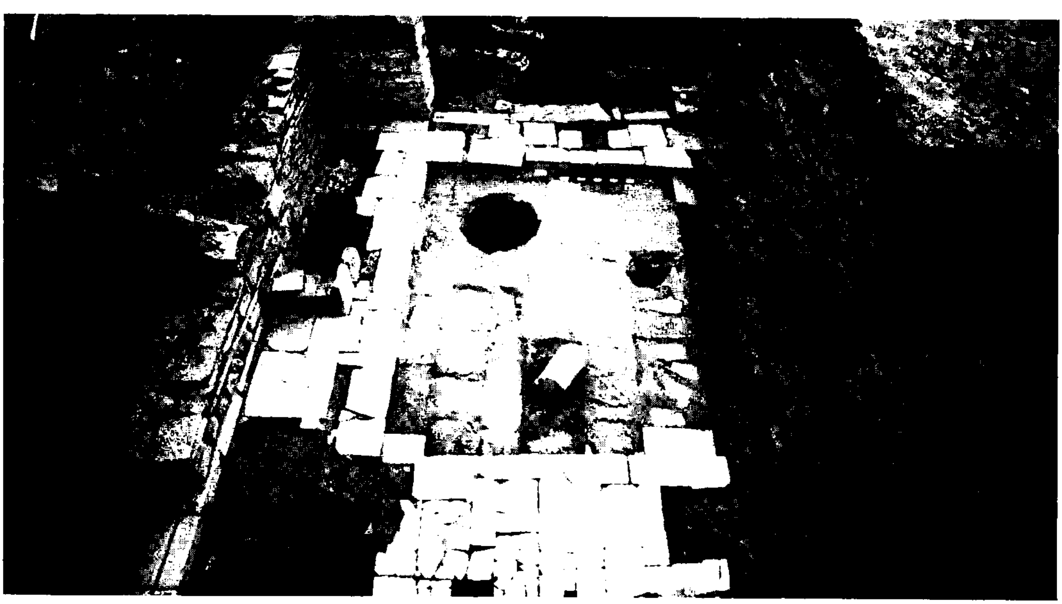
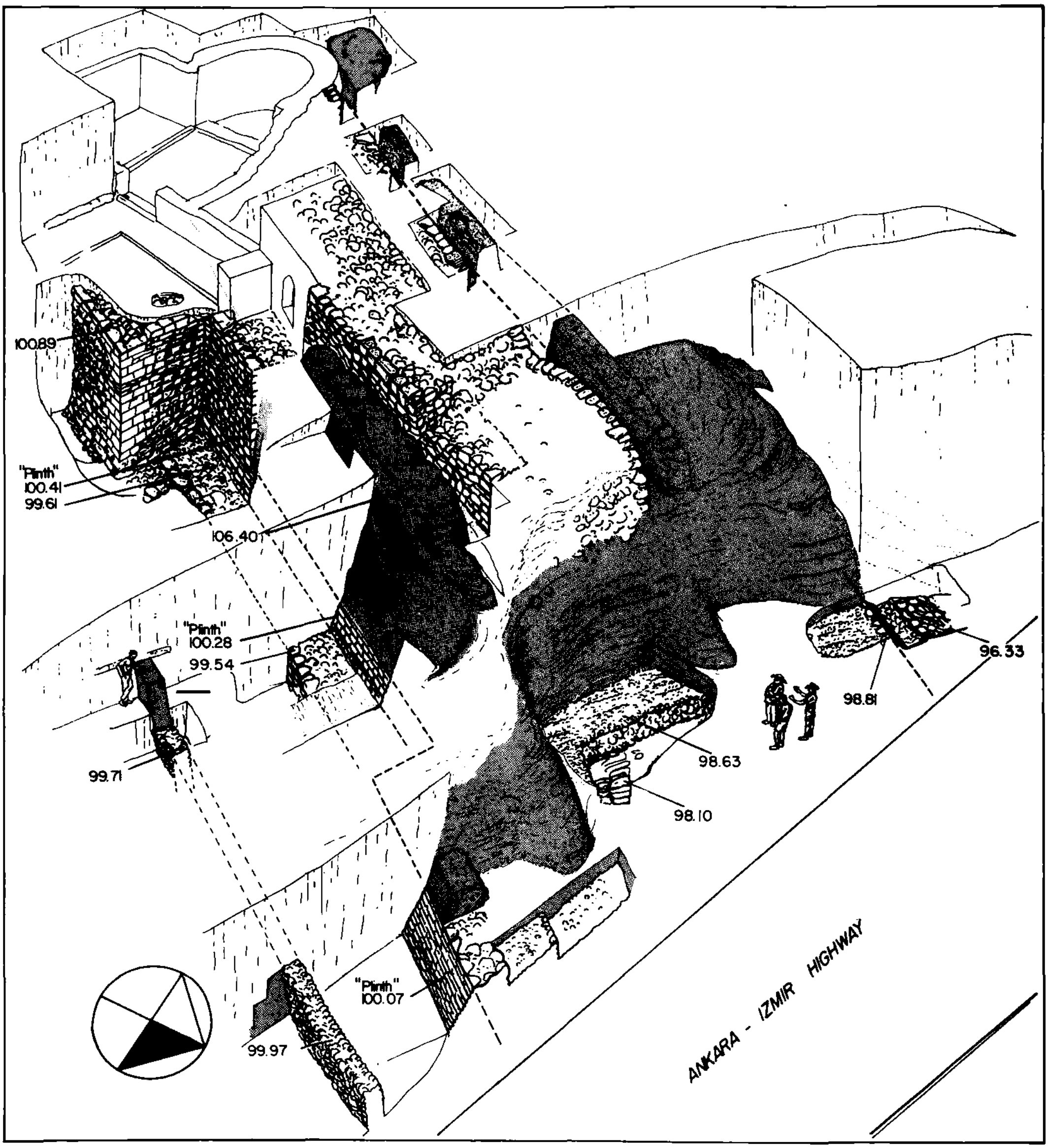


Fig. 18. Sector MMS, Late Roman features, room (C), view looking north.



MONUMENTAL MUDBRICK STRUCTURE
PERSPECTIVE VIEW of EXCAVATED REMAINS

AUGUST 21, 1981, TNH Revised 1982, TNH

Fig. 19. Sector MMS, Lydian features, interpretive perspective view, looking south.

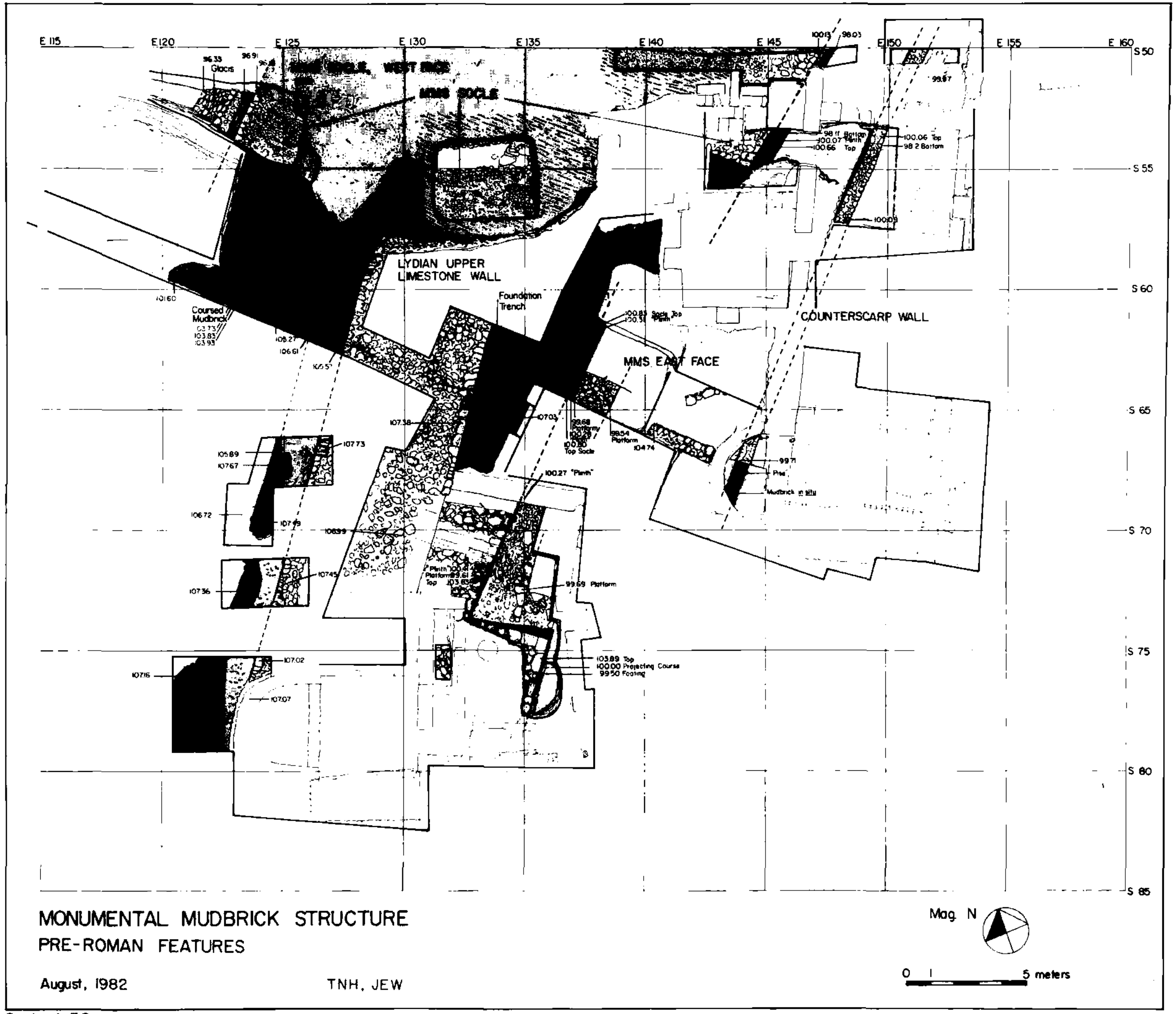


Fig. 20. Sector MMS, Lydian features, plan.

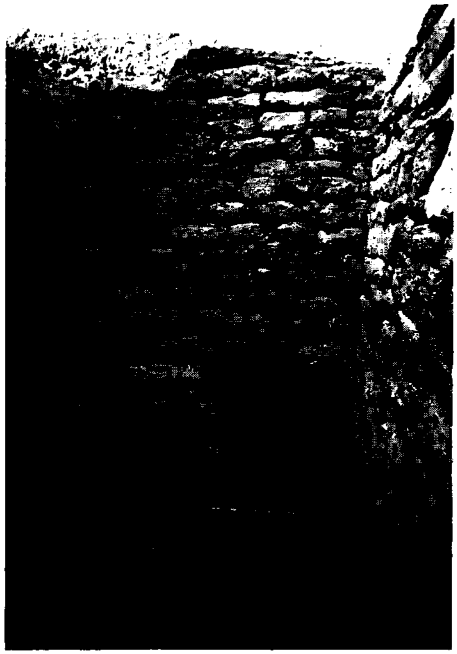


Fig. 21. Sector MMS, Colossal Lydian Structure, east stone facade with jog, looking south.

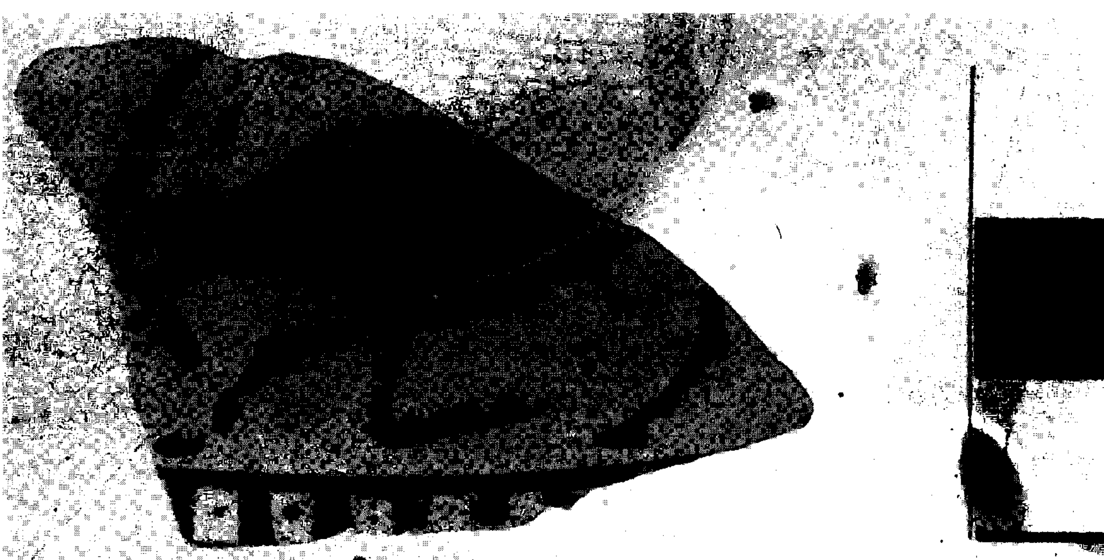


Fig. 22. Sector MMS, fragment of Fikellura amphora from debris in front of Colossal Lydian Structure's east stone facade.

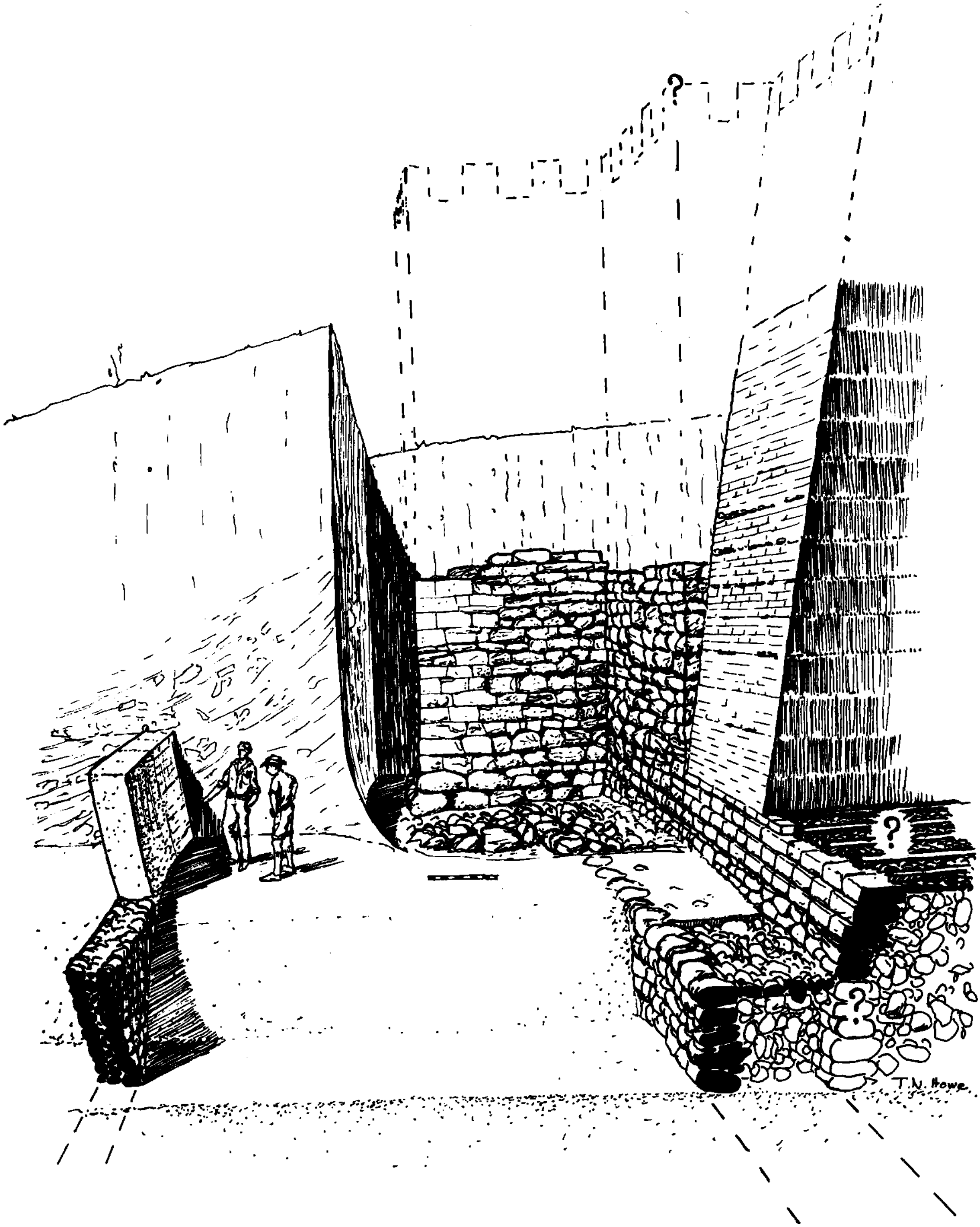


Fig. 23. Sector MMS, Colossal Lydian Structure, interpretive perspective view of east facade and narrow wall, looking south.

Fig. 24. Sector MMS, Colossal Lydian Structure. Mud brick superstructure of narrow wall, encased in destruction debris (in south sub-trench, under apse of Late Roman room (B), looking northeast).

Fig. 25. Sector MMS-S, Lydian wall, looking northeast.

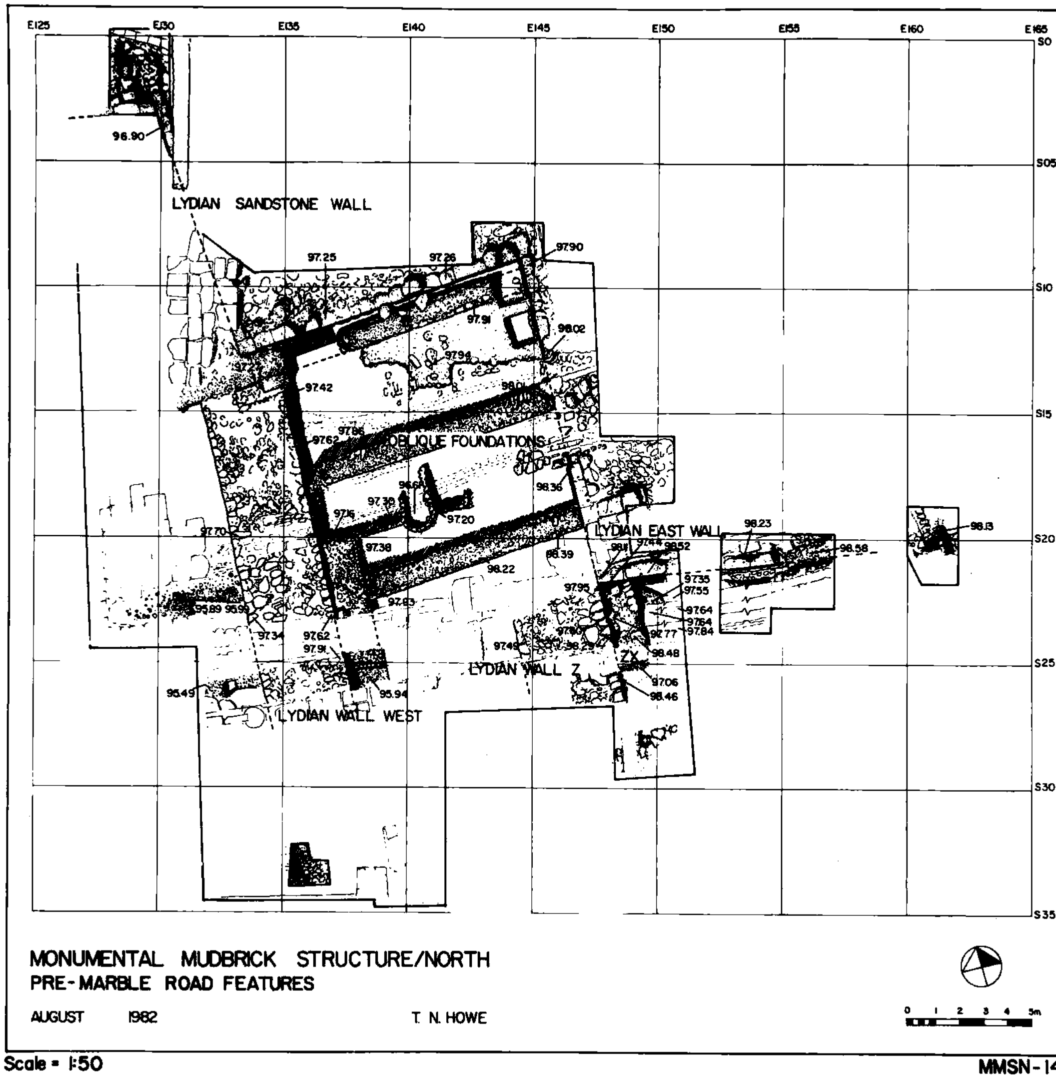


Fig. 26. Sector MMS-N, pre-marble road features, plan (with Lydian East Wall shaded).

Fig. 27. Sector MMS-N, Lydian East Wall, re-entrant corner, looking east.

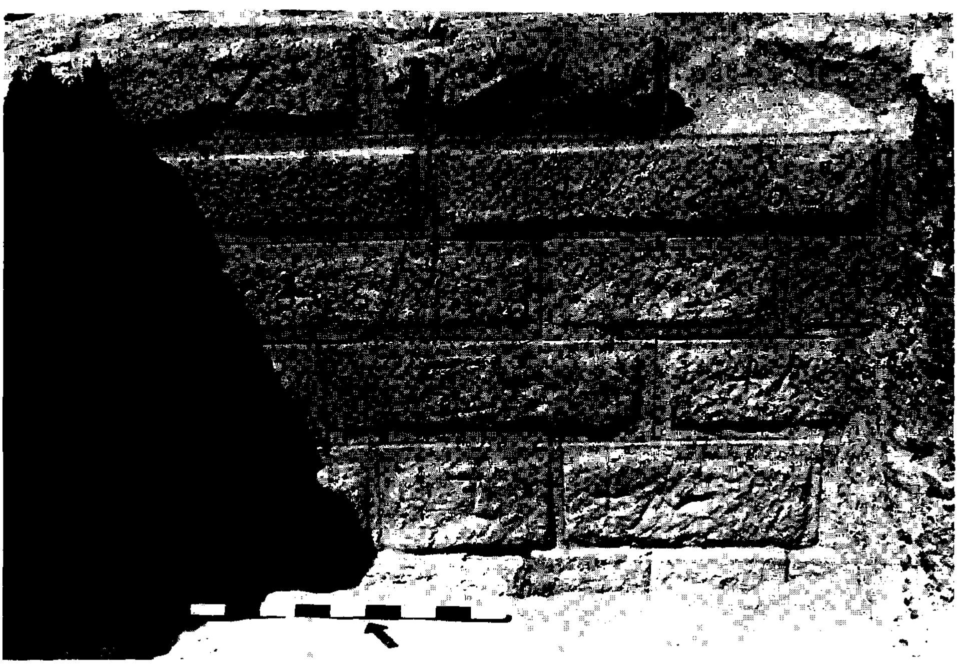


Fig. 28. Sector MMS-N, Lydian East Wall, sandstone masonry, looking northeast.

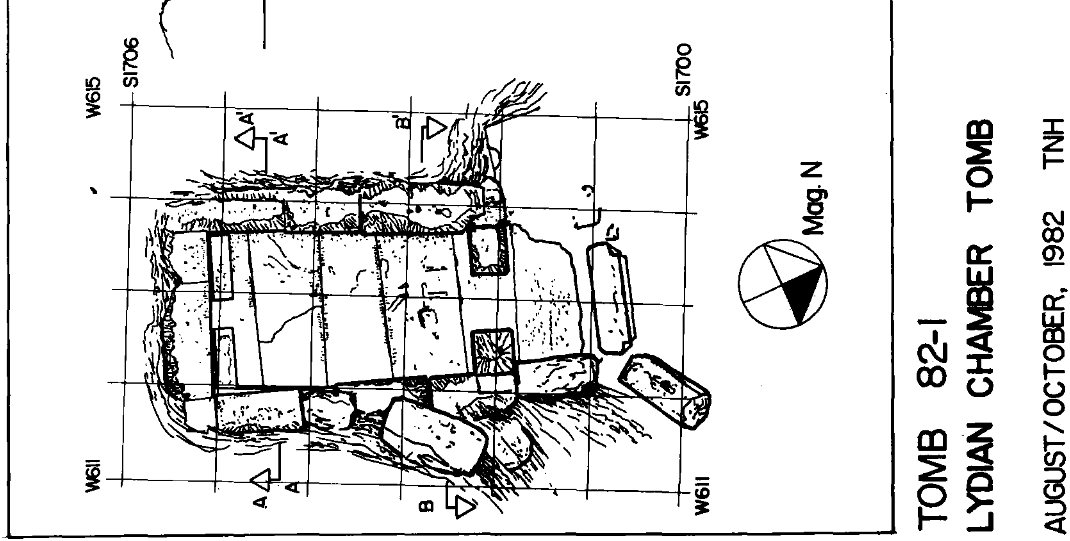
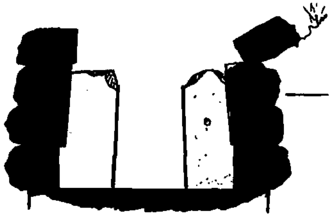
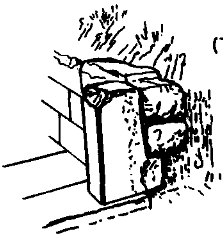


Fig. 29. Tumulus chamber (Tomb 82.1) in Sardis Necropolis, plan and sections.

SECTION A-A'



SECTION B-B'



(Top Block Removed)

DOOR JAMB

Fig. 30. Tumulus chamber (Tomb 82.1) in Sardis Necropolis, photograph taken from «monopod» camera support; north at bottom.

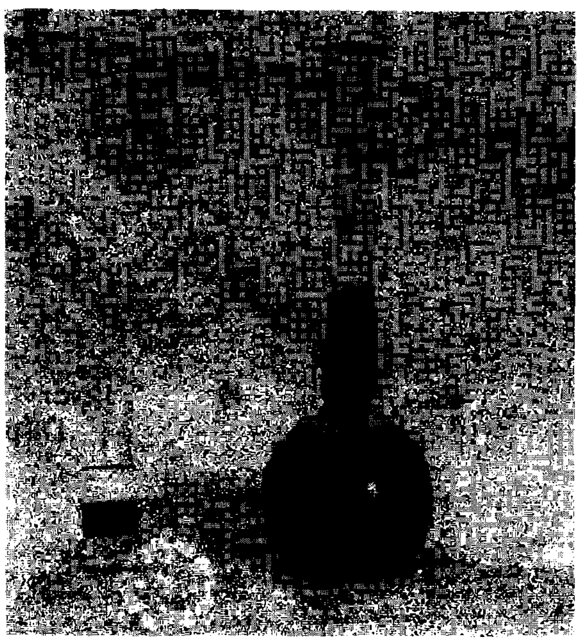


Fig. 31. Roman glass unguentarium (NoEx 81.13) with ancient oily contents.

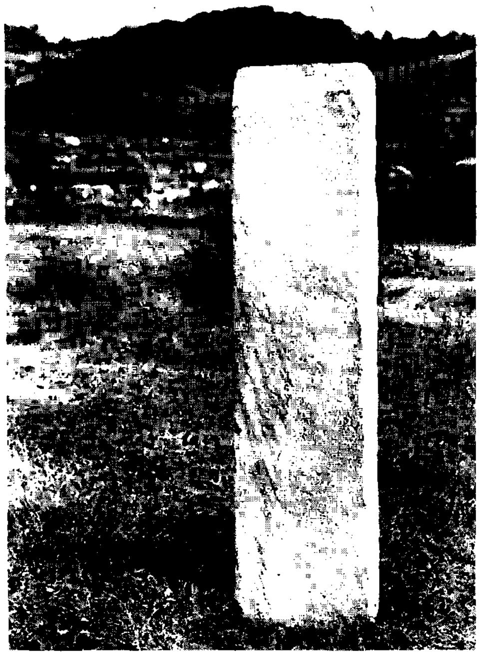


Fig. 32. Boundary stele from the Sanctuary of Artemis (IN82.1), re-erected in arbitrary location near Temple of Artemis.

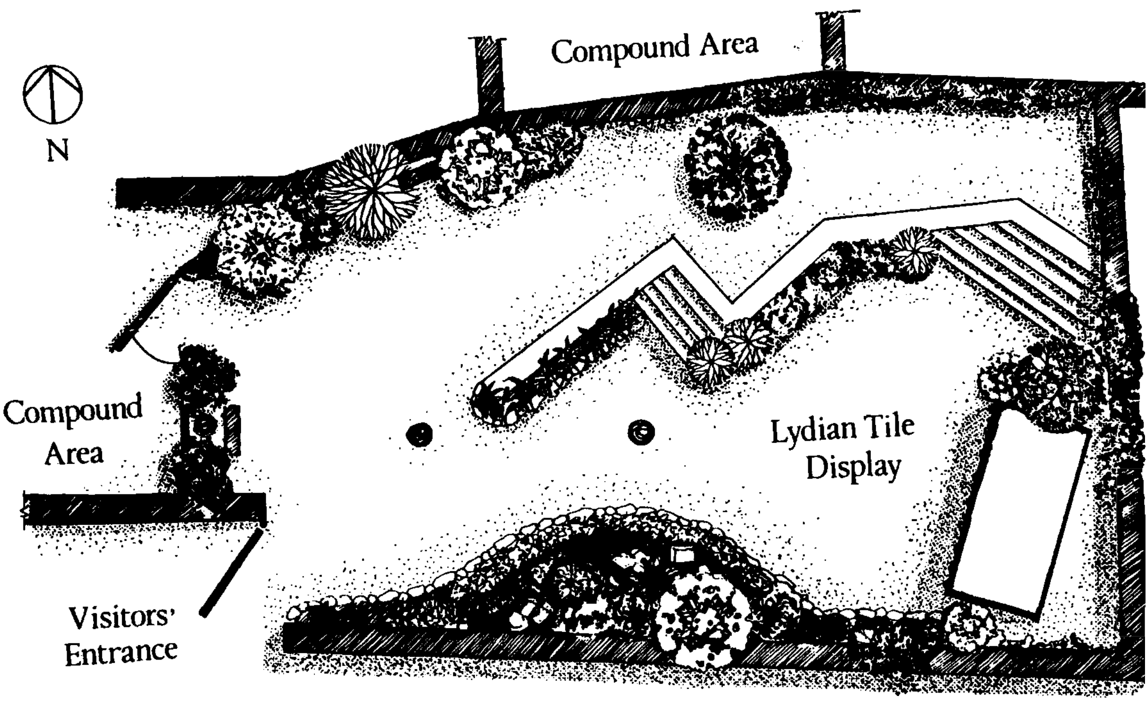


Fig. 33. Landscape design for exhibit area of structure displaying recreated Lydian roof and revetment tiles.

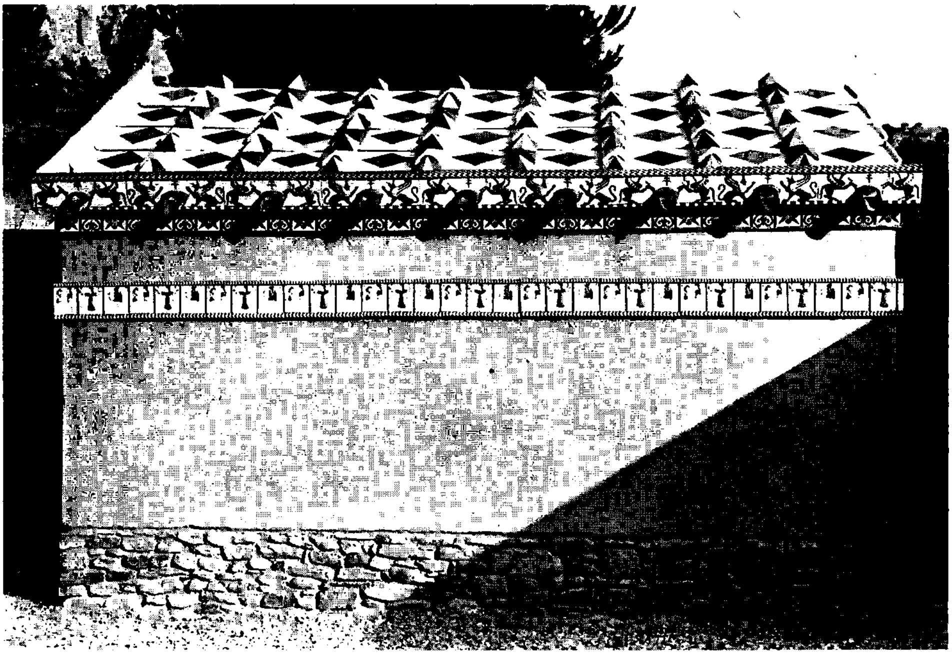


Fig. 34. Structure displaying recreated Lydian roof and revetment tiles, looking cast.

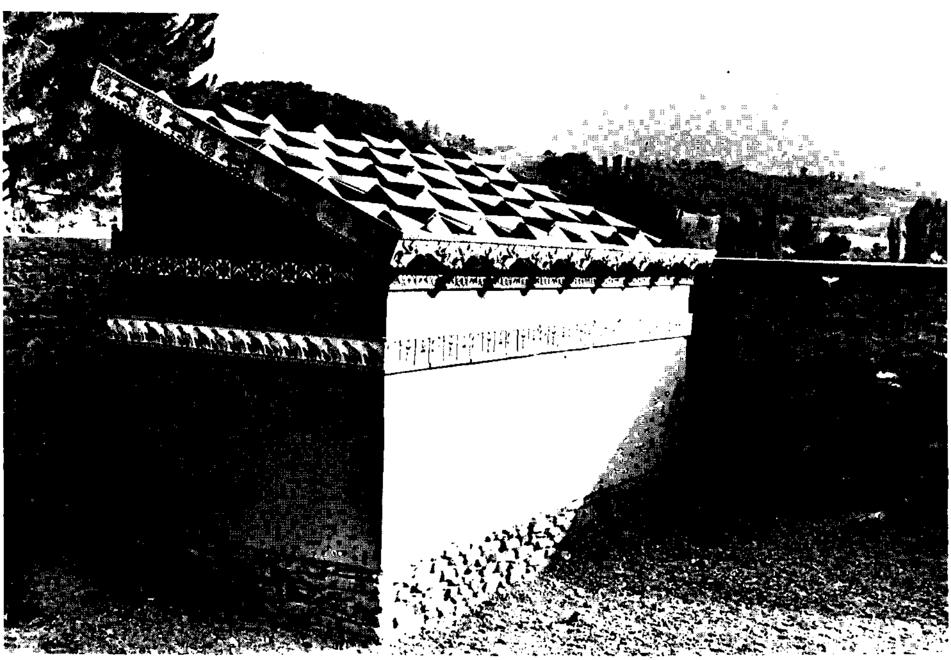


Fig. 35. Structure displaying recreated Lydian roof and revetment tiles, looking southeast.